

D.T. YUNSEL

AGGLOMERATION AS INNOVATION DYNAMICS: A CASE STUDY IN  
ADANA AND MERSİN

D L AD TÜRTÜK YÜNSEL

METU  
2010

MAY 2010

AGGLOMERATION AS INNOVATION DYNAMICS: A CASE STUDY IN  
ADANA AND MERSİN

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

BY

D L AD TÜRTÜK YÜNSEL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR  
THE DEGREE OF MASTER OF SCIENCE  
IN  
THE DEPARTMENT OF ECONOMICS

MAY 2010

Approval of the Graduate School of Social Sciences

---

Prof.Dr. Sencer AYATA  
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

---

Prof.Dr. Erol TAYMAZ  
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science of Economics.

---

Prof.Dr. Erol TAYMAZ  
Supervisor

**Examining Committee Members**

Prof.Dr. Erol TAYMAZ (METU,ECON) \_\_\_\_\_

Assoc.Prof.Dr. Elif AKBOSTANCI (METU,ECON) \_\_\_\_\_

Assoc.Prof.Dr. Teoman PAMUKÇU (METU,STPS) \_\_\_\_\_

**I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.**

**Name, Last name :** Dil ad TÜRTÜK YÜNSEL

**Signature :**

## **ABSTRACT**

### **AGGLOMERATION AS INNOVATION DYNAMICS: A CASE STUDY IN ADANA AND MERSIN**

Türtük-Yünsel, Dil ad

M.S., Economics

Supervisor: Prof.Dr.Erol Taymaz

May, 2010, 97 pages

In the last decades, the globalisation process has reshaped the competition dynamics in two ways: Technology and innovation have become significant components of productivity and competition; and policies taking into consideration local resources and local production systems, gains ground. In that context, clusters appear as new organisations of production. This thesis aims at assessing the innovation performance of the firms and the factors affecting their performance by comparing agglomerated and non-agglomerated firms in the TR62 (Adana, Mersin) Region. Adana Organised Industrial Zone (AOSB) and Mersin-Tarsus Organised Industrial Zone (MTOSB) are selected as agglomeration examples in the region to study the effects of spatial proximity on innovativeness. It is found that local specific policies such as the establishment of an integrated system for cooperation and competition are needed to improve the innovation and competition capacity of the region.

Key Words: Innovation, agglomeration, competition

## ÖZ

NOVASYON D NAM KLER OLARAK YI IN: ADANA MERS N ÇALI MASI

Türtük-Yünsel, Dil ad

Yüksek Lisans,Ekonomi

Tez Yöneticisi: Prof.Dr.Erol Taymaz

Mayıs, 2010, 97 sayfa

Son yıllarda, globalleşme süreci rekabet dinamiklerini iki yönden yeniden şekillendirmektedir: Teknoloji ve inovasyon, verimlilik ve rekabetin önemli bileşenleri haline gelmektedir; ve yerel kaynakları ve üretim sistemlerini dikkate alan politikaların önemi artmaktadır. Bu çerçevede, kümeler üretim organizasyonlarının yeni üyesi olarak gözükmektedir. Bu tez, firmaların inovasyon performanslarını ve performanslarını etkileyen faktörleri, TR62 (Adana, Mersin) Bölgesi'nde 2007 yılında bulunan ve bulunmayan firmaları karşılaştırarak değerlendirilmeyi hedeflemektedir. Coğrafî yakınlığın inovatiflik üzerindeki etkilerini araştırmak için bölgede 2007 yılı örnekleri olarak Adana Organize Sanayi Bölgesi (AOSB) ve Mersin-Tarsus Organize Sanayi Bölgesi (MTOSB) seçilmiştir. Bölgenin inovasyon ve rekabet yeteneğinin gelişmesinde işbirliği ve yenilik için entegre sistemlerin kurulması gibi yerel özel politikalara ihtiyaç duyulduğunu ortaya kondu.

Anahtar kelimeler: novasyon, 2007 yılı, rekabet

to My Family

## ACKNOWLEDGEMENT

I would like to express my thanks and gratitude to my supervisor Prof.Dr. Erol Taymaz for his guidance, patience, advice and criticism throughout the research.

I also express my thanks to the jury members Assoc.Prof.Dr. Elif Akbostancı and Assoc.Prof.Dr. Teoman Pamukçu for their critical reading of the thesis.

I would like to thank my friends from Çukurova Development Agency for their kind support and help. In particular, a big thank goes to Ceren Topcu and Baran Türkmen for their valuable suggestions.

Special thanks go to my parents, Emine and Arif Türtük, for their endless love and thrust all through my education and life, and to my sister, Ceylan Türtük, for her generous encouragement and support.

Last but not least, heartfelt thanks go to my husband Tayfun Yusuf Yünsel for his patience, support and understanding. It has been a great pleasure to have creative discussions with him during the study.



## TABLE OF CONTENTS

PLAGIARISM.....	iii
ABSTRACT.....	iv
ÖZ.....	v
DEDICATION.....	vi
ACKNOWLEDGMENTS.....	vii
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	x
LIST OF FIGURES.....	xi
LIST OF ABBREVIATIONS.....	xii
 <b>CHAPTER</b>	
1. INTRODUCTION.....	1
1.1. The Context and Aim of the Thesis.....	1
1.2. Scope of the Thesis.....	2
1.3. Content of the Thesis.....	3
2. AN OVERVIEW OF KNOWLEDGE ECONOMY, AGGLOMERATION, AND INNOVATION.....	4
2.1. Knowledge Economy.....	4
2.3. Innovation and Innovation Economy.....	6
2.3. Agglomeration, Scale Economies and Clusters.....	8
2.3.1. Clusters and Competition.....	14
2.3.1.1. Clusters and Productivity.....	14
2.3.1.2. Clusters and New Business Formation.....	15
2.3.1.3. Clusters and Innovation.....	15
2.3.2. Clusters, Location and Economic Development.....	15
2.4. Competitiveness, Productivity and Innovation.....	16
3. AN OVERVIEW OF TR62 (Adana, Mersin) REGION.....	20
3.1. NUTS.....	21
3.2. Main Economic Indicators of the Region.....	22
3.2.1. Gross Domestic Product of the Region.....	23

3.2.2. Labour Force and Employment.....	24
3.2.3. Manufacturing Industry of the Region .....	26
3.2.4. Foreign Trade of the Region .....	30
3.3. Economic Infrastructure of the Region .....	33
3.3.1. Organised Industrial Zones and Industrial Zones .....	33
3.3.2. FTZs.....	36
3.3.3. Ports .....	37
3.3.4. Technoparks .....	37
3.4. Socio-economic Development Rate of the Region.....	39
3.5. Innovation Capability of the Region .....	42
3.5.1. RIS-Mersin.....	42
3.5.2. Indicators of innovation: Patent, Utility Model and Industrial Design ....	44
3.6. General Evaluation.....	49
4. AGGLOMERATIONS AS INNOVATION DYNAMICS:	
A CASE STUDY ON THE TR62 (Adana, Mersin) REGION.....	50
4.1. Method and Data.....	51
4.2. Hypothesis of the Research .....	52
4.3. Analysis and Results .....	53
4.4. General Evaluation .....	6973
5. CONCLUSION.....	73
<b>REFERENCES.....</b>	<b>75</b>
APPENDICES.....	80
APPENDIX A.....	80
APPENDIX B.....	88
APPENDIX C.....	96

## LIST OF TABLES

### TABLES

Table 1: Summarized alternative approaches to the knowledge-based economy .....	5
Table 2: A dozen economies of scale .....	10
Table 3: GDP Per Capita of NUTS2 Regions .....	23
Table 4: Unemployment Rate of NUTS2 Regions .....	25
Table 5: Prominent Sectors of Adana in terms of local unit and employment .....	28
Table 6: Prominent Sectors of Mersin in terms of local units and employment .....	28
Table 7: Prominent sectors of export in Adana between 2002 and 2007 .....	31
Table 8: Prominent sectors of export in Mersin between 2002 and 2007.....	32
Table 9: Sector distribution of companies in production.....	34
Table 10: Sector distribution of companies in production.....	36
Table 11: Competitive analysis of the regional patent applications .....	46
Table 12: Competitive analysis of the regional utility model applications.....	47
Table 13: Competitive analysis of the regional industrial design applications.....	48
Table 14: Advantages of cooperation .....	56
Table 15: Product and Process Innovation.....	58
Table 16: Effects of innovation on the firm .....	59
Table 17: Bottlenecks of innovation.....	60
Table 18: Distribution of successful and unsuccessful firms according to innovation and improvement achievement .....	61
Table 19: Cross analysis of firms' innovation and improvement achievement .....	63
Table 20: Market share of firms which do not export .....	66
Table 21: Supplier and customer relations of the most innovative firms .....	66
Table 22: Supplier and customer relations of more innovative firms.....	67
Table 23: Supplier and customer relations of innovative firms .....	67
Table 24: Supplier and customer relations of non- innovative firms .....	67
Table 25: Indicators of the firms managed by primary school graduates.....	69

## LIST OF FIGURES

### FIGURES

Figure 1: Porter's Diamond Model (1990).....	17
Figure 1: The location of TR62 (Adana, Mersin) Region.....	20
Figure 3: Gross Domestic Product of the Region.....	23
Figure 4: National and regional labour force participation and unemployment rate..	25
Figure 5: Economic activity of employment.....	26
Figure 6: Distribution of local units by sectors (Adana, Mersin).....	27
Figure 7: Distribution of regional export and import according to provinces .....	30
Figure 8: Ranking of the provinces (first 30 provinces) .....	41
Figure 9: Ranking of the provinces (first 30 provinces) .....	41
Figure 10: Distribution of industrial design, utility model and patent applications of the region .....	44
Figure 11: Patent applications of the region.....	45
Figure 12: Utility model applications of the region.....	46
Figure 13: Industrial design applications of the region .....	48
Figure 14: Distribution of firms according to location and sector .....	53
Figure 15: Structure of the firms .....	54
Figure 16: Source of capital .....	54
Figure 17: Education of managers.....	55
Figure 18: Export performance of firms in last three years .....	55
Figure 19: Cooperation status of firms .....	56
Figure 20: Status of R&D Department .....	57
Figure 21: Method of monitoring technological developments .....	57
Figure 22: Funding of Innovation.....	59
Figure 23: Innovation and improvement status according to the location.....	63
Figure 24: Local distribution of successful and unsuccessful firms.....	64
Figure 25: National market share of successful firms and unsuccessful firms .....	65
Figure 26: Status of R&D Department .....	68

## LIST OF ABBREVIATIONS

**AOSB:** Adana Organised Industrial Zone

**ÇKA:** Çukurova Development Agency

**DTM:** Undersecretariat of the Prime Ministry for Foreign Trade

**EDAM:** Center for Economics and Foreign Policy Studies

**FTZ:** Free Trade Zones

**GEME:** Export Promotion Center

**BS:** Statistical Classifications of Regional Units

**KOSGEB:** Small and Medium Industry Development Organization

**MIP:** Mersin International Port

**MPM:** National Productivity Center

**MTOSB:** Mersin-Tarsus Organised Industrial Zone

**OIZ:** Organised Industrial Zones

**R&D:** Research and Development

**SMEs:** Small and Medium Sized Enterprises

**SPO:** State Planning Organisation

**TOSYÖV:** Foundation of Turkish SMEs, self-employers and administrators

**TTGV:** Turkish Technology Development Foundation

**TUB TAK:** The Scientific and Technical Research Council of Turkey

**TÜRKAK:** Turkish Accreditation Agency

**TurkStat:** Turkish Statistical Institute

**ÜSAM:** Common Research Center for University and Industry

## CHAPTER 1

### INTRODUCTION

#### 1.1. The Context and Aim of the Thesis

Technology and innovation has become the key for competition and growth in the last decades as a result of the globalisation process. As globalisation reshapes competition dynamics, productivity gets directly related with technology and innovation. At the same time, globalisation adds to the weight of local dynamics and local strategies. Countries will be able to compete in the globalised economy, as soon as they realize the value of local sources, and utilize them effectively. This is the case for both developed and developing countries.

The local milieu is identified by two proximities: geographical proximity and cognitive proximity. Geographical proximity includes agglomeration and district economies, while cognitive proximity means shared behavioural codes, common culture, mutual trust and sense of belonging. As Camagni and Capello (2002) suggest, the local territory organises financial capital, general information, consolidated technologies and codified knowledge to continuously innovative processes and products.

In that context, the significance of clusters rises as a new organisation of production systems. Clusters are groups of interconnected firms, related industries, suppliers and institutions located in particular fields. According to Porter (1998), clusters affect competition by increasing the productivity, by driving innovation and by stimulating new business formation. Nevertheless, the cluster is not only an economic entity, but also a social organisation (Morosini, 2004). Besides, clusters are mostly based on the functioning of SMEs. SMEs play a vital role both in the decrease of the unemployment rate and in the creation of new job opportunities, so they are seriously taken into consideration in the development and implementation of the policies in developing and especially in developed countries.

The aim of thesis is to analyse the innovation performance of the firms and the factors affecting their performance on the basis of a comparison of agglomerated and

non-agglomerated firms in Adana/Mersin Region in Turkey (TR62 region). The main motive of the study is to bring out the main features of the innovative firms, and to investigate whether the innovativeness is directly influenced by being agglomerated or not.

Organized Industrial Zones (OIZs) are good examples of geographic agglomeration. One of the most important purposes of OIZs is to increase the rate of productivity and profitability by the agglomeration of vertically and horizontally integrated industries (OSB Üst Kurulu u, 2010). They play a key role in the acceleration of regional economic development. Thus, in the case study, OIZs are selected as agglomeration examples in order to study the relationship between innovativeness and spatial proximity.

## **1.2. Scope of the Thesis**

The scope of the thesis is limited to TR62 (Adana, Mersin) Region. Firms operating in similar industries of Adana and Mersin provinces are chosen, and then categorised according to their location inside or outside of Adana Organised Industrial Zone (AOSB) and Mersin Tarsus Organised Industrial Zone (MTOSB). The sampling includes not only SMEs, but also some large firms which can be defined as successful SMEs of the past.

In the study, we analyze the innovation performance of the agglomerated and non-agglomerated firms in the TR62 (Adana, Mersin) Region by exposing the factors affecting the performance. We specifically test if the innovation performance of the firms is related with competition and cooperation dynamics of being agglomerated.

The survey was conducted with 20 firms operating in various industries. Half of them are located in AOSB and MTOSB, and other half is located out of OIZs. The survey is based on the data collected through interviews, which were personally done with the managers. The interview is composed of the questions investigating general information, cooperation status, production and process relations, technological and innovation activities of the firm.

### **1.3. Content of the Thesis**

This thesis consists of five chapters. After the introduction, an overview of knowledge economy; agglomeration; and innovation will be introduced in Chapter 2. This chapter provides theoretical framework and basic concepts.

Chapter 3 presents an overview of the TR62 (Adana, Mersin) Region where the survey study is conducted.

In Chapter 4, the case study and its main findings are presented. The innovation performance of the agglomerated and non-agglomerated firms in the TR62 (Adana, Mersin) Region is discussed on the basis of the data collected through interviews. This section includes the findings on the effect of agglomeration on the innovation capability.

The last chapter concludes the thesis by a general assessment of the case study. Findings of the case study are used to make policy recommendations by considering the characteristics and the potential of the region.



## CHAPTER 2

### AN OVERVIEW OF KNOWLEDGE ECONOMY, AGGLOMERATION, AND INNOVATION

#### 2.1. Knowledge Economy

Knowledge and knowledge-based economy have come into question in recent decades although the term was used in the work of Fritz Machlup (1962) so many years ago. In knowledge-based economy, knowledge is categorized as non-material resource in economic performance and plays a vital role in competitiveness and innovation.

According to Camagni and Capello (2009), there are two aspects of knowledge-based economy; the consensus of the central role played by spatial elements in the creation and diffusion of knowledge, and the lack of a unique interpretative paradigm. Three main reasons regarding the importance of space are defined by Camagni and Capello (2009) as:

- externalities stemming from urban environment
- knowledge spillovers subject to strong visible distance-decay effects
- collective learning based on a relational space where economic and social interactions take place and are embedded into geographical space.

On the other hand, Camagni and Capello's (2009) different definitions of knowledge-based economy are summarised in Table 1.

Table 1: Summarized alternative approaches to the knowledge-based economy

	<b>Sector-Based Definitions ('70-'80)</b>	<b>Function-Based Definitions ('80-'90)</b>	<b>Relation-Based Definitions ('90-2000)</b>
<b>Driving Forces of the Knowledge-Based Economy</b>	Science-based sectors	High education, R&D	Cognitive capability
<b>Location Regions</b>	Advanced regions	Scientific regions	Learning regions
<b>Path Towards Innovation</b>	Invention-innovation short circuit	Spin-offs, spatial spillovers	Collective learning, local synergies
<b>From Innovation to Performance</b>	Radical innovation, Schumpeterian profits	Technological breakthrough, royalties on patents	Continuing innovation, productivity increases
<b>Spatial Context</b>	High-tech clusters	Science parks, large city regions	Innovative milieu, large cities
<b>Role of Space</b>	Proximity economies, specialisation advantages	Proximity and agglomeration economies	Uncertainty reduction, relational capital

Source: Camagni and Capello (2009)

In the first approach, invention-innovation short circuit is related with individual firms of advanced sectors. High-tech districts, providing proximity externalities, attract firms as R&D activities are linked to production activities (Camagni and Capello, 2009). In the second approach, innovating firms interact with R&D and higher education facilities and the interaction resulted in academic spin-off or knowledge spillover flowing from the latter to the former (Acs et al.1994; Audretsch and Feldman 1996; Anselin et al. 2000). In the third approach, collective learning processes, spatial proximity, network relations (long-distance, selective relationships), interaction, creativity and recombination capability are the major determinants (Camagni and Capello, 2009).

The common focus of three approaches is the role of space. In function-based approach, space is either a strong concentration mechanism of advanced facilities or a driver of knowledge spillover from R&D clusters (Camagni and Capello, 2009). Both of the cases define the space in a widely abstract, indirect and stylised way, and spillover effects are assumed as a black box (Capello and Faggian, 2005).

In the cognitive approach, knowledge flows, information channels, and local milieu are analysed. This approach describes local milieu as the host of hierarchical and functional, economic and social interactions, not an abstract space (Camagni and Capello, 2009). The local milieu is identified by two proximities: geographical proximity and cognitive proximity. Geographical proximity includes agglomeration, district economies, while cognitive proximity means shared behavioural codes, common culture, mutual trust and sense of belonging. By the huge mobility of professional and skilled labour and the intense co-operative relations among local actors, the milieu incorporates collective learning processes (Camagni and Capello, 2002). Camagni (1991, 2004) identifies the milieu as a “cognitive engine”, emphasizes its innovative character and describes its features as:

- Inducing interaction and co-operation
- Reducing uncertainty (especially about the competitors’ and partners’ behaviour)
- Reducing information asymmetries
- Reducing probability of opportunistic behaviour

The importance of local territories is emphasized, as it is the local territory that organises the pervasive factors (financial capital, general information, consolidated technologies and codified knowledge) into continuously innovative processes and products. This organisation is peculiar to some selective places that create, exchange and utilise tacit knowledge continuously and convey business ideas to real markets (Camagni and Capello, 2009).

### **2.3. Innovation and Innovation Economy**

In globalizing world, innovation and knowledge, regarded as keys of competition and national progress, become more of an issue gradually. Innovation means commercialisation of new ideas and includes new manufactured products, new ways of producing products, and new or improved services.

According to Ahin (2009), in OECD and EU literature, innovation is a bilateral concept as it points out both process and results. As identified in the OECD Frascati Manual: “*basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts without any particular application in view*”. Economic and commercial imperatives make innovation distinctive (OECD, 2008).

According to Oslo Manual, there are four types of innovation: product innovation, process innovation, organisational innovation and marketing innovation.

- § **Product innovation** involves significant changes in the capabilities of goods and services. Both entirely new goods and services and significant improvements to existing products are included.
- § **Process innovation** represents significant changes in production and delivery methods.
- § **Organisational innovation** refers to the implementation of new organisational methods. These can be changes in business practices, in workplace organisation or in the firm’s external relations.
- § **Marketing innovation** involves the implementation of new marketing methods. These can include changes in product design and packaging, in product promotion and placement, and in methods for pricing goods and services.

The survey study of the thesis mainly includes product and process innovation together with product and process improvement. The interview has questions regarding these innovations and improvements. Question about marketing innovation, not organisational innovation, also takes place in the interview.

With the advances in ICT technology, competition and penetration of innovative goods and services accelerate. It seems difficult to become more competitive and to cope with globalisation unless firms, cities, regions and countries perform innovation based strategies and policies.

OECD Report (2008) describes innovation and competition as a *virtuous cycle*, leading to more efficient use of human and physical resources: increasing global competition encourages innovation, and innovation in turn helps to drive competition. In the creation of policies regarding innovation, two main features make the process complicated. Firstly, in spite of potentially high returns, there is a high degree of uncertainty. Secondly, while innovation strengthens the position of successful innovative firms, unsuccessful ones lose out. So, to promote innovation means to promote change and adaptation, and this accelerates the process of creative destruction (OECD, 2008).

### **2.3. Agglomeration, Scale Economies and Clusters**

As Gordon and McCann stated, opportunities for different kinds of agglomerations, such as human, social and economic, are provided by large urban realities of necessity and inevitability. Internal economies, external economies, urbanisation and localisation economies can be clarified in this respect.

Internal economies are related with a larger size of a plant which benefits fixed costs, while external economies (agglomeration economies) exploit the benefits of localisation and urbanisation (World Development Report, 2009). Morosini (2004) defines localisation economies of scale as specialised economic advantages resulting from close geographic proximity of only specific industries, and depicts economic advantages stemming from factors and conditions which benefit all economic entities and agents of agglomeration as urbanisation economies.

As Morosini (2004) emphasizes, localised economies of scale in agglomerations go back to early observations of Adam Smith's about the labour specialisation and to Marshall's explanations of firms' localisation in the same areas. In addition, Morosini (2004) describes the three key explanations of Marshall as specialised labour, non-traded input specific to an industry, and maximum flow of information and ideas.

Marshall (1961) defines localised industry as an industry concentrated in certain localities, and determines the main origins of localised industries as physical conditions, the patronage of courts and the deliberate invitation of rulers. The advantages of localised industry are considered in two groups: production side and customer side.

Hereditary skills, the growth of subsidiary trades, the use of highly specialized machinery, and a local market for special skill are the components of production advantages. In addition, a district composed of different industries is successful to reduce each other's depression in the case of demand and supply failures. On the other hand, there is a localisation of shops which deal in expensive and alternative goods, but this is not valid for the ones supplying ordinary domestic needs (Marshall, 1961).

In Table 2, economies of scale are detailed with examples (World Development Report, 2009). Internal economies can be classified as pecuniary and technological, while external (agglomeration) economies consist of localisation, urbanisation, and pure agglomeration. Technological, localisation and urbanisation economies are also divided according to being static or dynamic. All these economies of scale are related with theoretical background and exemplified. As detailed in the table, scale economies eventuate in different issues like specialisation, efficiency, growth, innovation, labour pooling, and learning by doing in respect of different types.

Table 2: A dozen economies of scale

Type of economy of scale		Example		
Internal	1.Pecuniary		Being able to purchase intermediate inputs at volume discounts	
	Technological	2.Static technological	Falling average costs because of fixed costs of operating a plant	
		3.Dynamic technological	Learning to operate a plant more efficiently over time	
External or Agglomeration	Localisation	Static	4."Shopping"	Shoppers are attracted to places where there are many sellers
			5."Adam Smith" specialisation	Outsourcing allows both the upstream input suppliers and downstream firms to profit from productivity gains because of specialisation
			6."Marshall" labour pooling	Workers with industry-specific skills are attracted to a location where there is a greater concentration
	Urbanisation	Dynamic	7."Marshall-Arrow-Romer" learning by doing	Reductions in costs that arise from repeated and continuous production activity over time and which spill over between firms in the same place
			8."Jane Jacobs" innovation	The more that different things are done locally, the more opportunity there is for observing and adapting ideas from others
	Urbanisation	Static	9."Marshall" labour pooling	Workers in an industry bring innovations to firms in other industries; similar to no.6 above, but the benefits arises from the diversity of industries in one location
			10."Adam Smith" division of labour	Similar to no.5 above, the main difference being that the division of labour is made possibly by the existence of many different buying industries in the same place
			11."Romer" endogenous growth	The larger the market, the higher the profit; the more attractive the location to firms, the more jobs there are; the more labour pools there, the larger the market-and so on
	12."Pure" agglomeration		Spreading fixed costs of infrastructure over more taxpayers; diseconomies arise from congestion and pollution	

Source: World Development Report (2009)

Scott and Storper (2003) emphasize that the most striking forms of agglomerations of today are “the super-agglomerations” or “city-regions”; and describe the city regions as “locomotives of the national economy”. Density of interrelated economic activities, high levels of productivity and innovative potentials are the features of these agglomerations (Scott and Storper, 2003). In addition, Scott and Storper (2003) define cities as “privileged sites for economic growth because they economise on capital intensive infrastructure”, and add three dimensions to analyse the defined reason underlying agglomeration: “the dynamics of backward and forward inter-linkage of firms in industrial systems”, “the formation of dense local labor markets around multiple workplaces”, and “the emergence of localized relational assets promoting learning and innovation effects”.

Cluster can be defined as “geographically bounded concentration of similar, related or complementary businesses with active channels for business transactions, communications and dialogue that share specialised infrastructure, common opportunities and threats” (Rosenfeld, 1995). Porter (1998) defines clusters as “geographic concentrations of interconnected companies and institutions in a particular field”. In other words, cluster mean “concentrations of firms that are able to produce synergy because of their geographic proximity, and interdependence, even though their scale of employment may not be pronounced or prominent” (Rosenfeld, 1997).

Cooke (2001) describe the cluster concept as “a geographically proximate firms in vertical and horizontal relationships involving a localised enterprise support infrastructure with a shared development vision for business growth, based on competition and cooperation in a specific market field”. On the other hand, Bekar and Lipsey (2001) emphasize the innovative character and linkages of clusters, and make the definition 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”.



The term cluster is also known as business cluster, industrial cluster, competitive cluster and Porterian cluster. Clusters enable many kinds of location specific externalities because of the proximity. According to Ketels (2003), these externalities can be summarised as knowledge spillovers; access to specialised suppliers and human resources; learnings from the close interaction with specialised customer and suppliers; and pressure for higher performance in head-to-head competition.

In addition, Morosini (2004) defines industrial cluster by stressing its social side:

*“An industrial cluster is a socioeconomic entity characterized by a social community of people and a population of economic agents localized in close proximity in a specific region. Within an industrial cluster, a significant part of both the social community and the economic agents work together in economically linked activities, sharing and nurturing a common stock of product, technology and organizational knowledge in order to generate superior products and services in the market place” (Morosini, 2004).*

Ketels (2003) explains types of clusters in three dimensions. These dimensions are:

- The type of products and services they produce
- The locational dynamics they are subject to
- Their stage of development, and the business environment that surrounds them.

Firstly, clusters are categorised by the type of products and services they produce. This classification indicates clusters which specialise in certain sectors, like food, automotive, financial services, and so on. Ketels (2003) denotes that the early discussions on clusters were related to clusters with international importance and leading world market position, such as the financial clusters in New York and London, the media cluster in Hollywood, the textile/fashion clusters in Northern Italy, and the IT cluster in Silicon Valley.

In time, the attention shifts to clusters specialised in a particular stage of their fields' value chain. Footwear industry is used to exemplify these clusters by Ketels (2003).

Northern Italy has successful, high wage cluster which is known with brand building, design, and high value production all over the world. Portugal's cluster is known by footwear manufacturing and the production serving fashion-conscious markets in Europe. Romania's cluster acts like an offspring of the Italian cluster and products low-to medium value products. There are also major clusters in China and Vietnam, specialised in the production of high-volume, but low value footwear. Clusters working in a particular stage of value chain are also seen within a country (Ketels, 2003). At that point, it is important to denote the requirements of successful regional clusters. According to Ketels (2003), regional clusters can identify their specific role and, by this way they can improve their position.

Second categorisation of clusters is related to the locational dynamics they are subject to. Ketels (2003) explain different location choices of clusters in three ways: Some industries determine the location by the need to be close to their customers ("local" industries), some others determine by the need to be close to natural resources ("natural resource-dependent" industries), and some choose the location according to the quality of the cluster-specific business environment ("traded" industries). Traded industries play an important role in the attractiveness of a specific location. Local industries serve only local markets, though other industries serve global markets (Ketels, 2003).

Thirdly, clusters can be categorised by their degree of development and business environment. Ketels (2003) define two dimensions to determine the stage of development: "the quality of the external business environment the cluster operates in", and "the progress the cluster has made in mobilising the potential of its business environment through active cooperation and other internal activities". Ketels (2003) addresses the literature for these dimensions: For the first dimension, it is emphasized that clusters of weaker environments tend to be weaker; for the second dimension, it is stressed that cluster dynamics are not spontaneous, they are dependent on and reinforced by purposeful action.

### **2.3.1. Clusters and Competition**

The definition of competition has changed in time; it is not related to inputs and the scale no more. Modern competition is connected to productivity and productivity depends on how companies compete, not on the particular fields they compete in (Porter, 1998a).

According to Porter (1998a), clusters can affect competition in three ways:

- § By increasing the productivity of the companies in the cluster (cluster-productivity)
- § By stimulating new businesses in the field (cluster-new business formation)
- § By driving innovation in the field (cluster-innovation)

Ketels (2003) explains the benefits of a cluster in a similar way: companies of a cluster can operate with a higher level of efficiency; the level of business formation in a cluster tends to be higher; and companies and research institutions can achieve higher levels of innovation. A cluster means to reach more specialised suppliers and assets in a shorter way compared to isolated environment. As clusters include external suppliers and partners, new businesses can operate in such an environment more easily. Lastly, close linkages with other firms and customers, and knowledge spillovers make pressure to innovate (Ketels, 2003).

#### **2.3.1.1. Clusters and Productivity**

In a cluster, to source inputs, to access technology and information, to access needed institutions, to coordinate with related companies, and to measure and motivate improvement become more productive. In other words, cluster means,

- Better access to employees and suppliers
- Access to specialized information
- Complementarities
- Access to institutions and public goods
- Better motivation and measurement (Porter, 1998a).

### **2.3.1.2. Clusters and New Business Formation**

The collective pool of competitive resources, benefiting all members of the cluster, is increased by cluster. These resources can be defined as needed assets, inputs, skills, staff, consumer opportunities and low entrance barriers. As a result, the companies of the cluster advance more than the ones outside (Porter, 1998a). The cost of failure for start-ups is also lower in clusters (Ketels, 2003).

### **2.3.1.3. Clusters and Innovation**

Other than productivity, also the company's ability to innovate is improved by clusters. Even the ongoing relationship with other actors of cluster is helpful to learn early about evolving technology, component and machinery availability, service and marketing concepts (Porter, 1998a). Sheer pressure, -competitive pressure, peer pressure, constant comparison-, is the other powerful element of the cluster that forces the innovation.

## **2.3.2. Clusters, Location and Economic Development**

A well functioning cluster system is essential for countries of middle-income to become an advanced economy and however, this is the case even for the high-income countries (Porter, 1998a). On the other hand, innovation requirement will increase as the economy evolves.

One of the most important issues of cluster is the location. In developing countries, it is common to perform a great part of the economic activity around capital cities because of the unavailability of infrastructure, suppliers and institutions of outlying parts. This kind of settlement brings with bottlenecks, congestion and inflexibility which cause high costs and inefficiencies. At the end, cost of productivity rises. Even the advanced economies, like Japan, face such inefficiency. Almost 50% of total manufacturing shipments are around Tokyo and Osaka. Rather than the inadequacy of infrastructure, this is the result of powerful and centralized policies and institutions of government. A number of metropolitan areas, which consist of specialized clusters, mean specialization and dispersion. Such a structuring of

internal specialization and trade accelerates productivity growth and makes companies to be able to compete successfully in the globalised world (Porter, 1998a).

Morosini (2004) emphasizes the dynamic feature of the industrial clusters. One of the key actors determining the economic performance of industrial clusters is the degree of knowledge integration between the agents of industrial clusters, and the other is the scope of their economic activities (Morosini, 2004). The nature and quality of a cluster's underlying social fabric is important to assess the knowledge creation and innovation. On the other hand, its competitive and business logic are analysed by the reach and scope of the economic activities of the cluster. Social knowledge together with economic factors and the forces of competition are important to evaluate clusters in a dynamic sense (Morosini, 2004).

#### **2.4. Competitiveness, Productivity and Innovation**

Innovation is often called with productivity and competitiveness as Porter (1998a) defined close links between innovation, productivity and competitiveness. It is appropriate to handle the competitiveness of a nation in a globalised world by the Diamond Model of Michael Porter. The basic economic factors, such as land, labour, location, population size, and natural resources are no more decisive factors of industrial growth and competitive capacity. On the contrary, Porter (1990) emphasizes that the abundance of these factors can damage competitive advantage and comes up with the concept of clusters.

Porter (1990) defines the Competitive Advantage of Nations as the outcome of four linked factors of companies in the clusters and emphasizes that all these factors can be influenced by government.

As shown in Figure1, the factors for competitive advantage of countries and regions in Porter's Diamond Model are:

- § Factor conditions
- § Demand conditions
- § Firm strategy, structure and rivalry
- § Related supporting industry

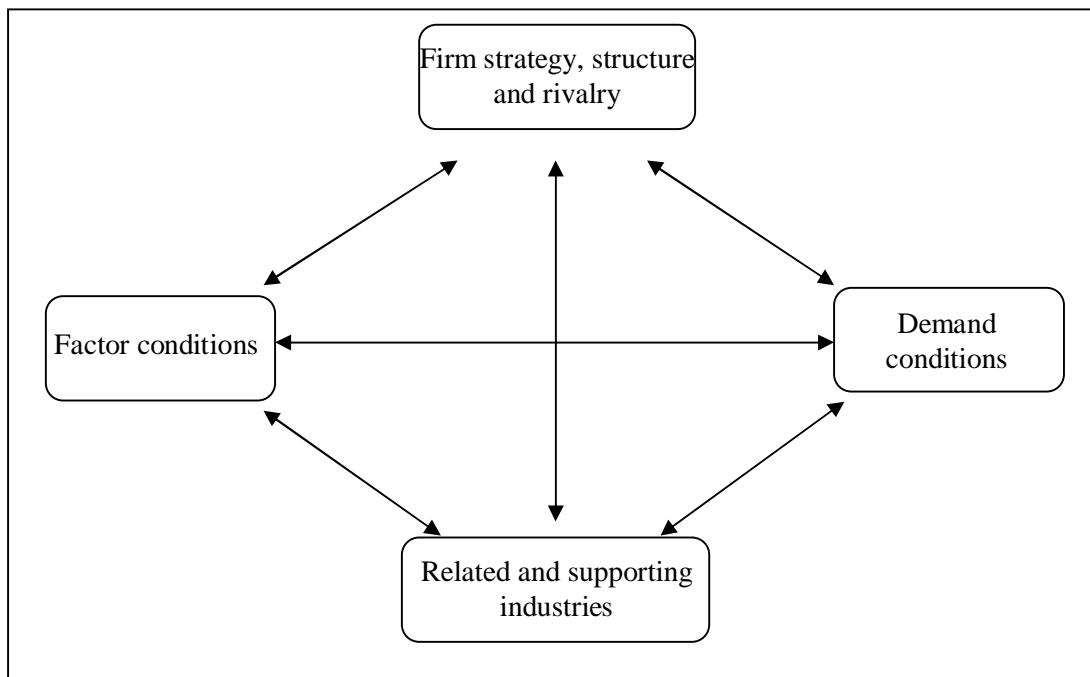


Figure 2: Porter's Diamond Model (1990)

*Source: Porter (1990)*

Firstly, factor conditions are human resources, physical resources, capital resources, knowledge resources and infrastructure. Specialised factors are usually specific to an industry and affect its competitiveness (Traill, 1998). According to Porter (1990), "national prosperity is created, not inherited". General use factors, such as unskilled labour, raw materials, are not an issue of competitiveness. On the contrary, specialised factors are related to investment, they are difficult to copy, and so they are valuable.

Secondly, demand conditions are important for the competition. There is a pressure of improving competitiveness by performing high quality and innovative products as soon as the customers of an economy demand. This pressure is strengthened by the dynamic conditions of business environment, and makes firm strategy, structure and rivalry one of the factors of competition. Lastly, inputs, which are important for internationalization and innovation, are produced by related supporting industries. These industries take place in the upgrading process by encouraging other companies in the chain to innovate (Traill, 1998).

Additionally, all these determinants of competitiveness can be affected in the local, regional, national and supranational level by the government. Competition between

firms, supply conditions of specialised factors and demand conditions can be an issue of intervention. Lastly, something happens outside of the control of the firm, like chance events. Chance either upgrades or worsens the competitive position of a firm unexpectedly. Porter claims that the interaction of these factors enables innovation and improves competitiveness (Traill, 1998).

According to Porter (1998), cluster means both competition and cooperation. There is an intense competition to win while there is also cooperation among companies of related industries and local institutions. As different players and different areas exist, these two opposite occasions, -cooperation and competition-, coexist.

Simmie (2008) identified two different Porters, Porter I and Porter II, as there is such a shift in the conceptualization of clusters. In Porter I, clusters are defined as “geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (universities, standard agencies, and trade associations) in particular fields that compete but also cooperate” (Porter, 1998b). According to Simmie (1998), this is a localized and supply-side concept of clusters. In Porter II (2003), regional prosperity is achieved by export-oriented clusters. Wages of export clusters are higher than the ones serving local markets.

According to Simmie (2008), in the classification of the term competitiveness at different levels of economic aggregation, it is applied both to the individual firm (microeconomic level) and to the national economy (macroeconomic level), and clusters represent a third meso level. It is difficult to handle competitiveness and productivity separately as competitiveness is described in terms of productivity.

Simmie (2008) claims that productivity growth is sustainable as soon as an economy continually upgrades itself. Porter (2003) defines innovative capacity as “the key to productivity” and describes competitiveness and productivity as equal. The increasing internationalisation of the world economy requires high value-added products and services, and being innovative (Porter, 2003). In that point, “the definition of competitiveness is productivity and innovation, -not low wages, low taxes, or a devalued currency” (Porter, 2000).

On the other hand, it is important to stress the contribution of Schumpeter on innovation. Simmie (2008) summarizes his main legacy in four topics:

- innovation is the main source of dynamism in capitalist economic development
- the importance of the historical (evolutionary) perspective in understanding long-term economic change
- it is essential to distinguish conceptually between invention, innovation and diffusion of innovations
- the importance of the links between organizational, managerial, social and technical innovations

Innovation is defined by Porter (1990) as an attempt to create competitive advantage by perceiving or discovering new and better ways of competing in an industry and bringing them to market. Simmie (2008) defines innovation as “a complex social and geographic process, not only a technological and economic process”.



## CHAPTER 3

### AN OVERVIEW OF TR62 (Adana, Mersin) REGION

*“Paradoxically, the enduring competitive advantages in a global economy lie increasingly in local things-knowledge, relationships, and motivation that distant rivals cannot match” (Michael E. Porter)*

Nowadays, in spite of the acceleration of globalisation, local values become more of an issue and the policies regarding local priorities become popular and widespread. In that context, territorial units are reorganised and regional policies are specialised.

In the scope of the thesis, survey analysis includes the region consisting of the provinces Adana and Mersin. Henceforth, the region will be called “TR62 (Adana, Mersin) Region” as it is one of 26 NUTS2 Regions of Turkey. The location of the region is illustrated in Figure 2.



Figure 3: The location of TR62 (Adana, Mersin) Region

Source: ÇKA (2010)

In this section, firstly, coexistence of Adana and Mersin under the concept of TR62 Region will be clarified by the explanation of the term NUTS. Then, TR62 Region will be analysed, by exploring its general economic indicators, economic infrastructure, socio-economic development, and innovation capability.

### 3.1. NUTS

“NUTS, -nomenclature des Unités territoriales statistiques' in French-, and NTUS, -nomenclature of territorial units for statistics in English-, is a geographical nomenclature subdividing the territory of the European Union into regions at three different levels (NUTS 1, 2 and 3, respectively, moving from larger to smaller territorial units” (Eurostat, 2010)

In general, it can be defined as a geocode standard indicating the subdivision of countries according to statistical characteristics, and it is used as an instrument in European Union’s Structural Fund delivery mechanism (Wikipedia, 2010a).

NUTS was established by Eurostat more than 30 years ago in order to provide a single uniform breakdown of territorial units for the production of regional statistics for the member states of the European Union. For the other European Economic Area (EEA) countries and for Switzerland, and for the candidate countries awaiting accession to the EU, a coding of Statistical Regions has been defined by Eurostat in agreement with the countries concerned (European Commission, 2010c).

NUTS is defined and developed according to following principles (European Commission, 2010b):

- *The NUTS favours institutional breakdowns:* Normative and analytical criteria may be used in subdividing national territory into regions. Normative regions reflect political will and their limits are fixed according to the tasks allocated to the territorial communities, according to the sizes of population necessary to carry out these tasks efficiently and economically, and according to historical, cultural,

and other factors. On the other hand, analytical (or functional) regions are defined according to analytical requirements; they group together zones using geographical criteria (e.g., altitude or type of soil) or using socio-economic criteria (e.g., homogeneity, complementarity or polarity of regional economies). For practical reasons to do with data availability and the implementation of regional policies, the NUTS nomenclature is based primarily on the *institutional divisions* currently in force in the Member States (normative criteria) (European Commission, 2010b).

- *The NUTS favours regional units of general character:* Territorial units specific to certain fields of activity (mining regions, rail traffic regions, farming regions, labour-market regions, etc.) may sometimes be used in certain Member States. NUTS excludes specific territorial units and local units in favour of regional units of a general nature (European Commission, 2010b).
- *The NUTS is a three-level hierarchical classification:* Since this is a hierarchical classification, the NUTS subdivides each Member State into a whole number of NUTS 1 regions, each of which is in turn subdivided into a whole number of NUTS 2 regions and so on (European Commission, 2010b).

In 2002, Turkey, a candidate awaiting accession to the EU, generated BS of three levels in that context. SPO and TurkStat made this classification according to the population, geography, regional development plans, basic statistical indicators and the socio-economic development ranking of the cities. In that context, there are 12 NUTS1 Region, 26 NUTS2 Region and 81 NUTS3 Region in Turkey and, TR62 (Adana, Mersin) Region is one of these 26 NUTS2 Regions.

### **3.2. Main Economic Indicators of the Region**

The region is regarded as a developed region, ranked after the most developed regions of Turkey. The economy of the region is shaped by its location and its natural resources. Agricultural character of the region, as understood from the name of the region “Çukurova”, is the main determinant of the regional economy.

In this part of the thesis, main economic indicators and economic infrastructure will be introduced. After summarising GDP, employment rate, and foreign trade of the region, manufacturing industry and economic infrastructure will be analysed.

### 3.2.1. Gross Domestic Product of the Region

It is seen that nominal GDP of the region increases between the years 1987-2001 (Figure 3). If the year “2001” is excluded because of the economic crisis, it can be denoted that nominal GDP (in \$) of the region doubled in this period. However, the ratio of the regional GDP to the national GDP is not stable, and it displays a decreasing trend since 1995.

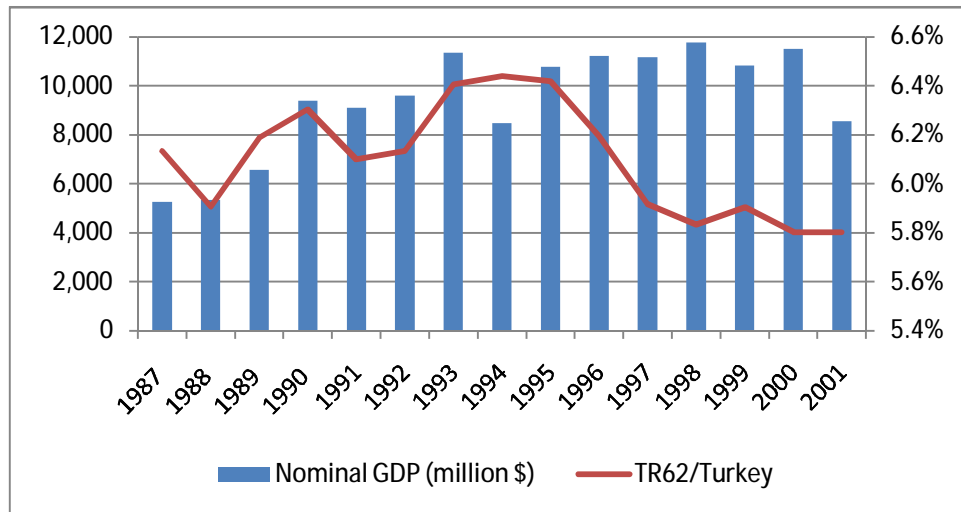


Figure 4: Gross Domestic Product of the Region  
Source: TÜ K (2001)

In addition, regional GDP per capita value of the year 2001 is illustrated in Table 4. GDP per capita of the region is ranked 8<sup>th</sup>, with the value of 2393\$. This means that the regional GDP per capita is above the national value, 2146\$.

Table 3: GDP Per Capita of NUTS2 Regions

Rank	Code of the Region	Name of the Region	GDP Per Capita(\$)
1	TR42	Kocaeli, Sakarya, Düzce, Bolu, Yalova	4109
2	TR31	zmir	3215
3	TR10	stanbul	3063
...			
7	TR32	Aydın, Denizli, Mu la	2427
8	<b>TR62</b>	<b>Adana, Mersin</b>	<b>2393</b>
9	TR81	Zonguldak, Karabük, Bartın	2324
	<b>TR</b>	<b>Turkey</b>	<b>2146</b>
...			
24	TRC3	Mardin, Batman, ırnak, Siirt	993
25	TRB2	Van, Mu , Bitlis, Hakkari	749
26	TRA2	A rı, Kars, I dır, Ardahan	730

Source: TÜ K (2001)

### 3.2.2. Labour Force and Employment

Labour force, the supplier of labour, is the population of working age, and includes both employed and unemployed people. Labour force participation rate is the ratio between the labour force and all population, and unemployment rate is the percentage of the population who is available and willing to study, but has no work.

In Figure 4, labour force participation rate and unemployment rate of Turkey and TR62 are illustrated for the period 2004-2009. Labour force participation rate of the region generally displays an increasing trend, and the regional rate has been better than the national rate since 2006. On the other hand, unemployment rates of the region and Turkey are acting together since 2007, but the region has higher values. As seen in Table 4, in 2009, the region has the highest unemployment rate among all NUTS2 regions. In this year, regional unemployment rate is 22%, while the national unemployment rate is 14%. Unemployment rate is the main economic and social issue of the region.

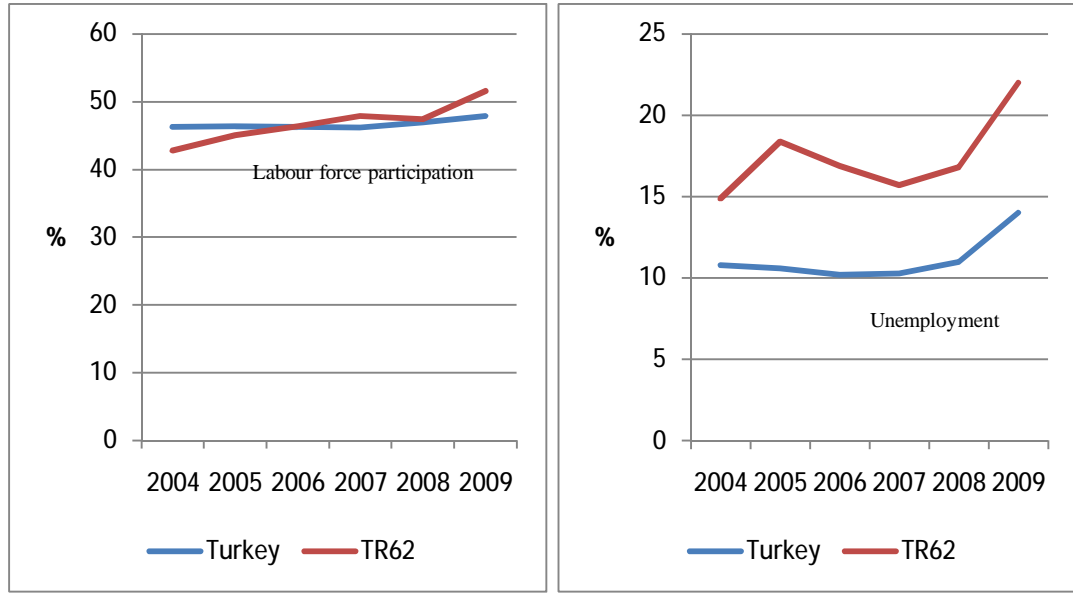


Figure 5: National and regional labour force participation and unemployment rate  
Source: TÜ K (2009)

Table 4: Unemployment Rate of NUTS2 Regions

Rank	Code of the Region	Name of the Region	Unemployment Rate (%)
1	TR62	Adana, Mersin	22,0
2	TRC2	anlıurfa, Diyarbakır	18,8
3	TR63	Hatay, Kahramanmara , Osmaniye	18,0
...			
	TR	Turkey	14,0
...			
24	TR81	Zonguldak, Karabük, Bartın	7,3
25	TR83	Samsun, Tokat, Çorum, Amasya	6,9
26	TR90	Trabzon, Ordu, Giresun, Rize, Artvin, Gümü hane	6,0

Source: TÜ K (2009)

Lastly, employment is analysed by economic activity in the period 2004-2009 (Figure 5). Excluding 2009, employment of the service sector has the highest share in this period. The shares of all economic activities are close to each other. If trade and service are evaluated together, their share exceeds 50%. The provinces of the region have metropolitan character; and the region attracts migration. This outstanding character of the region explains the high rate of employment in trade and service.

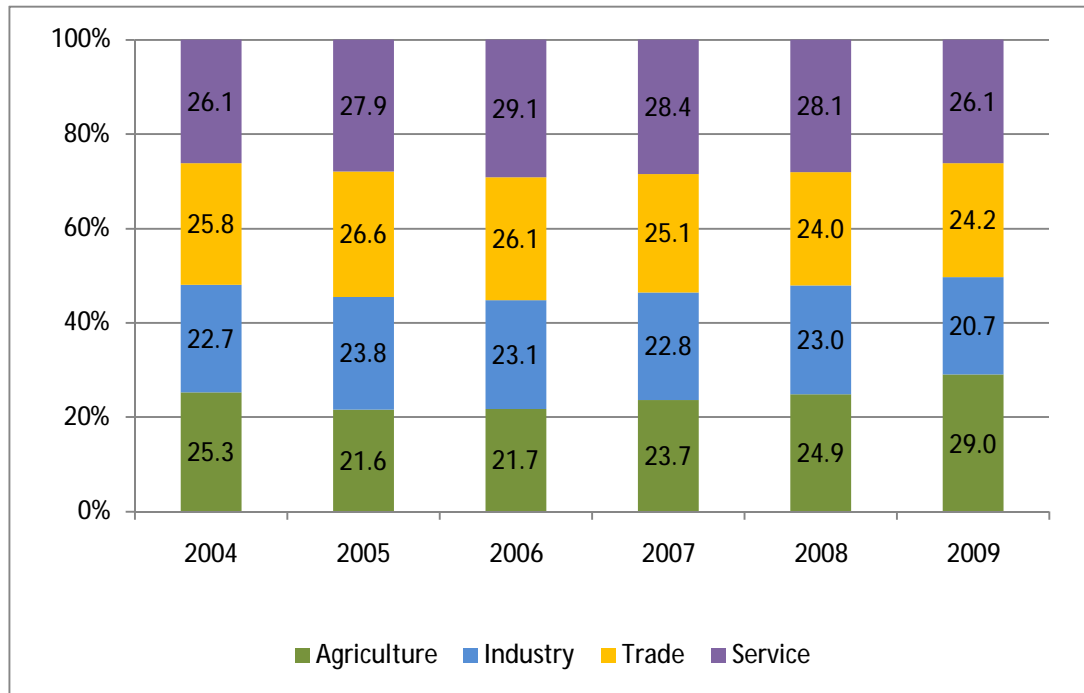


Figure 6: Economic activity of employment  
 Source: TÜ K (2009)

### 3.2.3. Manufacturing Industry of the Region

It would be right to stress the industrial character of the region. This appears as a traditional aspect of Adana, and as a dynamic and tenacious character for Mersin. Manufacturing industry plays a vital role in the regional economy by the capability of both production and employment.

In Figure 6, the distribution of local units by sectors is illustrated. Though Adana and Mersin displays similar properties, the share of some sectors differ. Whole sale and retail trade is the most common sector for both of the provinces, and this is followed by manufacturing (19%) in Adana; and by transportation and storage (13%), and by manufacturing (12%) in Mersin. The latter can be explained by Mersin International Port. As the survey of the thesis is based on manufacturing firms, the other sectors will not be analysed in this chapter.

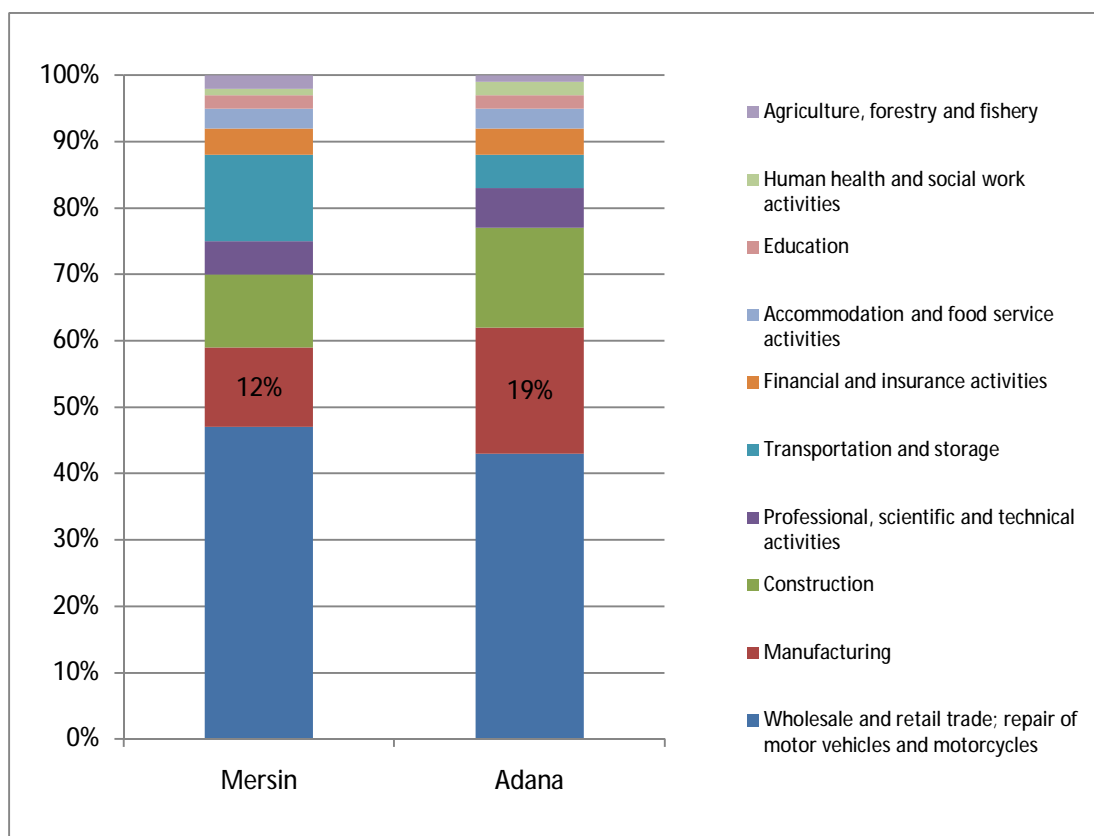


Figure 7: Distribution of local units by sectors (Adana, Mersin)

Source: ATO, ADASO, MTSO (2009)

When manufacturing local units of the region are categorised according to sectors, manufacture of food products, manufacture of machinery and equipment, manufacture of rubber and plastic products, manufacture of wearing apparels, manufacture of fabricated metal products, manufacture of chemical and chemical products, and manufacture of furniture appear as the prominent sectors (ÇKA, 2010a).

It is neither adequate nor explanatory to determine the prominent sectors by analysing local unit number only. Therefore, the subsectors with either higher employment rate (such as textile industry) or higher local unit rate are included and location quotients<sup>1</sup> of employment are taken into consideration. Following tables project the prominent subsectors of Adana and Mersin. “Rank” of the sector reflects the rankings of the location quotient in the region. The subsectors like production of

<sup>1</sup> Location Quotient Technique is detailed in Appendix C.



electricity, transporting and storage are excluded as the employment rate is low at regional level, but unique at national level (ÇKA, 2010a).

Table 5 and Table 6 display the prominent sectors of Adana and Mersin respectively, in terms of local unit and employment. Manufacture of chemical and chemical products, petroleum, coal, rubber and plastic products, industry of metal-machinery and equipment, transportation and professional scientific measuring instruments-tool, industry of food-drink-tobacco are the top 3 sectors of Adana. In Mersin, these three sectors are agriculture and livestock, industry of non-metal products, and industry of food-drink-tobacco. Industry of textile knitting, industry of food-drink-tobacco, garment and leather, and industry of chemical and chemical products are the common sectors of Adana and Mersin.

Table 5: Prominent Sectors of Adana in terms of local unit and employment

<b>Rank</b>	<b>Sector</b>	<b>Number of Local Units</b>	<b>Employment</b>	<b>Share of Local Units</b>	<b>Share of Employment</b>	<b>Location quotient of employment</b>
<b>5</b>	Industry of chemical and chemical products, petroleum, coal, rubber and plastic products	276	17.244	0,18	0,15	1,30
<b>6</b>	Industry of metal-machinery and equipment, transportation and professional scientific measuring instruments-tool	367	30.656	0,24	0,27	1,21
<b>7</b>	Industry of food-drink-tobacco	260	19.539	0,17	0,17	1,05
<b>8</b>	Industry of wood, cork products and furniture	106	4973	0,07	0,04	1,03
<b>11</b>	Industry of textile knitting, garment and leather	254	28.618	0,16	0,25	0,82

Source: ÇKA (2010)

Table 6: Prominent Sectors of Mersin in terms of local units and employment

<b>Rank</b>	<b>Sector</b>	<b>Number of Local Units</b>	<b>Employment</b>	<b>Share of Local Units</b>	<b>Share of Employment</b>	<b>Location quotient of employment</b>
<b>1</b>	Agriculture and livestock	117	1583	0,08	0,03	12,95
<b>4</b>	Industry of non-metal products	56	4457	0,04	0,08	2,00
<b>5</b>	Industry of food-drink-tobacco	484	14.008	0,35	0,26	1,58
<b>6</b>	Industry of wood, cork products and furniture	82	3134	0,06	0,06	1,36
<b>8</b>	Industry of chemical and chemical products	171	7909	0,12	0,15	1,24
<b>14</b>	Industry of textile knitting, garment and leather	91	9589	0,07	0,18	0,57

Source: ÇKA (2010)

According to Evaluation Report of ÇKA (2010), all the outstanding regional sectors, most of which are manufacturing, can be categorized in three groups: Leader sectors, strong sectors and flourishing sectors. This classification helps to develop sector specific strategies.

Leader sectors consist of agriculture based food industry, textile industry and chemistry industry. The development of all these manufacturing industries has been dependent on outstanding regional sources. These industries, with a high level of experience, stand out with the indicators of employment, revenue and export.

Secondly, industry of metal equipment and machine, industry of paper and paper products, and logistics are strong sectors. These sectors, with the potential of growth, have a high rate of revenue and export.

Lastly, furniture industry, tourism and industry of renewable energy present flourishing sectors. Although this group has not converted its potential to value yet, it has developed significantly in recent years, and it is supposed to be important for the future of the region.

### 3.2.4. Foreign Trade of the Region

From past to present, Çukurova Region has a strategic importance as it is located on the channels of commerce. In that point, the region is also the international expansion point of commodities.

The region's main export countries are European and Middle East countries, while import countries are European countries and countries of Asia's third largest (China, Japan, India) (ÇKA, 2010a).

In Figure 7, the distribution of export and import in 2007 is analysed according to the provinces. 56% of regional export and 73% of regional import belongs to Adana, while 44% of regional export and 27% of regional import is performed by Mersin.

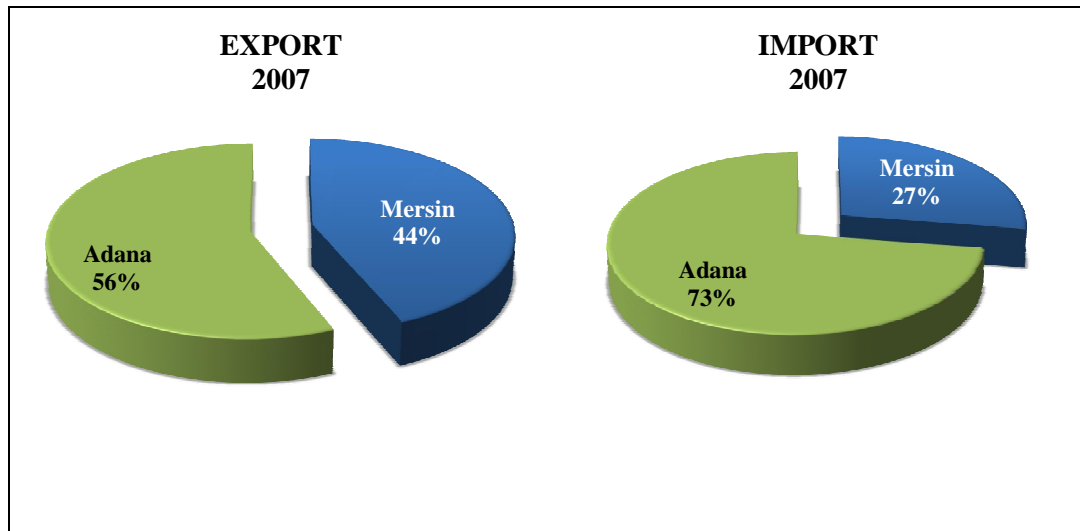


Figure 8: Distribution of regional export and import according to provinces  
(Source: ÇKA, 2010a)

It is certain to get information about the industrial character of the provinces by interpreting export coverage. In the period of 2002-2007, import indicators of Adana are higher than its export indicators, and export coverage ratio is getting lower. This reflects the need of raw materials and intermediates, and the provincial character of industry (ÇKA, 2010a).

On the other hand, Mersin International Port is one of the most important ports of East Mediterranean, and so foreign trade is very important for its economy. But the industrial character of Mersin does not require high rates of import and this keeps its export higher than its import (ÇKA, 2010a).

After glancing at foreign trade properties of the region, exporting sectors of the region can be detailed. To determine the prominent exporting sectors, following three criteria were used:

- For the share of the sector export in the total export to be higher than the ideal ratio (1/23)
- For LQ to be higher than 1
- For the rate of change of LQ to be higher than the average rate of change (160%)

Sectors satisfying at least two of these conditions are qualified as prominent export sectors of the region (ÇKA, 2010a).

Table 7 and Table 8 show the prominent exporting sectors of Adana and Mersin, which are determined by the criteria above. There are 5 favourite sectors of Mersin, and 7 favourite sectors for Adana. The favourite export sectors of Adana are manufacture of textiles, manufacture of motor vehicles, trailers and semi-trailers, manufacture of rubber and plastic products, manufacture of food and beverage, vegetable production, manufacture of machinery and equipment, and manufacture of paper and paper products; and the favourite export sectors of Mersin are vegetable production, manufacture of other non-metallic minerals, manufacture of food and beverage, manufacture of basic metals, and manufacture of other transport equipment. Vegetable production and manufacture of food and beverage are the common sectors.

Table 7: Prominent sectors of export in Adana between 2002 and 2007

Sector	Share in the total export of the province (2007)	LQ (2007)	Change of LQ (2002-2007)
Manufacture of textiles	X	X	
Manufacture of motor vehicles, trailers and semi-trailers	X	X	
Manufacture of rubber and plastic products	X	X	
Manufacture of food and beverage	X	X	
Vegetable production	X	X	
Manufacture of machinery and equipment n.e.c	X		X
Manufacture of paper and paper products		X	X

Source: ÇKA (2010)

Table 8: Prominent sectors of export in Mersin between 2002 and 2007

Sector	Share in the total export of the province (2007)	LQ (2007)	Change of LQ (2002-2007)
Vegetable production	X	X	
Manufacture of other non-metallic minerals	X	X	X
Manufacture of food and beverage	X	X	
Manufacture of basic metals	X		X
Manufacture of other transport equipment		X	X

Source: ÇKA (2010)

### **3.3. Economic Infrastructure of the Region**

Industrial zones, organized industrial zones, specialised industrial zones, ports and free trade zones are the backbone of the economic facilities and so they foster the economic development. Already, 4 organized industrial zones (Adana Hacı Sabancı, Mersin Tarsus, Kozan and Silifke Organized Industrial Zones), Mersin International Port, Mersin and Adana-Yumurtalık Free Trade Zones constitute the main infrastructure of the regional economy. At the same time, Ceyhan Energy Specialised Industrial Zone, Agriculture Specialised Industrial Zones, Çukurova Teknokent and Mersin Technoscope have been at the establishment phase.

#### **3.3.1. Organised Industrial Zones and Industrial Zones**

Organised Industrial Zone is as an instrument to accelerate the development of the industry. This incentive mechanism began in Turkey by the establishment of Bursa Industrial Zone in 1962 and today the number of the organised industrial zones reached 261.

Objectives of organised industrial zones are:

- To discipline the industry
- To make a contribution to the development of the cities in a planned manner
- To increase the rate of productivity and profitability by the agglomeration of vertically and horizontally integrated industries
- To penetrate the industrialisation in underdeveloped regions
- To discipline the usage of the agricultural area for industry
- To establish healthy, reliable, cheap infrastructure and social facilities
- To prevent the environmental pollution by the help of common treatment plants
- To provide the management of the zones by their own bodies under the control of the state (OSB Üst Kurulu u, 2010).

In addition to organised industrial zones, industrial zones were formulated to foster economic development. Ministry of Industry and Commerce offers and the cabinet declares the foundation of the regions. Industrial zones aim:

- To achieve technology transfer and the economic development
- To foster production and employment
- To promote investment
- To direct the savings of the Turkish workers in the foreign country to investment
- To attract foreign direct investment

The area of the zone is expropriated on behalf of the treasury, the infrastructure of the region is built by the ministry of industry and commerce and the investors get the easement of the parcels. These are the main differences between organised industrial zones and industrial zones.

As mentioned above, the region has four OIZs, two of which are used efficiently. These operating OIZs will be handled in the survey. However, there is not much to tell about Ceyhan Energy Specialised Industrial Zone and Agriculture Specialised Industrial Zone as they are at the very beginning of establishment.

### **3.3.1.1. AOSB**

AOSB has an area of 1225 ha and 434 parcels totally, 427 of which were assigned. In AOSB, the number of the operating firms is 263 and these firms provide an employment of 18.500. AOSB has a sewage treatment plant and laboratory for environment. The most common sectors of the zone can be stated as the manufacture of textiles, metals, food products, rubber and plastic products (ÇKA, 2010a). Table 9 details the sector distribution of companies in AOSB.

Table 9: Sector distribution of companies in production\*

---

\* Sector classification diverges according to different definitions of different corporations.

<b>AOSB</b>	
<b>Sector</b>	<b>Number of Firms</b>
Manufacture of textiles and wearing apparel	65
Manufacture of metals	35
Manufacture of food products	27
Manufacture of rubber and plastic products	21
Manufacture of chemicals	17
Manufacture of wood and wood products	13
Manufacture of construction elements	13
Manufacture of machinery and equipment	11
Manufacture of petroleum products	11
Manufacture of paper and paper products	11
Storage	7
Foundry	7
Packaging	6
Dyes	5
Manufacture of electrical equipment	5
Others	9
<b>TOTAL</b>	<b>263</b>

*Source: AOSB (2010)*

### **3.3.1.2. MTOSB**

MTOSB has an area of 658 ha, and 155 parcels totally. In the zone all the parcels have been assigned. In MTOSB, the number of the operating firms is 105 and these firms provide an employment of 5500. It has a sewage treatment plant and laboratory for environment (ÇKA, 2010a). The most common sectors of the zone can be stated as metal, machine and transportation vehicles industry, chemistry, petroleum products, rubber and plastic products industry, food, alcohol and tobacco industry, and soil and stone related industry. Sector distribution of companies in MTOSB is detailed in Table 10.



Table 10: Sector distribution of companies in production\*

<b>MTOSB</b>	
<b>Sector</b>	<b>Number of Firms</b>
Metal, machine and transportation vehicles industry	38
Chemistry, petroleum products, rubber and plastic products industry	26
Food, alcohol and tobacco industry	20
Soil and stone related industry	9
Metal industry	5
Paper, paper products and printing industry	4
Wooden products and furniture industry	4
Textile, ready to wear and clothing and leather industry	2
<b>TOTAL</b>	<b>108</b>

Source: MTOSB (2010)

### 3.3.2. FTZs

FTZ means an area of a country where some of the normal trade barriers like tariffs and quotas are eliminated and bureaucratic requirements are lowered to attract both new business and foreign investments. FTZs can be defined as labour intensive manufacturing centres involving the import of raw materials or components and the export of factory products. Mersin FTZ and Adana-Yumurtalık FTZ are two FTZs of TR62 Region.

#### 3.3.2.1. Mersin FTZ

Mersin FTZ, together with Antalya FTZ, is one of the first two free trade zones of the country. Among the operating 19 FTZs, Mersin FTZ ranks second in terms of employment, and ranks fourth in terms of trade volume (ÇKA, 2010a).

In the zone, commerce of industrial products has the greatest share, but there is also commerce of agricultural products. It is significant that most of the firms operating in the zone perform commercial activities rather than production activities, and that defines the preponderant feature of the zone as “commerce” (ÇKA, 2010b).

---

\* Sector classification diverges according to different definitions of different corporations.

### **3.3.2.2. Adana-Yumurtalık Free Trade Zone**

Yumurtalık FTZ is one of the zones that have the largest area, but it is not as busy as Mersin FTZ as it is still in the process of structuring. It is designed for heavy industry. Firms of the zone operate in the manufacture of chemicals and construction materials. Some firms, specialized in building ships and boats, are in the establishment phase (ÇKA, 2010a).

### **3.3.3. Ports**

In the region, there are 7 ports and wharfs of freight and passenger transportation. Among them, only MIP stands out with the commercial character. At MIP, with its 21 waterfronts, 30 boats of different sizes can realize loading and uploading operations at the same time. Handling of the port is nearly 15.000.000 tons per year. Besides, BOTA Port is specialized in crude oil transportation (ÇKA, 2010a).

### **3.3.4. Technoparks**

Technopark is an advanced university-industry cooperation model where entrepreneurs and companies come together to offer higher value added products and services under competitive conditions by benefiting the knowledge and the research power of the universities (Technoscope, 2010). Technoparks behave like a bridge in the transfer of knowledge and experience between universities and the companies, and this integration means contribution to economic development.

While different terminologies such as “Research Park, Science Park, Technology Valley” are used in the world, “Technology Development Zone, Technopark, Technopolis” are used in Turkey, referring to the similar conformation. The objectives of technoparks can be summarized as:

- To promote innovative technologies and related information
- To commercialize technological knowledge
- To support technology intensive production and entrepreneurship
- To contribute to the adaptation of manufacturing industry to innovative technologies

- To support foundation and development of innovative companies that operate high added value by benefiting from local potentials
- To promote regional development by intensive R&D studies
- To increase the synergy and cooperation between local companies
- To provide employment of qualified labour
- To increase the export rate at technology based products
- To create foreign investment opportunities (Technoscope, 2010).

The contribution of R&D studies to innovation cannot be negated. Opportunities of technoparks, such as consultation service facilities, the provision of proper place and environment, the university infrastructure and the cooperation with university, are designed to improve the innovation capacity of the country by supporting the companies carrying out R&D studies.

Additionally, not only the companies of the technoparks, but also the university take the advantage of these structures. The university-industry cooperation is realized by technoparks, meaning the enrichment and activation of university services by supporting the education, research and training activities of it. Low operating costs resulting from exemptions and supports, proximity to research facilities and qualified human resources and efficiency rise make technoparks attractive for the companies. On the other hand, industrial funds that enable academic personnel to continue their research facilities and employment opportunities for both students and graduates constitute the attractiveness of technoparks for universities. Companies of technoparks benefit from physical and value added services, like consultancy in foundation, business plan, administration, finance, advertising, marketing, technology and accessibility to business and technology networks (Technoscope, 2010).

Legal regulation of technoparks (Technology Development Zones) in Turkey was completed in 2001 by the Technology Development Zone Law (no: 4691). Exemptions and supports of technoparks are corporate tax exemption, income tax exemption, VAT exemption, duty and tax exemptions, exemption of employer share of insurance premium and economic energy use. At the end of 2009, 37 technoparks (Ankara (6), stanbul (5), Kocaeli (3), zmir, Konya, Antalya, Kayseri, Trabzon,

Adana, Erzurum, Mersin, Isparta, Gaziantep, Eski ehir, Bursa, Denizli, Edirne, Elazı , Sivas, Diyarbakır, Tokat, Sakarya, Bolu, Kütahya, Samsun and Malatya) were established. 21 of these can be considered as active ones (ÇKA, 2010a). As seen, two of these are in TR62 Region, ‘Teknokent’ of Çukurova University and ‘Technoscope’ of Mersin University.

#### **3.3.4.1. Mersin Technoscope**

Mersin Technoscope was established in 2005 to strengthen the competitive position of Mersin in both national and international level. It was established with the partnership of Mersin University, MTOIZ, Mersin Provincial Private Administration, Mersin Chamber of Commerce and Industry, Tarsus Chamber of Commerce and Industry, Mediterranean Exporter Unions and METU Technopolis. There are two different campuses of the technopark, one in the university and the other in the MTOIZ. Companies of the zone operate in software, renewable energy, virtual engineering, medicine, food, automotive, mechatronics, machine and electronic. Technoscope aims to become a key actor in regional development by promoting innovation and R&D practices (MTOSB, 2010).

#### **3.3.4.2. Çukurova Teknokent**

Çukurova Teknokent is located in Çukurova University campus. Çukurova Technology Development Zone A. ., the legal entity responsible for the management and operation of the technopark, was founded in 2005. Infrastructure and buildings of the zone have not been completed yet.

### **3.4. Socio-economic Development Rate of the Region**

It is necessary to get information about the socio-economic development rate of the region to analyse the region generally. In addition, the indexes used for this analysis include the indicators related to knowledge economy, innovation and competition.

The latest survey bringing out the competitiveness of the provinces was made by EDAM in 2009. There is also a study of SPO regarding the competitiveness and socio-economic development rankings.

Competitiveness index of EDAM is about the relative competitiveness of the provinces. It includes not only the indicators of economic activity and efficiency but also the infrastructure indicators of a province, like education, physical infrastructure and so on, and it does not exclude the dynamics of labour market. The most important feature of the index is that it underlies creativity and the knowledge economy, and the components of the index can be referred to the competitive capability of the future (ÇKA, 2010a).

According to this survey, Adana is ranked 22nd and Mersin 25th among the provinces of Turkey. Figure 3 shows the ranking of the first 30 provinces according to EDAM.

Secondly, Socio-economic Development Index of SPO (2003) can be mentioned (Figure 4). This index includes the indicators of demography, health, industry, agriculture, construction, finance, infrastructure and welfare. In this survey, Istanbul, Ankara and İzmir constitute the top three, while rank of Adana and Mersin is 8 and 17, respectively.

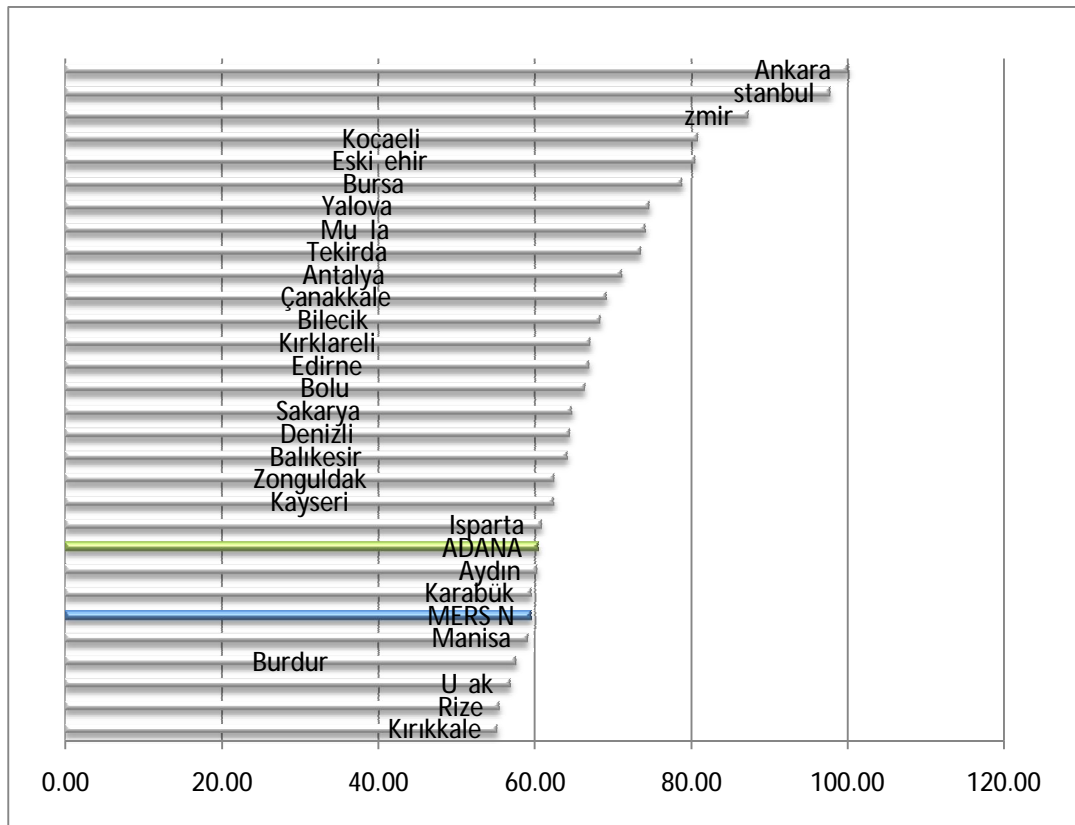


Figure 9: Ranking of the provinces (first 30 provinces)  
Source: EDAM (2009)

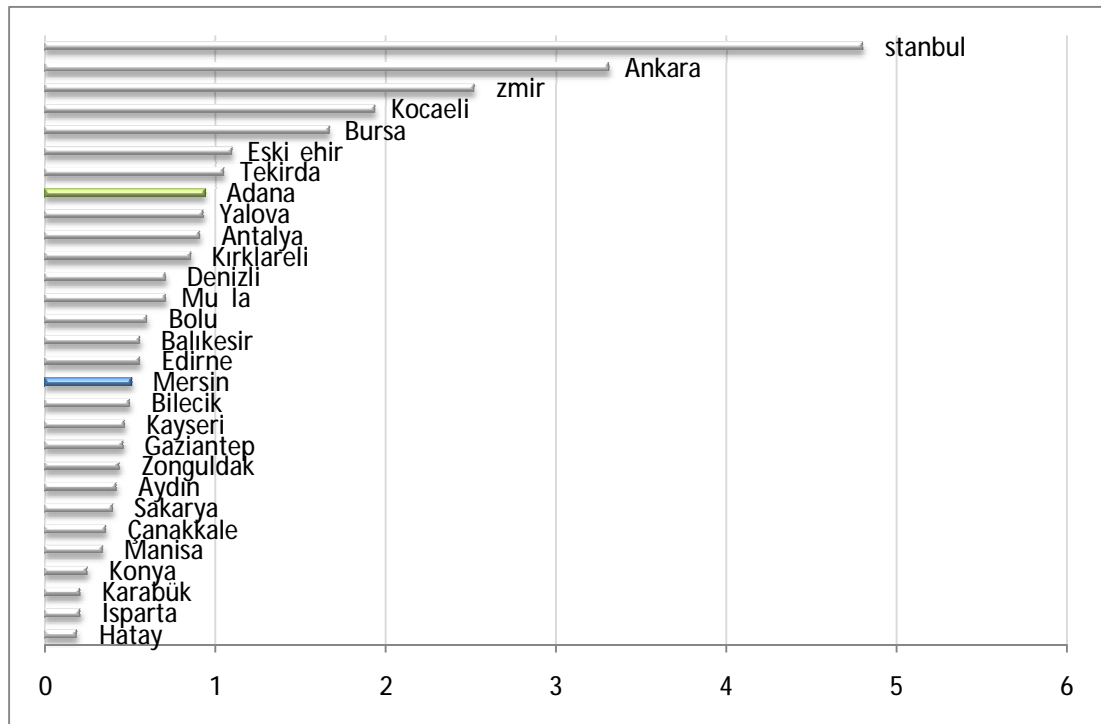


Figure 10: Ranking of the provinces (first 30 provinces)  
Source: SPO (2003)

### **3.5. Innovation Capability of the Region**

Infrastructure and indicators of innovation help to understand the innovation capability of the region. In the region, there are 3 universities (Çukurova, Mersin and Ça ) and 2 technoparks (Çukurova Teknokent and Mersin Technoscope). These are important actors of R&D and innovation activities facilitating competitiveness and economic development. Furthermore, Mersin has developed Turkey's first regional innovation strategy, RIS-Mersin, which is in line with EU based policies and strategies.

Technoparks were detailed in the previous part of the study. In this part, RIS-Mersin will be briefed and then, innovation indicators will be analysed to display the innovativeness character of the region.

#### **3.5.1. RIS-Mersin**

The RIS-Mersin project, the first RIS project of Turkey, was financed by EU 6.<sup>th</sup> Framework Programme since June 2005 and implemented in the presidency of Governor of Mersin and coordination of METU Technopolis, with the partnership of Mersin University, Mersin Chamber of Commerce and Industry, Mersin Tarsus Organized Industrial Zone, and from Greece, Epirus Region, Business and Innovation Center. The project aims to raise awareness in the region about the importance of innovation and to develop an innovation strategy for the region.

In the project, it is targeted to enhance the regional innovation potential by focusing on small business community. The objectives of the project are:

- To provide a common platform for cooperation among public and private sector, research organizations and universities, and financial institutions in the region through the elaboration of a Regional Innovation Strategy.
- To promote the establishment and further development of regional innovation infrastructures and to integrate them into the main streams of European research

- To create connection between the research centres and the companies, help to transform the established and available knowledge at enterprises and higher education research institutes into innovations, encourage stronger links in the region, country, and the European Research Area
- To promote a culture open to innovation and creativity by assessing needs in the enterprise sector in terms of innovation, by using public awareness raising techniques, by educating the players. (businesses, researchers, entrepreneurs
- To strengthen diffusion of knowledge and technology in the economy to achieve better economic development performance
- To promote collective actions, to establish local interactions envisioning strategic alignments
- To encourage collaborative activity between businesses. Whilst the focus of support may be on SMEs, larger businesses will be also included
- To increase the number of smaller innovative enterprises by creating or supporting seed and venture capital funds, technology parks and incubators
- Human development, determining the directions of human resource development (RIS Mersin, 2010).

To sum up the project process, in the first year, the innovation promotion activities were performed to take the attention of key regional actors, and in the second year, the current situation of the region was analysed and prior sectors with the potential of innovation were determined by the help of SWOT analysis and survey studies. Then, platforms of the prior sectors, agro-food, tourism and logistics, were constituted. After all these studies, the draft Mersin RIS was structured on four basic aims:

- Ø improving the innovation system and culture in Mersin
- Ø stimulating investment on innovation
- Ø exploiting regional potential in key sectors
- Ø developing knowledge producers

All these were targeted to achieve the vision of Mersin that was defined as “becoming a region with high life quality and knowledge and innovation based sustainable economy” (RIS Mersin, 2010).



### 3.5.2. Indicators of innovation: Patent, Utility Model and Industrial Design

Notably, patent indicators are widely used to reveal the innovation capacity. Not only the patent, but also utility model and industrial design indicators will be analysed in the means of regional innovation success.

In Figure10, number of regional applications of industrial design, utility model and patent is illustrated for the period of 1999-2008. According to the figure, all kinds of applications show an increase as from 2002. Additionally, appreciable increase of patents in 2007 is noteworthy although industrial design applications are the most common one among all generally.

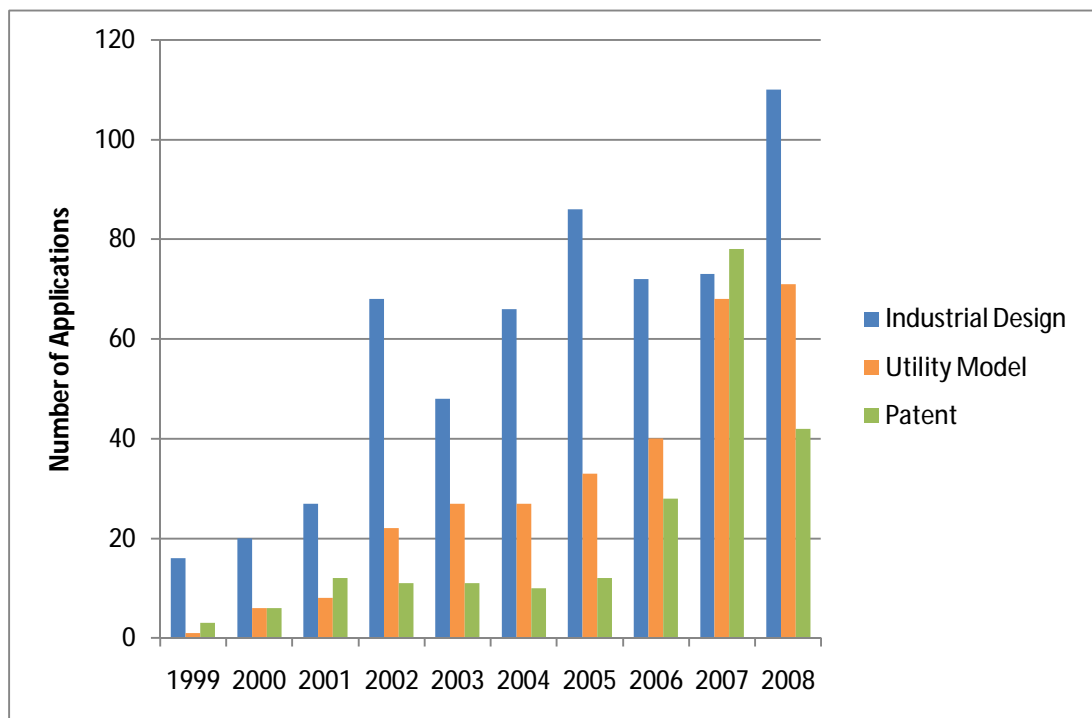


Figure 11: Distribution of industrial design, utility model and patent applications of the region

Source: TPE (2008)

The term “patent” usually means a right granted to anyone who invents or discovers any new and useful machine, process, article of manufacture, or composition of matter, or any new and useful improvement of them (Wikipedia, 2010b).

Patents encourage and facilitate innovation by warranting legal protection of inventors. On the other hand, there is a counterview that suggests patents can lower R&D investments, decrease overall economic output and prevents development at the end. These are the models where collaboration and information sharing has a strong impact in the process of new and improved product (Wikipedia, 2010c).

As seen in Figure 7, during 1999-2008, patent applications of the region have a tendency of increase, especially in the last three years. However, the ratio of the regional applications to the national applications is not stable.

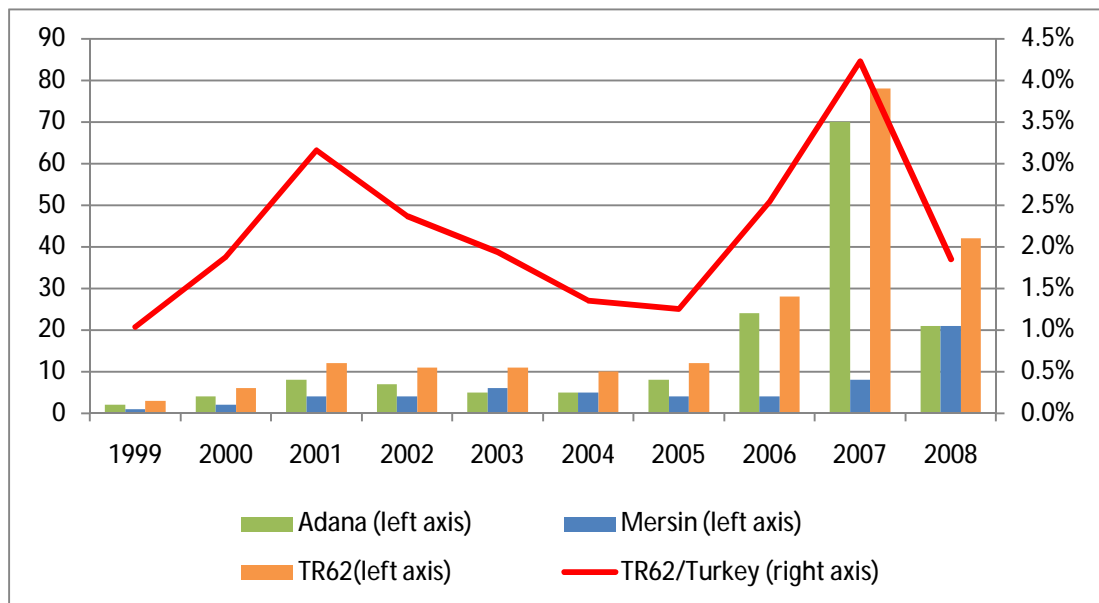


Figure 12: Patent applications of the region  
Source: TPE (2008)

In Table 11, the region has 102 applications and its rank is 9 among 26 NUTS2 Regions. Top three regions are Istanbul, Ankara and Izmir, and though these regions consist of only one province, their application numbers at least triple the applications of the region.

Table 11: Competitive analysis of the regional patent applications

Rank	Code of the Region	Name of the Region	Number of patent applications
1	TR10	istanbul	1800
2	TR51	Ankara	361
3	TR31	zmir	293
...			
8	TR33	Manisa, Afyon, Kütahya, U ak	110
9	<b>TR62</b>	<b>Adana, Mersin</b>	<b>102</b>
10	TR32	Aydın, Denizli, Mu la	90
...			
24	TR81	Zonguldak, Karabük, Bartın	4
25	TRC3	Mardin, Batman, ırnak, Siirt	2
26	TRB2	Van, Mu , Bitlis, Hakkari	0

Source: TPE (2008)

On the other hand utility model is defined as *a statutory monopoly granted for a limited time in exchange for an inventor providing sufficient teaching of his or her invention to permit a person of ordinary skill in the relevant art to perform the invention* (Wikipedia, 2010d). Rights granted by utility model laws and patent laws are very similar. In Figure 8, it is seen that utility model applications of the region displays an acceleration trend and this acceleration is also valid for the ratio of regional applications to the national applications.

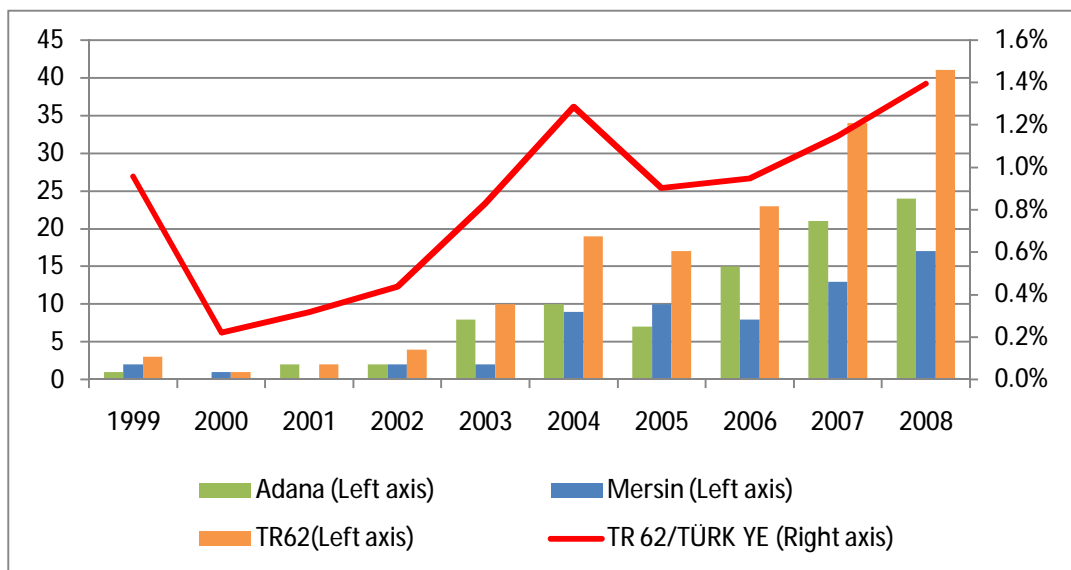


Figure 13: Utility model applications of the region

Source: TPE (2008)

According to Table 12, rank of the region is again 9, with 41 utility model applications. When compared with the top regions, it is clear that the region has low number of applications.

Table 12: Competitive analysis of the regional utility model applications

Rank	Code of the Region	Name of the Region	Number of utility model applications
1	TR10	istanbul	886
2	TR41	Bursa, Eskişehir, Bilecik	166
3	TR31	zmir	156
...			
8	TR32	Aydın, Denizli, Muğla	53
<b>9</b>	<b>TR62</b>	<b>Adana, Mersin</b>	<b>41</b>
10	TR21	Tekirdağ, Edirne, Kırklareli	33
.....			
24	TRA2	Ağrı, Kars, Iğdır, Ardahan	2
25	TRC3	Mardin, Batman, Şırnak, Siirt	1
26	TRB2	Van, Muş, Bitlis, Hakkari	0

Source: TPE (2008)

Lastly,

*industrial design is a combination of applied art and applied science, whereby the aesthetics, ergonomics and usability of mass-produced products may be improved for marketability and production, and industrial design rights are intellectual property rights that make exclusive the visual design of objects that are not purely utilitarian (Wikipedia, 2010e).*

Regional industrial design applications show an increase trend generally (Figure 9). Although the ratio of the regional applications to national ones is not stable; it has an increasing trend in the previous two years.

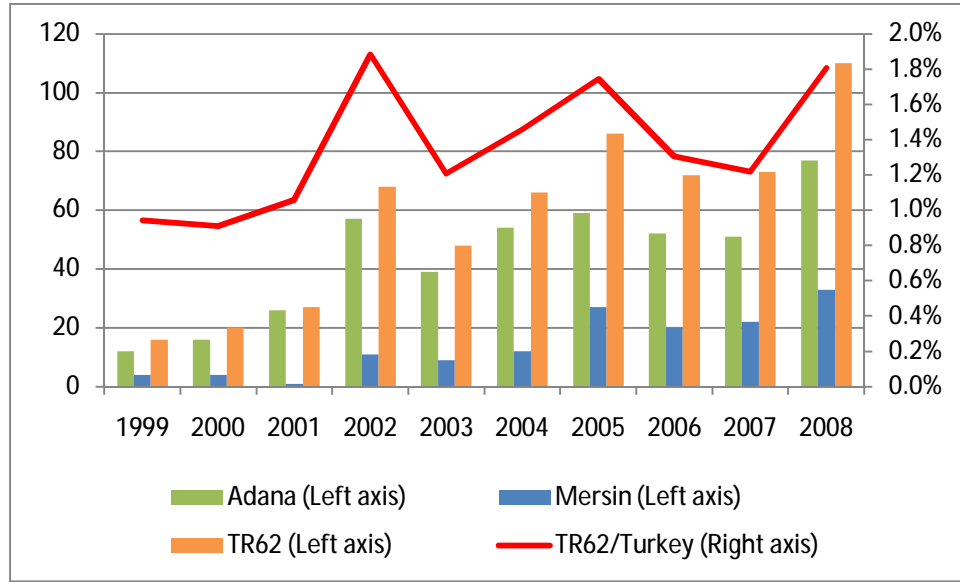


Figure 14: Industrial design applications of the region  
Source: TPE, 2008

Like the performance of other innovation indicators, the region is ranked 10<sup>th</sup> in the applications of industrial design (Table 13). The region has only 110 applications while successful regions have almost 500 applications.

Table 13: Competitive analysis of the regional industrial design applications

Rank	Code of the Region	Name of the Region	Number of industrial design applications
1	TR10	istanbul	3082
2	TR51	Ankara	517
3	TR41	Bursa, Eski ehir, Bilecik	498
...			
9	TR33	Manisa, Afyon, Kütahya, U ak	142
10	<b>TR62</b>	<b>Adana, Mersin</b>	<b>110</b>
11	TR32	Aydın, Denizli, Mu la	105
...			
24	TRA1	Erzurum, Erzincan, Bayburt	1
25	TRA2	A ri, Kars, I dir, Ardahan	1
26	TRB2	Van, Mu , Bitlis, Hakkari	0

Source: TPE (2008)

To conclude, the innovation indicators of the region, which are also included in the socio-economic development indexes, are not sufficient, and this frustrates to be ranked in top rows. For the region to compete, it is crucial to improve the innovation indicators.

### **3.6. General Evaluation**

TR62 Region has a strategic position and, this position brings advantages and disadvantages for the region. The characteristic feature of the region is its climate, which makes life conditions easier, agricultural production fruitful; and facilitates industrial production. The region can be defined as an attractive point for close regions and migration in this way, the region has to cope with the highest unemployment rate of Turkey.

The region experienced a successful industrialisation in the past. However, it is difficult to tell about the sustainability of this success. Though the region has many outstanding sectors (classified as leader, strong and flourishing sectors above), none of these is in the front rank of Turkey. The sectors are in need of reorganisation with innovative models. On the other hand, the region has a suitable economic infrastructure to foster economic development. While some of these structures are at establishment phase, they need the support of both entrepreneurs and academics.

In addition, the region has witnessed an increase especially in utility model and industrial design applications although the innovation indicators of the region does not appear in the front ranks. It is right to say that there is an attempt to arouse competitive dynamics.

As Porter (1998a) emphasizes “the enduring competitive advantages in a global economy lie increasingly in local things and knowledge”. The role of the regions is reshaped in the globalising world. The provinces of the region have the capability of fostering economic development. In this context, TR62 Region is to revise its position and strategies to be able to cope with the dynamics of globalisation and localisation.

## CHAPTER 4

### **AGGLOMERATIONS AS INNOVATION DYNAMICS: A CASE STUDY ON THE TR62 (Adana, Mersin) REGION**

Economic growth and development is closely related with dense regional agglomerations and clusters of economic activity and, this is demonstrated by the spread and expansion of industrial clusters all over the world (Scott and Storper, 2003). According to Mytelka and Farinelli (2000), clusters come in many forms and these different forms are characterised by different development paths, different organization structures and specific problems. In addition, Mytelka and Farinelli (2000) define these groups as spontaneous agglomerations and constructed clusters. The term “cluster” indicates competition and cooperation; innovative firms with strong linkages; and localised relational assets which facilitate learning and innovation effects (Cooke, 2001; Bekar and Lipsey, 2001; Scott and Storper, 2003)

At the same time, as Isaksen (2001) implies, regionalisation gradually becomes an important aspect of the globalisation trend, and the regionalisation trend can be seen by the growth in importance of regional clusters and innovation systems in the last decades. The question of what strategies local communities can initiate in order to raise the innovativeness and competitiveness of regional firms is again emphasized by Isaksen (2001).

The competition in the globalised world requires developing innovation capabilities by regional dynamics. In that context, the survey treats organised industrial zones as agglomeration examples at the regional level, and the innovation story of the region is searched for both agglomerated and not agglomerated firms. The concept of regionalisation affects the location choice by carrying out the study on the TR 62 (Adana, Mersin) Region, which is one of the 26 NUTS2 Regions of Turkey.

TR 62 (Adana, Mersin) Region can be evaluated as the most developed region in the eastern part of Turkey. Thanks to its metropolitan character, weather and natural resources, the region is suitable for many economic activities (ÇKA, 2010b). Adana has witnessed a successful industrialisation process in the recent past; hence, the

industrialisation culture is still strong in spite of the stagnancy in its most productive industries. However, the advantages of the region may often turn to disadvantages in means of attracting the unskilled labour of undeveloped regions and this causes the region to have the highest unemployment rate in Turkey.

As seen in the previous chapter, textile industry has performed very well in terms of both employment and export in the region. According to Taymaz (2004), textile and clothing industries have played a very important role in generating employment opportunities, and generating export revenue but these industries have low rate of productivity and wages. In addition, Taymaz (2004) emphasizes the role of textile and clothing industries in the early industrialization process of almost all countries since The Industrial Revolution. This is the case also for the region. However, textile industry is not as competitive as it was in the past; it is in need of reorganisation.

Among all NUTS2 regions, the region is ranked after the developed regions in terms of industrial indicators. Economic activities are concentrated in agriculture and agriculture based industries, but added value of the industries is still far from being permanent. The structure of the economy reflects the urgent need of reorganisation. The region needs to develop R&D and innovation facilities in order to foster regional economic development in the globalised economy.

#### **4.1. Method and Data**

The study aims to reveal innovation performance and the factors affecting the performance by the comparison of agglomerated and non-agglomerated firms in the TR62 (Adana, Mersin) Region. AOSB and MTOSB are accepted as agglomeration cases in the region. Most of the firms surveyed operate in the food, metal-machine and textile industries. There is only one firm operating in plastic industry.

To conceive the opportunities and the contributions of being together, firms are analysed in two groups: the firms operating in organized industrial zones and the ones operating out of the zones. Innovative capability of the firms, process of innovation and the difficulties of innovation were tried to bring out at the end of the study.



Sectors of the firms were chosen according to the characteristics of the regional economy. As indicated in the previous section, some sectors stand out in the terms of local unit number, employment rate, location quotient, and export volume. Although these sectors are not the same for Adana and Mersin, there are common sectors prominent in two provinces. Agriculture-based food industry and textile industry are the common sectors in Adana and Mersin and these two sectors take place in both of the organized industrial zones. Metal and machinery industry is an important sector for both Adana and Mersin and the most common sector observed in MTOSB. There is only one exception of these sectors, as one of the firms operates in plastic industry.

The case study is based on data collected from 20 firms in Adana and Mersin. These 20 firms are composed of 10 firms operating in AOSB and MTOSB, and 10 firms operating out of AOSB and MTOSB. Most of the firms are SMEs, but there are also successful large firms which were SMEs once upon a time. The analysis is based on data collection through interviews, which were personally done with the managers or the professionals of the firms.

Interview questions were selected from three sources: a survey on textile firms in AOSB (Kavas, 2006); the survey by Taymaz et al. (2008); and the survey by Dulupçu and Sungur (2007).

The interview is composed of 6 parts. The first part is related to general information about the firm and the second part includes questions about cooperation. Production process relations are included in the third part. The fourth part investigates research and development and technological activities. Innovativeness of the firm is inquired in the fifth part, and other comments about innovation, cooperation and being agglomerated/ not agglomerated take place in the sixth part of the interview. Questions are asked for the period of the last three years (2007-2009)..

## **4.2. Hypothesis of the Research**

The purpose of the thesis is to identify the innovation performance and the factors affecting the innovative performance by comparing agglomerated and non-agglomerated firms in Adana and Mersin. The hypothesis can be summarized as follows:

**Hypothesis:** The main features affecting the innovation performance of the firms are related with competition and cooperation atmosphere of being agglomerated

### 4.3. Analysis and Results

Among the 20 firms interviewed, 10 firms are located in the OIZs, while the other 10 firms are located out of OIZs. 9 firms are in metal-machinery industry, 7 firms in food industry, 3 firms in textile industry, and one firm in other (plastic) industry (see Figure 14).

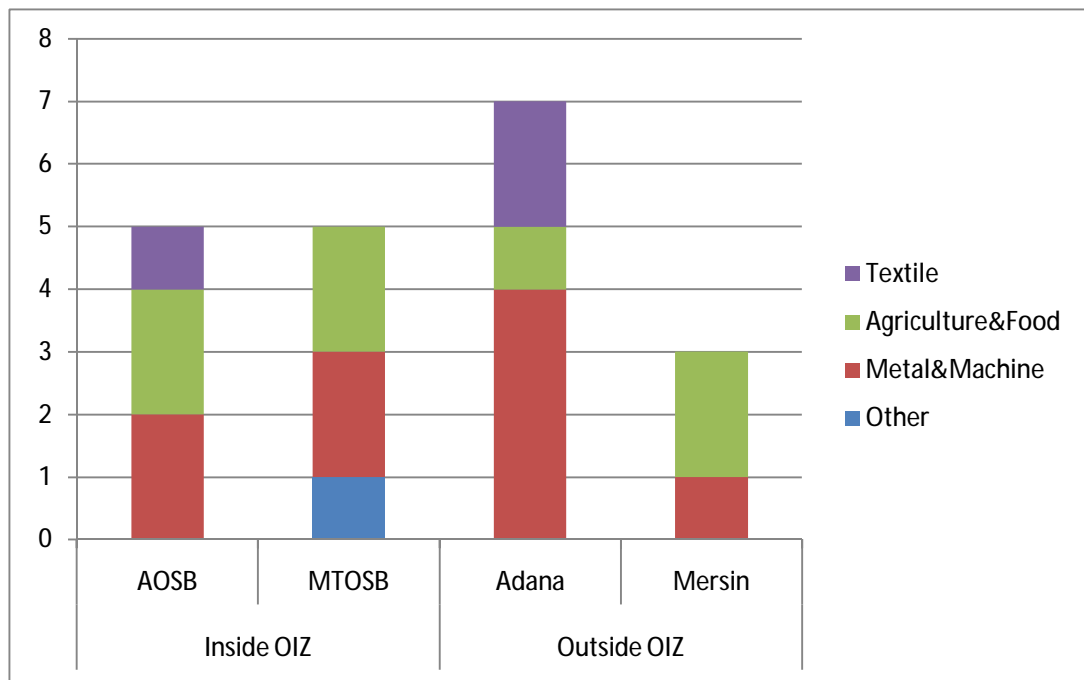


Figure 15: Distribution of firms according to location and sector

If these firms are grouped in 3 size categories by employment, 11 firms (55% of surveyed firms) are small firms (whose employment is between 10 and 49), 7 firms (35% of the firms) medium firms (whose employment is between 50 and 99), and 2 firms (10% of the firms) large firms (whose employment is more than 100).

One of the most distinctive features of the surveyed firms is the rate of family business. 70% of surveyed firms are family businesses, while 20% of them have multi partners, and 10% of them are group firms (Figure 15).

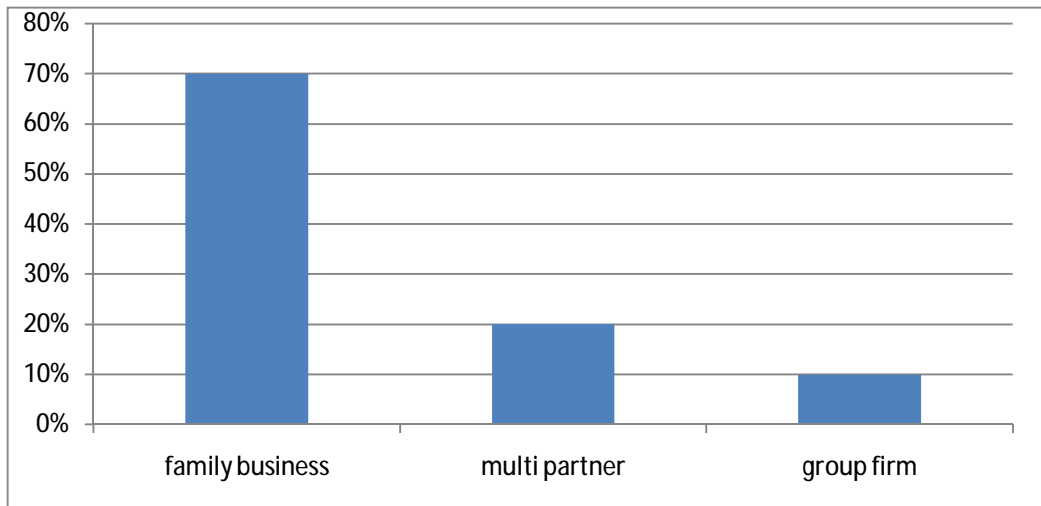


Figure 16: Structure of the firms

Surveyed firms are established mainly by regional capital (Figure 16). Regional capital means that the partners of the firms are from Adana and Mersin. This case can be evaluated together with the high rate of family business.

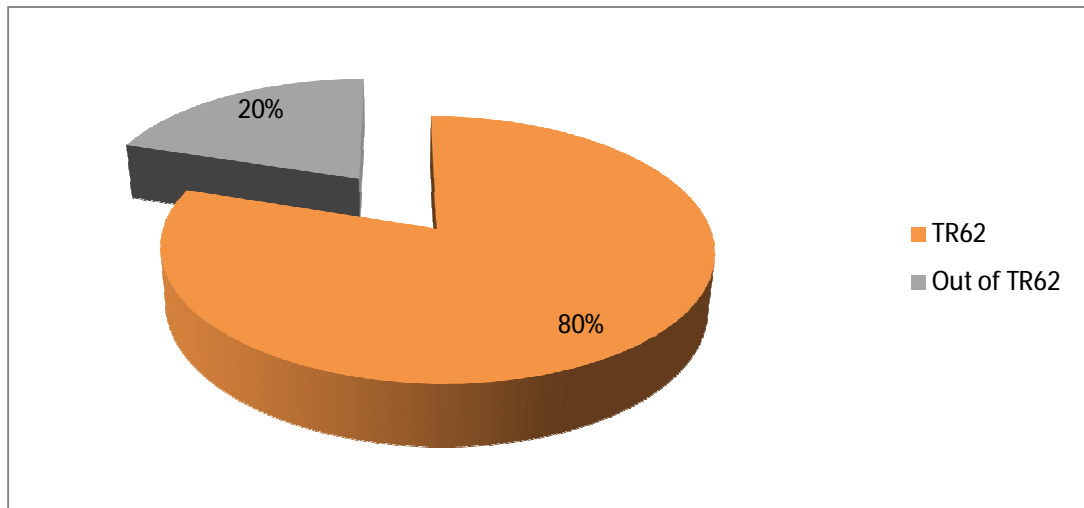


Figure 17: Source of capital

As seen in Figure 17, the rate of university graduate managers is high (75%). Managers with high school degree and managers with vocational education have the same rate (10% each). Lastly, primary school graduate managers have the lowest share (5%). During the interviews, it was seen that most of the university graduate managers were first generation.

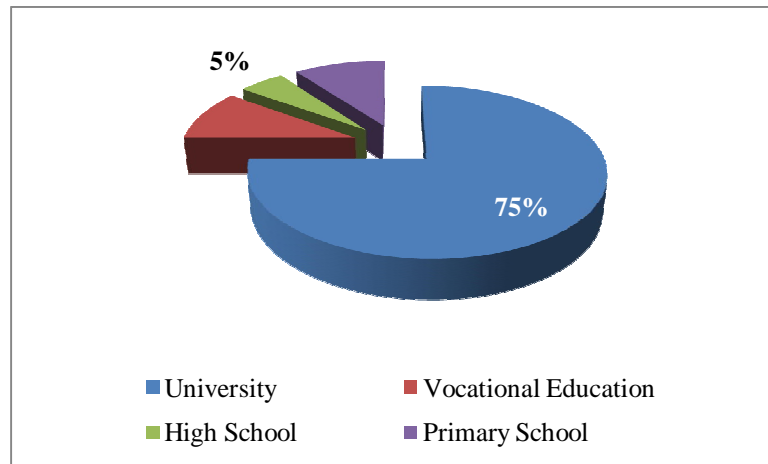


Figure 18: Education of managers

Export performance of 15 exporting firms (75% of surveyed firms) is illustrated in Figure 18. It is found that 6 firms (40% of the exporting firms) have increased the export rate in the last three years, 6 firms (40% of them) have protected the rate in spite of the economic crisis. Only 3 firms (20% of them) have a decrease in exports.

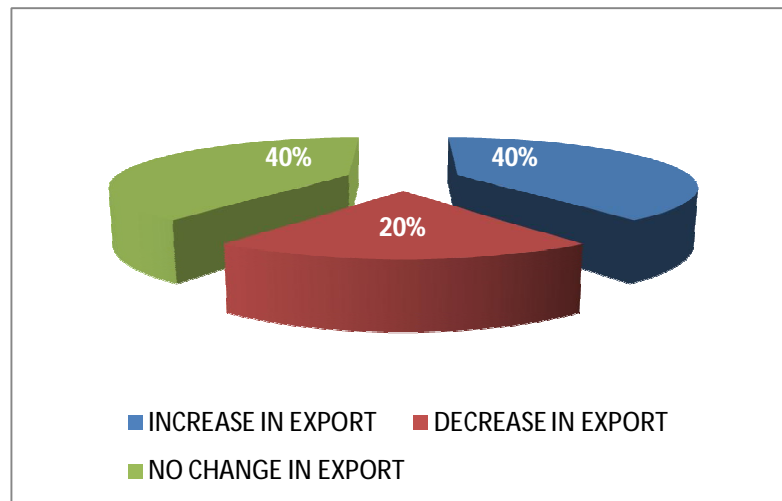


Figure 19: Export performance of firms in last three years

A high proportion (15 firms) of surveyed firms informed that they have established cooperative relations (Figure 19), and this rate is nearly the same for the firms inside and outside of OIZs. During the interview, it was tried to detail the cooperation relations by the help of cooperation matrix. But, only a few defined relationships with different actors. It is right to say that cooperation is limited with a few actors and subjects.

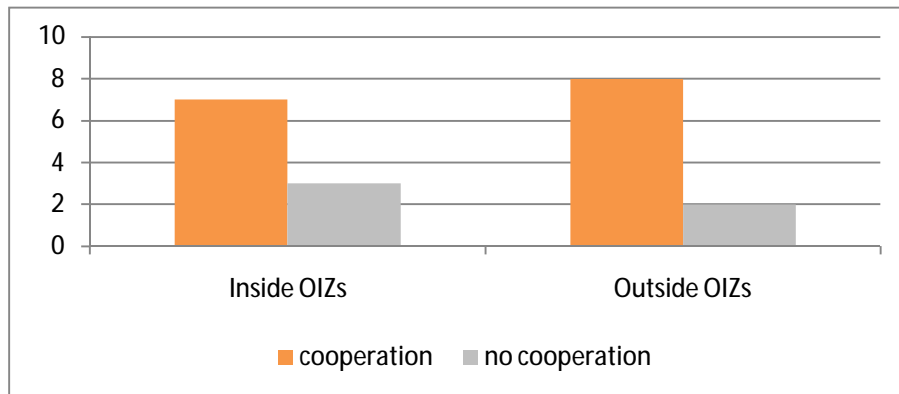


Figure 20: Cooperation status of firms

Questions regarding advantages of cooperation were answered by 6 out of 15 cooperating firms. Table 14 shows the number of firms and their grades about the advantages of cooperation. Decreasing cost of access to knowledge and advantages of other firms' experience are graded by 6 firms. This is followed by joint R&D opportunities and easy access to raw materials. Lastly, 4 of 15 cooperating firms evaluate access to experienced professionals as an advantage of cooperation.

Table 14: Advantages of cooperation

	Low (1)	Middle (2)	High (3)	Total Point
<b>Decreasing Cost of Access to Knowledge</b>	-	4	2	<b>14</b>
<b>Advantages of Other Firms' Experience</b>	3	3	-	<b>9</b>
<b>Joint R&amp;D Opportunities</b>	2	3	-	<b>8</b>
<b>Easy Access to Raw Materials and Intermediate</b>	2	3	-	<b>8</b>
<b>Access to Experienced Professionals</b>	2	1	1	<b>7</b>

9 firms (45% of surveyed firms) have an R&D department, while 6 firms (30%) do not have. 4 firms plan to establish and one firm's R&D is at the establishment phase (Figure 20). Here, it should be emphasized that most of the firms of food industry have Quality Control Department instead of R&D Department.

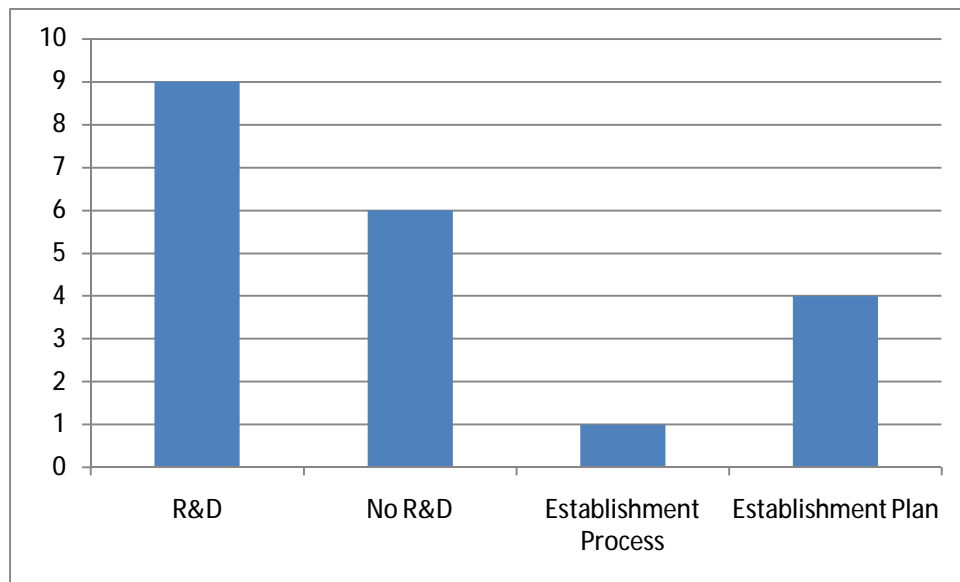


Figure 21: Status of R&D Department

Among the methods used to monitor technological developments, attending fairs and exhibitions has the highest share (39%). Monitoring technology at other firms (imitation) and through staff changes are also important methods to monitor technological developments (21% and 17% of firms, respectively). Other methods have been used less frequently (Figure 21). According to many firms, monitoring technological developments by attending to national and international fairs is easy and efficient.

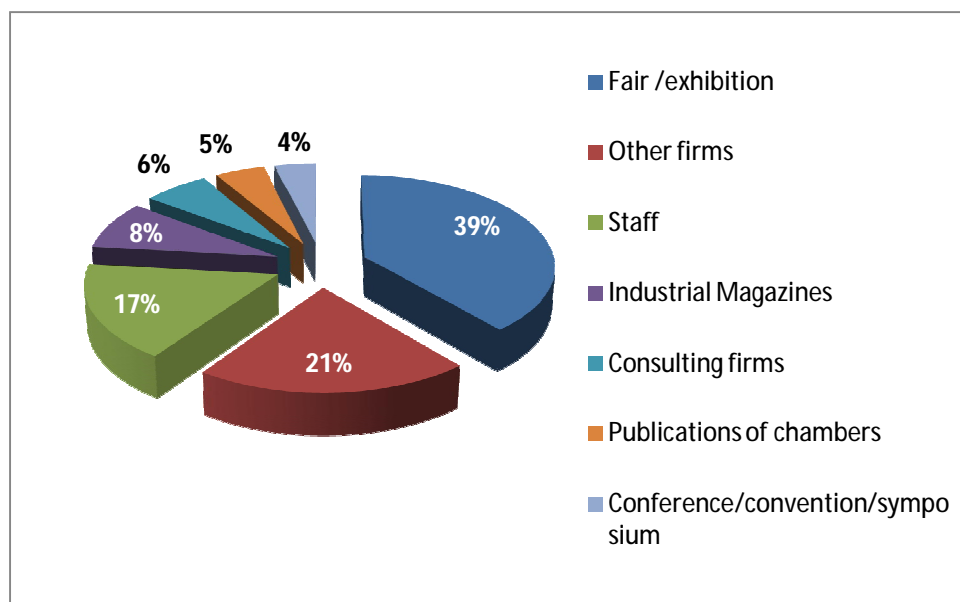


Figure 22: Method of monitoring technological developments

In order to evaluate the innovativeness of the firms, innovation is separated into 4 components: product innovation (new product), product improvement (improved product), process innovation (new process), and process improvement (improved process). Table 15 shows the number of innovating firms which perform only new product-process, only improved product-process, and both of them. There are 13 firms which have at least one new or improved product. 5 firms perform only improved product, while just one firm perform only new product. The number of firms which perform both of them is 7.

Success of the firms in terms of process innovation is similar to the success of product innovation. Improvement again dominates innovation. There are 18 firms which have at least one new or improved process. The number of firms performing only new process is just one. More than half of innovating firms inform that they have been improving their processes only, and nearly one third of them perform both of them.

Table 15: Product and Process Innovation

		Number of Firms	Total Number of Firms
PRODUCT INNOVATION	Only new product	1	13
	Only improved product	5	
	Both of new product and improved product	7	
PROCESS INNOVATION	Only new process	1	18
	Only improved process	11	
	Both of new process and improved process	6	

To bring out the innovation capability of the firms, their patent applications/registrations, and quality certificates were asked in the survey. Even the most innovative firms are not successful in terms of patents. But, 16 firms of 20 firms have quality certificates, and it is right to say that the number of quality certificate is highest for the most innovative firms.

Totally, 15 firms of 19 innovating firms answer the questions about funding of innovation, and this is illustrated in Figure 22. More than 60% of the innovating firms use their equity for this activity. Both the firms funding innovation by only credit, and the firms funding innovation by the mix of credit and equity, have a share of less than 15%. In addition, nearly 7% of innovating firms use equity and financial support together.

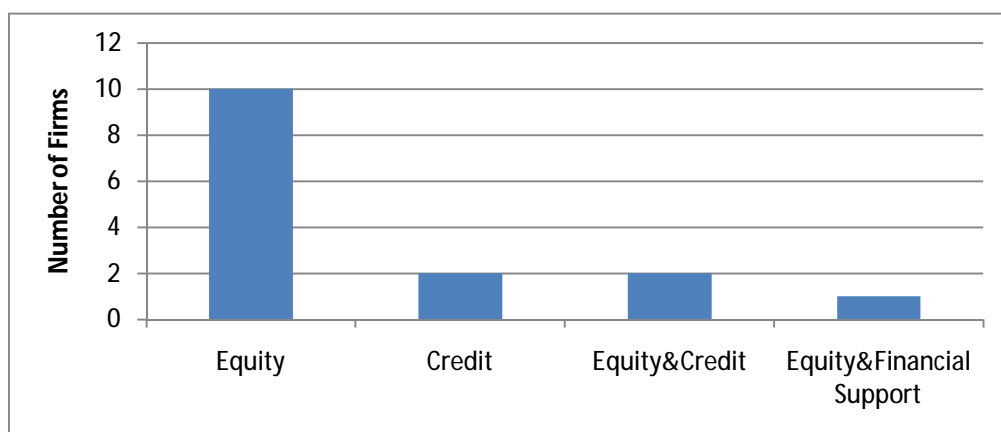


Figure 23: Funding of Innovation

Answers regarding the effects of innovation were given by 19 innovating firms. Increasing variety of products and services; increase of market share and sales; and increase of export are the most common effects of innovation on firms. These effects are followed by increase in the quality of products and services; increase of production capacity; and decrease of costs, respectively. Among the effects of innovation, improvement in the worker health and safe has the lowest share (Table 16).

Table 16: Effects of innovation on the firm

Effect of Innovation	Number of Responses
Increasing Variety of Products/Services	15
Increase of Market Share/Sales	15
Increase of Export	15
Increasing Quality of Product/Service	12
Increase of Production Capacity	11
Decrease of Costs	8
Improvement in the Worker Health and Safety	3



Lastly, bottlenecks of innovation are analysed. As seen in Table 17, all difficulties have nearly same shares. Lack of qualified staff, demand risks, and inability of time sparing are the main bottlenecks. These are followed by economic risks, costs, bureaucratic difficulties. Financial constraints and lack of technological knowledge have the lowest number of responses.

Table 17: Bottlenecks of innovation

<b>Bottlenecks</b>	<b>Number of Responses</b>
<b>Lack of qualified staff</b>	11
<b>Demand risks</b>	11
<b>Inability of time sparing</b>	11
<b>Economic risks</b>	10
<b>Costs</b>	10
<b>Beurocratic difficulties</b>	10
<b>Financial constraints</b>	8
<b>Lack of technological knowledge</b>	7

In this context, surveyed firms can be evaluated in two groups: successful firms and unsuccessful firms in terms of innovation, and the success are determined by product-process innovation and product-process improvement indicators. If it is given “one point” to each innovation and improvement, the ones getting at least two points will be evaluated as successful and the ones getting lower will be evaluated as unsuccessful.

Surveyed firms are evaluated in 5 groups totally according to their innovation and improvement achievement; and their innovation performance is classified as high, medium/high, medium, low and none. Successful firms are displaying high, medium/high and medium level of innovation performance while unsuccessful firms are displaying either low or no performance of innovation (Table 18). According to this classification, 14 firms are successful and 6 firms are unsuccessful in terms of innovation.

Table 18: Distribution of successful and unsuccessful firms according to innovation and improvement achievement

		Number of Firms	Point of New Product/Process	Point of Improved Product/Process	Inside OIZs	Out of OIZs
<b>Successful Firms</b>	High performance of innovation (Total Point:4)	4	2	2	3	1
	Medium/high performance of innovation (Total Point:3)	1	2	1	0	3
		2	1	2		
	Medium performance of innovation (Total Point:2)	4	0	2	4	3
		3	1	1		
<b>Unsuccessful Firms</b>	Low performance of innovation (Total Point:1)	5	0	1	2	3
	No performance of innovation (Total Point: 0)	1	0	0	1	0

The firms of high level of innovation performance are the ones that are successful in both innovation and improvement. These firms perform new product, new process, improved product, and improved process at the same time. That implies high capability of innovation. Four of the firms are in this group, and three of them are in OIZs.

The firms of high/medium level of innovation performance are composed of two groups: the ones that have both new product and new process together with improved product or process, and the ones that have both improved product and process together with new product or process. Three of the surveyed firms take place in that group, and all of them take place out of OIZs.

The firms displaying medium level of innovation performance are composed of two groups. The first group includes the firms which have both improved product and process, but they don't have any new product or new process. The second group includes the firms which have one kind of innovation (product or process) together with a kind of improvement (product or process). This group includes 7 of the surveyed firms, 4 of which take place in OIZs.

On the other hand, the firms called unsuccessful in terms of innovation can be categorised in two groups: the ones which make neither innovation nor improvement and the ones that make only process improvement. According to this categorisation, 6 of the surveyed firms are evaluated as unsuccessful. Two of the firms with low performance of innovation and the firm with no performance of innovation operate in OIZs. Other three firms are out of OIZs.

Table 19 shows the number of firms that make different combinations of innovation and improvement. According to the table, half of the firms are improving process and product at the same time and nearly one third of the firms perform other combinations. As the high number of improvement combination is not valid for other combinations, it is not wrong to say that "improved" products and processes dominate "new" products and processes. Armatlı-Köro lu (2005) emphasizes that innovations in the industrial regions of Turkey consist of the modifications in existing product rather than radical innovations. This is the case also in TR62 Region.

Table 19: Cross analysis of firms' innovation and improvement achievement

<b>Number of firms</b>	<b>Product Innovation</b>		
<b>Process Innovation</b>	6	<b>Process Innovation</b>	
<b>Product Improvement</b>	7	6	<b>Product Improvement</b>
<b>Process Improvement</b>	6	6	10

In Figure 23, the firms are investigated separately in terms of new product/process and improved product/process, so total number of firms is much more than 20. According to the figure, firms which are outside OIZs are more successful in new product, while firms taking place inside OIZs are more successful at new process and improved process. Performance of product improvement is the same for both of the groups

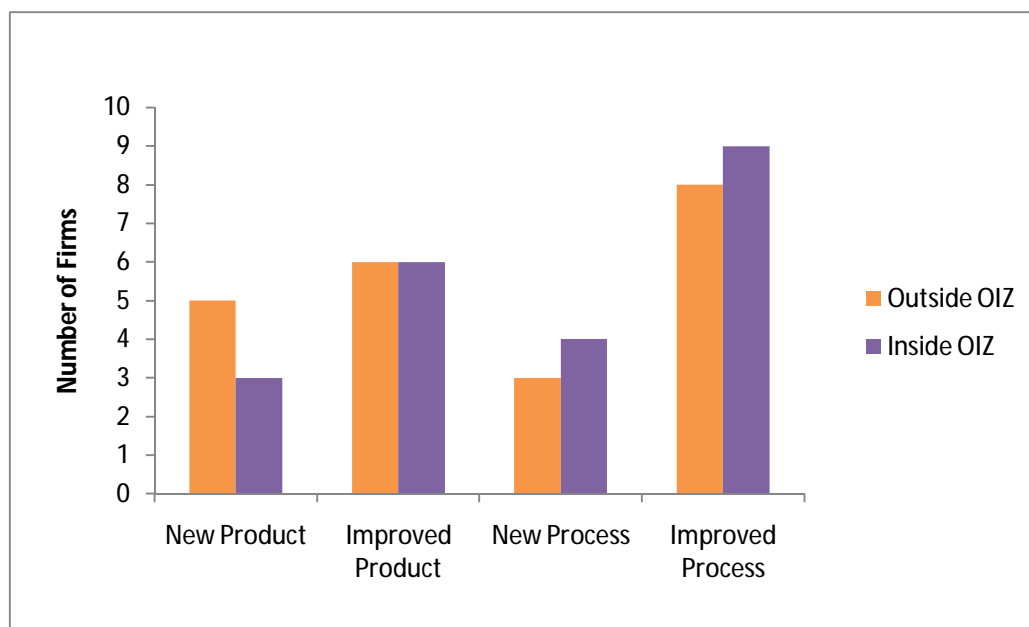


Figure 24: Innovation and improvement status according to the location

In Figure 24, successful and unsuccessful firms are categorised according to their location. It is seen that half of 14 successful firms and half of 6 unsuccessful firms locate in OIZs. So, in this sense, it is hard to cite the noticeable effect of being agglomerated in OIZs.

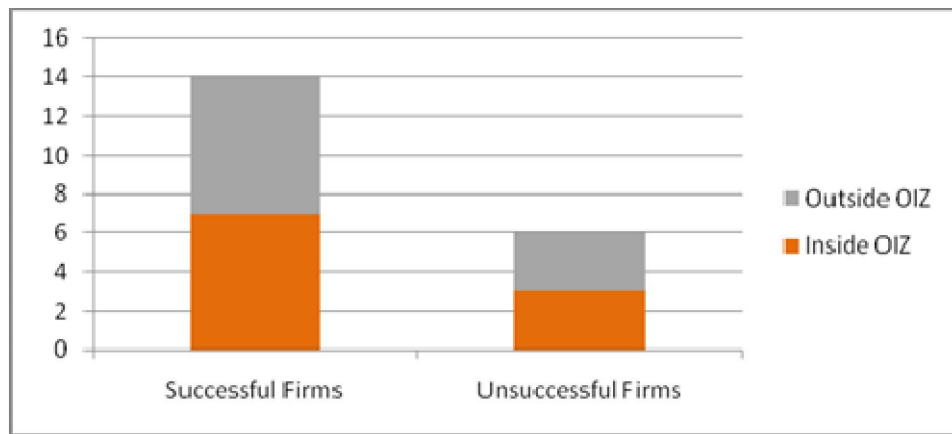


Figure 25: Local distribution of successful and unsuccessful firms

The distinctive features of successful and unsuccessful firms are summarised below, in terms of national market share, export performance, supplier and customer relations, and R&D infrastructure. Furthermore, the outstanding features of the firms are stressed.

Firstly, all successful firms attract attention in terms of national market share. All of them have national market share, most of which are high or middle. This can be explained by impulsive force of competition, especially at national level. It is important to ensure the requirements of competition, and innovation constitutes one of its most important elements. Business contacts at national level also mean keeping abreast of the market closely.

Different from successful firms, neither of unsuccessful firms has high level of national market share; they have middle or low level of market share. The ones with no national market share either only export or have a high level of regional and provincial market share. Exporting firms of this group can be evaluated as successful, but non-exporting firms do not have high level of national market share either.

In Figure 25, national market share of surveyed firms are illustrated. Nearly 80% of successful firms have high or middle level of national market share, and there are no firms operating out of national market. But, the indicators are different for unsuccessful ones. About more than half of them have low or middle level of national level, and the rest do not have market share at national level.

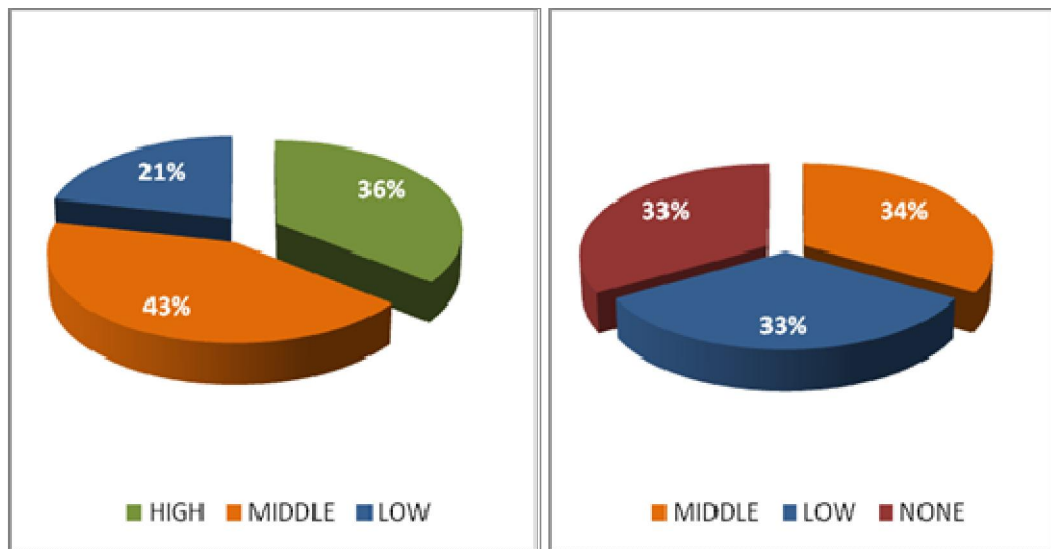


Figure 26: National market share of successful firms and unsuccessful firms

The second outstanding feature of successful firms is their export performance. In spite of hard global economic conjuncture, most of them have either risen or maintained the level of export in the last three years. This case adds the effect of international level of competition to the innovation success of firms. On the other hand, export performance of the second group (unsuccessful firms) resembles the first group's (successful firms) performance. But the second group differs from the first group especially by the character of firms which do not export. This kind of firms has usually high level of regional and national market share in the first group, while they do not have such a performance in the second group.

According to Table 20, nearly all market shares of the first group are high. As emphasized before, this level of competition can be interpreted as a competitive pressure for the companies to do something new, or they take place in the market thanks to their innovation capability. Low performance of unsuccessful firms can be interpreted in this context, too. Excluding other market conditions, it is hard for these firms to rival with this level of innovation performance or vice versa, to be out of more competitive market conditions cause stagnancy.

Table 20: Market share of firms which do not export

	<b>Provincial Market Share</b>	<b>Regional Market Share</b>	<b>National Market Share</b>
<b>Successful Firms</b>	MIDDLE	HIGH	HIGH
	HIGH	HIGH	MIDDLE
	HIGH	HIGH	HIGH
<b>Unsuccessful Firms</b>	HIGH	HIGH	-
	LOW	LOW	MIDDLE

The next analysis can be the supplier (S) and customer (C) relations of the firms. In the tables below, the firms are detailed in terms of these relations. Table 21, 22, 23 and 24 define the location of the suppliers and customers of the firms. “Regional” describes the ones located in TR62 (Adana, Mersin) Region; “National” describes the national ones located out of TR 62 Region; and “International” indicates the foreign ones. The firm whose box is coloured (e.g.: Firm1, Firm2, firm3) shows that firm is operating in OIZ.

Table 21 shows the relations of the firms with high performance of innovation (the most innovative ones). Most of the relations are international, and this is followed by national relations. Regional relations are the weakest ones. Three of these firms locate in OIZs.

Table 21: Supplier and customer relations of the most innovative firms

	<b>Firm1</b>	<b>Firm2</b>	<b>Firm3</b>	<b>Firm4</b>
<b>S1</b>	Regional	Regional	National	National
<b>S2</b>	National	Regional	International	International
<b>S3</b>			International	International
<b>C1</b>	National	International	International	International
<b>C2</b>	International	National	International	International
<b>C3</b>	International	National	National	International

The supplier and customer relations are again dominated by international linkages for the firms with medium/ high performance of innovation (more innovative firms) (Table 22). All of these firms operate out of OIZs.

Table 22: Supplier and customer relations of more innovative firms

	<b>Firm1</b>	<b>Firm2</b>	<b>Firm3</b>
<b>S1</b>	International	Regional	Regional
<b>S2</b>	International	National	National
<b>S3</b>	International		International
<b>C1</b>	National	International	International
<b>C2</b>	National		International
<b>C3</b>	Regional		International

In addition, the relations of the firms with medium performance of innovation (innovative firms) acquire a different character. As seen in Table 23, national relations are the most common one, and followed by regional relations. Four of these seven firms are in OIZs.

Table 23: Supplier and customer relations of innovative firms

	<b>Firm1</b>	<b>Firm2</b>	<b>Firm3</b>	<b>Firm4</b>	<b>Firm5</b>	<b>Firm6</b>	<b>Firm7</b>
<b>S1</b>	National	National	National	National	Regional	National	Regional
<b>S2</b>	Regional	Regional	National		National	Regional	National
<b>S3</b>	National	Regional			National	National	National
<b>C1</b>	National	National	National	National	National	International	National
<b>C2</b>	National	National	National	International	National	Regional	National
<b>C3</b>	National	National	National		National	International	National

The relations of non-innovative firms (firms with low or no performance of innovation-unsuccessful ones) are illustrated in Table 24. It is seen that the relations are dominated by regional ones. Half of these firms take place in OIZs.

Table 24: Supplier and customer relations of non- innovative firms

<b>THE WORST</b>	<b>Firm1</b>	<b>Firm2</b>	<b>Firm3</b>	<b>Firm4</b>	<b>Firm5</b>	<b>Firm6</b>
<b>S1</b>	National	National	Regional	Regional	Regional	Regional
<b>S2</b>	Regional	International	Regional	National		Regional
<b>S3</b>	National	International		National		National
<b>C1</b>	International	International	International	Regional	National	Regional
<b>C2</b>	Regional	National		Regional		Regional
<b>C3</b>	National	International				Regional



As a result, supplier and customer relations are different in terms of location for innovative and non-innovative firms. The more innovative firms indicate the more international relations. These relations become national and regional as the innovative performance decreases. It can be said that either international networks affect firms to be innovative, or innovative firms are able to compete in the global markets.

Fourthly, the most distinguishing feature between two groups is their R&D infrastructure. In the first group, more than half of the firms have R&D Department, and the rest plan to establish the department. In the second group, contrarily, none of them have R&D department and only one of them plans to establish the department.

The difference between two groups in terms of R&D infrastructure is detailed in Figure 26. While 9 firms of 14 successful firms have R&D Department, none of the unsuccessful firms has R&D Department. Here, it is important to stress that companies which do not have R&D Department inform that they have already been carrying out R&D activities at the time of production. These kinds of activities are called as informal R&D activities. Santarelli and Sterlacchini (1990) evaluate informal R&D as an important part of SMEs' total R&D, but they emphasize that large firms' systematic R&D is more effective than occasional R&D in terms of product innovations. In our analysis, firms with R&D Department range in size and so, it is hard to say that large firms are better than the small ones. But, almost all the firms which achieve both product and process innovation have R&D Departments.

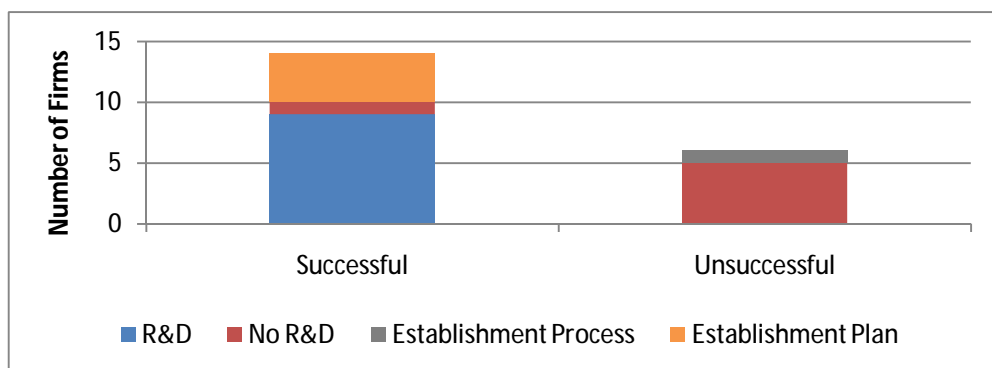


Figure 27: Status of R&D Department

In addition, the firms with national capital distribution, and the firms managed by primary school graduates can be stressed by their outstanding feature. It is striking that all the firms whose capital distribution is national take place in the successful group. If the education level of administrative staff is handled, it will be seen that most of them have university degree and the others have vocational, high school and primary school degree. It is important to stress that to be managed by university graduate does not bring innovative capability directly, because there are also unsuccessful firms managed by these managers. But, it is interesting that the firms managed by primary school graduates have weak indicators in terms of innovation, market share and export.

According to Table 25, the firms of this group have low performance of innovation and do not export. On the other hand, one of them has high provincial and regional market share, but no national market share; the other has low provincial and regional market shares, and medium level of national market share.

Table 25: Indicators of the firms managed by primary school graduates

<b>Education</b>	<b>Primary School</b>	<b>Primary School</b>
<b>Total Point of Innovation</b>	1	1
<b>Provincial Market Share</b>	HIGH	LOW
<b>Regional Market Share</b>	HIGH	LOW
<b>National Market Share</b>	-	MEDIUM
<b>Export</b>	NO EXPORT	NO EXPORT

#### **4.4. General Evaluation**

In the globalisation era, the importance of knowledge economy and innovation rises, and so, firms, cities, regions and countries are to perform innovation based strategies to be able to strengthen competitiveness and cope with globalisation. At this point, the local milieu and its innovative character gain ground together with clusters.

Local milieu is no more an abstract space; all of the hierarchical, functional, economic and social interactions occur in the local milieu (Camagni and Capello,

2009). Agglomeration and district economies are included in the geographical proximity of the local milieu while common culture, sense of belonging, mutual trust and shared behavioural codes indicate cognitive proximity (Camagni and Capello, 2002).

Other outstanding feature of the milieu is its innovativeness. Camagni (1991, 2004) describes the milieu as a “cognitive engine” and emphasizes its innovative side. Local territories are important in the organisation of financial capital, codified knowledge, general information and consolidated technologies to innovative products and processes (Camagni and Capello, 2009).

Innovation and competition are described as a “virtuous cycle” in OECD Report (2008). This cycle provides to use human and physical resources more efficiently. At the end, increase of global competition leads to innovation, and innovation accelerates competition (OECD, 2008).

In this context, the innovative capability of TR62 (Adana, Mersin) Region was tried to bring out by investigating the feature of the firms. The region was chosen to analyse the dynamics of a local milieu. It is a region in which the local resources can be organised to create a dynamic and competitive milieu.

The region is ranked after the developed regions of Turkey. In the past, it witnessed rapid industrialisation, especially in textile manufacturing though it is not as competitive as it was in the past. Together with its agricultural feature and location, the region can be qualified as an attractive and a crossing point. But, its metropolitan character brings with disadvantages like high unemployment rate. Today, the region has to use its all resources efficiently to cope with regional disadvantages and to gain competitiveness in both national and international areas.

As mentioned above, knowledge economy and innovation plays an important role in competition. On the other hand, clusters are defined as organisations that foster innovation and competition. Economic infrastructure of the region has the capacity to

enable economic development of the region. In the survey, the firms operating in OIZs are seen as agglomeration examples of the region. By the establishment of OIZs, it is aimed to increase the rate of productivity and profitability by the agglomeration of vertically and horizontally integrated industries (OSB Üst Kurulu u, 2010). The firms operating in OIZs and the ones operating outside of OIZs are investigated through interviews to search out their innovation achievements and their outstanding features.

First of all, the composition of the innovation can be stressed. Like other industrial regions of Turkey, regional firms have a tendency to make modification rather than radical innovation. This is the case for product and process innovation; and for both agglomerated and non-agglomerated ones.

Other point is the regional, national and international linkages of successful innovative firms. These linkages are in terms of supplier and customer relations. The relations of the most successful ones are international and national; while the relations of unsuccessful ones are regional and national. This clarifies especially the effect of global linkages on innovation. Especially in textile industry, the firms specialised in contract manufacturing of international firms have to meet the requirements of the foreigners' standard, and this means improvements in the firm. Again, there is no difference between agglomerated and non-agglomerated ones.

When evaluated together with the above analyses, it is hard to make a difference between the agglomerated and non-agglomerated firms in terms of innovation. The success of the firms depends on their individual efforts. Most of these successful firms are established by professionals experienced in the field, or they are old corporate firms.

One of the prominent firms, operating out of OIZs, attracts attention with their effort to design machines according to the needs of the farmers. The firm is operating in pesticides, and its manager is an agricultural engineer. Together with his team, he determines the needs of farmers and design machines peculiar to these needs. They

collaborated with TUB TAK in the design of a machine. They find regional corporate structure insufficient. The firm is enlarging its market share rapidly. In the success of the firm, it is right to stress the individual effort of the firm.

Another successful firm was established by a professional experienced in his field so many years. The firm is successful in the industry, and this success is usually achieved by its innovative character. It has intensive collaborations with regional and national actors; and its distinctive character is the willingness to share their experience and success with other firms as this is not a common manner in the region.

In addition, it was seen through interview that corporated firms display successful indicators. Their relations are intensified mostly at international level while their relations with regional actors are limited. Their human resources and physical infrastructure are suitable for innovation activities.

As result, in the region, the innovation dynamics are determined by individual achievements rather than regional interactions. It is hard to make a difference between the agglomerated and non-agglomerated firms in terms of innovation. The advantages of operating in OIZs are defined in a limited frame by many of the firms. Cooperation is again limited with a few actors, and the regional corporate structure is defined as weak. There is an increasing trend in the regional innovation capability, but this is not the case for many of the firms. On the other hand, there is an attempt in the region to arouse competitive dynamics. In that point, it is important to design regional specific policies to penetrate innovation capabilities. An integrated system of cooperation and competition can help to foster the regional dynamics.

## CHAPTER 5

### CONCLUSION

The acceleration of globalisation has reshaped competition conditions and raised the importance of local dynamics. Technology and innovation has become vital for productivity, and local resources and production systems constitute the main competitive factors. In that context, the study investigates the innovative performance of the Adana/Mersin Region with a special emphasis on the role of agglomerations. Organised industrial zones are used as geographic agglomeration examples, and the main features of the innovative firms are analysed to shed light on the effects of agglomeration on innovativeness.

Surveyed firms are different in terms of type, size, sector, and location. Most of them are family businesses that are managed by family members, and a few of them are partnership companies, most of which are founded and managed by professionals. Their market performance, export performance and business prospects are all different.

These firms are analysed by using indicators that could reflect the variation in their innovative performance. In addition to a set of common criteria, firm specific conditions are also investigated. At the end, innovative firms and the main factors determining their innovativeness are analysed together with the obstacles that reduce the chance of being innovative. We first classify firms as successful and unsuccessful according to their innovation capability. This categorisation helps to clarify their distinguishing properties.

During the interviews, it was seen that there was a strict distinction between the firms managed by professionals and the traditional family businesses. The first group of firms is found to be more competitive, and they are at least aware of the importance of being innovative. On the other hand, traditional family businesses are innovative if the firm is cooperated with other firms/institutions. If not, they are not as successful as the ones managed by experienced professionals, in terms of innovativeness. They prefer to operate in a traditional manner, and are satisfied with their current profits.

The distribution of innovations by type observed in the region resembles the distribution in other regions. Product and process improvements are more common than new products and processes. In other words, product/process modification dominates radical innovations. There is no difference between agglomerated and non-agglomerated firms in that respect. On the other hand, the effect of global linkages on innovation is revealed by the intensive international linkages of the most innovative firms. The firms specialised in contract manufacturing (for textile industry) and the firms with many kinds of quality certificates have to meet the requirements of a certain standard, so they improve their competition capability.

The number and the level of cooperation are rather limited although the firms tend to claim that they cooperate with other institutions. The main actors for cooperation are the Chamber of Trade and Industry and KOSGEB. There is a lack of coordination especially with universities. Most of the firms find universities as insufficient and uninterested to cooperate with the industry. Though there was an organisation at Çukurova University in Adana which was established to build cooperative relationship with the industry (ÜSAM), its activities are considered by firms as limited. It is observed that the institutional structure in the region is not strong enough to encourage cooperation between firms and other relevant institutions (universities, chambers of trade and industry, etc.).

Our analysis suggests that it is not easy to make a difference between agglomerated and non-agglomerated firms in terms of innovation dynamics. In the region, these dynamics are determined by individual achievements rather than regional interactions. When the firms operating in the OIZs were asked for the benefits of agglomeration, a significant number of them suggested that they take advantage only of the infrastructural opportunities provided by the OIZs. Only a few firms defined the benefits of agglomeration in terms of competition and cooperation. Besides, the same question was asked to the firms located out of zones. Most of these firms as well define OIZs in terms of infrastructural opportunities. It is interesting that some of the firms claim even that firms located in the OIZs faced with unduly competitive pressures (monitoring each other, imitation, etc.), and they find it almost impossible to establish cooperative relations.

In sum, the TR62 (Adana, Mersin) Region has a tradition of industrial activity and sustains this capability by different kinds of industries. The region represents a good environment for the analysis of innovation performance in terms of agglomeration. Over time, the economic infrastructure has developed to foster the development of the region. AOSB and MTOSB are good examples in that respect. These OIZs constitute a significant share of production and employment of the region. Furthermore, the specialised institutions in the region, like technoparks, the Chambers of Trade and Industry, and universities provide opportunities for cooperation and competition.

In conclusion, the region is in need of policies to improve its innovation capability. In that sense, regional specific policies, like the establishment of an integrated system of cooperation and competition can help to foster innovation capabilities. Such a system can pave the way of transforming the agglomerations to functioning clusters, and help to foster the regional dynamics.



## REFERENCES

- Acs, Z., Audretsch, D., Feldman, M. (1994) *R&D spillovers and recipient firm size*, The Review of Economics and Statistics, 76(2): 336-340
- Armatlı-Köro lu, B. (2005) *Innovativeness in industrial districts of Turkey and indicators of innovation activities in SMEs*, G.U. Journal of Science, 18 (4): 693:706
- Audretsch, D., Feldman, M. (1996) *R&D spillovers and the geography of innovation and production*, The American Economic Review 86(3): 630-640
- Bekar, C. and Lipsey, R. (2001) *Clusters and economic policy*, Revised Version of a Paper Presented at Policies for the New Economy, Montreal
- Camagni, R. (1991) *Local milieu, uncertainty and innovation networks: towards a new dynamic theory of economic space*. In: Camagni, R. (ed) *Innovation networks: spatial perspectives*, Belhaven-Pinter, London, pp: 121-144
- Camagni, R. (2004) *Uncertainty, social capital and community governance: the city as a milieu*. In: Capello, R., Nijkamp, P. (eds) *Urban dynamics and growth: advances in urban economics*. Amsterdam, Elsevier, pp: 121-152
- Camagni, R. and Capello, R. (2009) *Knowledge-Based Economy and Knowledge Creation: The Role of Space*. In: Fratesi, U., Senn, L. (eds) *Growth and Innovation Of Competitive Regions, The Role of Internal And External Connections*. Springer, Berlin, pp:145-165
- Camagni, R., Capello, R. (2002) *Milieux innovateurs and collective learning: from concepts to measurement*. In: Acs., Z.de Groot HLF, Nijkamp, P. (eds), *The emergence of the knowledge economy*. Springer, Berlin, pp: 15-46
- Capello, R. and Faggian, A. (2005) *Collective learning and relational capital in local innovation processes*, Regional Studies, 39:1, 75-87
- Cooke, P. (2001) *Knowledge Economies: Clusters, Learning & Co-Operative Advantage*, London: Routledge
- ÇKA (2010a) *Mevcut Durum Analizi Raporu*
- ÇKA (2010b) *De erlendirme Raporu*
- Dulupçu, M. and Sungur, O. (eds) (2007) *Yenilik, birli i ve Giri imcilik: Batı Akdeniz Bölgesi (Antalya-Burdur-Isparta, BBS TR61) KOB 'lerinin Tutumlarının De erlendirilmesi*, Ankara
- EDAM (2009) *Türkiye için bir rekabet endeksi*

- European Commission (2010a) *Nomenclature of territorial units for statistics - NUTS Statistical Regions of Europe*,  
[http://ec.europa.eu/eurostat/ramon/nuts/home\\_regions\\_en.html](http://ec.europa.eu/eurostat/ramon/nuts/home_regions_en.html)
- European Commission (2010b) *Basic principles of the NUTS*,  
[http://ec.europa.eu/eurostat/ramon/nuts/basicnuts\\_regions\\_en.htm](http://ec.europa.eu/eurostat/ramon/nuts/basicnuts_regions_en.htm)
- Eurostat (2010), *NUTS*,  
[http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/NUTS](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/NUTS)
- Gordon, I. and McCann, P. (2000) *Industrial Clusters: complexes, agglomeration and/or social Networks*, *Urban Studies*, 37(3), 513-532
- Isaksen, A. (2001) *Building Regional Innovation Systems: Is Endogenous Industrial Development Possible in the Global Economy?* *Canadian Journal of Regional Science*, XXIV: 1, 101-120
- Kavas, N. (2006) *Interfirm Relations and Innovative Capacity in Adana Organized Industry Zone: A Case Study on Textile Firms*, Master Thesis, METU: Ankara
- Ketels, C. (2003) *The development of the cluster concept present-experiences and further developments*, NRW conference on clusters, Duisburg, Germany
- Machlup, F. (1962) *The Production and distribution of knowledge in the United States*, Princeton University Press, New York
- Marshall, A. (1961) *Principles of Economics*, Ninth (Variorum) Edition with Annotations by C.W.Guillebaud, Vol.1 Chapter X-XI, 267-290
- MTOSB (2010) *MTOSB Catalogue*
- Morosini, P. (2004) *Industrial Clusters, Knowledge Integration and Performance*, *World Development*, Vol.32, No.2, pp.325-326
- Mytelka, L.K., and Farinelli, F. (2000) *Local Clusters, Innovation Systems and Sustained Competitiveness*, UNU/INTECH Discussion Papers
- OECD (2002) *Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development*, OECD Publications, Paris
- OECD and the European Commission (2005) *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 3rd Edition, OECD publications, Paris
- OECD Reviews of Regional Innovation: North of England, United Kingdom*, *Regional Innovation in OECD Countries: Key Issues and Framework*, 2008, 41-59
- OSB Üst Kurulu u (2010), *Dünya’da ve Türkiye’de OSB Uygulamaları*,  
<http://www.osbuk.org/index.php?page=content/osbuygulama&id=1>

- Porter, M.E. (1990) *The Competitive Advantage of Nations*, London: Macmillan
- Porter, M. E. (1998a) *Clusters and the new economics of competition*, Harvard Business Review, Nov/Dec98, Vol. 76 Issue 6, p: 77
- Porter, M.E. (1998b) *On Competition*, Cambridge, MA: Harvard Business School Press
- Porter, M.E. (2000) *Location, competition and economic development: local clusters in a global economy*, Economic Development Quarterly, 14 (1), 15-34
- Porter, M.E. (2003) *The economic performance of regions*, Regional Studies, 37 (6&7), 549-578
- RIS Mersin(2010) *RIS Mersin Project* <http://www.ris-mersin.info>
- Rosenfeld, S. (1995) *Production Systems and Regional Development*, Chapel Hill, NC: Regional Technology Strategies
- Rosenfeld, S. (1997) *Bringing business clusters into the mainstream of economic development*, European Planning Studies, Vol: 5, No: 1
- ahin, A. (2009) *Mersin’de faaliyet gösteren küçük ve orta büyüklükteki işletmelerin yenilik faaliyetlerinin ölçülmesi*, Doğu Akdeniz Üniversitesi Dergisi, 10 (2) 2009, 259-271
- Santarelli, E. and Sterlacchini, A. (1990) *Innovation, Formal vs. Informal R&D, and Firm Size: Some Evidence from Italian Manufacturing Firms*, Small Business Economics 2, 223-228
- Schumpeter, J.A. (1942) *Capitalism, Socialism and Democracy*, New York: McGraw-Hill
- Scott, A., and Storper, M., (2003) *Regions, Globalization, Development*, Regional Studies, Vol.37:6&7, pp: 579-593
- Scott, AJ. (ed) (2001) *Global city-regions: trends, theory, policy*, Oxford University Press, Oxford (in Camagni&Capello)
- Simmie, J. (2008) *The contribution of clustering to innovation: from Porter I Agglomeration to Porter II export base theories*. In: Karlsson, C. (ed) Handbook of Research on Innovation and Clusters, Cases and Policies, Edward Elgar, Cheltenham, UK, 19-32
- Taymaz, E. (2004) *Competitiveness of Turkish Textile and Clothing Industries*, Economy, Finance and Management, 217(April) pp: 5-23
- Taymaz, E., Filiztekin, A., Fisuno lu, M., Kılıçaslan, Y.,and Lenger, A. (2008) *Kobilerde Dönüşüm: Küçük Firmaların Büyük Başarıları*, İstanbul, Türkönfed

Technoscope (2010) *Mersin Technology Development Zone*  
<http://www.technoscope.com.tr/eng/index.html>

Traill, B. and Pitts, E. (1998) *Competitiveness in the Food Industry*. Springer. p. 17–19

Wikipedia (2010a) *Nomenclature\_of\_Territorial\_Units\_for\_Statistics*  
[http://en.wikipedia.org/wiki/Nomenclature\\_of\\_Territorial\\_Units\\_for\\_Statistics](http://en.wikipedia.org/wiki/Nomenclature_of_Territorial_Units_for_Statistics)

Wikipedia (2010b) *Patent*, <http://en.wikipedia.org/wiki/Patent>

Wikipedia (2010c) *Economics and patents*  
[http://en.wikipedia.org/wiki/Economics\\_and\\_patents](http://en.wikipedia.org/wiki/Economics_and_patents)

Wikipedia (2010d) *Utility Model*, [http://en.wikipedia.org/wiki/Utility\\_model](http://en.wikipedia.org/wiki/Utility_model)

Wikipedia (2010e) *Industrial Design* [http://en.wikipedia.org/wiki/Industrial\\_design](http://en.wikipedia.org/wiki/Industrial_design)

World Development Report (2009) *Reshaping Economic Geography*, Part Two: Shaping Economic Geography, 125-145

## APPENDICES

### APPENDIX A

#### AGGLOMERATION, NETWORKING and INNOVATION SURVEY

#### I. ABOUT THE FIRM

1. **Name:**
2. **Location:**     Adana     Mersin     Inside OIZ     Outside OIZ
3. **Year of Establishment:**
4. **Sector:**
5. **Subject of Activity:**
6. **Structure of the Firm**
  - Family Business
  - Multi Partners
  - Foreign Partners
  - Holding Company
  - Others
7. **Capital Distribution:**
  - Regional (TR62 (Adana-Mersin) Region)
  - National (Out of TR62 Region)
  - Foreign
  - Other

**8. The educational information and task of administrators in the firm:**

Task	Education

9. **Number of Employment:**
10. **Rate of Qualified Labour:**
11. **Is there mobility of labour?**

	Yes	No
<b>Inside OIZ</b>		
<b>Outside OIZ</b>		

12. **Products**
  - Main Products:**
  - Intermediate Products:**
13. **Marketshare (0:none, 1:low, 2:middle, 3:high)**
  - Provincial Marketshare ( )**
  - Regional (Adana, Mersin) Marketshare ( )**
  - National Marketshare ( )**

**14. Leader Firms of the Sector (L1,L2,L3) (OIZ-Regional-National-International)**

	Inside/Outside OIZ	Regional	National	International
<b>L1:</b>				
<b>L2:</b>				
<b>L3:</b>				

**15. Status of The Leader Firms (F1,F2,F3)**

	Buyer	Seller	Important Competitor	Important Cooperation	Firm of the Same Group
<b>F1:</b>					
<b>F2:</b>					
<b>F3:</b>					

**16. Contribution of export incomes to the net sales revenue (last 3 years):**

“ Increase “ Decrease “ No change “ No Export

**17. Strategy of the Firm:**

**II. COOPERATION**

**1. Does the firm cooperate at national/international level:** “ Yes “ No

**2. Actors and Subjects of Cooperation:** Explain the actors and subjects of cooperation by grading the cooperation level

	Level (0,1,2,3,4)	Prototype Development	Joint R&D	Cost Sharing	Access to New Funding Sources	Opening New Markets	Staff Training	Access to Experienced Professionals
Consulting Firms								
Suppliers								
Customers								
Firms of other sectors								
Competitive firms of the sector								
University								
Technopolis								
ÜSAM								
Chamber of Trade and Industry								
Mercantile Exchange								
Chamber of Professions								
Development Agency								
KOSGEB								
TUBITAK								
TÜRKAK								
TOSYÖV								
TTGV								
GEME								
SPO								
DTM								
MPM								
Ministry of Industry and Commerce								

**3. Effect of the Regional Corporate Structure to Cooperation (0:none, 1:low, 2:middle, 3:high)**

- Governorship ( )
- Municipality ( )
- Chamber of Trade and Industry ( )
- Mercantile Exchange ( )
- Association of Industrialists and Businessmen ( )
- University ( )
- Development Agency ( )
- Chambers/Unions/Organizations of Professionals ( )

**4. Advantages of Cooperation (0:none, 1:low, 2:middle, 3:high)**

- Decreasing Cost of Access to Knowledge ( )
- Joint R&D Opportunities ( )
- To Take Advantage of Other Firms' Experience ( )
- Access to Experienced Professionals ( )
- Easy Access to Raw Materials and Intermediate ( )

**III.PRODUCTION PROCESS RELATIONS**

**1. Suppliers**

*3 Main Suppliers of The Firm (S1,S2,S3)*

S1:

S2:

S3:

*Some Basic Information about These Suppliers*

	Location	Sector	Years Of Relation	Resource Type	Type of Relation
<b>S1</b>					
<b>S2</b>					
<b>S3</b>					

**Location:** O:OIZ, R:Region, T:Turkey, F: Foreign

**Sector:** Sector 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

**2. Customer Firms**

*3 Main Customers of The Firm (C1,C2,C3)*

C1:

C2:

C3:

*Some Basic Information about These Customers*

	Location	Sector	Years Of Relation	Resource Type	Type of Relation
<b>C1</b>					
<b>C2</b>					
<b>C3</b>					

### 3. Internal and External Knowledge Resources

∅ Main inter-organizational relationships and the degree of their contribution (0:none, 1:low, 2:middle, 3:high)

	Other Firms	Support Institutions	Knowledge Producers	Information Suppliers	Other
OSB					
Region					
Turkey					
Abroad					

**Other Firms:** Suppliers, customers, competitors, group of firm, collaborators etc.  
**Support Institutions:** Counseling institutions, profession institutions, training institutions, laboratories, audit firms, etc  
**Knowledge Producers:** Universities, R&D Departments etc.  
**Information Suppliers:** Technical and tradable knowledge suppliers, fairs, exhibitions, labour, publications, etc.

## IV. RESEARCH and DEVELOPMENT (R&D) VE TECHNOLOGICAL ACTIVITIES

### 1. Status

∅ *Does the firm have a R&D department?*

- ∅ Yes
- ∅ No
- ∅ It is being established
- ∅ It has been planned to establish

∅ *Number of R&D Staff*

- ∅ R&D Department:
- ∅ Other Departments:

### 2. Goal

- ∅ Product Development
- ∅ Product Improvement
- ∅ Technology Development

### 3. Funding-Expenditure

∅ *Share of R&D expenditures in total cost:*

∅ *Funding of R&D expenditures*

- ∅ Equity
- ∅ Financial Credit
- ∅ Financial Support

### 4. Exchange of Technology

	Machine	Patent	License	Know-How
Obtained Technology				
Sold Technology				



### 5. Method and Level of Monitoring Technologic Developments

- Ø Staff ( )
- Ø Other Firms ( )
- Ø Consulting Firms ( )
- Ø Fair/Exhibition ( )
- Ø Conference/ Convention/Symposium ( )
- Ø Industry Journals ( )
- Ø Chamber of Industry and Commerce/Its Publications ( )

(0:none, 1:low, 2:middle, 3:high)

## V. INNOVATION

### 1. Activities

Ø *Name and Number of Innovation in the Firm:*

.. **Product Innovation**

- Did the firm develop any new product in the name of technological character and/or its usage?

.. Yes

Which products? 1-

2-

3-

.. No

- Did the firm make any considerable improvements over the existing productions?

.. Yes

Which products? 1-

2-

3-

.. No

.. **Process Innovation**

- Did the firm adopt any new production process?

.. Yes

Which processes? 1-

2-

3-

.. No

- Did the firm make any considerable improvements over the existing processes?

.. Yes

Which processes? 1-

2-

3-

.. No

.. **Relation of Product Innovation and Process Innovation**

- Did the firm adopt **process innovations** to develop any **new product**?

.. Yes

.. No

- Any Contribution of Process Innovation Activities over the Development of New Products (0:none, 1:low, 2:middle, 3:high)

	New Product 1	New Product 2
New Process 1		
New Process 2		
Improved Process 1		
Improved Process 2		

- Did the firm adopt **process innovations** to make any considerable **improvements over the existing products?**

.. Yes

.. No

- Any Contribution of Process Innovation Activities over the Improvements of Existing Products (0:none, 1:low, 2:middle, 3:high)

	Improved Product 1	Improved Product 2
New Process 1		
New Process 2		
Improved Process 1		
Improved Process 2		

- **Marketing Innovation**

- Did the firm adopt any new marketing methods or make any considerable improvements over the existing methods?

.. New Methods

Which methods? 1-

2-

3-

.. Improved Methods

Which methods? 1-

2-

3-

Ø **Patents**

.. Number of Patent Request

National:

International:

.. Number of Patent Registration

National:

International:

Ø **Quality Assurances (global/national):**

Ø **Technology Transfer**

.. Did the Firm Transfer Any Technology ?

.. Yes

.. No

Which Methods were Used to Transfer Technology?(Please, mark according to their importance rankings, started with 1 to 5 as the most important)

- a. ( ) Cooperation for R&D  
b. ( ) Cooperation for production  
c. ( ) Obtaining the license  
d. ( ) Purchasing machinery and equipment  
e. ( ) Firm mergers  
f. ( ) Counseling Service  
g. ( ) Employment of new expertise  
h. ( ) Reverse engineering  
i. ( ) Open information sources (fair, exhibition, print-out etc.)  
j. ( ) Other:

## 2. Interorganizational Relations Regarding Innovation

### Ø Contribution of Inter-organizational Relationships to Product Innovation

(0:none, 1:low, 2:middle, 3:high)

	R&D Cooperation	External knowledge	Monitoring Other Firms	Supply Chain	Other
<b>OSB</b>					
<b>Regional (Adana -Mersin) çinden</b>					
<b>National</b>					
<b>International</b>					

### Ø Contribution of Inter-organizational Relationships to Process Innovation

(0:none, 1:low, 2:middle, 3:high)

**R&D Cooperation:** R&D with other cooperation

**External Knowledge:** The Innovation Process beginning with accessing external knowledge

**Monitoring other firms:** The Innovation Process beginning with monitoring other firms' activities (acquiring the idea-imitation)

**Supply chain:** The Innovation Process beginning with inter-organizational relationships between supplier-

	R&D Cooperation	External knowledge	Monitoring Other Firms	Supply Chain	Other
<b>OIZ</b>					
<b>Regional (Adana - Mersin)</b>					
<b>National</b>					
<b>International</b>					

## 3. Effect of Innovation on Firm

Ø Increasing Variety of Products/Services ( )

Ø Increase of Market Share/Sales ( )

Ø Increase of Export ( )

Ø Increasing Quality of Product/Service ( )

Ø Increase of Production Capacity( )

Ø Decrease of Costs ( )

Ø Improvement in the Worker Health and Safety ( )

#### 4. Funding of Innovation

- .. Equity
- .. Other Firms
- .. Financial Credit
- .. Financial Support
  - KOSGEB
  - TÜB TAK
  - TTGV
  - ÇKA
  - International

#### 5. Bottlenecks of Innovation

- Ø *Economic risks* ( )
- Ø *Costs* ( )
- Ø *Lack of Qualified Staff* ( )
- Ø *Financial Constarints* ( )
- Ø *Lack of Technological Knowledge* ( )
- Ø *Bureaucratic Obstacles* ( )
- Ø *Demand risks* ( )
- Ø *Unability of time sparing* ( )

#### VI. OTHER

Anything to add about innovation, cooperation and being together:

#### Survey Date:

##### § Surveyed

- **Name-Surname:**
- **Position:**
- **Phone:**
- **E-mail:**

## APPENDIX B

### VII. FİRMA BİLGİLERİ

1. Ad:
2. Yer: " Adana " Mersin " OSB " OSB dışı
3. Kuruluş Yılı:
4. Sektör:
5. Faaliyet Konusu:
6. Firma Yapısı
  - " Aile
  - " Çok Ortaklı
  - " Yabancı Ortaklı
  - " Holding
  - " Diğer
7. Sermaye Dağılımı:
  - " Bölgesel (Adana-Mersin)
  - " Yerli
  - " Yabancı
  - " Diğer
8. Üst Yönetim Etitim Durumu/Görev:

Görev	Etitim Durumu

9. İstihdam Sayısı:
10. Nitelikli İşgücü Kapasitesi:
11. Nitelikli İşgücü Hareketliliği Var mı?

	Evet	Hayır
OSB içi		
OSB dışı		

12. Ürünler
  - Ø Ana Ürün:
  - Ø Ara Ürün:
13. Pazar Payı \*(0:yok, 1:düşük, 2:orta, 3:yüksek)
  - Ø İdki Pazar Payı ( )
  - Ø Bölgedeki Pazar Payı ( )
  - Ø Ulusal Pazar Payı ( )

14. Sektördeki Lider Firmalar (L1,L2,L3) (OSB içi/Dışı-Bölgesel-Ulusal-U.Arası)

	OSB	Bölge	Ulusal	Uluslararası
L1:				
L2:				
L3:				

**15. Firmaların (F1,F2)Konumu**

	Alıcı	Satıcı	Önemli Rakip	Önemli birli i	Aynı Firma Grubu
F1:					
F2:					
F3:					

16. İhracat Gelirinin Ciroya Katkısının Son 3 Yıl Durumu: " Artı  
" Azalı " Sabit " İhracat Yok

17. Firma Stratejisi:

**VIII. B RL**

1. Ulusal/Uluslararası Düzeyde birli i: " Var " Yok

2. birli i Kurumları ve Konuları: Firmanızın i birli i yaptı ı kurumları, i birli i konusunu ve i birli i düzeyini de ifade ederek belirtiniz.

	Düzy (0,1,2,3,4)	Prototip geli tirme	Ortak Ar-Ge	Maliyetlerin Paylaşılması	Yeni Finansman Kaynaklarına Ulaşma	Yeni Pazarlara Açılma	Personel E itimi	Deneyimli Uzmanlara Ulaşma
Danışmanlık Firmaları								
Tedarikçiler								
Müşteriler								
Sektör dışındaki firmalar								
Aynı sektördeki rakip firmalar								
Üniversite								
Teknokent								
ÜSAM								
Ticaret ve Sanayi Odası								
Ticaret Borsası								
Mesleki Örgütler/Odalar								
Çukurova Kalkınma Ajansı								
KOSGEB								
TÜB TAK								
TÜRKAK								
TOSYÖV								
TTGV								
GEME								
DPT								
DTM								
MPM								
Sanayi ve Ticaret Bakanlığı								

3. Bölgedeki Kurumsal Yapının Birli ine Etkisi (0:yok, 1:dü ük, 2:orta, 3:yüksek)

- Valilik ( )  
 Belediye ( )  
 Ticaret ve Sanayi Odası ( )  
 Ticaret Borsası ( )  
 adamları Dernekleri ( )  
 Üniversite ( )  
 Kalkınma Ajansı ( )  
 Mesleki Örgütler/ Odalar/ Birlikler ( )

4. birli inin Avantajları (0:yok, 1:dü ük, 2:orta, 3:yüksek)

- Bilgiyi Elde Etme Maliyetinin Azalması ( )  
 Ortak Ara tırma Olana ı ( )  
 Di er Firma Deneyimlerinden Faydalanma ( )  
 Uzman Ara tırmacı/ Personele Ula ma ( )  
 Hammadde / Ara Mamullere Daha Kolay Ula ma ( )

**IX. ÜRETİM SÜRECİNDEKİ LİKLER**

(Ana üretim faaliyetinin sürdürülmesinde yürütülmekte olan firmad ı ılı kiler)

1. Tedarikçi Firmalar

Ana Üretim Faaliyeti Kapsamında Yo un Yapılan 3 Tedarikçi Firma (T1,T2,T3)

T1:

T2:

T3:

Bu Tedarikçi Firmalar Hakkındaki Bilgiler

	Yer	Sektör	li ki Süresi	Kaynak Kullanırma	li ki Tipi
T1					
T2					
T3					

Yer: Q:OSB, B:Bölge, T:Türkiye, Y:Yabancı

Sektör: Tedarikçi Firma Sektörü

Kaynak Kullanırma: Firma ile Tedarikçinin Ortak Kullanıma Tahsis Ettikleri Kaynaklar

1:Mali, 2: Makine-Teçhizat, 3: nsan, 4:Bilgi

li ki Tipi: 1:Sipari Tabanlı, 2:Üretim Planından Haberdar Etme, 3: Ortak Üretim Planlaması

2. Mü teri Firmalar

Ana Üretim Faaliyeti Kapsamında Yo un Yapılan 3 Mü teri Firma(M1,M2,M3)

M1:

M2:

M3:

Bu Mü teri Firmalar Hakkındaki Bilgiler

	Yer	Sektör	li ki Süresi	Kaynak Kullanırma	li ki Tipi
M1					
M2					
M3					

### 3. Dı Bilgi ve Beceri Kaynakları\*

Ø Ana Üretim Faaliyeti Kapsamında Yararlanılan Önemli Dı Bilgi ve Beceri Kaynakları ve Önem Dereceleri \*(0:yok, 1:az, 2:orta, 3:çok)

	Di er Firmalar	Destek Kurulu ları	Bilgi Üreticileri	Enformasyon Sa layıcılar	Di er
OSB					
Bölge					
Türkiye					
Yurtdı ı					

**Di er Firmalar:** Tedarikçiler, mü teriler, rakipler, firma grubu, i birli i yapılanlar vb.  
**Destek Kurulu ları:** Danı manlık kurulu ları, meslek kurulu ları, meslek e itimi verenler, laboratuvarlar, denetleme hizmeti verenler vb.  
**Bilgi Üreticileri:** Üniversiteler, ba ımsız Ar-Ge kurulu ları, sözle meli ara tırmacılar vb.  
**Enformasyon Sa layıcılar:** Teknik ve ticari bilgi sa layanlar, mevzuat, i gücü, program, destek araçları vb. bilgisi sa layanlar, fuarlar, sergiler ve yayınlar

## X. ARA TIRMA-GELİ TİRME(AR-GE) VE TEKNOLOJİK FAALİYETLER

### 1. Kapasite

- Ø *Ar-Ge Departmanı*
- .. Var
  - .. Yok
  - .. Kurulu A amasında
  - .. Kurulması Planlanıyor
- Ø *Ar-Ge Çalı anı Sayısı*
- .. Ar-Ge Departmanında:
  - .. Di er Birimlerde:

### 2. Amaç

- .. Ürün Geli tirme
- .. Ürün yile tirme
- .. Teknoloji Geli tirme

### 3. Harcama-Finansman

- Ø *Ar-Ge Harcamalarının Toplam Harcamalar çindeki Payı:*
- Ø *Ar-Ge Harcamalarının Finansmanı*
- .. Özkaynak
  - .. Kredi
  - .. Mali Destek

### 4. Teknoloji Alı veri i

	Makine	Patent	Lisans	Know-How(Bilgi Deste i)
Satın Alınan Teknolojiler				
Satılan Teknolojiler				



**5. Teknolojik Gelişmeleri Takip Etme Biçimi ve Düzeyi\***

- Ø Firma Personeli ( )
- Ø Diğer Firmalar ( )
- Ø Danışmanlık Firmaları ( )
- Ø Fuar/Sergi ( )
- Ø Konferans/Kongre/Sempozyum ( )
- Ø Sektörel Dergi/Gazete ( )
- Ø Sanayi Ve Ticaret Odası/Yayınları ( )

\*(0:yok, 1:az, 2:orta, 3:çok)

**XI. NOVASYON ve TEKNOLOJİK YENİLİK**

**1. Faaliyetler**

Ø *Firmada Yapılan Yenilik/Sayı:*

.. **Ürün Yeniliği**

- Teknolojik Karakteri ve Kullanım Açısından Yeni Ürün Geliştirildi mi?

.. Evet.....Hangi ürünler:  
.. Hayır

- Mevcut Ürünler Önemli Düzeyde geliştirildi mi?

.. Evet  
Hangi ürünler: 1-  
2-  
3-  
.. Hayır

.. **Üretim Yöntemi (Proses) Yeniliği**

- Yeni Proses Edinildi mi?

.. Evet  
Hangi prosesler: 1-  
2-  
3-  
.. Hayır

- Mevcut Proseslerde Önemli Düzeyde geliştirme Yapıldı mı?

.. Evet  
Hangi prosesler: 1-  
2-  
3-  
.. Hayır

.. **Ürün Yeniliği-Proses Yeniliği İlişkisi**

- **Proses Yeniliklerinden** Herhangi Biri (Yeni/ geliştirildi mi ) Yeni Ürün Amacı ile Yapıldı mı?

.. Evet  
.. Hayır

- Proses Yeniliklerinin Yeni Ürüne Katkısı\*

	Yeni Ürün 1	Yeni Ürün 2
Yeni Proses 1		
Yeni Proses 2		
yile mi Proses 1		
yile mi Proses 2		

\*(0:yok, 1:az, 2:orta, 3:çok)

- **Proses Yeniliklerinden Herhangi Biri (Yeni/ yile mi ) Ürün yile tirmesi Amacı ile Yapıldı mı?**

- Evet
- Hayır

- **Proses Yeniliklerinin Ürün yile tirmesine Olan Katkısı \***

	yile mi Ürün 1	yile mi Ürün 2
Yeni Proses 1		
Yeni Proses 2		
yile mi Proses 1		
yile mi Proses 2		

\*(0:yok, 1:az, 2:orta, 3:çok)

- **Pazarlama Yeniliği**

- Pazarlama yöntemlerinde yenilik ya da iyileştirme yapıldı mı?

- Yenilik yapıldı  
Hangi yenilikler: 1-  
2-  
3-
- iyileştirme yapıldı  
Hangi yenilikler: 1-  
2-  
3-

#### Ø Patent Sayısı

- Patent Başvuru Sayısı  
Yurtiçi:  
Yurtdışı:
- Patent Tescil Sayısı  
Yurtiçi:  
Yurtdışı:

#### Ø Kalite Belgeleri:

#### Ø Teknoloji Transferi

- Firma Dışından Önemli Teknoloji Transferi Yapıldı mı?  
• Evet  
• Hayır
- Yapıldı ise, Hangi Yöntemlerle Gerçekleştirildi? Önem sırasını belirtiniz(1,2,...)

- f. ( ) Ar-Ge için birli i  
g. ( ) Üretim için birli i  
h. ( ) Lisans Alımı  
i. ( ) Makina ve Teçhizat Alımı  
j. ( ) Firma Birle mesi  
k. ( ) Danışmanlık Hizmetleri  
l. ( ) Yeni Uzman stihdamı  
m. ( ) Tersine Mühendislik  
n. ( ) Açık Bilgi Kaynakları (Fuar, Sergi, Yayın Vb.)

**2. novasyon için Di er Kurulu larla Olan li kiler**

**Ø Ürün Yeniliklerine Katkıda Bulunan Dı li kiler ve Önem Dereceleri**

	Ar-Ge birli i	Dı Bilgiye Eri im	Di er Firmaları zleme	Tedarik Zinciri çinde	Di er
OSB çinden					
Bölge (Adana - Mersin) çinden					
Türkiye çinden					
Türkiye Dı ndan					

(0:yok, 1:az, 2:orta, 3:çok)

**Ar-Ge birli i:** Ba ka Kurulu larla Yapılan Ortak Ar-Ge Faaliyetleri ile Ba layan Yenilik Süreci

**Dı Bilgiye Eri im:** Firma Dı ı Bilgi Kaynaklarını Kullanarak Ö renme ve Yetenek Geli tirme le Ba layan Yenilik Süreci

**Di er Firmaları zleme:** Di er Firmaların Yeniliklerini Görerek *Fikir Edinme ve Taklit* le Ba layan Yenilik Süreci

**Ø Proses yeniliklerine katkıda bulunan dı li kiler ve önem dereceleri\***

	Ar-Ge birli i	Dı bilgiye Eri im	Di er Firmaları zleme	Tedarik Zinciri çinde	Di er
OSB içinden					
Bölge(Adana-Mersin) içinden					
Ulusal					
Yabancı					

\*(0:yok, 1:az, 2:orta, 3:çok)

**3. novasyonun Firma Üzerindeki Etkisi**

- Ø Mal / Hizmet Çe itlili inde Artı ( )  
Ø Pazar Payında/ Satı larda Artı ( )  
Ø hracatta Artı ( )  
Ø Mal ve Hizmet Kalitesinde Artı ( )  
Ø Üretim Kapasitesinde Artı ( )  
Ø Maliyetlerde Azalı ( )  
Ø ç i Sa lı ı / Güvenli i Konusunda lerleme ( )

**4. novasyonun Finansmanı**

Ø Yeniliklerin Finansmanı Nasıl Sa lanmakta?

- .. Öz Kaynak  
.. Di er Firmalardan  
.. Kredi  
.. Mali Destek

- KOSGEB
- TÜB TAK
- TTGV
- Teknokent
- ÇKA
- Uluslar Arası

**5. novasyonda Kar ıla ılan Sorunlar**

- Ø *Ekonomik Riskler* ( )
- Ø *Maliyetler* ( )
- Ø *Kalifiye Eleman Yetersizli i* ( )
- Ø *Finansal Kısıtlar* ( )
- Ø *Teknolojik Bilgi Eksikli i* ( )
- Ø *Bürokratik Engeller* ( )
- Ø *Talep Riskleri* ( )
- Ø *Vakit Ayıramama* ( )

**XII. D ER**

Yenilik, i birli i ve birarada olma konusunda eklemek istedikleriniz:

**Anket Tarihi:**

**§ Anketi Cevaplayan Ki inin:**

- **Adı Soyadı:**
- **Görevi**
- **Tel:**
- **E-posta:**

## APPENDIX C

### Location Quotient Technique<sup>2</sup>

This technique compares the local economy to a reference economy in the identification of the local economic specializations. It is based upon a calculated ratio between the local economy and the economy of some reference unit.

To calculate any location quotient the following formula is applied. In this formula, regional economy can be compared to the national economy.

$$\frac{\text{---}}{\text{---}} = \frac{\text{---}}{\text{---}}$$

--- : The quantity of labour force/employment/ firm/export etc. of industry “i” in the region

--- : Total quantity of labour force/employment/ firm/export etc. in the region

--- : The quantity of labour force/employment/firm/export etc. of the industry “i” in the country

--- : Total quantity of labour force/employment/ firm/export etc. in the country

t: time

In the calculation of location quotients, three general outcomes are possible. These outcomes are as follows:

LQ < 1.0	LQ = 1.0	LQ > 1.0
----------	----------	----------

If the location quotient is calculated for employment:

*LQ < 1.0 = All Employment is Non-Basic*

A LQ that is less than zero suggests that local employment is less than was expected for a given industry. Therefore, that industry is not even meeting local demand for a given good or service. Therefore all of this employment is considered non-basic by definition.

*LQ = 1.0 = All Employment is Non-Basic*

---

<sup>2</sup> Source: <http://mailer.fsu.edu/~tchapin/garnet-tchapin/urp5261/topics/econbase/lq.htm> and ÇKA (2010)

A LQ that is equal to zero suggests that the local employment is exactly sufficient to meet the local demand for a given good or service. Therefore, all of this employment is also considered non-basic because none of these goods or services is exported to non-local areas.

*LQ > 1.0 = Some Employment is Basic*

A LQ that is greater than zero provides evidence of basic employment for a given industry. When an  $LQ > 1.0$ , the analyst concludes that local employment is greater than expected and it is therefore assumed that this "extra" employment is basic. These extra jobs then must export their goods and services to non-local areas which, by definition, make them Basic sector employment.

In the analysis of the region (Chapter 3), LQ was used for comparative analysis of the sectors by ÇKA.