INTERFIRM RELATIONS AND INNOVATIVE CAPACITY IN ADANA ORGANIZED INDUSTRY ZONE: A CASE STUDY ON TEXTILE FIRMS

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

NİHAN (DÜLGER) KAVAS

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
SCIENCE AND TECHNOLOGY POLICY STUDIES

SEPTEMBER, 2006

Approval of the Graduate School of Social Sciences

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ABSTRACT

INTERFIRM RELATIONS AND INNOVATIVE CAPACITY IN ADANA ORGANIZED INDUSTRY ZONE: A CASE STUDY ON TEXTILE FIRMS

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M.S., Science and Technology Policy Studies
Supervisor: Assoc.Prof.Dr. Erkan Erdil
September, 2006, 120 pages

Over the recent years, the learning capacity and knowledge creation ability of small and medium-sized enterprises (SMEs) have been increasingly highlighted. Cluster concept represents as a geographical agglomeration where SMEs overcome the structural constraint and develop inter-firm relationships based on the trust. The trust based inter-firm relations increase the opportunity of SMEs to establish cooperation and competition linkages. The present study investigated SMEs in textile sector to identify the inter-firm relationships in Adana Organized Industry Zone. The aim of this study is development of policy recommendations for promoting inter-firm relationships of SMEs. First, we present the theoretical perspective of various approaches the cluster concept, strategic elements of cluster, advantages of clustering and competitive and cooperation advantages. Then we explain the SMEs concept mainly emphasized on the basic weaknesses of SMEs. In this regard, we analyze the main characteristics of textile SMEs in AOSB based on the innovative performance and inter-firm relations. Two main aspects are concluded from the survey results. Textile SMEs in AOSB require developing more relationships with firms and institutions to constitute cooperation and higher innovation services to gain competitiveness.

Key words: Cluster, SMEs, inter-firm relationships

ÖZ

ADANA ORGANİZE SANAYİ BÖLGESİNDEKİ FİRMA İLİKİLERİ VE YENİLİK ÜRETME KABİLİYETİ: TEKSTİL FİRMALARI ÇALIŞMASI

Kavas Dülger, Nihan
Yüksek Lisans, Bilim ve Teknoloji Politikası Çalışmaları
Tez Yöneticisi: Doç. Dr. Erkan Erdil
Eylül, 2006, 120 sayfa

Son yıllarda küçük ve orta büyüklükteki işletmelerlerin (KOBİ) öğrenme yetileri ve bilgi üretme yetenekleri artan oranda vurgulanmaktadır. Küme kavramı, KOBİ'lere yapısal sınırlamalarının üstesinden gelme ve güvene dayalı firma ilişkileri kurma olanağını sağlayan coğrafi yoğunlaşmayı temsil etmektedir. Güvene dayalı firma ilişkileri KOBİ'lerin işbirliği ve rekabet bağlantılarını kurması için fırsatları arttırır. Bu çalışma Adana Organize Sanayi Bölgesindeki (AOSB) firma ilişkilerini tanımlamak amacıyla tekstil sektöründeki KOBİ'leri incelemektedir. Bu çalışmanın amacı, KOBİ'lerin firma ilişkilerinin geliştirilebilmesi için politika önerileri oluşturmaktır. İlk olarak, küme kavramının çeşitli yaklaşımları, küme kavramının koşulları, işbirliği ve rekabetin yararları teorik bir çerçevede sunduldu. KOBİ kavramı, temel zayıflıkları vurgulanarak anlatıldı. Bu bağlamda, AOSB'deki tekstil KOBİ'lerinin yenilik üretme başarımına ve firmalar arası ilişkilerine dayanarak temel özellikleri analiz edildi. Araştırma sonuçlarından iki temel sonuca ulaşıldı. AOSB'deki tesksil KOBİ'leri işbirlikleri oluşturmak için daha fazla firma ve kuruluş ile ilişkilerini geliştirmeye ve rekabetçilik kazanabilmeleri için daha fazla yenilikçi servislere ihtiyaç duymaktadır.

Anahtar kelimeler: Küme, küçük ve orta büyüklükteki işletmeler, firma ilişkileri.

To My Father

ACKNOWLEDGMENTS

I would like to express my deepest gratitude to my supervisor Assoc. Dr. Erkan Erdil for his incredible patience, guidance, advice, criticism and encouragements throughout the research.

I am grateful to Administration of Adana Organized Industry Zone and textile firms for their priceless help. Special thanks go to Emine Ersoy her guidance.

I am grateful to Serap Cihantimur for her technical and motivational support and honorable friendship.

Special thanks go to my father, mother, and sister for their endless love and trust throughout both my education and life.

I would also like to offer heartfelt thanks to Mahmut Dülger for his valuable suggestions and encouragements. I could not have accomplished without his understanding and support.

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ASOB: Adana organized Industry Zone

DTM: Undersecretary of Foreign Trade

DTP: State Planning Organization

EU: European Union

IGEM: Enterprise Development Centre of KOSGEB

ILO: International Labour Organisation

KGF: Credit Guarantee Fund Inc.

KOSGEB: Small and Medium Industry Development Organisation

KSS: Small Scale Industrial Estate

KÜSGET: Small Industry Development Organisation

OSB: Organised Industrial Zone

SEGEM: Industrial Training and Development Center

SME: Small and Medium Sized Enterprise

TEKMER: Technology Development Centre of KOSGEB

TESK: Confederation of Turkish Tradesmen and Craftsmen

TESKOMB: Tradesmen and Artisans Credit and Security Cooperatives Union Central Association of Turkey

TOBB: Union of Chambers of Commerce, Industry, Maritime Trade and Commodity Exchanges of Turkey

TPE: Turkish Patent Institute

TSE: Turkish Standards Institute

TTGV: Technology Development Foundation of Turkey

TUIK: Turkey Institution of Statictics

TÜBİTAK: Scientific and Technical Research Council of Turkey

TÜRKAK: Turkish Accreditation Agency

UNCTAD: United Nations Conference on Trade and Development

UNIDO: United Nations Industrial Development Organization

CHAPTER 1

I.INTRODUCTION

1.1 The Context and Aim of The Thesis

In the last two decades, technology and innovation have become the main driving force of economic activity. Growing and irreversible trend towards globalization increased the importance of technology and innovation. Economic actors emphasized the local resources related to development of technology and innovative activity to overcome the affects of globalization such as the reduction in barriers to international trade, the internationalization of employment, capital and resources. Therefore, focusing on local resources and regionalization took increasing attention as focusing on globalization. Regionalization is increasingly seen as one important aspect of the globalization trend. Development of local production systems, regional innovation systems became the main aim of both developed and developing countries. The change of the competition concept accompanied this process. Competition gains more dynamic perspective that evaluates the productivity rather than input's costs. In that sense, competition has become more dependent on the ability of firms to apply new knowledge and technology in their products and processes. This view emphasizes the inside the firms, but cluster concept emphasizes the outside the firm which has vital role to constitute knowledge and technology advantage. Cluster is defined by Porter (1998a) as a concentration of interconnected firms and institutions in a particular field. As Porter (1998b) mentions, although, the concept spatial proximity has been highlighted by Marshall (1920) nearly one hundred year ago, the concept recently take considerable attention in the economic literature, particularly for regional development and regional innovation. Cluster represents a new way of thinking about location included inter-firm relationships, institutions and governments to contribute the competitive success. However, accepting the cluster only as an economic organization is not sufficient, because cluster occurs by the combination of social, cultural, historical and economic factors.

Moreover, the recent literature emphasizes the role of clusters on facilitating small and medium-sized enterprises (SMEs) to overcome the growth constraints. The most important characteristic of SMEs is, they are flexible and can adapt quickly to changing market demand and supply situations. They generate employment and help diversify economic activity and make a significant contribution to exports and trade. SMEs play a key role in triggering and sustaining economic growth in both developed and developing countries. There are numerous successful SMEs clusters, which give inspiration to developing countries to achieve economic development. There has been a great deal of interest in recent years on the ability of SMEs in nurturing entrepreneurship and generating new products and processes. The innovative capacity of SMEs and their inter-firm relationships, which based on competition and cooperation, constitute the main subject of this thesis.

The aim of thesis is to analyze the inter-firm relations of SMEs and their innovative capacity within cluster concept. The question, whether the inter-firm relationships of SMEs that are based on cooperation and competition could increase the innovative capacity of firms or not, constitutes the main motive of this study.

The health of local business environment directly affects the health of firms. Therefore, this thesis attempts to reflect upon inter-firm relationships and innovative capacity of SMEs in Adana Organized Industry Zone (AOSB). In order to achieve this goal, textile SMEs are selected as a case study, because of their well-known and widespread economic activity in the region.

The aim is constitute a policy recommendation and strategies for regional development, especially for developing countries. Briefly, SMEs in Turkey have significant disadvantages; constituting well-designed regional development strategy would help them to generate their economic activity. Therefore, in the following chapters we will explain the central concepts that require for the discussion.

1.2 Scope of The Thesis

As explained in the preceding section, SMEs have significant importance to nurturing entrepreneurship and generating new process and products. Nadvi (1995) mentions that cluster offers unique opportunities for SMEs to engage in the wide array of domestic linkages between users and producers and between the knowledge producing sector and the goods and services producing sectors of an economy that stimulate learning and innovation.

According to Morosini (2004) two fundamental dimensions have to be analyzed to understand the cluster concept. Firstly, to understand cluster potential for knowledge creation and innovation it is necessary to look at nature and quality of cluster. Secondly, to understand the forces driving its competitive and business logic it is necessary to assess the research and scope of its economic activity. In this thesis, we try to analyze these both dimensions for textile firms in AOSB in broad sense. Each type of cluster has own peculiar characteristics based on the circumstances and changing economic activity. Different clustering policies have been applied in different areas both developed and developing countries. (Altenburg and Meyer-Stamer, 1999). This study aims to analyze SMEs in Turkey, particularly SMEs that have concentrated in a particular area and belong to the same industry.

The scope of this thesis is limited to the textile SMEs in AOSB. The reason for choosing the textile firms is profoundly related to the regional economy. Textile industry has begun in 1860s in the region as cotton presser. Thus, textile industry has historical roots in Adana region. Many of textile-related industry have developed in the region by stimulating the textile industry.

We tried to expose how the textile SMEs in AOSB are using inter-firm relationships to increase their cooperation and innovative capacity. Consequently, we have two main arguments in the thesis.

- *Inter-firm relations that are based on cooperation and competition facilitate the innovative activities of SMEs in a particular area.*
- *Geographical concentration of SMEs with related industries and institutions helps to overcome the disadvantages of SMEs resulting from the size and structure.*

The survey study is conducted with 41 textile firms; those are all members of the AOSB. AOSB has been serving a suitable survey area, because it has collected textile SMEs in the region since 1995. Our analysis is based on data collection through interviews on the field. The interviews were personally done by managers or the mid-level managers of the firms. Questionnaire includes 32 questions. The first part of the questionnaire is related to general information about firm, the second part of questionnaire aims to find out “technological and innovative capacities of firms” and “inter-organizational relations”. The survey aims to identify quality and quantity of the inter-firm relations, suppliers and customers in order to determine technology usage and innovative capacity of textile SMEs in AOSB. We also,

aimed to understand quality perception of firms and how innovative they are in making their products and processes.

1.3 Outline of The Thesis

The thesis proceeds in the following outline; after the introduction, in Chapter 2, theoretical framework and basic concepts will be introduced. This chapter provides an overview of the recent literature on clusters, strategic element of cluster, life cycle of cluster. The advantages of cluster will be explained in three dimensions: The advantages result from agglomeration, interaction and level of activity. The network and industrial districts concepts and their differences from cluster will be discussed. Inter-firm relationships, particularly trust-based relationships will be mentioned.

Chapter 3 represents an overview on SMEs. Clustering SMEs and their influence to economic activity will be depicted. Innovative performance of SMEs and collective learning will be mentioned to clarify their role in cluster. Some advantages and disadvantages of SMEs will be defined. Some stylized fact of SMEs in Turkey and their specific weaknesses will be explained.

Chapter 4 presents the main findings of case study. More detailed information on SMEs inter-firm relationships and innovative capacity of textile firms in AOSB will be analyzed. Explaining the industrial and economic structure of Adana will be helpful to understand the economic capacity of AOSB and textile sector. The results of the case study that related to inter-firm relations and innovative capacity will be given. The leader firms of textile sector in AOSB will be defined with the help of Pajek program. Some information about the leader firms will be given to clarify their position in innovative activity of AOSB.

In the final chapter, findings of case study are will be discussed in accordance with the objectives of the study. The discussion is completed by policy recommendation, comprising identification of policy needs especially for labour-intensive industries in developing countries, which includes suggestions for further research.

CHAPTER 2

II. THEORETICAL FRAMEWORK AND BASIC CONCEPTS

During the 1990s, the world has experienced a growing and irreversible trend towards globalization. Globalization has influenced the world economy in various ways. According to Edgar (2000), the first affect is the increasing integration of the productive process. Outsourcing, licensing, subcontracting and other cooperative efforts based on an efficient international division of labour have become important. The second affect is the lowering or removal of the institutional barriers to international trade and the flow of capital. The third affect is technological advance, particularly in information dissemination and communications, which has considerably reduced the cost and complexity of going global. This has opened up world markets to new products and services and has created export opportunities for a vast number of SMEs which were earlier shut out by cost considerations (Edgar, 2000).

These affects highlight the importance of regionalization as well as globalization. Regionalization is increasingly seen as one important aspect of the globalization trend (Isaksen, 2001). Regionalization refers to economic activity dependent on resources that are specific to individual places (Storper, 1997). The principal empirical sign of the trend towards regionalization is the apparent growth in importance of regional clusters and innovation systems over the last decades. The current importance of regional clusters is related to the changing of economic structure. Transition from Fordism to post-fordism has some important consequences for the organization and localization of industrial activity, and by extension for regional development processes and regional policy (Isaksen, 2001). Over the last decades, the trend towards regionalization has increased its importance by the help of growing attention to regional clusters and regional innovation system approaches. These approaches constitute different types of regional clusters that have a considerable position in the world economy for both traditional products (e.g. Third Italy) and high technology products (e.g. Silicon Valley).

Clusters took on the role of becoming key nodes in the increasingly globalized arena of production, because they may contain productive resources and assets that are quite unique and place specific (Isaksen, 2001). As Isaksen (2001) mentions the place specific

characteristic was highlighted by Marshall (1920) nearly a hundred years ago. Since then, the spatial concentration issue has emerged which had increasing impact on economic literature and regional development (Piore and Sabel, 1984; Cooke, 2001; Scott, 1992; Storper, 1997). New concepts, such as clusters, technological districts, innovative milieu, learning regions, regional systems of innovation, introduce a newly developed theoretical and empirical construct to those who are concerned with industrial development and regional economies (Doloreux, 2002).

The place specific characteristic of clusters causes to interchangeable use of the concepts of network and cluster. The concept of network is used in various perspectives such as marketing, management, sociology and business. In the view of this thesis we have limited understanding of networks, we will be interested in the inter-firm networks that have significant role in clustering. The differences between cluster and networks need to be analyzed to understand the inter-firm relations more extensively.

In this chapter, we will summarize some definitions of cluster. The strategic elements that are required for cluster will be mentioned. The life-cycle of cluster will be explained to understand these strategic elements. The advantages of clustering that result from agglomeration, interaction and level of economic activity will be denoted to emphasize on the key role of clustering for individual firms, their competitive performance and regional development. The main argument of cluster concept is providing competitive advantage by geographical concentration of firms. Therefore these two main characteristics of clusters require more detailed analysis.

2.1. Some Definitions of Cluster

The cluster concept became clear in the literature with the pioneering definition of Porter (1990). Porter (1990) applies clusters to explain the competitiveness of nations; he later (1998a) stresses the importance of the geographical boundaries and competitive advantages. Porter (1998a) claims that cluster represent a kind of new organizational form by promoting both competition and cooperation. Competition is the main characteristics of cluster, without it cluster will fail. According to him, the most important feature of cluster is integrating competition and cooperation in different dimensions and different actors. Porter (1998a) defines the clusters as: Geographic concentration of interconnected companies and institutions in a particular field.

Porter's (1998a) definition also includes specialist suppliers, specialized infrastructure, other services and input providers, customers and associated institutions like universities, standards setting agencies, think tanks, training providers, trade associations, specialized training, education, information, research and technical support.

Literature displays a wide variety of cluster definitions. After Porter's (1998a) definition, researches tried to adopt more descriptive and comprised definition for cluster. Hill and Brennan's (2000) definition summarizes some critical characteristics of cluster. They define the cluster as a geographic concentration of competitive firms or establishments in the same industry that have either have close buy-sell relationships with other industries in the region, use common technology or share a specialized labour pool. Roelandt and Hertog (1999) emphasize the value-adding production chain. They define the cluster as networks of production of strongly interdependent firms related to each other in a value-adding production chain.

Morosini (2004) highlights the importance of social dimension of cluster. He defines the cluster as a socio-economic entity characterized by a social community of people and a population of economic agents localized in close proximity in a specific geographic region. According to him, the most significant feature of cluster is its natural quality and strength to integrate the social community and the economic agents in economically linked activities. He emphasizes that cluster actors share and nurture a common stock of product, technology and organizational knowledge in order to generate superior products and services in the marketplace. Cooke (2001) adopts more descriptive and comprised definition for clusters:

> A cluster is geographically proximate firms in vertical and horizontal relationships involving a localized enterprise support infrastructure with a shared developmental vision for business growth, based on competition and cooperation in a specific market field (Cooke, 2001).

Cooke's (2001) definition highlights Porter's (1998a) inclusion of vertical relationships and horizontal relationships between firms and institutions, as well as the importance and inclusion of common identity (Forsman and Solidanter, 2003).

Öz (2004) suggests that in many of the definitions provided in the literature, clusters are implicitly seen as dynamic, successful and competitive. Bekar and Lipsey (2001) summarize the characteristics that are common in most definitions of clusters. The first common characteristic is that most clusters have a geographic element, often taking the

form of an urban agglomeration, while some extend beyond urban areas and regions, sometimes spreading over national boundaries. However, Martin and Sunley (2003) claim that operating clusters on such a diverse range of spatial scales undermines both the empirical and analytical significance of the concept. They state that what constitutes the geographically proximate has to be denoted in the definition. The second characteristics that Bekar and Lipsey (2001) emphasize is that clusters are concentrations of firms with strong formal and informal linkages among themselves and to other institutions such as local universities, government research labs and other units in the supporting technological and business infrastructures. The third characteristic that they mention is that the larger the cluster, the more it is able to supply its own demand for critical intermediate inputs. After this summary, Bekar and Lipsey (2001) define a cluster as:

> A large regional grouping of geographically proximate innovative firms, where those firms have strong linkages to local educational and research bodies, government laboratories, financial institutions, other elements of the business infrastructure and to each other (Bekar and Lipsey, 2001).

In the concept of this thesis, cluster concept will be discussed as a geographical concentration of interconnected companies and institutions in vertical and horizontal relationships, based on the competition as well as cooperation. However, reaching the complementary approach for cluster concept requires more detailed analyses about it. Therefore, next section continues by identifying issues that are central to existence and development of clusters.

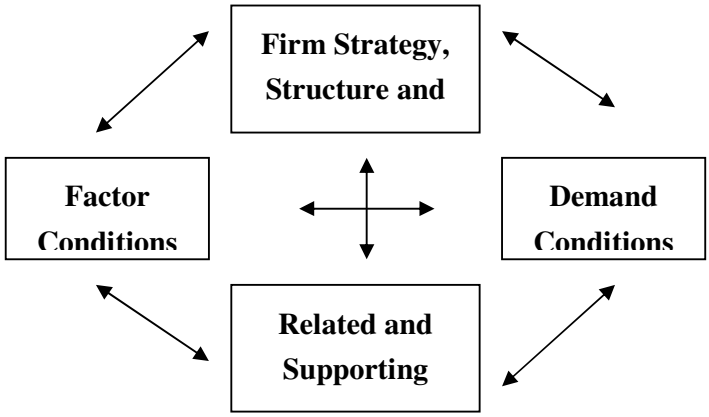
2.2. Strategic Elements for A Cluster

In his book *"The Competitive Advantage of Nations",* Porter (1990) analyses a number of case studies examined for more than one hundred industries in ten different countries. He concludes that the building of a home-based industry within a nation or region represents the organizational foundation for global competitive advantage. He also claims that the key to future prosperity of a nation is the improvement of productive capability by building clusters within its borders.

Porter (1990) developed his well-known diamond framework based on these case studies. In diamond framework (see in Figure 1) four elements; factor conditions, demand conditions, related and supporting industries and firm strategy and rivalry of the local

environment play significant role to promote the competition capacity of home-based industry.

Figure 1: The Diamond Framework of Cluster



Source: Porter (1990)

According to Porter (1998b), factor conditions refer to the basic inputs that allow competition. Basic inputs that are generic across many industries loose their importance due to general usage by all firms. In order to increase productivity, basic inputs must improve in efficiency, quality and ultimately specialization to particular area. Factor conditions are also related on whether firm prefer the cost related factors such as ready supplies of natural resources and unqualified employees or knowledge and technology-related advanced factors.

Demand conditions are explained as the nature of local demand like needs and wants of the customers for foreign and domestic goods as well as the existence of local industrial demand for related intermediate goods. Sophisticated and demanding customers press firms to improve their productivity, quality as well as technology. Porter (1998b) states that the existence of a geographic cluster often depends on the historical circumstances of local environment or an unusually sophisticated local demand.

The related and supporting industries refer to the local pressure or existence of suppliers of materials, components, machinery and services and related industries. Productivity and productivity growth is the highest where there is a cluster, not isolated firms or industries (Porter, 1998b).

The context for firm strategy and rivalry refers to rules, incentives and norms governing the local rivalry. Creating an advanced economy requires a vigorous local rivalry. The character of rivalry is strongly influenced by business environment such as local demand conditions, factor conditions and investment climate. Porter (1998b) states that investment climate includes macroeconomic and political stability, the tax system, labour market policies affecting the incentives for workforce development and intellectual property rules and their enforcement. These four factors interact with each other to constitute a complex and mutually supporting system for a firm. Porter (1990) states that the success of any given firm can be traced these four major factors.

Similarly, Morosini (2004) clarifies the economic activities of cluster based on three broad factors. First group of factors are mostly shaped by the external characteristic of firms, such as customers, product markets and also the macro-level demographical and legal framework, which governed these customers and markets. Second group of factors generally are shaped by the internal characteristics of firms, such as, resources, processes and capabilities. Third group of factors are governed by social approaches to learning, accumulating knowledge, creating a sense of identity and cultural behaviour.

Porter (1998a) with the concept of *'social glue'* and Morosini (2004) with the concept of '*common glue'* explain the social dimension of cluster that binds the actors together. Porter (1998a) describes four issues that are strategically important to understand cluster formation. Those are choosing locations, engaging locally, upgrading the cluster and working collectively, which are explained at below, constitute *'social glue'* for binding the cluster actors together.

a. Choosing location*:* Globalization, transportation and communication have led many firms to move some or all of their operations to locations where they obtain cost advantages such as low wages, taxes and utility costs. But, cluster suggests that these cost advantages may turn out to be "illusory". Because, cluster can evaluate the advantage of locations in systematic approach by using the efficient infrastructure, sophisticated suppliers and customers and specialized employees. Porter (1998a) suggests that location decisions must be based on both total systems costs and innovation potential, not on input costs alone.

b. Engaging locally: Cluster requires personal relationships, face-to-face contact, common interests and "insider" status. Companies can provide wider opportunities by engaging locally. The benefits of cluster can be maximizing if companies establish a significant local

presence. Cluster also generates the ongoing relationships with local institutions, government in that local presence.

c. Upgrading the cluster: The health of the local business environment directly affects the health of the company. Therefore, upgrading the cluster is the important aspect to sustain the presence of the cluster and its competitiveness.

d. Working collectively*:* Cluster brings a new form of collective action for private sector. In the past, collective action was understood by private sector as seeking government subsides and special assistance. However, cluster approach caused to rethinking of the role of local institutions and associations (Porter, 1998a).

Furthermore, Morosini (2004) describes five elements that bind the cluster actors together to build *'common glue'*. According to him, *common glue* connects different structural agents and integrates key knowledge across cultural, organizational and functional boundaries. These five elements are explained at below.

a. Leadership: A well-functioning cluster actors have explicit roles such as fostering cooperation, sharing knowledge, coaching leadership. The leadership role has different facilities that depend on the structure of cluster. Especially, the most innovative firm naturally becomes a leader of cluster by distributing high technology to other firms.

b. Building blocks: Due to strong socio-cultural ties, a well-functioning cluster develops "building blocks". Building blocks foster and facilitate all kind of relationships and linkages among the members by creating a common code of behaviour. This common code of behaviour consists of a common language, a common industrial culture and atmosphere, a common philosophy and approach.

c. Communication rituals: Communication events, interaction and approach consist of communication rituals within a well-developed cluster. Communication interactions support the development of a common sense of identity in cluster. Industry associations, local or national lobby, interests groups built a common image to present the cluster. In addition, communication approach facilitates the development of a common sense of identity by directing members to have common and explicit quality standards.

d. Knowledge interactions: A well-functioning cluster develops a series of regular, explicit mechanisms for sharing technological and organizational knowledge among members. Research centres, technological institutes, universities, think-thanks, training schools actively promote knowledge interactions between individual, firms and institutions.

e. Professional rotations: A highly competitive cluster develops a significant pool of specialized employees. The degree of cross-firm mobility of these specialized employees takes place within the geographical boundaries of the cluster. This mobility provides an effective and efficient vehicle for exchanging tacit knowledge and experiences (Morosini, 2004).

Clusters are dynamic organizations that include various development processes. Binding different actors of cluster occurs in different phases of cluster. The life-cycle phases of cluster are strategically important as the actors of cluster. Cluster requires a decade or more to evaluate all actors and use them effectively.

2.3. Life-Cycle Phases of Clusters

Clusters originate from different circumstances, factors and environments. As a living structure, cluster experiences different phases. Porter (1998a) clarifies these phases as birth, evolution and decline. Similar description comes from Carbonara (2004); he claims that clusters can be modeled using three main stages, namely the start up stage of "formation", the "development" stage and the growth stage of "maturity".

In addition, Piore and Sabel (1984) state that the early stages of cluster are characterized by the reinforcement of a "craftsman-like" manufacturing system localized in a specific geographical area. They also claim that the development of networking processes among firms depends on their ability to carry out an integrated system of production activities in accordance with the flexible specialization model.

Porter (1998a) describes the basic characteristics of cluster phases. The birth phase explains the beginning of cluster. Cluster's roots usually endure the historical circumstances. The sophisticated and unusual local demand often gives rise to cluster. On the other hand, due to the new business formation mentioned at above, existence of suppliers' industry and customers also give birth to new cluster. The other factor is the existence of related cluster in the same location that constitutes the necessary circumstances for new cluster. It has

been recognized that one or two innovative firms that stimulate the growth of many others may form the seeds of new cluster.

The evolution phase explains the development of cluster. Once a cluster begins to grow with the help of factors suggested above, local competition and local institutions support forming of self-reinforcing cycle of cluster. In the evolution phase cluster's fame spreads out. Therefore, entrepreneurs take notice, specialized employees attend to work, specialized suppliers and customers pay attention, information accumulates and local institutions begin to develop. Besides these developments, government and private sector invest in cluster in order to support its growth.

> Clusters require a decade or more to develop dept and form the competitive advantage; consequently cluster needs a long-term economic and social planning (Porter, 1998a).

The decline phase explains the reasons of losing competitive advantages. Eventually, clusters may lose their strong structure and competitive advantages because of both external and internal factors. The most important external factor is technical discontinuities that cause to neutralize many advantages of cluster such as capacity of innovation, flow of information, market opportunities. The change in buyers' needs is the other important external factor. If cluster persists in continue its traditional production, it would cause disharmony between suppliers and customers demands. The internal factors are as effective as the external ones. Cluster offers their members a flexible structure; on this account over-restrictive rules slow the productivity of cluster. If the collective action turned to over consolidation firms would suffer from creating new ideas. They inevitably require radical innovation. The stagnation on quality of institutions and universities providing technical and educational support is the other internal factor that influences the future of cluster. Clusters definitely feel the decline phase when the cost of doing business begins to outrun the ability to upgrade (Porter, 1998a).

Once a cluster begins to form, their advantages result from agglomeration, interaction and level of economic activity occur. The internal and external factors that cause to decline of cluster may overcome by using effectively the advantages of clustering.

2.4. Advantages of Clusters

Clustering serves significant contribution to economic development. In order to analyze the importance of cluster in regional development, economy and innovation processes, significant advantages of clustering should be explained. Many studies on cluster (Porter, 1998a; Pyke, Becattini and Sengenberger 1992; Morosini, 2004; Schmitz, 2000; Preissl and Solimene, 2003) highlight the advantages of clustering in various dimensions. In addition, the advantages of clustering used as tool for an economic policy especially for small and medium-sized enterprises in developing countries.

Porter (1998a) emphasizes the advantages of clustering in a sophisticated and detailed manner. He explains the advantages of cluster in three main aspects: productivity, innovation and new business formation. Being a part of a cluster allows companies to operate more productively in sourcing inputs, accessing information, technology and needed institutions; coordinating with related companies and measuring and motivating improvements (Porter, 1998a). In addition, enchasing productivity, Porter (1998a) emphasizes cluster's significant role in a firm's ongoing ability to innovative. According to Porter (1998a) some of the same characteristics that enhance the productivity have even more effect on innovation. Porter (1998a) claims that cluster forms a new business formation. Therefore, new companies grow up within an existing cluster rather that at isolated locations.

Preissl and Solimene (2003) collect the advantages of cluster in three headlines: Advantages resulting from agglomeration, interaction and level of economy. In this study we will follow these headlines and discuss the advantages in a more detailed manner by adding the other researchers' contributions.

2.4.1. Advantages Mainly Resulting From Agglomeration

According to Preissl and Solimene (2003) agglomeration is the association of productive activities in close proximity to one another, as in a well-defined region. Geographical proximity is the main characteristics of cluster that enable the related organizations to create and sustain interaction with each other. Clustering serve specialized infrastructure, specialized pool of labour force and some complementarities to related actors, institutions as well as the region. According to Porter (1998a), due to bringing together different kind

of institutions, firms, suppliers and customers, clusters are able to provide many forms of complementarities. Such as:

- Complementary products can be produced to meet customer's needs.
- Firms can coordinate their activities to optimize their collective productivity.
- Firms can enhance the reputation of location to attract the buyers and suppliers as well as employees.

According to Porter (1998a), any company by being a part of cluster is able to use an existing pool of specialized and experienced employees. On the other hand, cluster attracts many qualified employees. They offer an opportunity for talented and educated employees to find attractive jobs in the same location or in the related industry (Preissl and Solimene, 2003).

The economic advantages stemming from geographical proximity have been well described in the classical and neo-classical economic tradition while examining industrial complexes. As in the case of clusters, industrial complexes can develop internal economies of scale in terms of customer, supplier relationships and specific trading links (Bergman and Feser, 1999; Nadvi, 1995). Preissl and Solimene (2003) claim that the geographical proximity makes easier to establish shared and combined use of resources that makes clusters more attractive. Such as traffic systems, schools, universities, energy and water supply systems, telecommunication and waste treatment facilities are attractive features for firms.

In addition, governments will be more willing to invest in specific public infrastructures if the level of usage in a certain area and the economic benefits to be derived from such investment are high (Preissl and Solimene, 2003). Government, public institutions and private sector invest within clusters. These investments occur such as training programs, improvements of infrastructure, quality centres, testing laboratories, low-interest credits, tax exemptions support the members to increase the productivity (Porter, 1998a).

Uzzi (1997) aims to develop a systematic understanding of embeddedness and organization networks. He claims that embeddedness is logic of exchange that promotes economies of time, integrative agreements and complex adaptation. These positive affects rise up to a threshold, however, after which embeddedness can derail economic performance by making firms vulnerable to exogenous shocks or insulating them from information that exist beyond their networks.

2.4.2. Advantages Mainly Resulting From Level of Economic Activity

Clustering influences the economic activity in a various way. Concentration of interconnected firms and institutions in a particular field generates the level of economic activity in the broad sense. Clustering presents a new way of business formation for suppliers, customers, institutions and particularly new founded firms. Moreover, sharing same economical environment helps actors to compare their productivity with others.

Clusters are composed of many firms from the related industry. Therefore, clusters offer a deep and specialized suppliers base. According to Porter (1998a), sourcing locally not only lower transaction costs, but also import costs, contracting costs and documentation costs decrease depending on the level of relation and trust between suppliers and firms.

It has been recognized that firms in a cluster have a better market opportunities than isolated ones. (Porter, 1998; Pyke et al., 1992; Morosini, 2004; Schmitz, 2000) Being part of a cluster reduces many risks for newly founded firms. The infrastructure facilities are ready to serve the firms. Furthermore, inputs, employees and capital can be provided within cluster. The existing relationships within the cluster facilitate contacting with suppliers and customers for newly founded firms by introducing a significant local market and entrepreneurs.

The geographical agglomeration is also an important aspect to measuring. Being a part of a community puts the competitive pressure on firms. Even non-competing or indirectly competing firms feel the pressure because of local rivalry. That pressure might make them more creative, innovative and successful in order to gain local prestige within their local community. Firms within a cluster share same circumstances and perform similar or same activities. Therefore, clusters make it easier to measure and compare performances of local rivals (Preissl and Solimene, 2003).

2.4.3. Advantages Mainly Resulting From Interaction

Because of close relationships and face-to-face communication within the clusters, their actors constitute trust, which will be analyzed in detailed in the next part, and facilitate the flow of information. According to Preissl and Solimene (2003) competition and cooperation is the other asset resulted from interaction.

The process of interactive learning occurs among firms vertically related along the chain of production, as well as among firms horizontally related which compete in the same or related products market. The user-producer relationship has the special function to communicate information about both technological opportunities and user needs. The interactive learning requires the development of a common code of communication and involves elements of power of hierarchy, loyalty, mutual trust and respect (Lundvall, 1992). Clusters spontaneously form specialized information pool included information about marketing, technology and competitive advantages for all actors (Porter, 1998a).

Recent developments in the theory of cluster have increasingly emphasized the role of knowledge diffusion in supporting the districts competitive advantages (Baptista, 2001; Howells, 2002). According to Howells (2002), knowledge is crucial in helping to create innovation, which in turn stimulates economic growth and development. It also plays a more specific role in establishing and sustaining the long-term capabilities and performance of firms and organizations. According to Polany (1962) there are two kind of knowing which invariably enter jointly into any act of knowing a comprehensive entity. There is, knowing a thing by attending to it, in the way we attend to an entity as a whole and knowing a thing by relying on our awareness of it for the purpose of attending to an entity to which it contributes. He defines the second kind of knowing as tacit. Concepts such as "tacit" and "codified" knowledge have been called in to explain the knowledge diffusion in the clusters. Following Lissoni (2001), codified knowledge is described as general and abstract: understanding it may require high education levels, and also some personal contacts, but no common social background. Codified knowledge, that is, can be easily transferred outside its context of generation. On the contrary, only people who have shared the same personal experiences, and possibly contributed actively to its generation can understand tacit knowledge. Therefore, the existence and diffusion of tacit knowledge requires the pre-existence of a community of people, rich of social links and endowed with a common cultural background (Lissoni, 2001). Nonaka and Takeuchi (1995) conclude that codified and tacit knowledge are not exclusive, but rather complementary. They argue that, knowledge can be converted from one from to the other (as cited in Forsman and Solidanter, 2003). Lissoni (2001) shares this view and explains how they complete each other. Codified knowledge is responsible for major technological and scientific breakthrough; tacit knowledge is the necessary tool for translating them into economically viable innovations. This view seems to be shared to an extent by some economic geographers Malecki, (2000); Storper (1997) (as cited in Forsman and Solidanter, 2003). Cluster interaction is likely to create an atmosphere that facilitates the exchange of tacit

knowledge. Thus, industrial districts, which, by definition, rely upon long-established and homogeneous social networks, are best placed to diffuse and produce tacit knowledge (Lissoni, 2001).

The ongoing relationships within cluster not only facilitate firms to learn early about evolving technology, service and marketing concepts, but also provide the flexible structure and capacity to act rapidly. Due to geographic proximity technological changes are transferred from one firm to another through various formal and informal mechanisms. Trust between actors is indispensable characteristics of both these two mechanism, particularly informal mechanisms. Newland (2002) suggests that trust accumulates from repeated interactions between firms and other actors in which they contract and re-contract, formally and informally. Trust results from a process of learning through experience which actors can be relied upon. Personal contract facilitates such repeated interactions and this in turn is likely to depend on proximity. According to Granovetter (1973) the interpersonal networks provide the most fruitful micro and macro bridges to translate the small-scale interaction into large-scale patterns.

Clusters combine competing firms in same industry as a business partners. Clusters are driven by competitive and cooperative action; therefore, clusters represent sound places for inter-firm relationships. The importance of competitive advantages and geographical concentration will be explained in detail in the next sections.

2.5. Geographical Concentration

In recent decades, the growing global movement of goods, information and capital create a tendency to see geography as diminishing its importance. According to Porter (1998b) it is a paradox, because geographical concentration is especially fundamental for competition in an economy with rapid transportation, communication and easy access to global markets. The paradox lies in the fact that sustainable competitive advantages in a global economy appear to increasingly develop at the regional level in the form of knowledge, abilities, relationships and motivation, which cannot be achieved by distant competitors (Porter, 1998b).

Morosini (2004) mentions same issue; according to him it is interesting that developments in global transportation, communication and technology have made localization economies more critical for the competitive performance of firms. The communication and similar

technologies have also highlighted tacit knowledge and close relationships between economic agents as key determinants for competitive success of firms. Geographical location not only influences the relationship between knowledge and innovative activity, but also affects the way that such interaction influences the geography of innovation and economic activity (Howells, 2002).

It has been generally accepted (Porter, 1998b; Arndt and Sternberg, 2000; Morosini, 2004; Baptista, 2001; Howells, 2002) that changes in competition and technology have eliminated many of the traditional roles of geographical location. Companies can provide their requirements such as capital, resource and inputs from global market easily, also may be cheaper. Porter (1998b) suggests that global souring is normally a second-best solution compared to clusters. According to Arndt and Sternberg (2000), locations with particular advantages like an infrastructure or an inexpensive labour force had a competitive strength. Today, competition has become much more dynamic.

> Using global procurement businesses can compensate for disadvantages with the respect to the costs of factors of production, whereby the age-old idea of competitive capacity loses its importance (Arndt and Sternberg, 2000).

Clusters are often concentrated in particular geographical location, sometimes in a city, region or country. Geographical, cultural or institutional proximity let to form closer relationships, special access, transferable information and powerful incentives for productivity and innovation that are difficult to tap from a distance. Geographical concentration serves to generate many of the productivity and innovation benefits that result from clustering. Porter (1998b) summaries those benefits as:

- Reduction of transaction costs,
- Improvement of information creation and separation,
- Effective form for local institutions,
- Generation of cooperation and competition.

The other point mentioned by Porter (1998b) is that clusters not only account for a major share of economy of a geographic area, they also have an overwhelming share of the economic activity that is “exported” to other locations.

The other characteristic of clusters is contributing competition between firms located in the same cluster. Competition occurs as a result of geographical concentration, because spatial proximity facilitates to monitoring the other firms.

2.6. Competition, Cooperation and Clustering

It has been generally accepted that (Porter, 1998a; Bergman and Feser, 1999; Lopez, 2000; Morosini, 2004, Schmitz, 2000) clusters provide opportunities for entrepreneurs to specialize and improve the competitive position of individual firms.

Porter (1998a) suggests that in last two decades the meaning of competition has been dramatically changed. The economies of scale were the main measurement for the competition. Due to development of modern and flexible technologies, which are less sensitive to scale than previous ones, the influence of scale per se diminishes. Modern competition depends on productivity, not on access to inputs or the scale of individual enterprises (Porter, 1998a). Furthermore, Lopez (2000) states that the competitiveness is a process rather that static and it must be considered with its dynamic features. Because of the changes in economic conditions, knowledge production, distribution and acquisition became key resources in order to create competitiveness. Porter (1998a) emphasizes the same dynamic feature of competition and he adds that firms can decrease many input cost's disadvantages through global sourcing, but competitive advantage rests on making more productive inputs, which requires continual innovation. Competitive capacity is based on the effective use of inputs, which requires constant innovation. Regional clusters of interdependent businesses and institutions create new knowledge, technologies and investments in physically as well as socially-specialized infrastructures, which support continual improvement in business competitiveness (Arndt and Stenberg, 2000). Newland (2003) distinguishes the competition as weak competition and strong competition. Weak competition involves the search for lower costs means of producing existing good with existing technology. Strong competition is a strategy that involves the creation of new goods of new technologies to produce existing goods. Strong competition facilitates the innovative activity of economic actors According to Carbonara (2004), the competitiveness of geographical clusters can be considered to be the outcome of their innovative capabilities. In industrial districts, economic actors' individual actions influence the outcomes for all parties involved, information is easily dispersed and social trust mechanisms play an important role in ensuring cooperative behaviuor (Oba and Semerciöz, 2005).

Porter (1998a) claims that clusters affect competition in three broad ways: By increasing the productivity of companies based in the area, by driving the direction and pace of innovation, which underpins future productivity growth, by stimulating the formation of new businesses, which expands and strengthens the cluster itself. According to Porter (1998a) in this broader and more dynamic view of competition, location affects competitive advantage through its influence on productivity and productivity growth. The prosperity also depends on the productivity with which factors are used and upgraded in a particular location. Porter (1998a) claims that companies can be highly productive in any industries if they employ sophisticated methods, use advanced technology and offer unique products and services.

> The sophistication with which companies compete in a particular location, however, is strongly influenced by the quality of the local business environment. Companies cannot employ advanced logistical techniques, for example, without a high-quality transportation infrastructure. Nor can companies effectively compete on sophisticated service without well-educated employees (Porter, 1998a).

According to Schmitz (2000), Porter (1990, 1998a) gives little attention to cooperation. However, Feser and Bergman (1999) state that one of the predominant themes in the cluster literature is "cooperative competition". The notion that the most competitive firms find ways to work together even they goes head to head in the development of new products. The interaction of competitive and cooperative attitudes in cluster has been identified as an important element of cluster dynamics (Schmitz, 2000; Pyke et al., 1992; Altenburg and Meyer-Stamer, 1999; Scott, 1988). Firms minimize risks and maximize their competitive position by regulating their cooperation that is based on trust and similar interests (Feser and Bergman, 1999). Schmitz (2000) claims that the clustering enterprises have stepped up local cooperation in response to the new competition pressure and also enterprises, which have increased cooperation, are performing better than those, which have not.

A common misconception is that the stress on cooperation means denying competition. Humphery and Schmitz (1995) claim that cooperation does not imply a lack of competition amongst clustering enterprises. On the contrary, in particular the early accounts of the Italian experience stresses that competition in product markets and cooperation for tackling common obstacles do not exclude each other. Furthermore, competition is often particularly severe amongst clustering producers, but this need not stop them from joining forces to overcome common bottlenecks in infrastructure, input supply or access to distant markets. It is the combination of competition and cooperation that drives the development of cluster

(Humprey and Schmitz, 1995). Brusco (1982) and Piore and Sabel (1984) also stress that firms whose outputs complement each other are more likely to cooperate than firms with near identical products. Altenburg and Meyer-Stamer (1999) examines how a ceramic tile in Brazil overcomes a major crisis and conclude that an increase in inter-firm cooperation is a key factor of clustering. Nadvi (1995) examines the some clusters in developing countries and depicts that SMEs have experienced growth and competitive advantages by cooperation.

If a firm is integrated into a network consisting of customers, suppliers, competitors, service providers and research institutions, firm would feel a competitive pressure. Furthermore, integration into such a network provides the resources necessary for development, production. Therefore, the inter-firm relationships that are derived from cooperation and competition of geographically concentrated firms have to be analyzed extensively.

2.7. Inter-Firm Relations

Due the fact that relationships do not exist in isolation or independent from each other, interactions between actors became the main subject of cluster and network analysis. The move from an analysis of individual firms towards the interactions between firms is the basis of much academic and managerial thinking in the 1990s (Ritter and Gemünden, 2003a). Recent publications in the cluster-related literature have shown that inter-firm links imply the potential to foster specific forms of higher cooperation and especially of learning within clusters (Staber, 1998). According to Rosenfeld (1997), clusters should have active channels for business transactions, dialogue and communication, without active channels even a critical mass of related firms clusters do not operate.

Business firms and inter-firm networks in industrial districts are said to be socially embedded, they are integrated in local, social structures that encourage collective involvement, high trust relationships and inter-organizational learning (Staber, 1998). Alfred Marshall (1920) may have been the first economist to comment on the “social atmosphere” of inter-firm relations as an important source of quantitive agglomeration economies (Staber, 1998).

Firms in industrial clusters tend to specialize in carrying out particular processes or stages in the production and distribution channel (Albu, 1997). Inter-firm relationships basically

occur between firms in two types: horizontally and vertically. Horizontal links refer to relationships of firms that belong to the same level of production chain. Vertical links refer to relationships of firms that belong to different level of production chain. In order to refer horizontal and vertical dimensions of a cluster, Maskell (2001) classify the firms into two groups: firms making similar products and the others making complementary products. While complementarily creates scope for fruitful exchange, similarity in activities implies contest and competition. Consequently, firms linked vertically in a cluster are likely to collaborate while firms located on the horizontal dimension are likely to be rivals. Thus, the interaction and consequent learning among the vertically liked firms is expected to be more prominent in a cluster than among competitors (Maskell, 2001). Establishment of both vertical and horizontal links requires some components, such as trust and sanction. Trust-based relationships facilitate collective efficiency.

Recent research on industrial clusters in developing countries confirms that social ties and local community are important basis for trust and sanction (Humphrey and Schmitz, 1998; Staber, 1998). The existence of a local community does not mean that enterprises trust indiscriminately. Having the right characteristics (being local and/or of a particular social group) is the first filter. It helps but is not sufficient. The second and more difficult hurdle is to prove honesty and competence. Both filters play a role; the former seems to help the formation of cluster but the latter carries increasing weight when local firms enter the international market (Humphrey and Schmitz, 1998). Uzzi (1997) points out network ties link actors in multiple ways, providing a means by which resources from one relationship can be engaged for another which is particularly the case in the context of industrial districts which has a rich history of social interaction.

Humphrey and Schmitz (1998) suggest that, trust operates at two levels: in the ordering of the relationships required for basic market transactions, and in the relationships which sustain the cooperation seen in industrial supply chains and clusters. Humphrey and Schmitz (1998) claim that, the embeddedness of enterprises in communities and the socio-cultural ties facilitate the emerging of trust and sanction. Moreover, Nadvi (1995) comes to similar conclusions in his study of the Pakistani surgical instrument cluster. He claims that, social networks have significant role in regulating inter-firm transactions and facilitating co-operation. In this thesis, we are interested in the second level of trust, which is related to inter-firm relation in the cluster, mentioned by Humphrey and Schmitz (1998).

Trust-based relations between economic agents have been seen as part of competitive advantage of manufacturing enterprises in Germany, Japan and parts of Italy during the 1970s and 1980s. Similarly, in debates on developing countries the question of trust is receiving increasing attention (Humphrey and Schmitz, 1998). According to Humphrey and Schmitz (1998), trust is emerging as the new "missing factor" that explains why some countries or regions develop rapidly and others lag behind.

Since trust is initiated, maintained and nurtured over time on reciprocated relations, time and information are two of the important determinants of a trustful inter-firm relation. It is expected that the longer a firm resides within an industrial districts, the more chances there will be that will enable the firm to be engaged in a trust-based relation (Oba and Semerciöz, 2005). It is expected that actors will trust other actors whom they already know (friends, family members) or have information (reputation, competence) to predict the prospective actions of these other actors. Therefore, following Oba and Semerciöz (2005) besides personal relation of entrepreneurs and firms' reputation, demographic properties such as age and size of firms have considerable importance for trust-based inter-firm relations.

According to Oba and Semerciöz (2005), in addition to demographic properties, the institutional arrangements and institutional environment are the other mechanisms that control and coordinate the trust-based inter-firm relations. Particularly, the institutional arrangements help economic actors to reduce the uncertainty of economic activities. They distinguish the institutional arrangements into two categories: Formal rules (laws and regulations) and informal rules (sanctions, customs and codes of conduct). According to them written agreements and contracts between economic actors are not common practices. When written agreements do exist, they do not fulfill the legal framework of a generally accepted contract (Oba and Semerciöz, 2005). However, according to Humphrey and Schmitz (1998) the influences of social-cultural bonds lessen over time, they are eroded by growth, notably the increasing differentiation within the community and the key role of outsiders. When foreign buyers impose higher standards in product quality, speed of response and reliability, individual enterprises have difficulties to achieve these demands on its own.

> The question of trust has therefore become more critical, but its foundation is changing from characteristic-based to process-based. The new ties are based on conscious investment in inter-firm relationships. The business partners do not necessarily have to change-but the basis of trust does (Humphrey and Schmitz, 1998).

The institutional environment, in which inter-firm exchanges are carried out, described by Oba and Semerciöz (2005) as the state, the financial system and the legal system. The state is the most important institution in promoting a trust-based environment for inter-firm relations. The state influences the functioning of industrial districts by economic policies. Especially, in less-developed countries, state influences the industrial districts' potential for production, fiscal, trade, labour policies and infrastructure investments (Nadvi and Schmitz, 1999). Moreover, as Brusco (1982) mentions that local governments can influence the industrial districts more directly.

> Local and regional governments support the formation of institutions such as credit consortia, trade fairs and marketing cooperatives, which provide support to local firms to solve their problems (Brusco, 1982).

Consequently, trust is emerged over time when enterprises obtain reliability of others by the way of several interactions. The advantage of industrial districts is that they can generate the trust between actors without direct relationship. Although, several face-to-face relationships are required in the industrial districts, enterprises can manage to develop trust-based relation without direct relation. Having information about the reputation, size, age, manager or location of enterprises influences the development of trust-based relation.

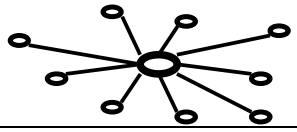
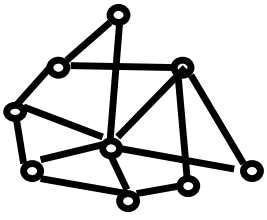
2.8. Some Definitions of Networks

The concept of network is used in various perspectives (marketing, management, sociology, business). Many investigators consider networks a central concept in their research, referring to the existence of a "network paradigm" (Cooke and Morgan, 1998) or "network approach" (Johanson and Mattsson, 1993) (as cited in Ritter and Gemünden, 2003a). We must underline that the concept of network is also used in "the industrial network approach" (Håkansson and Johanson, 1993; Håkansson and Snehota, 1995), in the "innovation system" (Asheim and Isaksen, 1997) and in the "cluster" (Porter, 1990). Håkansson and Johanson (1993) described the network as functions characterized by activities, actors and resources. Håkansson and Johanson (1993) go further and explain the mechanism of functions. They draw a distinction between primary and secondary functions. By primary function, they mean the positive and negative effects on the two partner firms of their interaction in a focal dyadic relationship. The second function, also called network function, capture the indirect positive and negative effects of a relationship, because is directly or indirectly included other relationships.

Piore and Sabel (1984) state that networks are alternative economic models to the large hierarchical productive forms of organization. They define the network as a group of firms with restricted membership that has specific objectives and linked each other with contractual structure.

Relations and networks have been analyzed with different theoretical backgrounds and methods, at different levels and with different results and conclusions. This diversity promotes a better understanding of the antecedents, dynamics and effects of relationships and networks. However, this diversity also creates problems to compare and integrate results and to develop a general theory based on cumulative evidences. Therefore, Ritter and Gemünden (2003a) offer a framework, which gives some overview and orientation by classifying and describing the different levels of networks. According to them, relationships and networks can be analyzed in four levels. Table 1 indicates these four levels and their basic characteristics.

Table 1: Levels of Relationships and Networks

1.Interaction (episode)		Single exchange One event in time Incident or Individual interaction
2.Dyad (individual relationship)	([1]) 	Two actors Long-term relationship (history)
3.Portfolio (similar relationship)		A focal firm Similarity in different things (position, size, function)
4.Net (relationships of an actor)		Suppliers Co-producers Customers Distributors Research institutions
5. Network		Whole structure of an industry or market

Source: Ritter and Gemünden (2003a)

[1] Figures adapted from Durgut, M. and Erdil, E. (2005) "Strategic Partnership: Managing Technology in Networks" Sabancı Universtiy

Over time, the focus of research has moved from the individual relationships towards a wider structure. This was due to the "discovery" of connectedness, which acknowledged the fact that relationships do not exist in isolation or independent from each other (Ritter and Gemünden, 2003a). The relationships cannot be analyzed or understood separately from other relationships (Håkansson and Johanson, 1993).

Following Ritter and Gemünden (2003a), the interaction or episode is the first and basic level of analysis. It can include a single exchange or an incident or an individual interaction. Although one event occurs in time, it might be influenced by the past and expected future. The dyad level includes aggregation of interactions between two actors. These two actors have an interaction history, which influence their actions. The portfolio takes a single firm (often called the focal firm) as a starting point and concerns its' different relations with its similar actors. In the net level all relationships of a firm are subject to the analysis. The network is the broadest level of analysis, it concerns about the whole structure of an industry or a market.

In the 1990's the growing body of literature started to analyze the nature and functions of relationships. The modern understanding of marketing, purchasing and innovation management as inter-organizational interaction processes had been pioneered by the work of Industrial Marketing and Purchasing (IMP) group (Ritter and Gemünden, 2003a). Håkansson and Johanson (1993) describe the networks in terms of actors, activities and resources. These elements influence each other: Actors perform activities and control resources; activities transform resources and used by actors to achieve goals, and resources give actors power and enable activities (Ritter and Gemünden, 2003a).

Ritter and Gemünden, (2003b) explains how and why firms able to built up and use networks of relationships and give them competitive advantages as follows:

- Availability of resources,
- Network orientation of human resources management,
- Integration of intra-organizational communication,
- Openness of cooperate culture.

According to Staber (2001), networks require a particular focus of attention about the inter-firm relations. Because, many different firms within a cluster serve many different markets within and out of the cluster which keep the forces of competition alive and guarantees a flexible and effective handing of activities. The view is taken in thesis that, a network

includes different levels, which described at above, relationships of actors, activities and resources. Because, these network analysis procedures provide a very useful methodological approach to an examination of the quality of regional cluster formations. Network includes both weak and strong relationships. According to Granovetter (1973) weak ties are as important as strong ties. Because, they are associated with exploration which facilitate the creation of new areas of knowledge.

2.9. Some Definitions of Industrial Districts

In 1970s, a group of researchers identified several regions in Northern/ Central Italy (the Third Italy) that had experienced significant economic growth during the preceding decade. They argue that the high economic growth rates and significant improvement of social conditions in these regions were causally related to the properties of Marshallian industrial districts and represented a specific form of social and economic development (Brusco, 1982). Industrial districts (such as the Italian industrial districts described in Brusco 1982; Piore and Sabel 1984; and Pyke, et.al., 1992) are concentrations of firms involved in interdependent production processes, often in the same industry or industry segment, that are embedded in the local community and delimited by daily travel to work distances (Isaksen, 2001).

A cluster is a sizable agglomeration of firms in a spatially delimited area which has a distinctive specialization profile and which inter-firm specialization and trade is substantial. If the local business network in which a dense social fabric based on shared cultural norms and values and on elaborate network of institutions facilitate the dissemination of knowledge and innovation, constitute a specific type of clustering and may be termed "industrial districts" (Altenburg and Meyer-Staber, 1999).

Belussi (1999) claims that if a cluster is effectively characterized by, at least, some degree of division of labour, then it can be defined as an industrial district. The ideal-typical industrial districts refers to a geographically concentrated community of mostly small firms which specialize in particular tasks and are liked both horizontally and vertically through a mix of cooperation and competition (Pyke et al., 1992; Brusco, 1982).

According to Pyke et.al., (1992) industrial districts are geographically defined production systems, characterized by a large number of firms that are involved at various stages and in various ways, in the production of a homogeneous product. They also explain the common

features of industrial districts as small or family-owned firms, innovativeness, entrepreneurial spirit, inter-firm cooperation and flexible production system. Another definition comes from Asheim (1994), who describes the industrial districts as a network of small and medium-sized enterprises within geographically defined production systems. Inter-firm relations in the district are embedded in local, social structure and practices that support dense information exchange and constant innovation (Staber, 1998) All economic action in industrial districts is said to be embedded in a dense web of network ties among individuals, firms and service organizations (Staber, 1998).

In the literature cluster and industrial district are frequently interchangeably used. But cluster has more extensive perspective than industrial districts. Isaksen (2001) briefly explains that every industrial district is a cluster, whilst a cluster is not necessarily an industrial district. Both clusters and industrial districts generate external economies. In this context, the concept relates to the achievement of increased efficiency through extensive external division of labour within networks of specialized firms (Isaksen, 2001).

Saxenian (1994) emphasizes the characteristics of Silicon Valley as an industrial district. It promotes collective learning among specialist producers of interrelated technologies. Therefore, the dense social networks and open labor markets encourage entrepreneurship and the ongoing mobilization of resources. Companies compete intensely, in the same time they simultaneously learn about changing markets and technologies through informal communications, collaborative projects, and common ties to research associations and universities.

2.10. Differences Between Cluster, Network and Industrial Districts

Since the 1980s, a mosaic of localized production systems have emerged which has had increasing impact and importance on economic geography and regional development. New concepts such as industrial districts, networks and clusters are introduced with newly developed concept of regional system of innovation (Doloreux, 2002).

Cluster may be seen as a catchword for many types of industrial agglomeration, e.g. industrial districts, innovative milieu, local industrial complexes and new industrial spaces. Thus, cluster is a broader concept than many of other terms mentioned (Isaksen, 2001). The differences between these concepts have to be analyzed to provide more extensive cluster understanding. Distinguishing cluster and network concepts will help researchers to

evaluate the inter-firm relationships in a detailed manner and facilitate to introduce policy recommendations.

The problem is, these concepts are used interchangeably in the literature. In addition, in the international business and other academic literature networks and clusters are often assumed to denote the same thing (Cooke, 2001). Forsman and Solidanter (2003) explain the main differences between cluster and network based on Cooke (2001) and Rosenfeld (1997, 2001). According to them, Rosenfeld's (1997, 2001) classification is mainly concerned with policy networks and Cooke's (2001) classification is an adoption of Rosenfeld (1997, 2001).

Table 2: Characteristics of Networks and Clusters

CHARACTERISTICS	NETWORK	CLUSTER
Membership	Restricted	Open
Relationships	Competitive though cooperation	Competitive with cooperation
Actor amalgam	Common business goals	Collective vision
Base for interaction	Formal partnership	Informal interaction
Scale	Limited, inter-firm	Large
Basis of knowledge transfer	Relationships	Location/proximity

Source: Forsman and Solidanter (2003), adapted from Cooke (2001) and Rosenferd, (1997, 2001).

Based on the memberships, clusters can include tens of thousands of firms and other actors (Cooke, 2001); however, according to Håkansson and Snehota (1995) there is a limit to number of relationships each actor can maintain within a network. Morosini (2004) implies that all economic relations have different level of embeddeness. Clusters have unusual level of embeddeness and social integration capability. Therefore, cluster naturally distinguishes from network. Because, networks have explicit spatial applications, they cannot provide that level of embeddeness for actors.

Forsman and Solidanter (2003), denote that the content of relationships is increased collective competitive strength through the cooperation between actors, as they can pool their resources and knowledge and work towards a common goal. But, the relationships in a cluster contain both cooperation and competition on the firm level. As mentioned previously, existence of cluster is based on some social or historical components, which

Porter (1998a) defines as social glue and Morosini (2004) defines as common glue. The cluster actors have more common things, which naturally include the common business goal of network actors.

Porter (1998a) points out that cluster offer transaction cost advantages without imposing the inflexibilities of vertical integration or the management challenges of creating and maintaining formal linkages such as networks, alliances and partnerships. Clusters provide a beneficial environment for each member to interact with others formally without sacrificing its flexibility.

The main purpose of this chapter was to define the basic concepts of this thesis. The concept of cluster, network and industrial district are used interchangeably in the literature. All of them have significant role in the regional development and inter-firm relationships. We provide a brief explanation and main components of them.

In sum, clusters are concentration of interconnected firms in a geographical area. Spatial proximity provides many advantages for firms and their relationships with other related industries. Establishing common rules, aims and values, binding together with the influence of social glue facilitate to behave in collective efficiency. However, this collective efficiency does not deny the competitive relationships of firms. Firms can compete head to head; in the same time cooperate for common values. Competitive and cooperative relationships show differences based on the type of linkage. Horizontally linked firms usually experience competition, while vertically linked firms experience cooperation usually based on the supplier and buyer relationship. Clustering decrease the negative affects of globalization and increases the impacts of regionalization, particularly for small and medium-sized firms. The basic component of the inter-firm relationship is trust, which established by time and density of relationship. Next chapter will be analyzed how clustering influenced the economic activity of SMEs.

CHAPTER III

III. SMEs AND CLUSTERING OF ECONOMIC ACTIVITY

Initially, SMEs were considered as local enterprises that employ local work-force and produce for local markets. This view has changed dramatically in the last two decades. Economic capacity of SMEs attracted the attention of researchers and politicians when SMEs proved that they can achieve a lot by cooperating with other SMEs, institutions, government and related industry. Today, there is increasing agreement that organizing SMEs where they can manage cooperation and competition facilitate to overcome growth constraints. Clustering of SMEs constitute new perspective for regional development strategies. Clustering of SMEs not only provide benefits for SMEs, but also provide benefits for social, cultural and economic structure of region. By attracting different resources such as customers, suppliers, employees, institutions as well as public investment into the region, the economic performance and social life have opportunity to develop. There are number of case studies about the development and characteristics of clusters in developed countries. Therefore, developing countries has inspired the successful clustering examples in the developed countries.

The advantages of clustering, which were mentioned at previous section, have considerable meaning for SMEs. The basic advantages of clustering which results from agglomeration, level of activity and interaction may serve different alternatives for SMEs. Clusters may create positive externalities that enable enterprises, particularly SMEs, to grow and develop. Briefly, clustering can provide a pool of specialized work force, access to suppliers of specialized inputs and services, quick dissemination of new knowledge for SMEs.

Clustering among the enterprises develops the local policy to shape a shared local development vision and give strength to collective action to enhance entrepreneurial strategies. The collective learning occurs when the common rules, values and aims emerged. Due to high degree-uncertainty and risks of innovation process, the collective learning is very important for SMEs especially in innovation process. There are numerous

researches in the literature aiming to clarify the external and internal sources of innovation process. Inter-firm relations and relationships with institutions constitute very important role in innovation process of SMEs. Furthermore, these researches investigate whether the spatial and cultural proximity can play a decisive role in innovation process and in improving access to important input factors for SMEs. In the context of this thesis, we will discuss the studies that are related with the collective learning and innovation performance of SMEs. Particularly, we emphasize on different SMEs characteristics that would help them in innovation process.

Defining SMEs and reaching a consensus on one definition is certainly difficult. The institutions, researchers, countries engaged in activities aimed at the SMEs can make different definitions, because of different understandings and implementations. The three parameters generally applied for definition of SMEs: capital investment, number of workers and volume of production or turnover of business. The number of workers is the most common parameter using for definition of SMEs. In Turkey, different institutions have applied different definitions. In this study, we will use the Turkish Institution of Statistics (TUIK) definition, which adopted EU's definition recently. TUIK definition includes different parameters to define and understand SMEs in Turkey.

Due to their size, SMEs serve several advantages; however they have several disadvantages also. Providing close relationships with customers, suppliers and employees, low operating expenses, less bureaucratic organization, providing social balance between regions, evaluating small savings, providing work for unskilled work force are some advantages of SMEs. Deficiency on capital, qualified work force, technology, and marketing are some disadvantages of SMEs. These are main disadvantages of SMEs generally accepted in the literature. There are also disadvantages resulting form regional or economic structure of countries, particularly for developing countries. Therefore, several developing countries continue to liberalize their domestic and external policies adding to the competitive pressures faced by the local firms. At the same time they search for policy initiatives to increase the competitiveness of their enterprises. Under these circumstances, identification of the sectors and location for infrastructural support is crucial if the limited resources are to be utilized efficiently and productively to raise competitiveness of domestic enterprises (Nadvi and Schmitz, 1999).

Identification of the importance of SMEs is crucial for Turkish economy. SMEs approximately constitute 99.3 % of total enterprises. In the context of regional development

and innovation policies, emerging successful SMEs become increasingly important for Turkish economy. Therefore, authorities have carried out a variety of programs to support SMEs. The supporting programs accelerated when Turkey joined the Custom Union. Because deficiency of Turkish SMEs became apparent in the international competitive market.

In the view of this thesis, we will emphasize the characteristics of clustering SMEs. Type of SMEs and their functions in the clusters will be mentioned. In order to analyze the importance of clustering for SMEs, the advantages and disadvantages of SMEs has to be highlighted. Furthermore, we will explain the general definitions of SMEs that are used by different institutions. Basic weakness of SMEs in Turkey will be clarified to understand the supporting programs and importance of strategies. Although, we consider only a region in the context of this thesis, the general weakness of SMEs in Turkey reflects the regional weaknesses as well.

3.1. SMEs and Clustering of Economic Activity

Compared to two decades ago, there is now more optimistic perspective about the growth, economic capabilities and activities of SMEs, especially in developing countries. SMEs in developing countries used to be considered as mainly local affairs: using local inputs, run by members of local communities, making goods which satisfied the needs of local people, and boosting local incomes, employment and entrepreneurship (Caniëls and Romijn, 2001). However, recent researches on cluster (Piore and Sabel, 1984; Pyke, et.al., 1992; Altenburg and Meyer-Stamer, 1999; Nadvi and Schmitz, 1999) have made significant contribution to change this approach. There is an increasing agreement that clustering helps small enterprises to overcome growth constraints and compete in distant markets (Nadvi and Schmitz, 1999). According to Altenburg and Meyer-Stamer (1999), clustering is especially common among the traditional small-sized and labour-intensive activities, because upgrading these activities contributes to a more balanced firm size structure and a more labour-intensive growth pattern. They claim that these features of clustering have attracted the interest of policymakers and policy agencies in developing countries. Recently, numerous bilateral and multilateral agencies (including the World Bank, UNIDO, UNCTAD, and ILO) have begun to recognize the benefits of clustering and to reframe their SMEs and private sector development programs (Altenburg and Meyer-Stamer, 1999).

The roots of the notion that small firms benefit from clustering go back to Marshall (1920), in his book, *Principles of Economies,* he shows why and how clustering could help enterprises to compete. He claims that agglomeration of firms involved in similar or related activities produce positive incidental externalities. Such as:

- A pool of specialized workers,
- Access to suppliers of specialized inputs and services,
- Quick dissemination of new knowledge.

Similarly, according to Piore and Sabel (1984), the external economies of cluster can provide advantages to SMEs, which they could not reach by the individual efforts. The effects of external economies do not occur deliberately, but they are unintended or incidental. However, they stress that there is also consciously pursued joint action. This joint action can be of two types, first one is individual firm cooperating and second one is group of firms joining forces in business association. In this respect, local outcome occurs more than the sum of the outcome of the single firms (Piore and Sabel, 1984).

In addition to Marshall's (1920) incidental externalities and Piore and Sabel's (1984) joint action, Schmitz and Nadvi (1999) suggest that, the agglomeration of related activities does not have adequate characteristics; there should be also deliberate force which they called as *joint action*. They identify the incidental externalities as passive effects and joint action as active effects. According to them, the passive and active effects form together the concept of *collective efficiency*, which is the main requirement for cluster. Schmitz and Nadvi (1999) also claim that distinguishing and identifying the passive and active components of collective efficiency facilitate to recognize the reason why is some clusters are successful, others not. They state that, the existence of trade networks and the existence of sanctions and trust are the conditions that are necessary for emerging the collective efficiency.

> Clusters only experience industrial growth where effective trade networks connect them to sizable distant markets and where trust sustains inter-firm relations (Schmitz and Nadvi, 1999).

In many performing clusters, networking essentially emerged spontaneously as a result of the historical, social and cultural environment surrounding the SMEs (Piore and Sabel, 1984; Nadvi, 1995). On the contrary, Ceglie and Dini (1999) stress that clusters do not always emerge spontaneously. Process of emerging successful clusters includes two main factors:

- Existence of high transaction costs which requires identification of suitable network partners and strengthen relationships,
- Existence of imperfect functioning markets that is necessary for developing networks of innovation and information.

Similarly, Rabellotti (1995) describes the major characteristics of industrial cluster in a detailed manner:

- Geographically clustered small and medium-sized firms which are sectorally specialized,
- Forward and backward linkages based on market and non-market exchanges of goods, information and people,
- Common cultural and social background linking economic agents and creating a behavioural code (explicit and often implicit),
- Network of public and private local institutions supporting the economic agents acting within cluster.

As mentioned by Rabellotti (1995), integrating small and medium-sized firms, which are sectorally specialized, are the main characteristics of clusters. There are number of case studies about the clustering of economic activities of SMEs for developed countries, however, especially studies on developing countries (India–knitwear, Brazil-shoes, Pakistan, Indonesia, Peru, Mexico, Italy) has gained increasing attention recently. Small firm clusters in developing countries usually enjoy a historical tradition in the area with local enterprise in craft or artisan working of certain products along side a custom of self-employment and entrepreneurship (Öz, 2004). Clusters in developing countries have been inspired by success stories and competitiveness of clusters in developed countries (Humphrey and Schmitz, 1995); small firm industrial districts in Europe, especially Italy (Schmitz and Nadvi, 1999). The researches on industrial clusters started to change the opinion about the growth and export capacities of small firms in developing countries.

Humphrey and Schmitz (1995) make numerous analyses about the small firm policies; they conclude that cluster of small firms has to be based on the "*triple C*" which stands for customer oriented, collective and cumulative. The customer orientation forces firms to analyze the needs of customer and evolve the technology of obtain technical assistance to meet the customers' needs. The collective action primarily helps to generate the relationships between enterprises that develop cooperation and collective learning. These two features establish the conditions for the third "C". Becoming less depending on support

from outside and upgrading itself is called cumulative capacity (Humphrey and Schmitz, 1995).

Altenburg and Meyer-Stamer (1999) believe that "*triple C*" principles need to be applied differently to categories of clusters. Because clusters and also their environment are constantly changing, so clusters should be interpreted as dynamic systems. On this account, they review policy experiences from Latin America and identify measures for three types of clusters as seen at the Table 3.

Table 3: Types of Clusters

Survival clusters of micro and small-scale enterprises	More advanced and differentiated mass producers	Clusters of transnational corporations
- produce low-quality consumer goods for local markets - barriers to entry are low - lower productivity and wages than medium and large-scale enterprises - low degree of inter-firm specialization and cooperation - lack of specialist in the local labour force	- produce for domestic market - heterogeneous mix of enterprises - medium or large-scale enterprises	- technologically more complex activities - national and international markets - few linkages with domestic SMEs and institutions -derive competitive advantages from local external economies

Source: Altenburg and Meyer-Stamer (1999)

Although, Altenburg and Meyer-Stamer's (1999) cluster typology do not enclose all type of clusters, it explains the characteristics of clusters that can be experienced in developing countries. Survival clusters of micro and small-scale enterprises usually emerge rural areas or small towns where unemployment is high and relations are based on the family-ties. These clusters have difficulties to obtain the advantages of geographical proximity. The second type of cluster is called; more advanced and differentiated mass producers. This kind of clusters generally consists of medium or large-scale enterprises that grew usually during the import substitution era. They have limited innovation and competition capacity so they require some institutional and governmental support. The third type of cluster is called, clusters of transnational corporations. These clusters have high entry barriers for small firms; they rarely use the local market for sourcing. They locate production facilities closely so they can derive competitive advantages from geographical proximity (Altenburg and Meyer-Stamer, 1999). Their research reflects the main characteristics of clusters in

Latin America; they claim that, other clusters in developing countries may have common characteristics, but not those clusters in Europe and United States.

Each type of cluster has own peculiar characteristics based on the circumstances and changing economic activity. Different clustering policies have been applied in different areas in both developed and developing countries. Clustering of economic activity seems to enable firms, especially SMEs to grow and upgrade more easily (Altenburg and Meyer-Stamer, 1999). Therefore, growth and upgrading of SMEs is the main purpose of clustering activities particularly in developing countries. In the previous chapter, we explained the general advantages of clustering. The advantages of clustering resulted from the agglomeration, level of economic activity and integration, have significant meaning for SMEs. Although, we analyzed the advantages of cluster separately, they actually complete each other to constitute general advantages.

Geographical agglomeration provides capital market, pool of labour, and inter-firm relations for SMEs. Capello (1999) claims that if SMEs are located in a cluster, they would be initially influenced by greater capital and labour productivity. SMEs have problems to attract the external resources such as capital and labour which hesitate to join because of relatively short life and unpredictable conditions of SMEs. Being a part of a cluster brings continuity to economic activity and provide trustful environment for SMEs. The geographical agglomeration also creates significant opportunities for SMEs in order to constitute inter-firm relations.

Clusters also upgrade the level of economic activity of SMEs. Nadvi (1995) mentions that cluster offers unique opportunities for SMEs to engage in the wide array of domestic linkages between users and producers and between the knowledge producing sector and the goods and services producing sectors of an economy that stimulate learning and innovation. Clustering advantages can solve the problems of SMEs resulting from being small-scale. As mentioned by Capello (1998) because of diseconomies of scale and unpredictable and relatively short life of small firms impede them from taking risks that can be easily taken by large-scale enterprises. Nadvi and Schmitz (1999) claim that clusters are suitable organizations for ordinary enterprises whose risk level is low. In this respect, they state that clustering creates possible advantages for SMEs while taking small and calculable risks.

> SMEs may even become players in the world markets if a high degree of inter-firm performing complementary functions offset the disadvantages of being small (Altenburg and Meyer-Stamer, 1999).

Reaching external knowledge is not easy for SMEs. However, cluster can help to SMEs to provide external knowledge by its mechanism of information flows among different economic actors. Firms of cluster exchange and create knowledge through face-to-face interactions and with the creation of common language among institutions and associations. Creation of common language is the basic of the collective learning, which is the essential for clusters. Camagni (1995) explains that information collection and accumulation of knowledge takes place in a socialized way outside each firm, but inside the cluster. Learning from one another is particularly dependent upon the mobility of workforce, supply linkages and face-to-face contacts, which are promoted by spatial proximity (Camagni, 1995; Malmberg and Maskell, 1999).

In the context of this study, the collective learning and innovation capability related to inter-firm relations are assumed to be the most important advantages that emerged from clustering to overcome the constraint of SMEs. In the next section, these features will be examined for SMEs in a detailed manner.

3.2. Collective Learning and SMEs Clustering

According to Capello (1999), collective learning is a distinguishing feature of the dynamics of SMEs clustering and it is also a significant way of increasing factor productivity and supporting product and process innovation in cluster of small firms.

Capello (1999) defines the collective learning as a social process of knowledge accumulation based on a set of shared rules and procedures that allow individuals to coordinate their actions in search for solutions to problems. Collective learning is a learning process, because it includes cumulative capacity and interaction. Capello (1999) depicts the cumulative capacity as building upon existing knowledge and developing it on the basis of an element of continuity, on which knowledge rests and accumulates while time passes. Similarly, Keeble and Wilkinson (1999) state that sharing of the technical, marketing organizational knowledge and other aspects of the productive system enables organizational members to effectively communicate with others and coordinate their joint activities. They also suggest that if the knowledge base is shared by the members of the organization, and is enhanced by their participation in the organization's activity, learning becomes essentially a collective activity.

According to Malmberg and Maskell (1999), the general character of learning processes has two implications. First one is history matters and second one is proximity matters. Firms develop various routines and procedures in order to deal with the uncertain and incremental character of learning processes. If they make such routines and procedures extraordinarily durable, they can establish path-dependent *'learning trajectory'*. They also depict that even though communication technologies allow more long-distance interaction than was previously possible, there is still certain type of information and knowledge exchange continue to require regular and direct face-to-face contact. Therefore, the geographical proximity still keeps its importance in the interactive character of learning processes.

Following Malmberg and Maskell (1999), at the local level a firm's ability to create knowledge will enable it to interact with related firms in a process of collective learning, whereby partly codified and partly tacit knowledge is interchanged and utilized in each of the participating firms. Interaction with suppliers, customers, public assistance agencies, industry associations, foundations can provide missing external inputs into the learning process, which the firm itself cannot provide (Romijn and Albaladejo, 2002).

Besides the relationships with the related firms and institutions, the labour market plays an important role for SMEs in providing collective learning. According to Capello (1999) sustaining collective learning in the local market depends on providing continuity of main elements that are local labour market and stable linkages between local suppliers and customers. The stable input-output relationships generate a transfer of codified and tacit knowledge between cluster actors that accumulates the innovation process. Capello (1999) explains why the high mobility of local labour force is the significant characteristic of SMEs. First reason is a short and turbulent life-cycle of single production units of SMEs that causes an inevitable turnover of employees. Second reason is the redundancy of qualified local labour supply that facilitates the high mobility of labour force.

In order for collective learning to occur, the knowledge flows have to occur between firms and institutions. There are various differences between large firms and SMEs in acquiring knowledge. Large firms are more capable to reach tacit or codified knowledge. In large firms information and knowledge are transferred though functional interaction among R&D, production, marketing and organization department. But, SMEs do not have such effective departments. However, SMEs in a cluster cover this gap by the high mobility of labour force, by intense innovative interactions with suppliers and customers and by mechanisms of local spin-off (Romijn and Albaladejo, 2002).

Capello (1999) mentions another difference between large enterprises and small ones. He claims that, because of their common role as uncertainty reducing elements, the power and trust are often regarded as the two main elements for collective learning and dynamic synergy. The power is available for the large enterprises, and trust is for SMEs.

On the other hand, SMEs also require the dynamic synergies for collective learning. Cluster can serve suitable preconditions to SMEs for providing dynamic synergy and collective learning. Maskell and Malmberg (1999) state that at a local level, where firms share the same values, backgrounds and understanding of technical and commercial problems, a certain interchange of tacit knowledge does in fact take place. The local and accumulated knowledge can be transferred to all agents by using organizational, institutional and social networks of cluster. In this sense, imitation, reverse engineering, technological upgrading of product and process mainly occur by collective learning mechanisms in a cluster.

3.3. Innovation and SMEs Clustering

Lundvall (1992) claims that a system of innovation consists of a network of economic agents with the institutions and policies that influences their innovative behavior and performance. According to Mytelka (2000) this definition refers to a new understanding of innovation as an interactive process in which enterprises in interaction with each other and supported by institutions and organizations such as industry associations, R&D, innovation and productivity centers, standard-setting bodies, universities and training centres, information gathering and analysis services and banking and other financing mechanisms that play a key role in bringing new products, new process and new form of organization into economic use. Following Mytelka (2000), adopting such a definition will encourage policy-maker especially in developing countries to take a broader perspective on the opportunities for learning and innovation and to pay greater attention in SMEs.

Recently, some empirical studies have discussed the issue of whether the high level of linkages of SMEs positively affects innovation activities or not. According to some researchers (Cooke, 2001; Isaksen, 2001; Arndt and Sternberg, 2000; Romijn and Albaladejo, 2002; Mytelka, 2000) firms in a network are more innovative than individual firms. According to Isaksen (2001) the innovation performance of economy depends, to a large extent, on how firms utilize the experience and knowledge of other firms, research organizations, government sectors agencies etc. and on how they blend this with the firms'

internal capabilities. Mytelka (2000) denotes that market conditions have changed dramatically and the production has became more knowledge intensive and competition has both globalized and became more innovation based. Therefore, Arndt and Sternberg (2000) suggest that SMEs should cooperate during the innovation process for the reduction of uncertainties and costs, for the increasing flexibility towards changing market conditions.

Innovation is a process that is accumulative and it is surrounded by uncertainty (Lundvall, 1992). Because of the uncertainty of innovation process and economic activities actors require cooperation, especially SMEs which have limited sources of labour and capital. On this account, Keeble and Wilkinson (1999), present the preconditions of innovation process required by SMEs. First one is building shared values, norms and technical understanding so that diverse knowledge can be shared. Second one is coming together and seeking of individuals with their diverse and complementary knowledge to explain their ideas about new products and technology.

Romijn and Albaladejo (2002) similarly classify preconditions of innovation as internal and external sources. Romijn and Albaladejo (2002) emphasize the conceptual framework of innovative capacity of SMEs with a case study of small electronics and software firms in southeast England. After the investigation of the firm's innovative performance as well as large range of internal and external factors, they claim that innovative performance of SMEs is a result of various internal and external sources as seen in the Table 4.

Table 4: The sources of innovation capacity

Internal sources	**External sources**
Professional background of founder /manager(s)	Intensity of networking
Skills of workforce	Proximity advantages related to networking
Internal efforts to improve technology	Receipt of institutional support

Source: Romijn and Albaladejo,(2002)

According to Romijn and Albaladejo (2002), the initial educational background and prior working experience of founder or managers, their learning and adaptation capacity to new conditions and ideas, the professional qualification of workforce and ongoing technological

efforts such as R&D, formal and informal training, investments in technological licenses constitute the internal sources. On the other hand, the external sources include the intensity of networking with a variety of agents and institutions, geographical proximity advantages associated with networking and receipt of institutional support. They also mention that using capacity of external sources strongly requires networking and learning processes. Romijn and Albaladejo (2002) claim that interaction with suppliers, customers, public assistance agencies, industry associations, foundations can provide missing external inputs into the learning process, which the firm itself cannot provide.

From the other perspective, Asheim and Isaksen (1997) assume that intra-regional linkages are more important for the innovation process than inter-regional linkages. The concept of cluster serves the intensive intra-regional linkages between economic actors. Following Capello (1999), localized clusters of SMEs may exhibit a considerable degree of intra-regional networking in which collective learning is a club which outsiders are excluded. According to Isaksen (2001), clustering is seen as a first prerequisite for the emergence of a regional innovation system. However, to constitute an innovation system firms in the cluster have to form regional innovative networks involving more organized and formal cooperation between firms in innovation projects (Isaksen, 2001).

Although many studies emphasize the importance of inter-firm networks, relations with institutions, research centres, training programs and education institutions also have very important role for SMEs in innovation process. Different but interdependent economic institutions in a cluster constitute an important knowledge base for innovation process. Camagni (1995) and Capello (1999) denote that local embeddedness within a geographical cluster or milieu of innovative firms may have crucial importance for the innovativeness and competitive capacity of SMEs in terms of access to innovative ideas, new technologies and range of benefits obtained through the regional networks. Localization is conductive to innovation because clustering and proximity create an environment where developers, users and other participants in a knowledge network can exchange through a variety relationships based on trust and long term relations (Arndt and Sternberg, 2000).

Arndt and Sternberg (2000) investigate SMEs in 10 European regions in the context of their innovative performance. They use some descriptive data such as number of R&D employee, business size, employees with university degree, age of enterprises and sector to analyze the enterprises. They indicate statistically significant differences between cooperating and non-cooperating enterprises. They distinguish the firms into four

categories based on the spatial levels of cooperative relations. First group is firms performing regional networks; second group is firms performing inter-regional networks and third group is firms performing intra and inter-regional networks. The last group is firms with low network intensity. They conclude that among the SMEs cooperation take place most frequently with service providers (67 %), customers (57 %), followed by suppliers (42 %), research institutes (30 %) and competitors (26 %). Arndt and Sternberg (2000) explain why innovative firms require cooperation with others during the innovation process. According to them, cooperation during the innovation process reduce the uncertainties and costs, provide higher flexibility toward changing market conditions or better possibility for improving the selection and expansion of the product mix.

Product innovation is used as an indicator for the success of innovation, which guarantees that the innovation were already successful on the market in Arndt and Sternberg (2000) research. They conclude that successful SMEs work together with external innovators and profit from the long-term maintenance of their technological competitiveness and perhaps from the achievement of a leading role in technological change, in which they develop new technologies and transform them into new products.

Furthermore, Arndt and Sternberg (2000) investigate the firm size whether has positive effects on innovation performance or not. They claim that if firm gets bigger, its innovative capacity gets better. Many studies suggest that larger firms which employ more employee that have high skilled or R&D personal are definitely more innovative than small firms (Arndt and Sternberg, 2000; Keeble and Wilkinson, 1999). The existence of size advantages also facilitates to provide the financial resources by inexpensive ways and help to distribute the risks by the way of synergy effects (Arndt and Sternberg, 2000). Therefore, small firms can reduce the disadvantages that they are face with in the innovation process. Regional networks can help to small firms to solve the problems that resulting from firm size.

Level of relations also changes according to size of firms. Micro firms with less than 10 employees have generally cooperation and profit from spatial proximity in the innovation process. However, for SMEs with 10-499 employees, a combination of regional, inter-regional and international linkages is especially important in the same process (Arndt and Sternberg, 2000).

The qualification of employees is very important aspect for SMEs in innovation process. The characteristics of employees have to be distinguished based on the quality and quantity. Because, firm size has positive effects on the innovation process only if firm include well-qualified employees (Arndt and Stenberg, 2000). A high proportion of qualified employee refers to more developed capacity to absorb new knowledge and to extent networking capacity of firm in the innovation process. Romijn and Albaladejo (2002) conclude that innovative SMEs require adequate stock of scientists and engineers holding university degree to absorb new technologies and to be innovative based on the study on electronic and software SMEs in UK. Otherwise, any deficiency in stock of scientists and engineers can be a severe problem for ongoing growth.

The other interest area is the relation between export capacity and innovation process of SMEs. Malmberg and Maskell (1999) state that the export-oriented firms are more innovative and also have higher share of scientific workers than non-exporting firms. Keeble and Wilkinson (1999) study indicates that high technology, innovative SMEs has higher export rate, more collaboration and partnership with other agents, higher employment and turnover growth but lower number of employees than non-innovative SMEs. This study shows that productivity is related to quality of input, not quantity of inputs.

Besides the number and quality of employees, sector of firm has significant affect on the innovative performance of SMEs. Freel (2003) has analyzed the sectoral pattern of SMEs innovation and networking. The study indicates that SMEs in science-based, high-tech sectors are more innovative than others. Romijn and Albaladejo (2002) hypothesized that information and communication technologies (ICT) and infrastructure positively affect the innovative capacity of firms and increase the external innovative linkages. On the other hand, computer-based firms have positive impact on the innovation capacity. Innovation capability of firms also positively associated with in-house technological efforts such as foundation of R&D department and the level R&D expenditures.

In other words, innovation and collective learning are the main characteristics that SMEs gain from the clustering. Innovation and collective learning can emerge only where firms and institutions constitute networks for knowledge as well as products. Clustering facilitate the innovation activities and learning capabilities of SMEs by serving intra-regional, inter-regional and institutional relationships. Therefore, clustering of economic activities of SMEs takes considerable attention from both developed and developing countries. The

policymakers and researchers work to develop SMEs strategies, but due to different understandings and meanings there is no universal strategy for SMEs. Every single strategy reflects the characteristics of their own location. For this reason, after clarification of the definition of SMEs and their major advantages and disadvantages we will continue with economic importance of SMEs in Turkey and their basic problems.

3.4. Some Definitions of SMEs

In the last two decades, SMEs are defined as the main element of economic development and growth. In the beginning of this period, the role of SMEs was the employment generation and flexible structure due to low capital accumulation. Through time, the role of SMEs has been evolved in the development models. The recent studies indicate that learning capacity and knowledge creation ability of SMEs draw more attention than employment generation and flexible structure. Furthermore, with the increasing role of regional networks and regional innovation systems, SMEs have been defined as the engines of innovative performance and technological change. (Keeble and Wilkinson, 1999; Camagni, 1995; Capello, 1999; Amin, 1999)

There is no universally accepted definition of SMEs among different organizations and different countries. According to Taymaz (1997), the definition of small firms used by different authors and organizations are often confusing and inconsistent. Taymaz (1997) explains why the definition poses such a difficulty in three factors: Firstly, the SMEs sectors do not have a homogenous identity. Any definition based upon a one-dimensional measure tends to blur the diversity. Second, SMEs are supported in almost all countries by various means, and the definition will determine who will benefit from such SME support schemes. Finally, the deficiency of data on SMEs makes it difficult to use some definitions that are otherwise relevant on theoretical grounds.

SMEs definitions are generally based on the number of employees. There are additional criteria used for definition of SMEs such as amount of fixed investment, annual turnover and annual balance sheet totals. On the other hand, criteria used for SMEs show differences according to economic structure, such as a small-sized enterprise for developed country can be evaluated as the medium-sized enterprise in developing country. Table 5 indicates the different definitions of various institutions used for SMEs in Turkey.

Table 5: Definitions of SMEs

Organization	Sectoral definition	Criterion for definition	Micro-sized enterprises	Small-sized enterprises	Medium-sized enterprises
KOSGEB	Manufacturing industry	Number of workers		1-50	51-150
Turkish Institution of Statistic (TUIK)	Manufacturing industry	Number of workers Annual net sales	1-10 1 Million YTL.	10-49 5 Million YTL.	50-250 25 Million YTL.
HALK BANK	Manufacturing industry	Number of workers Fixed investment amount (EUR)	------- 550.000	------- 550.000	1-250 workers 550.000
UNDERSECRETARIAT OF TREASURY	Manufacturing industry, tourism, agro-industry, mining, education, health, software development	Number of workers, Investment amount, amount of investment subject to SME incentive certificate (EUR)	1-9 workers 550.000	10-49 workers 550.000	50-250 workers 550.000
UNDERSECRETARIAT OF FOREIGN TRADE (DTM)	Manufacturing industry	Number of workers, Fixed investment amount (EUR)	----- -----	----- -----	1-200 workers 1.830.000
EXIMBANK	Manufacturing industry	Number of workers	------	------	1-200 workers
EU	Non-primary private	Number of workers Annual turnover, Annual balance sheet	0-9 workers EUR 2 million EUR 2 million	10-49 workers EUR 10 million EUR 10 million	50-249 workers EUR 50 million EUR 50 million

Souces**:** 2005/25997 Official Journal (2005), Akgemci (2001), OECD (2004).

The Small and Medium Industry Development Organization (KOSGEB) Law no.3624 defines the small-sized enterprises as enterprises employing 1-50 workers and the medium-sized enterprise as enterprises employing 51-150 workers. KOSGEB uses manufacturing industry as a field and number of workers as a criterion.

European Union Commission on May 6, 2003 adopted a new Recommendation 2003/361/EC regarding its definition of SMEs. The Recommendation provides definition of small and medium-sized enterprises as follows:

Enterprises employing fewer than 10 workers and whose annual turnover and annual balance sheet totals are less than 2 Million EUR are micro enterprises. Enterprises employing 10 between 49 workers and whose annual turnover and annual balance sheet totals are less than 10 Million EUR are small-sized enterprises. Enterprises employing 50 between 250 workers and whose annual sales and annual balance sheet totals are less than 50 Million EUR are medium-sized enterprises.

TUIK developed a definition of SMEs based on the studies of adaptation process of EU. The implementing regulation that namely Definition, Classification and Characteristics of Small and Medium-sized Enterprises came into force in 2005. According to regulation, SMEs are classified as micro, small and medium-sized enterprises. The Official Journal 2005/25997 provides definition of small and medium-sized enterprises as follows:

Enterprises employing fewer than 10 workers and whose annual balance sheet totals are less than 1 Million YTL. are micro enterprise. Enterprises employing 10 between 49 workers and whose annual balance sheet totals are less than 5 Million YTL. are small-sized enterprise. Enterprises employing 50 between 250 workers and whose annual balance sheet totals are less than 25 Million YTL. are medium-sized enterprises.

Comparing the definition applied by different institutions, the definition of KOSGEB seems relatively superficial. Because it only uses the number of workers criterion and encloses the enterprises whose number of employees is between 1 and 150. In addition, among the all definitions only Undersecretariat of Treasury's definition encloses the manufacturing sectors as well as services sectors. Especially, the definition of Halkbank and DTM use same criterions but they conclude different definition. While Halkbank provide definition for SMEs in manufacturing industry 250 workers as an upper limit, this number is provided by DTM as 200 workers. The fixed investment amount also indicates considerable difference in the definitions, while Halkbank provide 550.00 EUR, this amount is provided by DTM as 1.830.000 EUR.

As mentioned above, definitions of SMEs can indicate differences according to economic structure of country. While EU's definition provides 2 Million EUR annual balance sheet

for micro enterprises, TUIK definition of SMEs provides 1 Million YTL. for micro enterprises. Same difference exists for small (EU 10 Million EUR/ Turkey 5 Million YTL.) and medium-sized (EU 50 Million EUR/ Turkey 25 Million YTL.) enterprises.

However, different institutions accept different definition of SMEs; they have been trying to reach a consensus about the definition of SMEs. In the view of this thesis, we will follow SMEs definition that is used by TUIK after 2005, which present the most detailed characteristics of Turkish SMEs. Besides, the institutional approach to definition of SMEs, there are number of definitions in the literature.

Although literature includes various SMEs definitions, we will mention few of them in the context of this thesis. Keeble and Wilkinson (1999) define SMEs as smaller interdependent, owner-managed enterprises with a work force of less than 250 employees. Camagni and Capello (1998) while emphasizing dynamic contribution of small firms in knowledge creation, they define SMEs as enterprises which have informal relationship with the regional environment as an important agent of innovation paths.

Taymaz (1997) states that innovation and flexibility are essential characteristics of SMEs. Moreover, it is also important to study the conditions under which SMEs could be innovative or flexible. In order to understand various forms of the existence of SMEs, Rainne (1989) propose the taxonomy for small firms, which includes a four-fold classification.

Dependent small firms: These complement and service the activities of larger firms. Their activity depends on the level of activity and the 'make or buy' decisions of these large 'patrons'. Such a situation places effective control in hands of the large enterprise, a control that extends not only over financial matters but also over the organization of the labour process, by forcing the minimization of wage costs and the implementation of flexible working.

Competitive independent small firms: These compete with large firms by intense exploitation of labour and of equipment. Even here, however, the rules of existence are laid down, if possibly unwittingly and unintentionally, by the large firm. In terms of industrial relations the result is, more often than not, hyper-exploitation of labour.

Old interdependent small firms: These operate in niches of demand unlikely ever to be touched by large capital. This will often entail a hand-to-mount existence, scraping around for a living. It is amongst this and the latter type of small business that sweat-shop is more likely to be found.

New independent small firms: Small firms operating in specialized markets, but remaining open to the potentially fatal attentions of large firms. In other words, small firms which, within a very wide reading of the term, conduct the product and market research which large firms then step in and develop (Rainne, 1989).

According to Taymaz (1997) Rannie's (1989) taxonomy, although simple, is useful in attracting attention to the diversity of SMEs that exist in very different market environment. SMEs indicate the characteristics of the region and economic structure they located. Therefore, every region has various kinds of SMEs. Altenburg and Meyer-Stamer (1999) suggest that, even though some leading firms in the region perform much better than the majority of SMEs, they do not belong to an entirely different universe, and it is therefore possible for the latter to close the gap through learning and incremental upgrading. In addition, although there are different kinds of SMEs, the general advantages and disadvantages resulting from their size and organizational structure belong to all kind of SMEs.

3.5. Advantages of SMEs

The advantages of SMEs that are related their size and organizational structure are clarified by many authors and researchers (Pyke, et.al., 1992; Ceglie and Dini, 1999; Mytelka, 2000, Nadvi, 1995; Humphrey and Schmitz, 1995; Akgemci, 2001). SMEs in many countries account for an overwhelming number of business establishments and employees and are a major player in economic activity due to their flexible structure and adaptation ability to changing environment that initially mentioned by authors. The advantages of SMEs not only provide opportunities for SMEs, they cumulatively provide additional advantages for regional development, innovation process and economic growth.

The advantages of SMEs can be listed under the following main headings:

- SMEs can constitute close relationships and even face-to-face communication with the customers, suppliers and employees. Moreover, close relationships between economic actors constitute much more flexible management capability in the

context of production, marketing and services. Due to their close relationships with economic actors, SMEs can able to develop a marketing strategy for domestic markets whose characteristics are well-known by SMEs (Akgemci, 2001).

- SMEs are generally based on labour-intensive production system; in that respect they can serve a high number of employment opportunities for unskilled employees. SMEs typically make a large contribution to manufacturing employment in developing countries (Romijn, 2001). Moreover, SMEs could pay lower wages because they usually employ unorganized labour (Taymaz, 1997).

- SMEs have less bureaucratic administrative structure and thus dynamic, entrepreneurial managers react quickly to take advantage of new opportunities. Moreover, ability to react quickly to facilitate the adaptation for changing market requirements (Goss, 1991). SMEs have great flexibility in responding to changing opportunities or ability to serve small and specialized niche markets (Albu, 1997).

- SMEs can apply new ideas and inventions without large-scale investment. They have capability to adapt to technological developments in a short period of time (Preissl and Solimene, 2003).

- Having relatively low operating expenses facilitates to establish more flexible management for SMEs (Ceglie and Dini, 1999).

- SMEs function as balance element both socially and economically within the different income groups (Akgemci, 2001). SMEs labor market performs a stabilizing function in society. SMEs provide many people, including unskilled labor, with employment opportunities, thereby distributing income from a macroeconomic perspective.

- SMEs play a significant role in the transfer of small savings into direct investment (Akgemci, 2001).

- In the long term SMEs become supplier of inputs and intermediary goods for the large-scale industrial enterprises (Akgemci, 2001).

- SMEs are aware of the needs of domestic market. With the effective marketing strategy they can meet the need of domestic market immediately (KOSGEB, 2001).

- SMEs are key players in the regional economy. Small and medium-scale local manufacturing is an indispensable industry offering non-agricultural employment opportunities in such areas (Nadvi, 1995).

3.6. Disadvantages of SMEs

Like advantages of SMEs, the disadvantages of SMEs are emerged from their size and organizational structure. There are various strategies and policies developed by international or regional institutions to eliminate the disadvantages of SMEs. These disadvantages indicate differences related to region, economic structure of country and the sector of SMEs. However, disadvantages of SMEs generally have similar characteristics. The disadvantages of SMEs can be listed under the following main headings:

- SMEs tend to have lower hiring and firing costs and have week incentives to have long-term employment contracts (Taymaz, 1997).

- SMEs often lack suitable qualified technical specialist. Thus, they are often unable to support a formal R&D effort on an appropriate scale (Gross, 1991). They have insufficient research and development activities (Akgemci, 2001).

- SMEs may experience problems in coping with patent system. They cannot afford time or costs involved in patent litigation (Goss, 1991).

- SMEs are often unable to capture market opportunities, certain standards and regular supply. They also have difficulties in achieving economies of scale, raw materials, finance and consulting services (Ceglie and Dini, 1999).

- SMEs experience a significant problem to internalization of functions that are the core elements of firm dynamism such as training, market intelligence, logistics and technology and innovation (Akgemci, 2001).

- SMEs have narrow profit margins, therefore especially in developing countries small-scale entrepreneurs unable to innovative improvements to their products and

processes. They have hardly any chance to look beyond the boundaries of their firms to capture new market opportunities (Humphrey and Schmitz, 1995).

- SMEs may experience great difficulty in attracting capital, especially risk capital (Goss, 1991). SMEs have limited financial capabilities and budgeting programs because bank and capital markets not see them capable enough (Mytelka, 2000). Therefore, they have difficulties to provide resources; moreover, they have deficiency to use the resources in efficient and adequate way (KOSGEB, 2001).

- Due to their low production capacity, purchasing law metals and intermediate goods more costly than large enterprises that have storing capacity (KOSGEB, 2001).

- Generally, there isn't any serious marketing organization in SMEs. Therefore, they experience deficiency of researching target markets, finding them and evaluating (Akgemci, 2001).

- SMEs' technological capabilities are weaker and they are usually not in a position to get funding for innovation on reasonable terms through the regular financial system. Owing to resource constraints, their information search efforts and investments in training and education tend to be quite restricted (Romijn, 2001).

- SMEs have difficulties to exhibit their production and product examples; also they are deprived of the power of advertisement (KOSGEB, 2000).

- The manager of SMEs hesitates to let the professional managers to undertake the management and they are unwilling to venture the risk that comes with the growth (KOSGEB, 2000). Also, SMEs are more dependent on the management skills of the enterprise owner or managers (Arndt and Sternberg, 2000).

In order to understand the economic and social importance of SMEs, we will analyze the economic role of SMEs in Turkey. Before this, we will represent the SMEs understanding in EU. Because of the adaptation process Turkey has been following EU's SMEs strategies and policies to develop its own SMEs.

3.7. SMEs In EU

According to Çolakoğlu (2002), the number of total enterprises in EU is 16.350.000; SMEs constitute 99.78 % of this number. Total employment is 101.300.000 and SMEs account for 71.47 % of total employment. Table 6 indicates the distribution of SMEs in EU based on the scale, number of enterprises and number of employees. As seen in the table, 15.210.000 (93,03 % of total enterprises) micro enterprises constitute the major part of total enterprises. 31.450.000 (31,05 % of total employee) employee constitutes the major part of total employees. However, the big enterprises (500(+)) employ 28,53 % of total employee with only 20.000 enterprises.

Table 6: Scale Distribution of SMEs in EU-15 (2002)

	Scale	**Number of enterprises**	**%**	**Number of employee**	**%**	**Average employment**
Micro	0-9	15,210,000	93.03	31,450,000	31.05	2
Small	10-19	605,000	3.70	8,250,000	8.14	14
	20-49	370,000	2.26	12,250,000	12.09	33
Medium	50-99	70,000	0.43	4,950,000	4.89	71
	100-249	60,000	0.37	10,400,000	10.27	173
	250-499	15,000	0.09	5,100,000	5.03	340
Large	500(+)	20,000	0.12	28,900,000	28.53	1,445
TOTAL		16,350,000	100.00	101,300,000	100.00	

Source: Çolakoğlu, (2002)

Due to their considerable economic role, SMEs have been the subject of specific EU policies or initiatives for years. The main objectives of these policies are the improvement of the business environment and the development of SMEs. Commission of the European Communities published a Working Paper namely *The Activities of the European Union for small and medium-sized enterprises* in 2005. Following the EU (2005), EU policies include different dimensions such as education and training, legislation and regulation, taxation and financial services, employment and social policy, technology, trade, environmental policy and energy. Many other policy areas, such as regional policy, research, vocational training or information society, also aim to improve SMEs' situation and competitiveness. In the EU (2005) key objectives of the policies are explained as follows:

- Facilitate access to finance for start-up and growth SMEs,
- Promote cooperation among SMEs,
- Encourage innovation within SMEs,

- Promote a culture of entrepreneurship and innovation,
- Bring about enterprise and innovation-related administrative reform.

EU has been recognized the importance of SMEs, their competitive advantages and innovative capacity. They create successful examples for developing countries. SMEs are at the heart of the strategy launched by the European Council in Lisbon in 2000, with the objective of the EU becoming the most competitive and dynamic, knowledge-based economy in the world, capable of sustainable economic growth, more and better jobs and greater social cohesion. With the forthcoming enlargement of the EU, these ambitious goals are also extended to the new Member States. Owing to their number and the large share of the workforce, SMEs play a particularly important role in the Turkish economy. However, in Turkey SMEs average profile is different from that of SMEs in the European Union or in most other OECD countries in that their average workforce and turnover are much smaller. They also lag well behind in terms of know-how, skill levels, capital investment to support their activities and access and ability to take advantage of modern technologies, especially in the information and communications fields (OECD, 2004).

3.8. SMEs In Turkey

Recently, both developed and developing countries have recognized the competitive potential and innovative capacity of SMEs. SMEs represent a large weight of the economic activity in Turkey. Therefore, in the extent of regional development and innovation policies, emerging successful SMEs become increasingly important for Turkish economy.

Similar to European examples, the Turkish government has carried out a variety of programs to support SMEs for many years. Since Turkey joined the Customs Union with the European Union in 1996, the implementation and organization of such programs have especially received increasing attention. Moreover, 1996 announced as SMEs year in Turkey.

As Lundvall (1992) mentions, the businesses are not only integrated into their sectors or specific environment, but they are also integrated into national framework, conditions and institutions. Innovation process is shaped by national patterns of specialization specific strengths in research, educational system and the structure of the financial system (Arnt and Stedberg, 2000). In this regard, Turkey has organized programs and medium and long-term economic strategies to develop its process of international integration with Customs Union

and European Union. Because of their considerable position in the Turkish economy, SMEs have been affected directly or indirectly from these economic policies (OECD, 2004). The agricultural sector and the rural population employed in the agricultural sector have considerably higher share in Turkey than corresponding average figures in the EU. Therefore, improving SMEs is also a development policy for Turkey. Because, increasing demand for labor can be only satisfied by developing SMEs capacities (DPT, 2005).

According to OECD (2004), this process began in the 1960s and was reinforced by the liberalization of the Turkish economy in the 1980s. At the same time, the government developed a specific SMEs policy and created SEGEM (Industrial Training and Development Center) and KÜSGET (Small Industry Development Organization), which, later on, were united under the umbrella of KOSGEB (Small and Medium Industry Development Organization) in 1990, as a major authority for the execution of these policies. International organizations like the World Bank and the United Nations Industrial Development Organization (UNIDO) called for the promotion of industrial subcontracting in the 1970s and 1980s (OECD, 2004). Also, there are a number of public organizations responsible in the formulation and implementation of SMEs policies. The Undersecretariat of State Planning Organization (DPT) is responsible for preparing long-term development plans and annual programs that cover SMEs policies. DPT takes the opinions of all the relevant public and private organizations during the preparation process of the Development Plans, determines macro policies for SMEs and ensures coordination among public and private organizations with the aim of increasing the effectiveness of implementation of these policies. The Undersecretariat of Treasury and Undersecretariat of Foreign Trade (DTM) are also the institutions that implement incentive programs for SMEs. In implementing the SMEs policies, Union of Chambers of Commerce, Industry, Maritime Trade and Commodity Exchanges of Turkey (TOBB) and Confederation of Turkish Tradesmen and Craftsmen (TESK) also play an important role as two main professional organizations. In addition, SMEs are supported in the areas of loans and guarantees through Halk Bank Inc., Tradesmen and Artisans Credit and Security Cooperatives Union Central Association of Turkey (TESKOMB) and Credit Guarantee Fund Inc. (KGF). Other organizations that render services to SMEs within the scope of their operational domain are Scientific and Technical Research Council of Turkey (TÜBİTAK), Technology Development Foundation of Turkey (TTGV), Turkish Standards Institute (TSE), Turkish Patent Institute (TPE) and Turkish Accreditation Agency (TÜRKAK) (DPT, 2004).

Furthermore, integration of the Customs Union with the European Union in 1996 strongly influences international competition on Turkish industry, especially for SMEs. The Turkish SMEs felt more competitive pressure due to international competition, which force them to improve their technological infrastructure (Taymaz, 1997). In order to support SMEs that experienced difficulties during the Custom Union process new policies, which encourage establishing, expanding, developing and protecting the SMEs, put into practice. Providing fund credits for investments, allowance for investments, tax exception and exemption are some of these measures. Furthermore, in order to improve their infrastructure, private and public sectors have accelerated the studies of establishment of Small Industry Zones (KSS), Organized Industrial Zone (OSB), techno parks and science parks (DPT, 2005). Although, SMEs have development potential, due to financial deficiency they experience difficulties to develop and growth. Therefore, SME Investment Cooperation established to provide financial support included guarantee fund, risk capital, investment partnership, real-estate partnership. However, these supports remain insufficient, due to considerable size of requirements of Turkey (DPT, 2005).

3.8.1. Main Features of SMEs in Turkey

SMEs constitute 99.3 % of total enterprises, employ 76.7 % of total employment and constitute 26.5 % of total investments in Turkey. The share of SMEs in total value added is 38 % and 10 % for exports (DPT, 2005). Even though, SMEs constitute the major part of Turkish economy in terms of the number of enterprises and number of employees, their contribution to investment, value added and exports are not adequate. In Turkey, SMEs commit significant functions not only in economic activity, but also in social life. Due to their separation to large geographical area, SMEs play considerable importance to decrease the differences of regions, diffusion of poverty, provide the employment (KOSGEB, 2001).

The share of SMEs in the total exports is approximately 10 %. This is relatively lower than the other countries. The share of SMEs in the total export is 43 % in India, 38 % in Japan, 32 % in USA, 31 % in Germany and 22 % in England (KOSGEB, 2000). It can be claimed that, considering the externalities that provided by SMEs, the export capacity does not present the reality. Because, SMEs are not only produce export products, but also they produce intermediate goods for exporting enterprises. Although, intermediate goods for exporting enterprises should increase the share of SMEs in the total export, the share seems still very low (KOSGEB, 2000). Like other developing countries, Turkey search for policy initiatives to increase the competitiveness of their SMEs both national and international.

According to TUIK data ([2]) in 2002, there are 1.881.433 enterprises in Turkey; 1.695.499 of enterprises are suitable to the definition of SMEs (Table 7). Micro enterprises (0-9) constitute 96.32 % of total SMEs; small enterprises (10-49) follow them with the number of 53.246 and constitute 3.09 % of total SMEs. There are three scales in the medium-sized enterprises and in turn 5.080 enterprises have between 50- 99 employees, 1.804 enterprises have between 100-150 employees and 1.387 enterprises have between 151-250 employees. Medium-sized enterprises constitute 0.48 % of total SMEs. Also 0.11% of total SMEs are constituted by big enterprises (250+) with 1.810 enterprises. According to TUIK data, in 2002 there are 6.325.036 person employed at manufacturing and service sectors.

Table 7: Size Distribution of Turkish SMEs

	Scale	**Number of enterprises**	**Percentage (%)**
Micro	0-9	1,633,509	96.32
Small	10-49	53,246	3.09
Medium	50-99	5,080	0.30
	100-150	1,804	0.10
	151-250	1,387	0.08
Big	250 +	1,810	0.11
TOTAL		1,695,449	100.00

Source : http://dieweb.die.gov.tr/reports/rwservlet?mthtmlcss&report=Metarp10ek1.rdf

Although total enterprise number is nearly 1.700.000, according to OECD (2004), only a small share of SMEs is in the manufacturing sector. According to TUIK data in 2001, there were around 210.000 SMEs (1-250 workers) in the sector (99.6 % of the total number of manufacturing firms). Just over 1 million persons are employed by these SMEs (64.3 % of the manufacturing total). Manufacturing sector SMEs are broken down across industries as follows: metallic goods 26.1 %, textiles, clothing and leather goods 25.6 %, wood and furniture 24.3 %, food and drink 12.7 %, paper 3.9 %, other sectors 7.4 % (OECD, 2004). SMEs usually work as a subsidiary for large enterprises. Therefore, SMEs have to constitute close relationships with large enterprises to be successful (KOSGEB, 2001).

In geographical terms, the distribution of SMEs reflects that of the population as a whole. They are concentrated in the coastal regions along the Marmara and Aegean Seas, with 38

[2] Source : http://dieweb.die.gov.tr/reports/rwservlet?mthtmlcss&report=Metarp10ek1.rdf

% and 17 % of the enterprises, respectively, and in Central Anatolia, with 16 %. The Mediterranean coastal region (11 %), the Black Sea region (9 %), southeastern Anatolia (6 %) and eastern Anatolia have far less organized formal economic activity (OECD, 2004).

According to research of KOSGEB (2000), 42 % of SMEs have manager that secondary school graduated. 19 % of SMEs have manager that primary school graduated. The share of high school-graduated manager is 21 % and only 18 % of SMEs have university-graduated manager.

As mentioned above, many countries have been experiencing some specific disadvantages of SMEs, but Turkey has been experiencing them more severely because of the role of SMEs' in Turkish economy. However, while SMEs dominate the economy in terms of employment and number of enterprises, they use little capital equipment, generate low levels of value added, receive only a small share of the funds of banking sector and make a small contribution to exports. On this account, Turkish SMEs require specific supports programs related to finance, education, consulting, marketing, export and technology.

3.8.2. Basic Weaknesses of Turkish SMEs

In developing countries, SMEs have been coping with more difficulties than developed countries. The economic structure of developing countries effects particularly the development and growth of SMEs.

> The problems of the Turkish SMEs constitute the basic bottlenecks regarding their development and gaining competitiveness both in the world and in the Single Market of the EU. These problems, which correspond to Turkey's structural obstacles, pose serious barriers to the success of current policies and programs (DPT, 2004).

Fundamental weaknesses of Turkish SMEs can be gathered into four main headlines.

- Insufficient know-how and low level of technology,
- Deficiency of industrial environment,
- Inefficient management and inability to access consulting services,
- Inability to access to finance support (DPT, 2004).

All of these weaknesses are common features of developing countries, but in some dimensions Turkey has unique obstacles and problems. Therefore, the Turkish authorities

have organized a long-term strategy and policies including education, R&D, government regulations, competitive policies, labour market, social policies and a sound-banking sector to overcome these obstacles and problems. In addition, strategies and policies aim to create a healthier economic environment for particularly SMEs and generally for the overall business sector. According to Humphrey and Schmitz (1995), supporting SMEs is generally based on three assumptions. First one is that there are benefits for the country as a whole from having strong SMEs sector. Second assumption is that this strong SMEs sector will not emerge without support from the state. The third assumption is that smallest enterprises have been justified more in terms of their welfare impact than their economic efficiency. It means that, supporting SMEs provides benefits to whole economic and social structure of a country.

In the next section, while the fundamental weaknesses of Turkish SMEs examined in four headlines, some policies and strategies to overcome these weaknesses will be explained.

3.8.2.1. Insufficient Know-How and Low Level of Technology

A large number of Turkish SMEs generally use inefficient technologies and outdated methods in the production process. Considerable proportion of Turkish SMEs produces for only national or local markets. Due to their low technological level as compared to European and OECD SMEs, their production is considered as low quality goods in competitive market. After the Customs Union and EU's implementations came into force, the technical level of Turkish SMEs became clearer (OECD, 2004). They faced pressure to raise their technical level and acquire know-how to gain a place in global market. The reasons of why Turkey has low level technology explained in detailed manner in the "Innovation Report of the World Bank, 2003". According to World Bank (2003) Turkey has low level of technology because:

• Turkey's R&D effort suffers from too little participation by the private sector. The share of the business sector in total R&D expenditure is around 35 % against the OECD average of 65 %, although the number of companies conducting R&D has increased between 1996 and 2000. Most of the rest of the R&D infrastructure is in government laboratories.

• University-based intellectual potential is high, however, university-industry interactions are weak because there is inadequate funding for cooperative projects at the universities and research laboratories and equipment are limited in some faculties.

• Finance for innovation and R&D is in short supply. Tax incentives have also been modest and benefit only large firms (World Bank, 2003).

Indeed, SMEs have limited capacity to use consultancy services, technology transfer mechanism and education services. In spite of information era, they have limited opportunity to reach to information. Especially, reaching knowledge and acquiring know-how has incredible important and difficult for SMEs. They even experience difficulties to reach internet information. OECD (2004) claim that if SMEs use computer and internet effectively they would benefit from some opportunities.

> Wide use of microcomputers could enhance dissemination of the information published by the government to promote exports. Increased internet use could help industrial SMEs to procure raw materials and capital goods more efficiently, thus trimming their costs and boosting their productivity. These positive effects have been clearly demonstrated in the North American and European markets. The internet can also help SMEs to advertise their products and simplify purchasing decisions for businesses and consumers alike. Computers can also help SMEs control production process and manage inventory (OECD, 2004).

According to Taymaz (1997), new technologies provide various advantages for SMEs. Firstly, the decaling effects of new technologies have been decreasing or even eliminating the cost disadvantages of developing country SMEs that produce in low volume because of limited size of domestic markets. Secondly, the flexibility of new technologies allows for increased product diversity so SMEs in developing countries are able to produce products that suit the competitive environment.

Inability of providing technological needs of SMEs is the common problem of developing countries. The creation of adequate consultancy mechanism, cooperation organizations that provides both technological and marketing know-how would enable them to overcome the competitive disadvantages.

3.8.2.2. Deficiency of Industrial Environment

A large number of Turkish SMEs are separately located usually outside the urban centres. Therefore, they produce only for local markets and have limited opportunity to interact with the other enterprises. SMEs require special resistance where they can obtain required services, reach various markets and establish cooperation and competition with other enterprises. The establishment of combined organizations such as small-scale industrial estates, organized industrial zones, science parks and techno parks would help to SMEs to overcome their isolation and interaction disabilities.

The organization of Small Industry Zones (KSS) started in 1965. Table 8 indicates the development process of KSS from 1965. The main objectives of establishing KSS are as follows:

- Bring together the small enterprises engaged with reparation and related industry that have insufficient work conditions due to separation all over the city,
- Improve cooperation and networks among small enterprises,
- Purchase their needs with minimum price,
- Introduce them with technological developments,
- Improve the relationships between basic industry and related industry (OECD, 2004).

Table 8: Small Industry Zones in Turkey, 1965-2002

Years	Number	Number of Work Places	Employment Capacity (persons)
1960-1965	262	62,113	386,080
1995	273	63,640	395,222
1996	289	65,326	405,338
1997	291	70,747	437,864
1998	294	71,722	443,714
1999	306	72,130	446,162
2000	313	74,130	445,000
2001	349	81,453	488,000
2002	362	83,318	500,000

Source: DPT, (2004) (These data are only for those small industrial estates that have used loans from the Ministry of Industry)

Until the year 2003, construction of 362 KSS was completed including a total of 83.318 work places. Currently, 400,000 people are employed at industrial estates, which have an

employment capacity of 500,000. 105 KSS have schools of apprenticeship and 136 of them have education or training centre. In addition, 173 KSS, which include 30.660 work places and capacity for 184.000 employee establishment studies, are continuing (DPT, 2004).

Organized Industry Zone (OSB) has more capacity than KSS, also they included more different kind of organizations. The establishments of OSB started in 1962, since than 118 OSB have been established. OSB is specific industry zone where infrastructure facilities such as transport, energy, water, raw metals and waste treatment are established for SMEs. The main objectives of establishing OSB are as follows:

- Serve modern and healthy conditions for SMEs,
- Protect the agriculture land from industry occupation,
- Take environmental pollution under control,
- Bring together related and similar enterprises,
- Improve their economic activity by providing technological support, market opportunity, fairs, consultancy services and education (OECD, 2004).

Besides these developments, additional applications put into practice particularly to develop the technological capacity of SMEs. In 2001, the Law on Technology Development Zones No: 4691 was put into effect with the aim of supporting technology-based enterprises, developing cooperation between universities and the industry, and facilitating the spread of technology. Within the framework of the provisions of this law, techno parks started to establish (DPT, 2004).

3.8.2.3. Inefficient Management and Inability to Access Consulting Services

Turkish SMEs generally emerge as family-owned enterprises or employ less than 10 employees; these cause the management problems in the enterprises. SMEs are basically managed with the traditional methods, instead of professional methods. The level of professional management is related to the number of employees as well as the capacity of manager (KOSGEB, 2000). Indeed, the education and experiences of managers have positive effects on the quality of management and innovation ability of enterprises. Romijn and Albaladejo (2002) accept the experience and education of manager as an internal factor for innovation. The experience and education of manager influence the management of SMEs, because SMEs are considered as more dependent on the management skills of the owner or managers than large enterprises (Arndt and Sternberg, 2000).

Turkish SMEs require consulting services about management issues, business planning marketing, financing, training, law and technology. Moreover, Turkish SMEs need easier and more frequent access to training, consultation and support in the area of R&D in order to improve the quality of their products and bring them into line with legislation on technical standards and European regulations (OECD, 2004).

Local industry associations, universities and finance institutions serve efficient consulting services for SMEs. Enterprise Development Centre of KOSGEB (IGEM) and Technology Development Centre of KOSGEB (TEKMER) have supported these consulting services. IGEM centres serve counseling about many issues, such as business planning, marketing, financing and production technology. TEKMER centres provide employment assistance, financial support for equipment purchase and the purchase of materials, access to services (*e.g.* testing), technical, financial and managerial consulting assistance, information services, training programs and acquisition of software for R&D activities of technology-based companies (OECD, 2004). Table 9 indicates that number of firms supported by these two institutions in 2002.

Table 9: Firms supported by IGEM and TEKMER, 2002

Type of support	Number of firms supported
IGEM	
Consulting services	2,928
Laboratory services	6,472
Training	5,870
Quality improvement	224
Other project support	4,175
TEKMER	
R&D support	140

Source: OECD (2004)

SMEs have been applying to IGEM mostly for laboratory services and training. In 2002, 6,472 SMEs provided laboratory services from IGEM, also 5,870 SMEs attended to training programs. However, only 140 SMEs applied for R&D support. Although, the increasing number of SMEs applies for support, relatively few SMEs receive major support at IGEM or TEKMER centres (OECD, 2004). A shift in program approach may be necessary to stimulate change in all sectors with significant SME populations (OECD, 2004). So, the positive outcomes of programs can be diffused the whole economy. According to OECD (2004), while the government actively seeks to support industrial SMEs in many areas, some of the support schemes have shortcomings, especially from a

long-term standpoint. It gives an example; the government has focused on increasing productivity and competitiveness in the SMEs industrial sector but has placed far less emphasis on improving competitiveness in other sectors, such as wholesaling and retailing, whose activities are tied closely to those of industry.

3.8.2.4. Inability To Access To Financial Support

Although SMEs account for 99.3 % of the total enterprises in Turkey, less than 5 % of bank credits is provided for them. Even if more Turkish SMEs wished to improve their technological capacity and modernize their plant and equipment, they would find it difficult to do so because of the difficulty of obtaining financing and accessing to credit and equity (OECD, 2004). The general financial problems of SMEs (capital and management deficiency, difficulties on providing credit) result from the economic and social structure of Turkey and traditional organization of SMEs (KOSGEB, 2001). Moreover, Turkey has experienced two serious economic crises in 2000 and 2001, which dramatically influenced financial sector. Therefore, reducing the credit volume for SMEs negatively affected; even SMEs could survive in the crisis conditions (OECD, 2004).

According to KOSGEB (2001), the share of the SMEs within the total loans in Turkey is around 6-8 %. This ratio is 42% in the United States, 50 % in Japan, 27 % in England, 15 % in India, 47 % in South Korea and 35 % in Germany.

Financing instruments such as credit guarantees, venture capital investment partnerships, real estate investment partnerships, finance, factoring and leasing companies for SMEs could enable them to increase their share of the volume of credits (OECD, 2004).

In this chapter, we discuss the importance of clustering for SMEs. The clarification of advantages and disadvantages of SMEs give us the opinion that how clustering of SMEs would help to their economic activity. We also explained the major role of SMEs in Turkish economy. The reason of explaining basic weaknesses of Turkish SMEs is to compare the characteristics and weaknesses of AOSB' SMEs. As mentioned at above, there is considerable change in the understanding of SMEs and their economic capacity in both developed and developing countries including Turkey. However, when the current practices as well as the policies and programs that are envisioned in the last period for SMEs are compared with the norms of the EU and developed countries, it is seen that Turkey's SMEs support system does not have the capacity to meet the needs of enterprises. Insufficient

resources and lack of sufficient institutional capacity constitute a significant obstacle in terms of obtaining short and medium-term results from the policies and programs that are designed to develop and support SMEs.

CHAPTER IV

IV. INTERFIRM RELATIONS AND INNOVATIVE CAPACITY IN ADANA ORGANIZED INDUSTRY ZONE: A CASE STUDY ON TEXTILE FIRMS

Textile and clothing industry have significant importance in Turkey. According to Taymaz (2004), the textile and clothing industries are characterized by labour intensity and low productivity. Therefore, developing countries with low wages have comparative advantages in these industries. As many other developing countries, the textile and clothing industries have played an important role in the process of industrialization of Turkey (Taymaz, 2004).

Following Taymaz (2004), the textile and clothing industries in Turkey accounts for 30-35 % of manufacturing employment, 15 % of manufacturing value added and 35-40 % of all exports. These industries have played a very important role in generating employment opportunities and generating export revenue. Textile and clothing industries are considered as an engine of the export especially in the first half of the 1980s and during 1990s. The share of total export revenue doubled from 1980 to 1985 (from 27% to 40 %) (Taymaz, 2004).

According to Taymaz (1997), in the last two decades, it has been accepted that labour-intensive sectors and industrial regions specialized in labour-intensive sectors could gain cost advantages in the global markets. Therefore, in the 1980s in Turkey, the rising sectors are generally craft-based sectors like textile and clothing. Similarly, the textile and clothing industries have been engines of economy of Adana. They play important role for the export capacity of the region. In 2000, textile and clothing industries constituted approximately 50.1 % of export capacity of Adana region. ([3])

Considering the importance of textile industry for Turkey and Adana, we will continue with the general description of industrial development of Adana. Explaining the economic structure and historical performance will help us evaluate today's structure more adequately. In order to understand the organization of production and business operations,

[3] Source: http://www.adanasanayi.gov.tr/ekonomik.htm

it is necessary to put them in their historical, socio-cultural, institutional and spatial context.

In this respect, historical development of textile sector and general social and economic characteristics of Adana will be mentioned in this chapter. We will use Adana Organized Industry Zone (AOSB) as a survey area. This study aims to concentrate on textile firms in AOSB by employing standard technical tools and by analyzing social structure of their inter-firm relations.

Innovation performance and inter-firm relationships of textile SMEs in AOSB will be analyzed based on the field survey. In order to understand the focal firm relationships we use the Pajek program. This program enables us to define the inter-firm relationships of focal firms and others.

4.1. Industrial Development of Adana

Adana is the sixth largest town in Turkey with a population of 1.960.000 in 2005. ([4]) Adana, as one of the metropolitan city of Turkey, is specialized in textile industry and agriculture. By means of integrating products of agriculture to textile industry, Adana has a long history in textile production. Since 18th century, Adana has continued to produce textile products and became the undeniable center of industry in Turkey.

Closeness of region to agricultural sources and transportation possibilities facilitate the development and growth of Adana region. Especially, yarn and cotton products have considerable role in the economy of Adana region, particularly in export performance. In addition to the importance of region as an industrial agglomeration area, the AOSB has considerable importance as an agglomeration area for the region, especially for textile industry. Therefore, the AOSB has a significant role to increase the production and export capacity of region.

The economy of Adana has various components. The share of industry is 25 % in the total product, the share of transportation and communication is 17 %, the share of trade is 16 % and the share of agriculture is 14 % of total product of region in 2003. ([5])

[4] Source: http://www.tuik.gov.tr/PreIstatistikTablo.do?istab_id=229

[5] Source: http://www.adanasanayi.gov.tr/ekonomik.htm

Adana contributes approximately 3.5 % of the total gross domestic product of Turkey (TUIK, 2002). According to TUIK, in 1987 gross domestic product of Adana was 2.590.454 TL., it became 3.190.448 TL. (based on the 1987 prices) in 2001. ([6]) With this contribution Adana is the sixth region, after Istanbul, Ankara, Izmir, Kocaeli and Bursa (AGV, 2002).

It should be emphasized that, even though Adana has a fluctuating economy, it has maintained its dominant and important position in Turkish production through the time. In addition, Adana had $ 1.654 per capita gross domestic product in 1987, it became $ 2.339 in 2001. The per capita gross domestic product continued its rise and reached to $ 3.268 in 2003. ([7])

The number of enterprises having 10 or more employees is 1.184 based on the KOSGEB Research of Adana (KOSGEB, 2005). According to KOSGEB (2005), this number seems to be inconsiderable but, most of industrial enterprises are large sized and have more than 250 employees. In addition, KOSGEB (2005) emphasizes that among the 500 large sized enterprises of Turkey, Adana has 19 of them. Moreover, the number of enterprises having more than 1000 employees is 6 (KOSGEB, 2005).

Adana's economic structure has been changing recently. Adana has nearly 2 Million population, its workforce was approximately 572.605 in 2000 (TUIK, 2002). In Adana, in the last two decades, the demand for labour in the agricultural sector has decreased, while demand for labour in the industry has increased (AGV, 2002). In 1980, 325.021 people were employed in agricultural sector, this number decreased to 246.725 people in 2000.

The proportion of agricultural sector decreased from 58.9 % to 43.1 % in the region. Furthermore, the industrial sector's employment has increased from 71.775 to 82.501, the share of which has increased from 12 to 15 % in the same period (AGV, 2002). According to employment statistics of TUIK (2002), the majority of workforce (43 %) of Adana is employed in the agricultural sector. In addition, only 16 % of workforce is employed in the industry. From these numbers, it is clear that Adana has tendency of moving their workforce from agricultural sector to the industry.

In the 18th century, industry and trade, which was based mostly on the cotton production,

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[6]-[7] Source: http://www.adanasanayi.gov.tr/ekonomik.htm

started in 1860's as cotton gin-press enterprises. At 1890's they transformed into integrated enterprises. The first textile investment was made in 1901. In the 1950's Adana was an important manufacturing center, which created value added nearly half of Istanbul (AGV, 2002).

However, after the 1950's the immigration began from other cities to Adana, which created several economic and social problems. Between 1950 and 1970, the investments to integrated enterprises increased and after 1970's the modernization process started. However, the integrated enterprises became over-size enterprises without specialization. Therefore, they lost their flexible structure. Even though, establishment of large-sized enterprises impede the development and growth of small and medium-sized enterprises. After 1970's, these large-sized integrated enterprises affected the regional production environment in terms of skilled employment and modern technology. The technical and skilled employees have established their own textile firms, which are mostly small-sized. The enterprises, especially small and medium-sized ones, have increased the knowledge of textile production and have diffused in the region (AGV, 2002).

In the same period, rapid economic development of other regions caused recession in the economy of Adana. Adana lost its attractive position as the traditional industry center in the 1980s. Therefore, Adana region began to stay behind Denizli and Gaziantep in the capacity of textile employment (Armatlı, 2004). But, after 1995 by the help of AOSB and export policies, Adana region started to rebuild and restructure the sector (AGV, 2002).

4.2. Some Stylized Facts on Adana Organized Industry Zone

AOSB is the main survey area of this study. It has considerable importance in the economy of Adana region. AOSB is built on the 1225-hectare area, which is not available for agriculture. Through the time, the infrastructure and settling will be completed; it will be the biggest organized industry zone in Turkey. As seen in the Table 10 there are 206 enterprises in the AOSB. 71 firms (34 % of total firms) work in the textile sector. Approximately 14.117 people is employed in the industry zone and 6.330 (45 % of total employment) of them is employed in the textile sector. According to information given

from Administration of AOSB, the building of 89 firms has been continued and 29 of them are related to textile sector.

Table 10: Distribution of Sectors and Employment Numbers of AOSB, November 2004

SECTOR	NUMBER OF ENTERPRISES	%	NUMBER OF EMPLOYMENT	%
TEXTILE	71	34	6.330	45
METAL	22	11	966	7
FOOD INDUSTRY	14	7	910	6
PLASTIC INDUSTRY	15	7	831	6
WOOD INDUSTRY	15	7	665	5
INFRASTRUCTURE	10	5	490	3
MACHINE	10	5	377	3
CHEMISTRY INDUSTRY	12	6	320	2
DYE INDUSTRY	7	3	216	2
CASTING INDUSTRY	3	1	234	2
PAPER INDUSTRY	3	1	360	3
OTHERS*	24	12	2,418	17
TOTAL	**206**	**100**	**14.117**	**100**
* **OTHERS:** PACKING, SHOES, BANK, GLASS, STORAGE, PRESS, TRASPORTATION, OIL PRODUCTS, GREASE INDUSTRY				

Source: AOSB, (2005)

Adana region indicates special characteristics for textile industry. As Porter (1998a) mentioned, clusters require geographic concentration of interconnected companies and institutions in a particular field. In addition, Porter (1998a) states that historical characteristics have considerable importance for clustering economic activity. Mytelka and Farinelli (2000) distinguish the cluster into two types: spontaneous agglomerations and constructed clusters. According to them, spontaneous agglomerations of enterprises and other related actors require long-term and strong relationships. AOSB serves a geographic concentration for interconnected enterprises. Furthermore, there are different institutions that facilitate the clustering economic activity in the region. University of Çukurova, the Chamber of Industry, the Chamber of Trade, the Small and Medium Sized Enterprises Development Center, the Research Center of University and Industry (ÜSAM), various customers and suppliers, Small Industry Zone and relatively large SMEs potential constitute the other components that required for clustering economic activity. Moreover,

the studies have been continuing to establish a techno-park in the University of Çukurova to facilitate and develop the ÜSAM capacity.

Besides this institutional network, Adana has valuable historical roots and natural features to connect and develop these potential components with its individual relation network, because, family ties and long-standing friendships are very important in the production network in Adana. There are many enterprises that provide different types of supports with family relations. The supports include the machinery, transportation, equipment, knowledge and financial types. Moreover, being from Adana, or being from the same districts of Adana has considerable importance to take place in social networks.

The other characteristic of Adana is that it has leading firms in the textile industry, which have considerable importance by integrating SMEs into global production networks and developing their exporting capacity by separating the global production perspective. This gives some clues about the existence or regional cooperative and competitive environment in Adana. There are small and medium-sized enterprises, which are dealing with only clothing, spinning, yarn or confection, while large enterprises engaging with integrated production. In Adana, both in terms of technological development and innovation capacity, leading firms are seen as important agents for small and medium-sized firms, which follow the success of examples and imitate them. The entrepreneurs have imitated the development method of leader firms in terms of products and process. In the following part of this chapter, textile SMEs in the AOSB are analysed with reference to networking and innovation.

4.3. Method and Data

This study aims to identify some of the factors determining relationships and innovation performance of 41 textile SMEs in the AOSB. The study is based on micro level network data, collected at the firm level in AOSB. Our analysis is based on data collection through interviews on the field. The interviews were personally done with managers or the officers in a high position in the firm. The questionnaire is prepared by Assoc.Prof.Dr.Erkan ERDİL and Prof.Dr.Metin DURGUT.

The first part of questionnaire is related to general information about firm, the second part of questionnaire aims to find out "technological and innovation capacities of firms" and

"inter-organizational relations". The sample questionnaire is attached to Appendix A. The Turkish version of questionnaire is attached to Appendix B.

The questionnaire includes the following categories: General firm information (founding year, founding process, capital, ownership of firm, employee number, main products, export capacity, quality certificates, leader firm of region, mobility of workforce, joining the trainings in the region), technological and innovation capacity of firms (quality certificates, patent applications, new or improved products and process), relationships with suppliers and buyers (length of relationships, major events, coordination mechanism), relationships with government agencies and industrial associations, long term firm strategy.

Because of its relative importance for AOSB and Adana region, the survey was aimed the textile industry. As mentioned at the previous section, textile industry has historical importance in Adana region. There are number of small and large-sized textile firms in Adana region. According to Administration of AOSB, after establishing AOSB in 1995, many textile firms located around the region prefer to move their firms into AOSB, because of significant opportunities presented by AOSB.

The list of textile firms in AOSB was provided by the Administration of AOSB. Among 71 textile firms we could manage to reach 41 firms. Interviews were carried out with managers, but some interviews had to be done with mid-level managers. Unfortunately, we had one difficulty during the survey. Some firms, mostly medium-sized firms hesitated to explain their customer profile. Therefore, instead of names and type of relations, we learned the place of customer firms and length of relationships with surveyed firms.

During the field survey and interviews, we could obtain detailed information about textile industry and textile productions. The interview with the Administration of AOSB became explanatory for our survey and highlighted some aspects, which had remained missing during the interviews with the firms. The Administration of AOSB distinguishes textile firms into three types, based on employee numbers, size, characteristics, products, sales, and wideness of market.

The first group of firms is generally micro level small firms. Among 41 firms that are subject to our survey 7 of them belong to first group. The first stage is, processing the gin in order to adjust its gaps. Developing gin's quality, endurance and even coloring emerge

during this stage. As the view taken during the interviews, the innovation and network capacity of first group is relatively lower than other groups. Based on Rainne's (1989) taxonomy, first group has similar characteristics to *dependent small firms.* Their economic activity strongly depends on the activities of second group of surveyed firms that are integrated enterprises.

The second group of firms is constituted by mainly medium-sized firms. They are continuation of integrated enterprises that established between 1950's and 1970's. Tranforming the gin into fabric occurs during this period. Based on the firm's capability and performance, different type of fabrics can be manufactured. The innovation ability can be followed by the creation of different type of fabrics. 23 firms among the 41 surveyed firms belong to second group. Based on Rainne's (1989) taxonomy, they are similar to both *old interdependent and new interdependent firms*. Because, some of them are old and they dominate the market. However, others are relatively small and newly founded. But, they reach similar amount of export performance and even more innovative performance.

The third group of firms is clothing enterprises. 11 firms out of 41 firms are related to third category. They use the labour-intensive production system more than other groups for this reason they can be similar to *competitive independent small firms* in Rainne's (1989) taxonomy. Table 11 indicates the number of these groups of firms and their percentage in the surveyed firms.

Table 11: Three Groups of Surveyed Firms

Total Number of Surveyed Firms:41		
	Number of Responses	Percentage of Surveyed Firms (%)
1. Group firms	7	17
2. Group firms	24	59
3. Group firms	10	24

In the view of this study, we investigate the innovative activity of SMEs in the AOSB. As Table12 indicates, we can distinguish the surveyed firms based on the number of employees according to SMEs definition. Consequently, 27 of firms are small-sized

enterprises, 14 of firms are medium-sized enterprises. 19 firms that have the number of employees between 20 and 49 constitute 46 % of our surveyed firms.

Table 12: Number of Employees of Surveyed Firms

Total Number of Surveyed Firms:41		
	Number of Responses	Percentage of Surveyed Firms (%)
Micro (1-9)	2	5
Small (9-19)	6	15
Small (20-49)	19	46
Medium (50-99)	4	10
Medium (100-250)	10	24

4.4. Hypotheses of the Research

The purpose of this thesis is to identify the inter-firm relationships of textile firms in AOSB. Based on the theoretical argument explained in the previous chapters empirical results will be analysed. Two hypotheses will be tested by employing the collected data.

Hypothesis 1:*Inter-firm relations that are based on the cooperation and competition facilitate the innovation activities of SMEs in a particular area.*

SMEs generally lack suitable qualified technical specialist. Thus, they are often unable to support R&D efforts. They have insufficient research and development activities. SMEs experience a significant problem to access to global markets due to their low-level technology. Cooperation and competition are the basic characteristics of clusters. Constituting a collective efficiency is related to the level of cooperation and competition. Especially trust-based inter-firm relations compose the environment for SMEs where they benefit from innovative activity.

Hypothesis 2: *Geographical concentration of SMEs with related industries and institutions helps to overcome the disadvantages of SMEs resulting from the size and structure.*

SMEs experienced a lot of disadvantages such as deficiency capital, qualified employee, qualified management that result from their size and structure, geographical concentration of SMEs facilitates to overcome these deficiencies. SMEs are often unable to capture market opportunities, certain standards and regular supply. They also have difficulties in achieving economies of scale, raw materials, finance and consulting services. Capello (1999) claims that by developing local networks, in which the elements of proximity (spatial, cultural, and psychological) generates three distinctive features: density of relations, informality and openness. SMEs may even become players in the world markets if a high degree of inter-firm relationships overcome the disadvantages of being small.

4.5. Analysis and Results

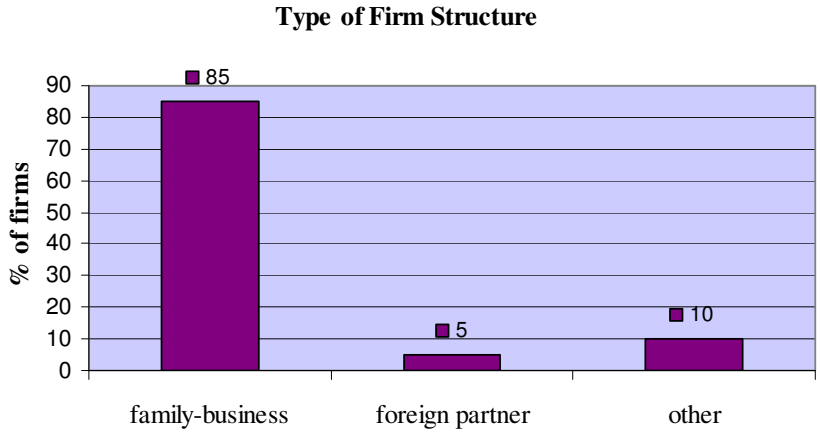
During the interview we first, try to discover the general characteristics of firms in order to understand the structure of AOSB and relationships. Secondly, we analyze their innovative performance and its connection to firms' inter-firm relationships and the relationships with other institutions.

4.5.1. General Characteristics of Surveyed firms

The results coming from the first section of our questionnaire are as follows:

- Out of 41, 35 firms (85 % of surveyed firms) reported that they are family-business structure. 2 firms (5 % of surveyed firms) have foreign partners, 4 managers (10 % of surveyed firms) identify their firms as other (partnership, individual).

Figure 2: Type of Firm Structure of Surveyed Firms



During the interviews, relatively young managers attracted our attention. It is assumed that, second generation takes the management from the first generation. Among 41 firms, 16 firms (39 % of surveyed firms) reported that they have university-graduated manager. 7 firms (17 % of surveyed firms) reported that they have vocational faculty-graduated managers. If we take into consideration the firms that reported innovative activity, we can conclude that among the 14 firms that reported innovative activity, 9 of them have university-graduated managers, 2 of them have vocational faculty-graduated manager and 3 of them have high school-graduated managers. Based on KOSGEB (2000), only 18 % of total SMEs in Turkey have university-graduated manager. This rate (39 %) is very high in AOSB. According to Öz (2004), better-educated second generation forms the link between family-business and professional management for SMEs in Turkey.

Table 13: Education of managers of surveyed firms

Total Number of Surveyed Firms:41		
	Number of Responses	Percentage of Surveyed Firms (%)
Primary school	3	7
Secondary school	6	15
High school	9	22
Vocational faculty	7	17
University	16	39

- 20 firms (49% of surveyed firms) reported that they made export between 2000 and 2004. All of 20 firms declared that their export revenues increased during this period.

- 13 firms (32 % of surveyed firms) reported that they have quality certificate. All of 13 firms have ISO-9001: 2000 certificate, 1 of them has also OEKO-TEX certificate. 12 of firms that have quality certificate are exporting firms (Table 14).

The features of exporting firms are indicated at Table 14. Among the 20 exporting firms 14 of them reported that they have innovative activity. 12 of them have reported that they have quality certificate. 21 firms that not reported export are also not reported innovative activity. Only 1 firm has quality certificate among the firms that did not reported export.

Table 14: Innovative capacity and Quality-certificate of Exporting Firms

Total Number of Surveyed Firms:41				
	Number of Responses	Percentage of Surveyed Firms (%)	Percentage of firms reported process or product innovation (%)	Percentage of firms reported quality certificate (%)
Firms reported export	20	49	70	60
Firms not reported export	21	51	0	5

- 31 firms (75 % of surveyed firms) defined their firm's capital stock distribution as regional, 8 firms are national and 2 firms are foreign.

- Only 2 firms (5 % of surveyed firms) have patent application. Both of them applied to national agencies.

4.5.2. Innovative Activities of Surveyed Firms

After analyzing the general structure of surveyed firms, in this section we present the findings related with the innovative activity of surveyed firms. In the second section of our questionnaire, we want to measure the innovative success of firms based on the product and process innovation. Table 15, 16 and 17 summarize the results of questions 15-16-17-18 in the questionnaire. We asked to firms if they made significant product and process innovation (new product or process, improvement product or process) in the period between 2000 and 2004.

Table 15: Results of Innovation Activities of Surveyed Firms

Total Number of Surveyed Firms:41		
	Number of Responses	Percentage of Surveyed Firms (%)
Firms that innovative	14	34
Firms reported product innovation	11	27
Firms reported process innovation	12	29
Firms reported both product and process innovation	8	20

Out of 41 firms, 14 of the firms (34 % of surveyed firms) reported that they made significant innovation activities in the period between 2000 and 2004. 11 firms (27 %) reported that they made product innovation includes both new and improvements. 12 firms (29 %) reported that they made process innovation including both new and improvements. Lastly, 8 firms (20 %) reported that they made both process and product innovations.

Table 16: Results of Product Innovation of Surveyed Firms

Total Number of Surveyed Firms:41			
	Number of Responses	Percentage of Surveyed Firms (%)	Percentage of firms reported innovation (%)
Firms reported new product innovation	3	7	21
Firms reported product improvements	11	27	79

In addition, as we can see from Table 17, out of 11 firms performing product innovations, only 3 of them reported that they made new products and 11 of them reported that they improved their products. One of the surveyed firms' manager claimed that their product innovation capacity is definitely related to their competition and cooperation capacity. She said that:

> In the textile industry imitation has considerable role for innovation. Monitoring the others products, particularly foreign products provides the vision for domestic firms. When your competitor creates new product for market you have to follow it. Actually you have similar materials, but you have to process it by their ways. Therefore imitation is easy for same level textile firms.

According to Ritter and Gemünden (2004), in the new-product development process, a range of different types of external partners (e.g., supplies, universities, research institutions, consultants and competitors) can play an important role as cooperation was identified to contribute significantly to company's innovation success.

Table 17: Results of Process Innovation of Surveyed Firms

Total Number of Surveyed Firms:41			
	Number of Responses	Percentage of Surveyed Firms (%)	Percentage of firms reported innovation (%)
Firms reported new process innovation	1	2	7
Firms reported process improvements	12	29	86

Similarly, at Table 17 indicates, out of 12 firms performing process innovation, only 1 of them reported that it made new process and 12 of them reported that they improved their processes.

In the view of this study, we distinguish the surveyed firms into three categories, namely first, second and third group. Table 18 indicates the innovative activities of these categories. As seen at the table, the first group of firms does not perform any innovative activity. None of 7 firms that belong to first group reported that they have innovative activity. Considering their size, production and innovative activity and export capacity they are far behind the other groups. Out of 24 (second group), 11 firms reported that they performed innovative activity. Considering 14 firms that reported innovative activity, 11 firms belong to second group. 11 firms that have innovative activity constitute 79 % of firms that reported innovative activity. The second group of firms constitutes the major part (27 %) of innovative capacity of surveyed firms. Therefore, the second group of firm forms the innovative dynamo of surveyed firms. 3 leader firms that are revealed by Pajek program belong to second group of firm. Out of 11, 9 firms reported that they made product innovation and 11 of them made process innovation. We can conclude that generally product and process innovator firms are the same. 8 firms (20 % of surveyed firms) for the second group reported that they have innovative activity in both product and process. In the third group the innovative activity is relatively lower than second group. Out of 10 firms (third group), 3 of them have innovative activity. It constitutes only 21 % of innovative activity of surveyed firms. 2 firms reported that they made product innovation and 1 firm reported that it made process innovation in the third group.

Table 18: Firms Categories and Innovative Capacity

Total Number of Surveyed Firms:41		
	Number of Responses	Percentage of Surveyed Firms (%)
1 th Group of Firms that innovative	0	0
1 th Group of Firms reported product innovation	0	0
1 th Group of Firms reported process innovation	0	0
1 th Group of Firms reported both product and process innovation	0	0
2 nd Group of Firms that innovative	11	27
2 nd Group of Firms reported product innovation	9	22
2 nd Group of Firms reported process innovation	11	27
2 nd Group of Firms reported both product and process innovation	8	20
3 rd Group of Firms that innovative	3	7
3 rd Group of Firms reported product innovation	2	5
3 rd Group of Firms reported process innovation	1	2
3 rd Group of Firms reported both product and process innovation	0	0

In order to understand the relationship between innovative performance and number of employees, we categorize the surveyed firms based on the number of employees and analyze their innovative performance. Arndt and Sternberg (2000) claim that, businesses pursuing cooperative efforts in innovation are typically larger and employ more R&D personnel. Although Arndt and Sternberg (2000) conclude this result by investigating high level innovative firms, our survey conclude similar results. As seen at Table 19, 50 % of innovative firms (7 firms) constitute by enterprises whose number of employee is between 100 and 250. Furthermore, enterprises whose number of employee is between 20-49 constitute 36 % of innovative firms (5 firms). Micro level enterprises whose number of employee is between 1 and 9 do not indicate any innovative activity.

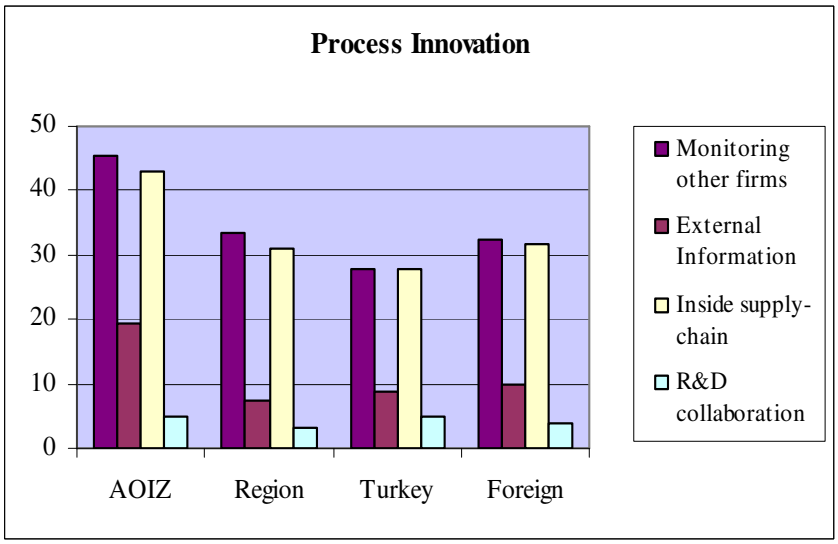
Table 19: Number of employee and innovative capacity of surveyed firms

Total Number of Surveyed Firms:41		
	Number of Responses	Percentage of firms reported process or product innovation (%)
Micro (1-9)	2	0
Small (9-19)	6	7
Small (20-49)	19	36
Medium (50-99)	4	7
Medium (100-250)	10	50

In the questionnaire, we asked to firms their degrees of inter-organizational relationships that forming their process and product innovation. Monitoring other firms is the major way of developing process and product innovation. Approximately, 40 % of surveyed firms form their innovative performance by monitoring the other firms inside AOSB. Monitoring other firms can be managed by monitoring their production process or by monitoring their products in the fairs. Establishing relationships inside the supply chain is the second common way of forming innovative performance. Supply-chain can be used in two ways. If suppliers share common values, rules and aims, it would contribute to cooperation. The customer's demand is another component that shapes the innovative activity. When we considered the textile firms categories in AOSB, the importance of supply-chain became clearer. Because, there is a strong customer-supplier relationship between firms. According to survey results, we can conclude that reaching the external information can be managed easier inside AOSB than other locations. Nearly, 20 % of innovative performance uses external information emanating from AOSB. The external information of foreign resources also constitutes higher rates than the external knowledge emanating from region or Turkey. It may indicate exporting firms established strong relationships with the foreign resources. However, the share of R&D cooperation remains relatively lower than other resources. Approximately 5 % of innovative firms use R&D cooperation in the process innovation. ([8])

[8] Similar research made by H.Tolga GÖKSİDAN in OSTIM. According to survey result external relationships contributing product and process innovation mainly emerge from relationships from Turkey and foreign.

Figure 3: Inter-organizational relationships in product-process innovation



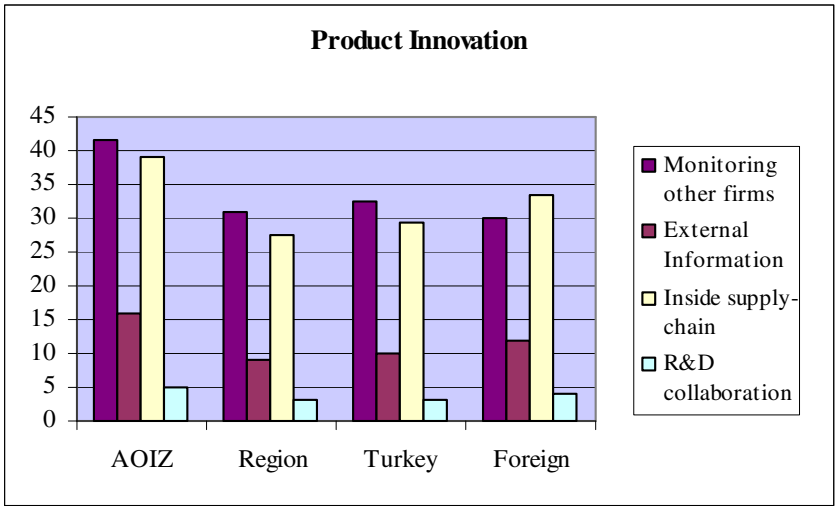


Table 20 summarizes the result of questions 24-25-26-27 in the questionnaire, we asked to firms if they have difficulties in achieving skilled labour force, or not. Moreover, we asked if they attended the training programs held by the Administration of AOSB or Chamber of Trade or Chamber of Industry. Textile industry has very considerable role in the employment, because it mostly requires labour-intensive production. According to Taymaz (2004), textile industry includes low-labour productivity and low-labour wages.

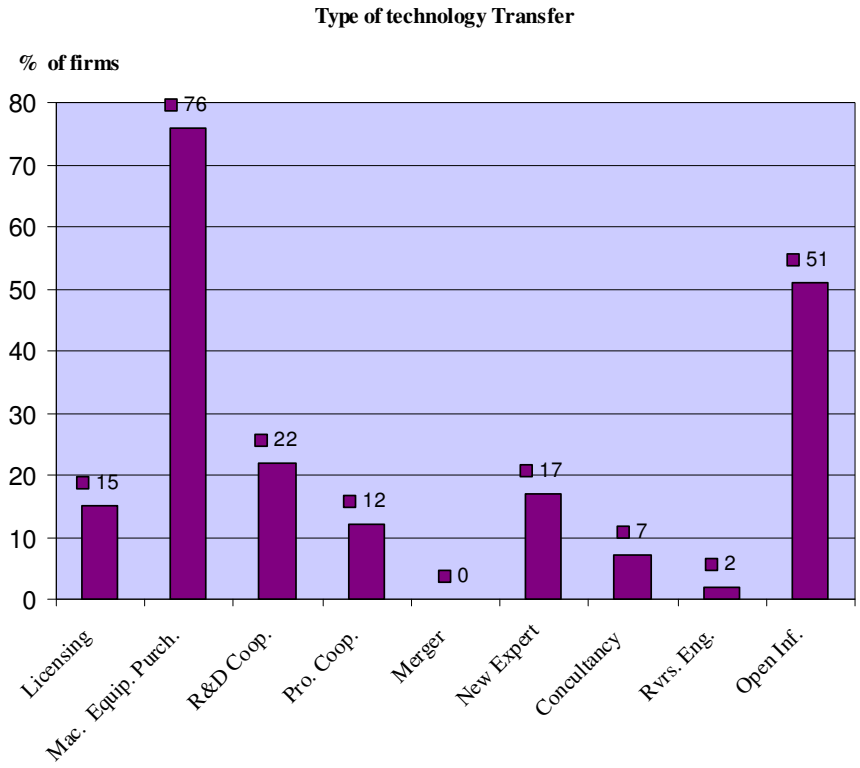
Table 20: Results of Labour Force of Surveyed Firms

Total Number of Surveyed Firms:41			
	Number of Responses	Percentage of Surveyed Firms (%)	Percentage of firms reported innovation (%)
Firms reported difficulties in achieving skilled labour force	12	29	67
Firms reported no difficulties in achieving skilled labour force	29	71	21
Firms reported attendance to training programs	14	34	36
Firms reported non attendance to training programs	27	66	33
Firms reported mobility of skilled labour force	27	66	37
Firms reported no mobility of skilled labour force	14	34	29

Therefore, results presented in the Table 20, indicates that only 29 % of surveyed firms (8 of them have innovative activity) reported they have difficulties on finding skilled-labour force. The other 71 % of surveyed firms (6 of them have innovative activity) reported that they have no difficulty in achieving skilled-labour force. 34 % of surveyed firms (5 of them have innovative activity) reported that they attend to join inter-organizational training programs, and 66 % of surveyed firms (9 of them have innovative activity) attended none of the training programs. 66 % of surveyed firms (10 of them have innovative activity) firms reported that there is mobility of skilled labour force inside and outside of AOSB. According to Arndt and Sternberg (2000), differences in the employment change are noteworthy, since regional network concepts are being increasingly discussed as new theory-led development concepts for regions. The mobility of skilled work-force creates the synergy effects which promote the innovation and strength the businesses competitiveness (Arndt and Sternberg, 2000). The labour-intensive production system is the basic characteristic of the textile industry. Therefore, there is high-level labour turnover among the firms. 67 % of innovative firms reported that they have difficulties to achieve skilled labour-force, also 37 % of innovative firms believe that there is labour mobility and only 36 % of innovative firms they encourage their labour to attend the training programs.

In the questionnaire, we asked to firms, if they made technology transfer or not. 30 firms reported that they made technology transfer by different ways. The figure indicates that which ways of technology transfer are common among the surveyed firms. Approximately 75 % of surveyed firms use the purchasing machinery and equipment for the technology transfer. Taymaz (2004) claimed that, based on the data on textile machinery imports, Turkish producers have invested heavily in the textile machinery in recent years. Open information such as: fairs, exhibitions are preferred by the surveyed firms as second widespread way of technology transfer (51 %). None of surveyed firms reported that they use mergers as a way of technology transfer.

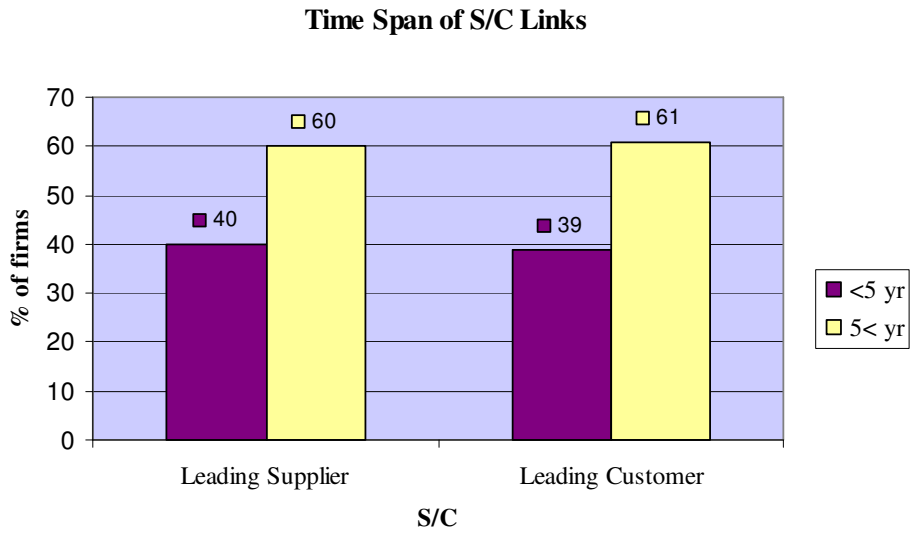
Figure 4: Type of Technology Transfer



In the questionnaire, the questions 30 and 31 are concerned with the supplier and customer relations of firms. The average time for supplier relationships is approximately 7.2 years and similarly the average time for customer relations is 7.3 years. Actually, textile industry has long history in Adana region. Considering history, the average time for suppliers and customers' relationships seems to be short. However, especially the second group of firms has significantly long-term customer and supplier relations (9.4 years); in contrary the first group of firms has relatively short-term relationship with customers and suppliers (5.1

years). There is significant difference between second and first group of firms about the time span. We can conclude that long-term relationships between customers and suppliers would facilitate the innovative activity of second group of firm. In addition, many second group of firms state that they have formal contracts with suppliers and customers, while many first group and third group of firms having informal agreements and commitments. As seen in Figure 5, 60 % of supplier relationships are longer than 5 years and 61 % of customer relationships are longer than 5 years. ([9])

Figure 5: Time Span of Suppliers/Customers Links

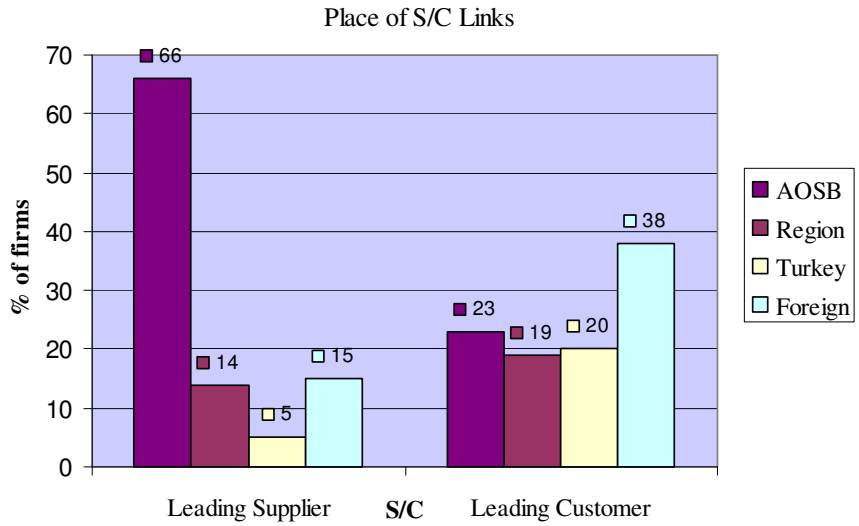


Similarly, we asked to surveyed firms where their suppliers and customers are located. According to survey results, 66 % of leading suppliers is located in the AOSB. 38 % of leading customers is located in abroad (Figure 6). During the interview with one of the officer, one competitor firm demands some package material that is urgently needed. The materials are sent as soon as possible. The officer explained the collective action in the region such as:

> We have been neighbors for years; we have to protect each other. Otherwise, the other regions may steal our reputation. Also, I am sure; when we need something they will definitely send us.

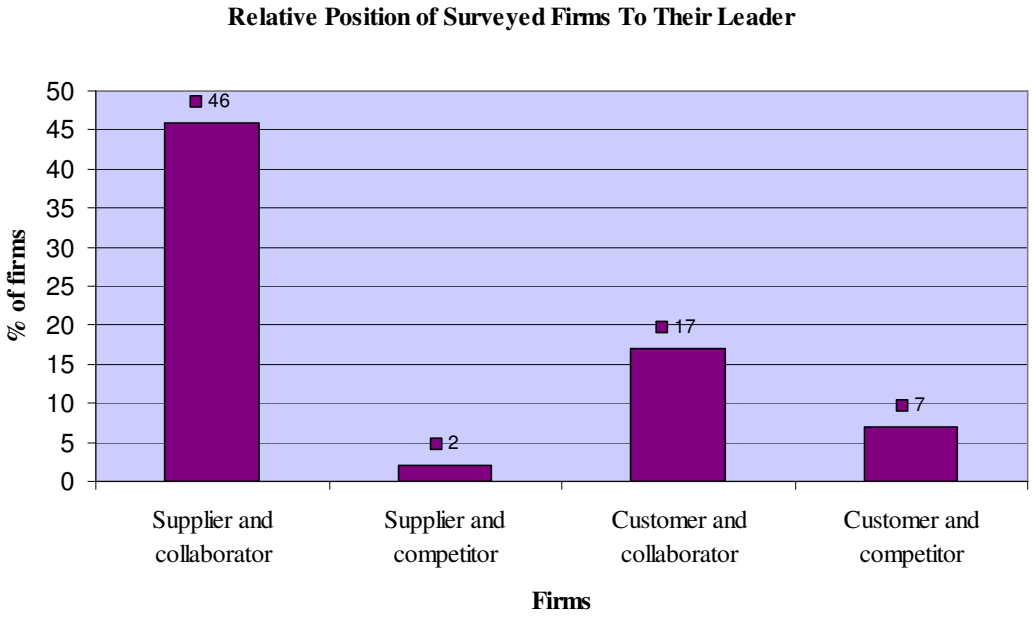
[9] In OSTIM research, average time for supplier relation is 8.4 years and 9.4 years for customers.

Figure 6: Place of Suppliers/Customers Links



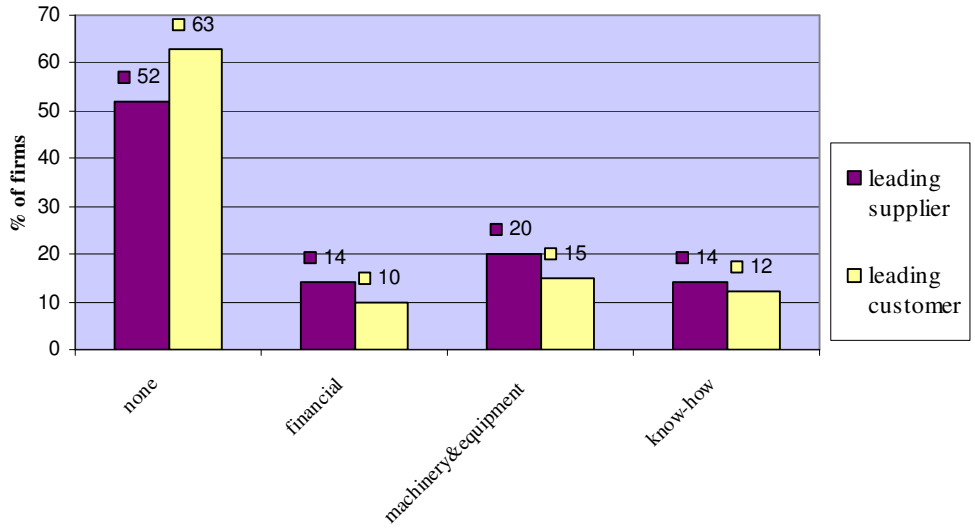
In order to analyze the inter-organizational relationships of firms with leading supplier and customers, we asked to describe their type of relationships. According to results presented by Figure 7, collaboration relationships are very common. Approximately 45 % of firms reported that their suppliers are in the same time their collaborator. 17 % of firms also reported that they have collaborating relationships with their customers. It should be emphasized that, there are strong relationships between suppliers and customers based on the trust and openness. Nearly 100 % of firms reported that their relationships are based on the orders. They do not use the formal production planning or knowledge sharing about the production plans.

Figure 7: The Relative Position of Surveyed Firms to Their Leader Firms



In order to understand cooperative or non-cooperative characteristics of firms, we asked to them what type of resources they share (financial-machinery-human resources-equipment-know-how) with their suppliers and customers. According to results only 14 % of firms share its know-how with customers and suppliers (Figure 8). Similarly financial resources are shared by only 14 % of firms. The only machinery and equipment resources are shared by 20 % of firms. ([10])

Figure 8: Shared resources type of surveyed firm



4.5.3. Leader Firms of Textile SMEs in AOSB

We also asked to firms to define at most 3 leader firms in the sector of their firms to discover the focal firms. We used Pajek program to analyze the relationships with the focal firms. According to results, 3 firms are in the center of the relationships (Figure 9). Firm 18-24 and 27 play significant role in the network relationships of AOSB.

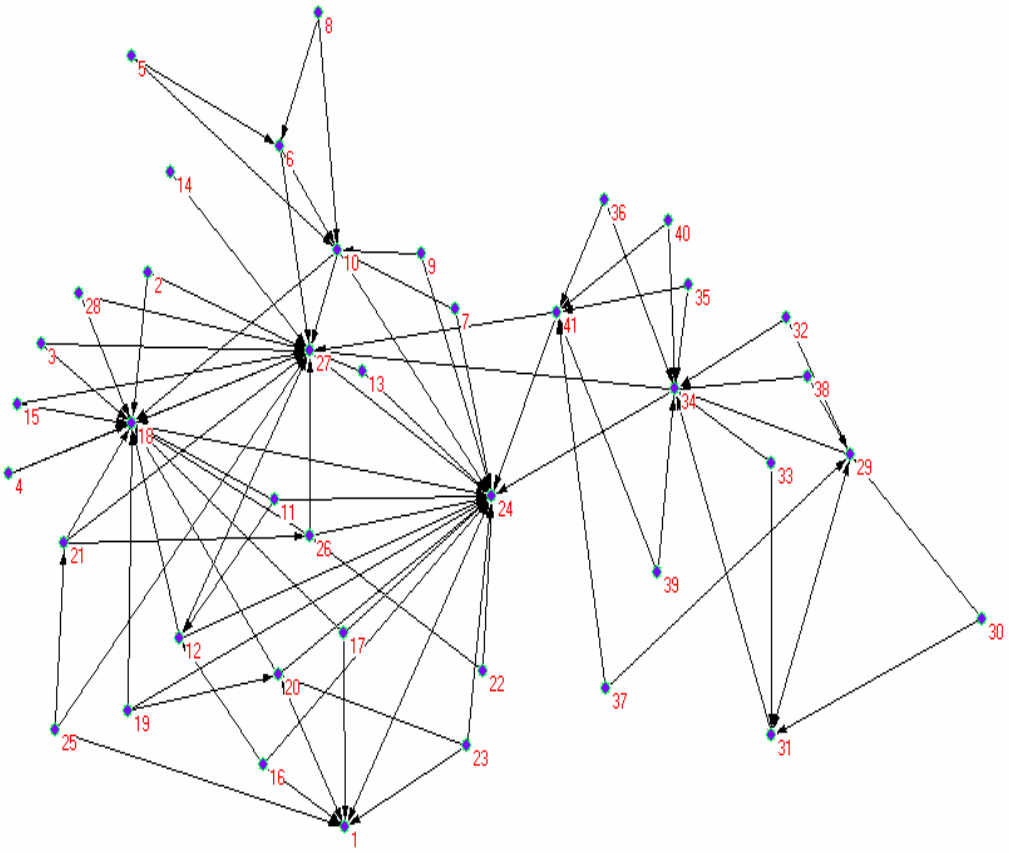
According to Granovetter (1973), the analysis of interpersonal networks of a focal firm is predicted over stronger ties involve larger time commitments, stronger sentiments of friendship, stronger feeling of similarity and therefore, a better sense of community. Saxenian (1994) claims that focal firms within industrial clusters play a leading role for the transmission of technology and knowledge. The focal firms in our research represent similar results. Firm 18 was founded in 1953. Firm 18 mainly export its products.

[10] In OSTIM research, 13 % of firm share its know-how with its supplier and 10 % of firm with their customers. 22 % of firm share financial resources with their customers and suppliers.

In fact, the $ 40 million exports to countries like U.K., Germany, Holland, Denmark, Sweden and U.S.A. account for more than 70 % of Firm 18's total sales.

Firm 18 has ISO 9001:2000 and Oeko-Tex Standard 100 certificates. Firm 24 was founded in 1983. Firm 24 is the biggest dyed firm in AOSB. The leader characteristics come from the dyed products of firm that are imported from abroad and processed in the firm. Firm 24 have also ISO 9001:2000 certificate and R&D department. Firm 27 founded in 1966. Firm 27 has cooperation with university. They execute R&D project together. One of the new product innovation activities belongs to Firm 27. According to Morosini (2004) the most innovative firm naturally becomes a leader of cluster by distributing high technology to other firms.

Figure 9: Leader firm of AOSB



In order to analyze the firm strategy we asked to firms what they plan in the long-term. In the questionnaire they choose their strategy among seven different strategies as evident from Table 21. 83 % of surveyed firms (34 firms) preferred to constitute collaboration with

other firms; meanwhile, 80 % of surveyed firms (33 firms) preferred to improve their strategic position against their competitors. 71 % of surveyed firms (29 firms) wanted to improve their strategy for global marketing. 49 % of surveyed firms (20 firms) are planning to improve concepts of new product. However, only 24 % of surveyed firms (10 firms) want to develop a long-term product planning. Only, 7 % of surveyed firms (3 firms) want to develop a strategy for skilled work force and university-industry collaboration.

When we look same indicators for the innovative firms, the rates seem to change. Innovative firms (7 firms) constitute 70 % of firms that planning to develop long-term products, 33 % of firms that want to improve a strategy against their competitors, 67 % of firms that want to develop a strategy for skilled work-force, 50 % of firms that planning to develop new product concepts, 35 % of firms that prefer to develop collaborator relationships, 34 % of firms that want to join global markets and 100 % of firms prefer to develop university-industry cooperation.

It should be emphasized that while non-innovative firms prefer to form cooperation relationships with other, the innovative firms prefer to develop cooperation relationships with university. The supporting skilled work force is also relatively low for non-innovative firms, while the innovative firms prefer to support strongly skilled work force.

Table 21: Strategy of surveyed firms

Total Number of Surveyed Firms:41			
	Number of Responses	Percentage of Surveyed Firms (%)	Percentage of firms reported innovation (%)
Firms reported firm strategy as long-term product planning	10	24	70
Firms reported firm strategy as improving strategic position against competitors	33	80	33
Firms reported firm strategy as planning for skilled workforce	3	7	67
Firms reported firm strategy as new product concepts	20	49	50
Firms reported firm strategy as cooperation and collaboration	34	83	35
Firms reported firm strategy as global marketing	29	71	34
Firms reported firm strategy as university and industry cooperation	3	7	100

In this chapter, we analyze the general structure, innovative activity and inter-firm relationships of textile SMEs in AOSB based on the questionnaire results. We can conclude that textile SMEs in AOSB carry on the textile tradition of Adana region. As Morosini (2004) mentions firms require a suitable environment to develop communication rituals. AOSB serves a suitable area of geographical concentration for the textile SMEs. They use the spatial proximity for customer and supplier relations. However, they still have difficulties resulting from the characteristic of textile sector. Only a small number of SMEs manage to integrate into global production networks and develop their exporting capacity in AOSB. These SMEs are also considered as leaders of textile sector in AOSB. Small firms follow and imitate these leader firms in terms of technological development and innovative activity. Therefore, the textile SMEs in AOSB prefer to establish cooperation relationships with their customers and suppliers. Maskell (2000) mentions that vertically linked firms generally constitute cooperation, while horizontally firms constitute competition. The textile SMEs in AOSB constitute both the vertical and horizontal links.

CHAPTER V

CONCLUSION

Over the last two decades, a large body of literature has emerged which deals with SMEs and SMEs policies for developed and developing countries. The aim of this study is not to review this extensive literature. However, we focused on indispensable role of SMEs in Turkish economy. We explained some weaknesses of SMEs in Turkey. Insufficient know-how and low level of technology, deficiency of industrial environment, insufficient management and inability to access to counseling services, inability of access to financial resources are considered as the basic weaknesses of SMEs in Turkey. The solution of these weaknesses requires long-term and comprehensive policies. Recently, in both developed and developing countries clustering of economic activity has been implemented as a comprehensive policy for SMEs. Particularly through clustering and inter-firm relationships, firms can attain a competitive advantage, which eludes isolated firms. The notion of collective efficiency results from the common rules, values and aims of the firms. Public and private sector have considerable role to enhance the collective efficiency. Active and passive effects result from the collective efficiency. The incidental externalities are accepted as passive effects and the joint action with the other economic activities accepted as active effects.

In order to constitute a comprehensive policy for SMEs, both European and developing country experiences have to be considered. More can be learnt from elsewhere in Europe and in developing countries, where public and private sector helped to bring about cooperation of firms. Therefore, many support policies has been developed and implemented for SMEs in Turkey. Authorities as well as entrepreneurs are now more conscious about the advantages and disadvantages of SMEs. There is increasing agreement that SMEs are the development components of Turkish economy. Therefore, this study and similar SMEs studies will help to constitute a comprehensive development policy for SMEs in Turkey.

The purpose of this thesis was to analyze inter-firm relationships of AOSB textile SMEs related to their innovative activity. We cannot analyze the innovative activity and inter-firm relations without considering the business and the regional environment. This process emerges bilateral dimensions. The regional environment influences the inter-firm relationships as inter-firm relationships influence the regional environment. Our understanding is limited so we investigated only small-firm inter-firm relationships and their influence to constitute the better environment for the regional development. Furthermore, regional development facilitates the better environment for the whole economy. Each region requires a special case strategy, thus specific political and economical measures for supporting innovation and regional development should be implemented in each particular region. Therefore, we not only investigate textile SMEs, but also we consider the regional environment of Adana region. AOSB was the best alternative to analyze the cluster concept for this region. While we were explaining the basic advantages of clusters, we mentioned that serving a better infrastructure for firms is the main characteristics of clusters. Therefore, we selected AOSB where firms provide infrastructure benefits in order to decrease the cost of energy and inputs provide a pool of specialized work force and decrease tax rates for exporting firms.

In AOSB, textile sector is generally composed of small and medium-sized enterprises. There are also large-sized of textile firms, but our study did not include them. Because, the aim of this study is that focus on textile SMEs and their inter-firm relationships. We also explained briefly the characteristics of textile sector. Textile sector includes various types of firms such as ginner, weavers, knitters, dyers and clothing. All types of firms are located in AOSB. In order to analyze their inter-firm relationships, we distinguished textile SMEs in AOSB into three categories. First group represents ginner firms; second group represents weaver, knitter and dyer firms; third group represents clothing firms. We examined them in detail based on their production processes, export capacity, number of employees and innovative activity. The different characteristics of these groups constitute the basic components of inter-firm relationships between them. However, all groups represent some collective characteristics of textile sector and Adana region. Their knowledge embedded in their activities represents the heritage of the Adana textile tradition. What was most relevant for this thesis was the presence of a strong cultural and historical characteristic of the textile and clothing sector.

85 % of surveyed firms reflect the traditional family-owned characteristic of SMEs in Turkey. According to results, the second generation, who has better education than

founders of enterprises, undertakes the management. The number of young managers took our attention during the interviews. The most common education level is university-degree among the young managers. They usually have duty of binding together the family-ties and professional management. Accepting the high education level of managers as an important component for innovation activity, we concluded that among the 14 firms that reported innovative activity, 9 of them have university-graduated managers. 2 of them have vocational faculty-graduated managers and 3 of them have high school graduates. 18 % of total SMEs in Turkey have university-graduated managers. 39 % of surveyed firms have university-graduated manager, which is nearly two times more than Turkish average.

A significant number of enterprises and labour-force working in the textile sector in AOSB, indicating a good degree of specialization and a critical mass of firms in a given geographical area. Although 71 % of surveyed firms reported that they have no difficulty to achieve skilled work force, 67 % of innovative firms have the problem of achieving skilled work force. Textile sector requires labour-intensive production system; however, it requires qualified work force for improving, designing and marketing their products. According to survey results, we can conclude that region has no employee problem; however the problem is achieving qualified work force. The Textile Faculty in University of Çukurova seems to be insufficient in terms of education of qualified work force. Education and training institutions should offer training according to professional standards in order to meet SMEs demand for qualified work-force; the quality of existing training programs should be upgraded and their capacity should be increased based on the changing product processes and growing market conditions. The Chamber of Industry has started to practical training courses for university students in 2004. Since then 50 students in a years have opportunity to work in a different department of textile firms. The practical training courses create the new vision for university students as well as firms. This implementation constitutes a good example for training and educational programs for SMEs coordinated by the public and private sectors. This kind of program also helps SMEs to establish the concept of human resources management system.

Based on the surveyed results, textile firms in AOSB have limited innovative capacity. Among the 41 surveyed firms 14 of them reported that they have innovative activity. Improving existing products and processes is attracting our attention, because among 14 innovative firms 12 of them reported that they improved their products or processes in 2000-2004. However, improving existing products and processes generally means for textile firm improve the quality. The rate of creating new product and process is lower than

the improving product and process. Firm 18-24 and 27 that constitute the resource for innovation are that referred by other firms as leaders of textile sector in AOSB. Because of their size, production capacity and relationships with outside the AOSB and global market, they are capable to bring the technological knowledge to AOSB. If the other firms occur within truly competitive environments they can enhance the international competitiveness by encouraging of leader firm's efficiency and innovative activities.

Only 3 firms reported that they have created new products or processes. There are only 2 firms that have patent applications. Innovation process involves high-level risk and uncertainty. Moreover, innovative process and generating new products and process requires great amount of investment and capital. One of the reasons, why SMEs are not as innovative as the large firms, is the financial problems. They also have difficulties to establish R&D departments and obtain special resources as well as specialist employees. Researchers claim that larger firms can bear the higher costs of innovation process and also they usually have R&D department with specialists. For these reasons, only second group of firms that are relatively old and have more capacity and employees conduct innovative activity. The second group of firms reported that they have been investing R&D in the last two decades. Textile firms are generally considered as low-level innovative firms. Therefore, textile SMEs in AOSB requires supports for innovative activity. In order to regain their innovation expenses they require supports for patent application. As mentioned by AOSB the application procedures and related agencies have been explaining during the AOSB and KOSGEB meetings. Firms require encouragement in the terms of patent application. Therefore, capacity for know-how transfer and consultancy should be developed. Increase in the capacities in engineering, technology transfer, R&D, design and of service producers all other related to technology should be provided. SMEs should be informed about successful SMEs activities on a national or international level also by making use of information and communication technologies. SMEs will be facilitated to benefit from the experience of successful companies.

The question is why some clusters are successful while the others not related to different reasons. Collective action, trust and sanction are some answers used by researchers to explain the differences between clusters. Therefore, we investigate the cooperation between firms and cooperation with local institutions. According to survey results, firms use the inter-firm relations to constitute the innovation activities. Monitoring other firms and supply-chain commonly used by innovative firms. The Fair of Çukurova Industry which has been hold on for three years provide a good environment for SMEs to monitor the other

firms. However, if textile firms organize a fair that related only textile sector and products, it will be more functional for them. It should be concluded that customer-supplier relationships have been developed, due to existence of integrated firms. It is quite clear that functioning dynamic regional development system can only build up over a span of years or decades. Average time of relationships is nearly 7 years for textile SMEs in AOSB. Actually, considering the historical development of textile sector in Adana, 7 years seems short. However, considering the second group of firms, which are generally integrated firms, average time of relationships increases to 9 years.

66 % of leading suppliers for textile SMEs are located inside AOSB. Medium and small-sized firms are customers of micro-sized firms. The cooperation rate with suppliers is 46 %. Therefore, we can conclude that there is a subcontracting relationship between medium-sized and micro-sized firms. Also, 83 % of surveyed firms defined their long-term strategy as contributing cooperation. Although they reported that they would like to contribute cooperation, their existing cooperation seems very low. Because, the rates of sharing resources remains very low when we consider their cooperation rate. Sharing know-how is the lowest rate in the shared resources. It should be emphasized that, although they constitute customer-supplier relationships, they do not share know-how and financial resources. This shows us that only machinery and equipment resources shared by firms.

On the other hand, establishing institutional relationships is the other dimension of cooperation. The most significant institution that has function in innovation processes of firms is ÜSAM. ÜSAM has been performing various tests for textile industry since 2003. Wearing off, breaking off, rubbing, pilling are different tests are performed in ÜSAM. Firms use the laboratory services of ÜSAM frequently. Even, four textile firms that subject to our survey are the constant members of ÜSAM and they benefit from the facilities of ÜSAM. However, to open the doors of ÜSAM to exporting firms, international accreditation required. The studies for international accreditation have been continuing. The activities and improvements in laboratory have been explaining to AOSB's firms during the annual meetings. ÜSAM has given information about R&D support, measuring in textile sector, quality control and computer-supported design. One of new product innovation is subject to our survey implemented by the help of ÜSAM. The studies to develop improved machinery for this new product have been continuing.

The studies of establishing Small Scale Industry Zone (KSS) in AOSB have been continuing. Firms are planning to provide their urgent requirements from the KSS.

Moreover, by establishing maintenance and service unit firms will be able to repair their machinery. Maintenance and service units may be the way of diffusion of machinery knowledge in the region. This helps to monitor the other firms and their production equipment by the other firms. Furthermore, establishment of Techno Park would lead the innovation dynamism of region.

49 % of surveyed firms and 70 % of innovative firms have exporting performance. Exporting firms are in the same time they perform innovative activity. Although the economic conditions are not suitable for export between 2000-2004, 49 % of surveyed firm reported that they have increased their export revenue during this period. Therefore, the ongoing innovative activity not also facilitates to overcome the affects of economic condition of Turkey, but also protect the global market opportunities for textile SMEs. Foreign buyers constitute 36 % of leading customers. Therefore, we conclude that the export performance of textile SMEs in AOSB is quite successful. However, the competitive pressure on the exporting firms is more because of their international relationships. Even though, 60 % of exporting firms have quality certificate, the quality of products and production process should be improved in order to make SMEs more competitive in international markets, while also informing them about international standards. Textile SMEs should be informed about best practices in the developed and developing countries in order to realization of successful ideas and applications as soon as possible. SMEs should be informed about project and technology management. During KOSGEB meetings, bring weaknesses of firms information about EU and 6 th Framework Program to notice of KOSBEG. Special SMEs support projects should be developed with due consideration of local potentials within the framework of regional development projects. For example, during the interview, we noticed that dyer products are the most important imported products. The region requires an effective dyer industry as a supplier industry.

According to Taymaz (2004), although Turkish textile industry has strong position against their competitors, it has to take some measures to protect its competitive position in the near future, such as adoption of new marketing strategies (developing their own brands, establishing new marketing channels, coupling their strategies with EU and US companies), specialization in niche markets, being innovative in generating and adopting new products and process. Turkey's active SMEs support policy has led to the formulation and implementation of numerous programs in recent years. Among the inspirations for and sources of these programs are the best practices and successful accomplishments of other countries. As noted above, the essential goals of these policies stem from those being

pursued for industry as a whole. Most of the studies are related to clusters in developed countries; therefore, the studies on developing countries remain limited. Finally we hope to provide an example for developing countries and their supporting programs.

In sum, Adana region constitutes a good example for cluster analyses. Because the region has history about this industry and through the time the related industry and related institutions are emerged to support the industry. Besides the agriculture, the textile industry constitutes the major economic activity of region. However, because of the traditional characteristics of the textile industry and the economic performance of region, industry requires a development policy. The presence of specialized educational structures, the Chamber of Industry, ÜSAM and other institutions indicated the presence of a multiplicity of actors in the region and some level of cooperation and competition relationships was observed. However, in AOSB, entrepreneurs' awareness of being part of an integrated system, as it is in a cluster, seemed very weak. AOSB's entrepreneurs were lacking the "cooperative" element of clusters. Weakness in innovative performance results from the characteristic of textile sector and the absence of a significant innovation dynamic within the firms in AOSB. Therefore, they experience fundamental problems to expand their market, keep their competitive edge, and create well-being and jobs. A cluster where innovation dynamics are not fully developed cannot be defined as a competitive cluster.

Summarizing, two main aspects were lacking in AOSB that could be described as potential or embryonic textile cluster: on one hand, more cooperation among entrepreneurs is needed, and on the other hand, the firms would need higher innovation services to gain competitiveness.

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2005 / 25997 Oficial Journal "Küçük ve Orta Büyüklükteki İşletmelerin Tanımı, Nitelikleri ve Sınıflandırılması Hakkında Yönetmelik"

APPENDICES

APPENDIX A

TECHNOLOGICAL INNOVATION AND INTER-ORGANIZATIONAL RELATIONS SURVEY

Survey Number:

Survey Date:

Surveyer:

Surveyed Name-Surname:

Position:

Phone Number:

I. ABOUT THE FIRM

In this section, we ask for general information about the firm.

1. **Name of firm?**

2. **Year of establishment?**

3. How would you classify your firm**?** Please mark only one)

1. [ ] Family business
2. [ ] Foreign partners
3. [ ] Others (Please explain)

4. What are the educational information and task of administrative personals (managers) in your firm?

Education	Tasks

5. Does your firm belong to any firm group?

1. [ ] Yes
2. [ ] No

6. Please define your firm's capital stock distribution.

Regional (Adana and neighbor cities)

National

Foreign

Other

7. Did you export in years **2000-2004**?

1. [ ] Yes

2. [ ] No Please go to question 9

8. How did the export incomes affect the net sales revenue of your firm?

1. [ ] Increased %

2. [ ] Decreased %

3. [ ] Not changed

9. How many people are working in your firm?

10. Do you have any qualification of global or national quality assurance? (ISO, TSE)

1. [ ] Yes

2. [ ] No Please go to question 12

11. Which quality assurance?

National _____

Global _____

12. Please define your firm main products and product group?

P1.

P2.

P3.

13. Please define leader firms in AOSB as in the same sector of your firm. (first three firms)

F1.

F2.

F3.

13a.In the table below please, mark your relative position to these leader firms.

	Seller	Buyer	Imported competitor	Imported cooperation	Same firm group
F1					
F2					
F3					

14. Please define leader firms outside AOSB as in the same sector of your firm. (one for each)

Regional (Adana and neighbor cities)

National

Foreign

II. TECHNOLOGICAL INNOVATION

In this section we ask for your firm's product and process innovation activities.

15. Did your firm make any considerable improvements over the existing products during the period 2000-2004? (product innovation)

1. [ ] Yes
2. [ ] No ⟶ Please go to question 16.

15a. Which products?

IP1.

IP2.

16. Did your firm develop any new product in the name of technological character and/or its usage during the period 2000-2004? (product innovation)

1. [ ] Yes
2. [ ] No ⟶ Please go to question 17.

16a. Which products?

NP1.

NP2.

17. Did your firm make any considerable improvements over its existing production processes during the period 2000-2004? (process innovation)

1. [ ] Yes
2. [ ] No ⟶ Please go to question 18.

17a. Which processes?

IP1.

IP2.

18. Did your firm adopted any new production process during the period 2000-2004? (process innovation)

1. [ ] Yes
2. [ ] No ⟶ Please, go to question 19.

18a. Which processes?

NP1.

NP2.

19. Did your firm adopt such process innovation to make any considerable improvements over the existing products?

1. [ ] Yes
2. [ ] No ⟶ Please go to question 20.

19a. Please, mark any contribution for your process innovation activities over the improvements of your existing products in the table below? (0 =none, 1= few, 2= very)

	Improved product 1	**Improved product 2**
Improved process 1		
Improved process 2		
New process 1		
New process 2		

20. Did your firm adopt such process innovations to develop ant new product?

1. [ ] Yes
2. [ ] No ⟶ Please go to question 21.

20a. Please, mark any contribution of your process innovation activities over the development of new products (0 = none, 1= few, 2= very)

	New product 1	**New product 2**
Improved process 1		
Improved process 2		
New process 1		
New process 2		

21. Have you ever used any financial credit or support for the innovations as inclined at above?

1. [ ] Yes
2. [ ] No ⟶

22. Have you applied for any patent request?

1. [ ] Yes
2. [ ] No ⟶ Please, go to question 23.

22a. If so, in which countries?

National

International

23. Have you ever transferred technologies during the period 2000-2004?

1. [ ] Yes
2. [ ] No ⟶ Please, go to question 24.

23a. Which methods did you use to transfer technology? (please, mark according to their importance rankings, started with 1 to 5 as the most important)

[ ] Obtaining the license

[ ] Purchasing machinery and equipment

[ ] Cooperation for R&D

[ ] Cooperation for production

[ ] Firm mergers

[ ] Employment of new expertise

[ ] Counseling service

[ ] Reverse engineering

[ ] Open information sources (fair, exhibition, print-out etc.)

[ ] Other

24. Do you compel to find qualified labour?

1. [ ] Yes

2. [ ] No

25. Do you attend to join any inter-firm training programs?

1. [ ] Yes

2. [ ] No ⟶ Please, go to question 26.

25a. Attended training course

1. [ ] Inside AOSB

2. [ ] Outside AOSB

26. Do you suspect frequent movement of qualified labour in your sector (Do you frequently observe any job alterations between firms?)

1. [ ] Yes

2. [ ] No ⟶ Please, go to question 27.

26a. What kind of movement is that?

1. [ ] Inside AOSB

2. [ ] Outside AOSB

III. INTER-ORGANIZATIONAL RELATIONS REGARDING PRODUCT AND PROCESS INNOVATION

In this section we ask for your firm's product and process innovation activities regarding the inter-organizational relationships.

27. Please, mark your degrees of firm inter-organizational relationships contributing the product innovation (0 = none, 1= few, 2= very)

	Monitoring other firms	External knowledge	Supply chain	R&D cooperation	Other
Inside AOSB					
Inside region					
Inside Turkey					
Outside Turkey					

Monitoring other firms: the innovation process beginning with monitoring other firms' activities (acquiring the idea-imitation)

External Knowledge: the innovation process beginning with accessing external knowledge.

Supply chain: the innovation process beginning with inter-organizational relationships between supplier-buyer

R&D cooperation: R&D with other cooperation.

Please, explain other.

28. Please, mark your degrees of firm inter-organizational relationships contributing the process innovation (0 = none, 1= few, 2= very)

	Monitoring other firms	External knowledge	Supply chain	R&D cooperation	Other
Inside AOSB					
Inside region					
Inside Turkey					
Outside Turkey					

Monitoring other firms: the innovation process beginning with monitoring other firms' activities (acquiring the idea-imitation)

External Knowledge: the innovation process beginning with accessing external knowledge.

Supply chain: the innovation process beginning with inter-organizational relationships between supplier-buyer

R&D cooperation: R&D with other cooperation.

Please, explain other.

IV. INTER-ORGANIZATIONAL RELATIONS

In this section, we ask for your firm's relations.

29. Please, define 3 main suppliers of your firm.

S1.

S2.

S3.

29a. Please, write some basic information about these suppliers.

	Place	Sector	Years of relation	Resource type	Type of relation
S1					
S2					
S3					

Place: A=AOSB, B=Region, T=Turkey, Y=Foreign

Sector: ISIC code of the supplier

Resource type: resource usage relations between firm and supplier 1= financial, 2= machinery-equipment, 3= human source, 4= know-how

Type of relation**:** 1=order based, 2= knowledge sharing about production plan, 3= cooperate production plan

30. Please, define 3 main customer of your firm.

C1.

C2.

SC3.

30a. Please, write some basic information about these customers.

	Place	Sector	Years of relation	Resource type	Type of relation
C1					
C2					
C3					

31. Please, mark your degrees of firm inter-organizational relationships contributing the internal and external knowledge resources (0 = none, 1= few, 2= very)

	Other firms	Support institutions	Knowledge producers	Information suppliers	Other
Inside AOSB					
Inside region					
Inside Turkey					
Outside Turkey					

Other firms**:** Suppliers, customers, competitors, group of firm, collaborators etc.

Support institutions: Counseling institutions, profession institutions, laboratories, training institutions etc.

Knowledge producers**:** Universities, R&D departments etc.

Information suppliers**:** technical and tradable knowledge suppliers, fairs, exhibitions, publications etc.

Please, explain if "other".

32. Please, mark the ones from the list regarding your firm's strategy.

[ ] Long term production planning (3 years and more)

[ ] Firm's strategic position against the competitors

[ ] Planning for skilled labour

[ ] New production methods and concepts

[ ] Cooperation and collaboration

[ ] Global marketing

[ ] University-industry cooperation.

APPENDIX B

TEKNOLOJİK YENİLİK VE FİRMALAR-ARASI İLİŞKİ ANKETİ

Anket no:

Anketin Doldurulduğu Tarih:

Anketör:

Yanıtlayanın Adı Soyadı:

Görevi:

Tel No:

I. FİRMA

Bu bölümde firmanıza ait genel bilgiler sorulmaktadır.

1. **Firmanın Adı?**

2. **Firmanın kuruluş yılı?**

3. **Firmanızı nasıl sınıflandırırsınız?** (Yalnız bir kutu işaretleyiniz)

4. [ ] Aile
5. [ ] Yabancı ortaklı
6. [ ] Diğer (Açıklayınız)

4. Firma **üst yönetiminin eğitim durumları ve görevleri** nelerdir?

Eğitim Durumu	Görevleri

5. İşyeriniz **belli bir firma grubuna** ait mi?

1. [ ] Evet
2. [ ] Hayır

6. Firmanızın **sermaye dağılımını** belirtiniz.

Bölgesel (Adana ve komşu iller)

Ulusal

Yabancı

Diğer

7. **2000-2004** yıllarında **ihracat** yaptınız mı ?

1. [ ] Evet
2. [ ] Hayır ⟶ Soru 9 ‘a geçiniz.

8. İhracattan son beş yıl içinde elde ettiğiniz **gelirin satış hasılatı içindeki payı** nasıl değişti?

1. [ ] Arttı %
2. [ ] Azaldı %
3. [ ] Değişmedi

9. Firmanızda tahminen **kaç kişi** çalışmaktadır?

10. Yurtiçi veya yurtdışı **kalite belgeniz** var mı? (ISO, TSE vb.)

1. [ ] Evet
2. [ ] Hayır ⟶ Soru12 'a geçiniz.

11. Hangi kalite belgeleri?

Yurtiçi _____

Yurtdışı _____

12. Firmanızın **ana ürünü/ürünleri** nelerdir?

Ü1.

Ü2.

Ü3.

13. Bulunduğunuz sektörün Adana Organize Sanayi Bölgesindeki **lider firmalarını** belirtiniz. (ilk üç firma)

F1.

F2.

F3.

13a. **Bu firmalara göre kendi konumunuzu** aşağıdaki tabloda işaretleyiniz.

	Satıcı	Alıcı	Önemli Rakip	Önemli İşbirliği	Aynı Firma Grubu
F1					
F2					
F3					

14. Bulunduğunuz sektörün Adana Organize Sanayi Bölgesi **dışındaki lider firmalarını** belirtiniz

Bölgesel (Adana ve komşu iller)

Ulusal

Yabancı

II.TEKNOLOJİK YENİLİK

Bu bölümde firmanızın gerçekleştirdiği ürün ve proses yenilikleri sorulmaktadır.

15. Firmanız 2000-2004 döneminde **mevcut ürünleri** önemli düzeyde iyileştirdi mi? (ürün yeniliği)

1. [ ] Evet
2. [ ] Hayır ⟶ Soru16 'a geçiniz.

15a. Hangi ürün/ürünleri ?

İÜ1.

İÜ2.

16. Firmanız 2000-2004 döneminde **teknolojik karakteri ve kullanım açısından yeni ürün** geliştirdi mi?

1. [ ] Evet
2. [ ] Hayır ⟶ Soru17 'a geçiniz.

16a. Hangi ürünler?

YÜ1.

YÜ2.

17. Firmanız 2000-2004 döneminde **mevcut üretim yöntemlerinde (proseslerinde)** önemli düzeyde iyileştirme yaptı mı? (proses yeniliği)

1. [ ] Evet
2. [ ] Hayır ⟶ Soru18'a geçiniz.

17a. Hangi prosesler? (önem sırasına göre)

İP1.

İP2.

18. Firmanız 2000-2004 döneminde firma için **yeni üretim yöntemi (prosesi)** edindi mi?

1. [ ] Evet
2. [ ] Hayır ⟶ Soru19 'a geçiniz.

18a. Hangi prosesler? (önem sırasına göre)

YP1.

YP2.

19. Firmanız **proses yeniliklerinden herhangi birini ürün iyileştirilmesi** amacıyla yaptı mı?

1. [ ] Evet
2. [ ] Hayır ⟶ Soru 20 'a geçiniz.

19a. Yaptığınız proses yeniliklerinin yaptığınız **ürün iyileştirmelerine** olan katkısını aşağıdaki tabloda işaretleyiniz. (0 = yok, 1= az, 2= çok)

	İYİLEŞMİŞ ÜRÜN 1	İYİLEŞMİŞ ÜRÜN 2
İYİLEŞMİŞ PROSES1		
İYİLEŞMİŞ PROSES2		
YENİ PROSES1		
YENİ PROSES2		

20. Firmanız **proses yeniliklerinden herhangi birini yeni ürün** amacı ile yaptı mı?

1. [ ] Evet
2. [ ] Hayır ⟶ Soru 21 'a geçiniz.

20a. Yaptığınız proses yeniliklerinin çıkardığınız **yeni ürünlere** olan katkısını aşağıdaki tabloda işaretleyiniz. (0 = yok, 1= az, 2= çok)

	YENİ ÜRÜN 1	YENİ ÜRÜN 2
İYİLEŞMİŞ PROSES 1		
İYİLEŞMİŞ PROSES 2		
YENİ PROSES 1		
YENİ PROSES 2		

21. Yukarıda bahsedilen yeniliklerin finansmanı için kredi ya da mali destek kullandınız mı?

1. [ ] Evet
2. [ ] Hayır

22. İşyeriniz patent başvurusunda bulun mu?

1. [ ] Evet
2. [ ] Hayır ⟶ Soru 23 'a geçiniz.

22a. Hangi ülkelere başvuru yapıldı?

Yurtiçi

Yurtdışı

23. 2000-2004 döneminde firma dışından sizin için önemli saydığınız **teknoloji transferi** yaptınız mı?

1. [ ] Evet
2. [ ] Hayır ⟶ Soru 24 'a geçiniz.

23. Teknoloji transferini hangi yöntemlerle gerçekleştirdiniz.(önemine göre 1'den 5'e kadar numara vererek sıralayabilir misiniz ?)

[ ] Lisans alımı

[ ] Makine ve teçhizat alımı

[ ] Ar-Ge için işbirliği

[ ] Üretim için işbirliği

[ ] Firma birleştirmesi

[ ] Yeni uzman istihdamı

[ ] Danışmanlık hizmetleri

[ ] Tersine mühendislik

[ ] Açık bilgi kaynakları (fuar, sergi, yayın vb.)

[ ] Diğer

24. Nitelikli işgücü bulmakta güçlük yaşıyor musunuz?

1. [ ] Evet

2. [ ] Hayır

25. Firmalar arası ortak eğitim programlarına katılıyor musunuz?

1. [ ] Evet

2. [ ] Hayır ⟶ Soru 26 'a geçiniz.

26. Katıldığınız eğitim programları

1. [ ] Adana Organize Bölgesi içi

2. [ ] Adana Organize Bölgesi dışı

26. Sektörünüzde nitelikli işgücü hareketliliği olduğunu düşünüyor musunuz? (Firmalar arası iş değiştirmeler sıkça yaşanıyor mu?)

1. [ ] Evet

2. [ ] Hayır ⟶ Soru 27 'a geçiniz.

26a. Ne tür hareketlilik gözleniyor?

1. [ ] Adana Organize Bölgesi içi

2. [ ] Adana Organize Bölgesi dışı

III. TEKNOLOJİK YENİLİK İÇİN DİĞER KURULUŞLARLA OLAN İLİŞKİLER

Bu bölümde firmanız ürün ve proses yeniliği yaparken yararlandığı firma dışı ilişkiler sorulmaktadır.

27. Firmanızın **ürün yeniliklerine** katkıda bulunan dış ilişkilerini önem derecesine göre aşağıdaki tabloda işaretleyiniz. (0 = yok, 1= az, 2= orta, 3= çok)

	Diğer Firmaları izleme	Dış Bilgiye Erişim	Tedarik Zinciri içinde	Ar-Ge İşbirliği	Diğer
AOSB içinden					
Bölge içinden					
Türkiye içinden					
Türkiye dışından					

İzleme : Diğer firmaların çıkardığı yenilikleri görerek **fikir edinme ve taklit ile başlayan yenilik süreci**.

Dış bilgiye erişim: Firma dışı bilgi kaynaklarını kullanarak öğrenme ve yetenek geliştirme ile başlayan yenilik süreci.

Tedarik zinciri içinde: Firmanın yer aldığı tedarik zinciri içinde **satıcılardan veya alıcılardan etkilenerek** başlayan yenilik süreci.

Ar-Ge işbirliği: Başka kuruluşlarla yapılan **ortak Ar-Ge faaliyetleri** ile başlayan yenilik süreci.

Diğer seçeneği işaretlendiyse açıklayın.

28. Firmanızın **proses yeniliklerine** katkıda bulunan dış ilişkilerini önem derecesine göre aşağıdaki tabloda işaretleyiniz. (0 = yok, 1= az, 2= orta, 3= çok)

	Diğer Firmaları izleme	Dış Bilgiye Erişim	Tedarik Zinciri içinde	Ar-Ge İşbirliği	Diğer
AOSB içinden					
Bölge içinden					
Türkiye içinden					
Türkiye dışından					

IV. ÜRETİM İÇİN DİĞER KURULUŞLARLA OLAN İLİŞKİLERİ

Bu bölümde, firmanızın ana üretim faaliyetlerinin sürdürülmesinde etkin olan firma dışı ilişkiler sorulmaktadır.

29. Firmanızın ana üretim faaliyetleri çerçevesinde **yoğun iş yaptığı üç tedarikçi** firmayı belirtiniz.

T1.

T2.

T3.

29a. Bu tedarikçi firmalar hakkındaki bilgileri aşağıdaki tabloda gösteriniz.

	Yeri	Sektörü	İlişki Süresi (yıl)	Kaynak Kullandırma	İlişki Tipi
T1					
T2					
T3					

Yeri: A=AOSB, B=Bölge, T=Türkiye, Y=Yabancı

Sektörü: Tedarikçi firma sektörü

Kaynak Kullandırma: Firma ile tedarikçinin ortak kullanımına tahsis ettikleri kaynaklar 1= mali, 2= makine-teçhizat, 3= insan, 4= bilgi

İlişki Tipi: 1=sipariş tabanlı, 2= üretim planından haberdar etme, 3=ortak üretim planlaması

30. Firmanızın ana üretim faaliyetleri çerçevesinde **yoğun iş yaptığı üç müşteri** firmayı belirtiniz.

M1.

M2.

M3.

30a. Bu müşteri firmalar hakkındaki bilgileri aşağıdaki tabloda gösteriniz.

	Yeri	Sektörü	İlişki Süresi (yıl)	Kaynak Kullandırma	İlişki Tipi
M1					
M2					
M3					

31. Firmanızın ana üretim faaliyetleri çerçevesinde yararlandığı önemli **dış bilgi ve beceri kaynaklarını** önem derecesine göre belirtiniz. (1=az, 2=orta,3=çok)

	Diğer Firmalar	Destek Kuruluşları	Bilgi Üreticileri	Enformasyon Sağlayıcılar	Diğer
AOSB içinden					
Bölge İçinden					
Türkiye içinden					
Türkiye dışından					

Diğer firmalar: Tedarikçiler, müşteriler, rakipler, firma grubu, işbirliği yapılanlar vb.

Destek kuruluşları: Danışmanlık kuruluşları, meslek kuruluşları, meslek eğitimi verenler, denetleme hizmeti verenler, laboratuarlar vb.

Bilgi üreticileri: Üniversiteler, bağımsız Ar-Ge kuruluşları,sözleşmeli araştırmacılar vb.

Enformasyon sağlayıcılar: Teknik ve ticari bilgi sağlayanlar, mevzuat, işgücü, program, destek araçları vb. bilgisi sağlayanlar, fuarlar, sergiler ve yayınlar.

Diğer seçeneği işaretlendiyse açıklayınız.

32. Firmanızın iş stratejisi içinde aşağıdaki unsurlardan yer alanları işaretleyin.

[ ] Uzun dönemli (3 yıl ve daha üstü) yeni ürün planlaması

[ ] Rakiplere göre firmanın stratejik konumunun güçlendirilmesi

[ ] Nitelikli işgücü planlaması

[ ] Yeni üretim konseptleri

[ ] İşbirlikleri ve ortaklıklar arasında yer alma

[ ] Dünya pazarlarına açılma

[ ] Üniversite-sanayi işbirliği