THE EUROPEAN PATENT SYSTEM AND TURKEY'S INTEGRATION: THE ROLE OF SMALL AND MEDIUM-SIZED ENTERPRISES

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ABSTRACT

THE EUROPEAN PATENT SYSTEM AND TURKEY'S INTEGRATION:
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This thesis analyzes Turkey's integration to European Patent System with special reference to the role of Small and Medium-Sized Enterprises (SMEs) within this process. The main purpose is to understand the position of SMEs in Turkey within the industrial property (IP) system in general, patent system in particular, as their effective usage of the IP system is crucial in terms of proper integration of Turkey into the European Patent System. In this respect, the thesis aims to answer two basic questions, namely, "What is the role of SMEs within the process of Turkey's integration to European Patent System" and "How can a more effective use of patent system by the SMEs in Turkey be achieved?"

Within this framework, a field research was conducted in three different industrial areas in Ankara with 136 SMEs active in manufacturing industry. Within the scope of the field research, it was tried to measure the R&D capacity as well as the extent to which the industrial property system, especially the patent system, in Turkey is effectively used by the participant firms.

According to the results of the field research, some proposals were tried to be put forward in terms of the achievement of a more effective use of the industrial property system in general, patent system in particular, by the SMEs in Turkey.

Keywords: Industrial Property, European Patent System, European Patent Convention, Small and Medium-Sized Enterprises, Patent Awareness

ÖZ

AVRUPA PATENT SİSTEMİ VE TÜRKİYE ENTEGRASYONU:
KÜÇÜK VE ORTA ÖLÇEKLİ İŞLETMELERİN ROLÜ

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Bu çalışma, Türkiye'nin Avrupa Patent Sistemi'ne entegrasyonu ve bu süreçte Küçük ve Orta Ölçekli İşletmelerin (KOBİ'ler) rolünü anlamaya çalışmaktadır. Temel amaç, Türkiye'deki KOBİ'lerin genelde sınai mülkiyet sistemi, özelde ise patent sistemi içerisindeki pozisyonlarının anlaşılmasıdır; zira, KOBİ'lerin sınai mülkiyet sistemini etkin bir şekilde kullanabilmeleri Türkiye'nin Avrupa Patent Sistemi'ne sağlıklı bir şekilde entegre olabilmesi açısından kritik bir öneme sahiptir. Bu anlamda, tezin yanıtlamaya çalıştığı iki temel soru bulunmaktadır; "Türkiye'nin Avrupa Patent Sistemi'ne entegrasyon sürecinde KOBİ'lerin rolü nedir?" ve "Türkiye'de sınai mülkiyet sisteminin KOBİ'lerce daha etkin kullanılmasının sağlanması nasıl başarılabilir?".

Bu çerçevede, Ankara'nın üç farklı sanayi bölgesinde, imalat sanayiinde aktif 136 KOBİ ile bir saha çalışması yürütülmüştür. Saha çalışması kapsamında, katılımcı firmaların Ar-Ge kapasiteleri ve Türkiye'deki sınai mülkiyet sistemini, özellikle de patent sistemini, ne derece etkin kullanabildikleri ölçülmeye çalışılmıştır.

Saha çalışması sonucu elde edilen verilere dayanılarak, Türkiye'deki KOBİ'lerin genelde sınai mülkiyet sistemi, özelde patent sistemini daha etkin kullanabilmelerinin sağlanmasına yönelik olarak bazı öneriler ortaya konulmuştur.

Anahtar Kelimeler: Sınai Mülkiyet, Avrupa Patent Sistemi, Avrupa Patent Sözleşmesi, Küçük ve Orta Ölçekli İşletme, Patent Bilinci

To Veli Kargın

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LIST OF ABBREVIATIONS

EC	: European Community
EEC	: European Economic Community
EPC	: European Patent Convention
EPO	: European Patent Office
EU	: European Union
GATT	: The General Agreement on Tariffs and Trade
IP	: Industrial Property
IPR	: Industrial Property Right
KOSGEB	: Small and Medium Industry Development Organization
METUTECH	: Middle East Technical University-Technopolis
PCT	: Patent Cooperation Treaty
R&D	: Research & Development
SME	: Small and Medium-Sized Enterprise
TIDEB	: Technology Monitoring and Assessment Directorate
TPI	: Turkish Patent Institute
TRIPS	: The Agreement on Trade Related Aspects of Intellectual Property Rights
TTGV	: Turkey Technology Development Foundation
TUBITAK	: Scientific and Technical Research Council of Turkey
WIPO	: World Intellectual Property Organization
WTO	: World Trade Organization

CHAPTER I

INTRODUCTION

In the increasingly knowledge-driven economy of 21st century, patent system appears to be one of the most significant drivers of innovation and competitiveness. It's a legal system which grants the inventors a monopoly right to produce and sell the product regarding the invention for a certain period of time, while obliging them to disclose their innovative idea to public, for the dissemination of technological knowledge. Hence, patent system not only rewards the inventor in economic terms, but also the act of publication of an invention, which is obligatory in the patenting process, serves the public's need to access the latest innovations. In this way, patent system basically acts as an inducement for others to innovate, which creates a process in which innovation breeds innovation. For those reasons, in present day, it is widely accepted worldwide that patent system serves as an important catalyst in a country's technological development.

Nevertheless, alongside with the emphasized advantages of patent system in economic and technological terms, there has also been an ongoing debate worldwide about whether protection of intellectual property is really necessary for the promotion of innovativeness and technological development. In other words, what is mainly discussed within the framework of those discussions is the possible damages that intellectual property protection may create when it is implemented in the context of developing economies. In this respect, it is advocated that in the countries which do not achieve a sufficient industrial development, copying of foreign technology appears as a necessary commercial activity in terms of establishment of a firm's industrial infrastructure as well as improvement of the economic and technological capacity of national industry. Therefore, when patent system is implemented in such economies without establishing the necessary infrastructure, there exists the risk to give harm to the national industry, as it

would be exposed to a highly competitive environment because of the intensified entrance of foreign technology into the domestic market as a consequence of the enforcement of necessary legal regulations for the protection intellectual property rights. Those discussions have also been a significant concern for Turkey as, since the early 1990s, rapid developments have been taking place in Turkey in terms of not only developing the national patent system in accordance with the international standards, but also integrating to the international and regional systems of protection. In this respect, Turkey's participation to European Patent Convention in 2000 is one of the most crucial cases that is worth exploring in terms of the relationship between intellectual property protection and developing countries.

The European Patent System, which is based on the European Patent Convention (EPC) signed in 1973, is today's one of the most successful models of international regulations of patent protection. It basically aims to rationalize the patent granting procedure as well as to increase the quality of patent protection in Europe, thus to contribute to the European economic integration and industrial growth. Being well-aware of its responsibilities in terms of integrating to the international developments regarding the field of patent, Turkey became a member of the EPC on 1st November 2000, which was also an important step in terms of Turkey's integration to EU. Becoming a part of the European Patent System was an important achievement for Turkey not only for the development and modernization of its own patent system, but also in terms of progressing in economic and technological development. Furthermore, it is also a significant development in terms of strengthening and increasing the attractiveness of patent protection in the country, not only for national industry, but also for foreign companies. However, besides its advantages, EPC membership also put forward inevitable challenges for Turkey deriving from the insufficient economic and technological capacity of Turkish industry. In other words, although EPC provides a more cost-effective and time-saving way of international patent protection for applicants, because of the said conditions of Turkish industry, Turkey face the challenge of exploitation of those advantages more by the foreign applicants.

Hence, in the short-term, rather than making European patent applications, Turkey would appear more to have the status of accepting European patent applications from other developed members of EPC, which would negatively affect the Turkish industrialists who are unprepared for competing with foreign technology. For this reason, the exploitation of the economic and technological advantages of European Patent System in the long term, to a great extent, depends on coping properly with the challenges that would be faced by the Turkish industry in the short term.

Within this framework, the main hypothesis of this thesis is that it is the Small and Medium-sized Enterprises (SMEs), which are the key actors in terms of proper integration of Turkey to European Patent System, not only because of the great share they have within the Turkish manufacturing industry, but also because of the fact that they are often the driving force behind innovations with their dynamic and creative capacity. Thus, the principal strategy to be developed for a successful integration of Turkey to European Patent System appears to be improving the economic and technological conditions of SMEs on the one hand, to achieve a more effective usage of patent system by the SME population on the other. In this respect, the thesis aims to answer two main questions:

- What is the role of SMEs in Turkey within the process of Turkey's integration to European Patent System?
- How can a more effective use of patent system by the SMEs in Turkey be achieved?

In order to answer those questions, it is aimed to analyze the problems of SMEs in Turkey with regard to their relations with the patent system as well as the reasons why they appear as the key actors in the context of Turkey's EPC membership. In this regard, the main framework of analysis will be the field research conducted for this thesis, with the purpose of measuring the level of R&D and patenting activities of SME population in Ankara, Turkey. Thereby, discussing the issue over concrete quantitative data will provide a more effective ground for the

development of some proposals in terms of the achievement of a more effective usage of patent system by the SMEs in Turkey, which is thought to be the key for a successful integration of Turkey to the European Patent System.

Firstly, the principles of patent protection will be examined, which is the subject of the second chapter, in order to provide the thesis with a theoretical background. In this regard, primarily, the concept of Intellectual Property Rights will be focused on in order to draw the general context within which the concept of patent originates as well as to understand the general reasoning behind the protection of intellectual creations. Then, the historical background of patent protection will be investigated by taking into consideration the process starting from the first appearance of patent protection in the world through the establishment of an international system of protection. Within this framework, the international agreements and institutions formed for the organization of an international registration system as well as for setting forth some international standards of protection will be mainly focused on. In addition to these, the philosophy behind patent protection will also constitute a significant part of the second chapter, in which the contribution of patent system to economic and social life will be discussed by giving special reference to both the positive and negative approaches to patent protection. In this regard, the stance of the thesis with regard to how those opposite perspectives are evaluated will also be explained.

The subject of the third chapter will be an explanation of the patent system existing in Europe and Turkey by focusing on the historical background of the establishment of both systems as well as their structural characteristics. Furthermore, the procedure within which Turkey became a party to the EPC as well as its current position within the European Patent System will also be examined in detail by taking into consideration both the advantages and challenges brought forth by Turkey's EPC membership.

In the fourth chapter, the relationship between patent protection and SMEs will be the main focus, within the context of both the Turkish Patent System and the

European Patent System. In this regard, firstly, the reasons behind why the SMEs should be considered as the key actors in coping with the challenges faced by Turkey within process of integration to European Patent System will be taken into consideration. Secondly, the problematic relationship between the SMEs and patent protection will be examined in the context of both Turkish and European Patent Systems by discussing the problems with the economic and technological conditions of SMEs on the one hand, the widespread unawareness among the SMEs regarding the purposes and scope of the protection provided by the patent system on the other. Furthermore, the current policies executed by both Turkey and EU in supporting the R&D and patenting activities within their respective SME populations will be put forward by focusing on the similarities and differences between their approaches. Within this framework, Turkey's participation to EU-coordinated SME programs will also be considered in terms of their effects on the strengthening of innovativeness within the SMEs in Turkey.

The fifth chapter will be a presentation of the quantitative data obtained as a consequence of the field research conducted in Ankara. In this respect, the detailed examination of the R&D capacity of the chosen sample as well as the extent to which the participant firms are active within the Industrial Property System in Turkey, particularly patent, will be presented. The field research was conducted in three different industrial areas of Ankara, namely, Middle East Technical University-Technopolis, Ostim Organized Industrial Zone and Sincan Organized Industrial Zone. It is important to emphasize that each of these industrial areas is composed of firms having different characteristics in terms of their economic and technological capabilities. In this way, what is aimed is not only to form a sample which is sufficiently representing the SME population in Ankara, but also to examine whether different economic or technological conditions lead to different levels of awareness with regard to industrial property protection in general, patent protection in particular.

Finally, in the conclusion part, it will be tried to find an answer to the question, "How can a more effective use of patent system by the SMEs in Turkey be

achieved?", as the main approach of the thesis towards the process of Turkey's integration to European Patent System is that it is the ability to find an effective answer to this question which would enable Turkey to cope with the challenges of EPC membership, thus to benefit from the advantages of European Patent System equally with the other contracting states. In this respect, some proposals for the solution of the problems of SMEs with regard to innovativeness and patenting will be put forward within the framework of the results of the field research. In other words, the information obtained through the field research will be guiding in terms of not only determining the principal problems of SMEs in Turkey regarding their relations with the patent system, but also proposing the appropriate solutions for those problems.

CHAPTER II

PRINCIPLES OF PATENT PROTECTION

Since the existence of mankind, creative intelligence of human mind has been producing new combinations of human labor and natural endowments in an incessant process. The basis of this process is that human beings, by their nature, continuously look for better conditions of life, which leads to production of new commodities as well as developing the already existing ones. After human beings form societies, this motivation for incessant development in human nature transforms from being an individualistic process to a societal process, which is heavily affected by rapidly changing social needs. Thus, the inventions and innovations put forward by people become a significant part of social life as well as an incentive for productivity and economic enlargement. Depending on this significant place of innovations and inventions in social life, in time, plans are also started to be made to legally regulate this part of social life. Those regulations can be explained within the framework of the policies which countries produce to encourage inventions and innovations in order to develop their economy according to the changing conditions. The oldest and most effective policy whose purpose is to encourage innovativeness and spread of technological knowledge is patent system which provides legal protection for inventions by granting the inventors certain time limited rights to make, use or sell the product regarding the invention, in return for them to disclose their innovative idea to public in order for the technological knowledge to be accessed by the other people.

Hence, it can be said that, although the concept of patent is conventionally known to be a technical term, as it seems, it is, in fact, a sociological phenomenon which was born out of specific social needs of human beings. There is an ongoing process in social life; the social needs of people continue to change rapidly and they adapt to those changes with their creative intelligence. This implies that there

is practically no limit to growth in the long run since there is no limit to human creativity. In this respect, the main function of the patent system is to systematize this process by rewarding the human creativity in economic terms, while encouraging the others to innovate not only by providing attractive economic advantages, but also by systematically disseminating the knowledge produced as a result of each intellectual creation. Hence, it can be foreseen that, as long as the human beings continue to create to cover their limitless needs, the patent system will continue to exist as a significant part of our lives as a policy for rewarding the intellectual creations, thus the encouragement of further innovativeness and spread of technological knowledge.

In order to better understand the principles of patent protection, its historical background in general as well as the philosophy behind patent protection should be examined in detail. It is those points which this chapter will try to focus on.

2.1. Protection of Intellectual Property Rights

Although the focus of this thesis is on patent protection, first of all, it is appropriate to briefly look at the whole picture which points to the general term of "Intellectual Property Rights". In general, intellectual property rights can be explained as the rights granted to individuals over the products which are created as a result of every kind of intellectual labor and intelligence[1]. The conventional view regarding the classification of intellectual property rights is that it has two sub-branches, namely, the copyright and industrial property rights (IPRs)[2]. Copyright generally refers to the protection of intellectual and artistic work corresponding to every kind of scientific and literary work as well as activities in the field of fine arts, music, cinema and computer programs. As for the industrial property (IP), it generally refers to a non-material right which aims to legally protect the innovations, creative works and inventions in industry and agriculture

[1] Yüksel, Mehmet, "Küreselleşme Sürecinde Fikri Mülkiyet Hakları", *Türkiye Barolar Birliği Dergisi*, Vol.14, No.2, 2001, p.557.

[2] Tekinalp, Ünal, *Fikri Mülkiyet Hukuku*, İstanbul: Beta Basım Yayım Dağıtım A.Ş., 2002, p.1.

by providing the ones who firstly put those innovations into practice with the right of producing and selling them in a monopolistic manner. The IPRs are composed of patents, utility models, trademarks, industrial designs, geographic indications and integrated circuit topographies.

For the purposes of this thesis, it is appropriate to mention only the brief definitions of those concepts in order to understand the general context from which the concept of patent originates. The details of patent protection will be examined later.

- **Utility Model:** Utility Model, like patent, is also a way of protecting inventions. Its difference from patent is that while patent is protecting inventions which are novel, involving an inventive step[3] and capable of industrial application, the criteria required for an invention to be protected by a utility model certificate do not involve having an inventive step, but only novelty and industrial applicability. In other words, novelty in patent refers to an absolute novelty in the sense that the information regarding the invention should not have been accessed by the public anywhere in the world, before the patent application is made. On the other hand, novelty in utility model refers to a substantial improvement on the already existing work, which would lead to a considerable extension of knowledge.

- **Trademark:** The concept of trademark is explained in Decree Law No. 556 Pertaining to the Protection of Trademarks as;

> A trademark, provided that it is capable of distinguishing the goods and services of one undertaking from the goods and services of another undertaking, refers to every kind of sign such as individual names, words, figures, letters,

[3] In Decree-law No.551 Pertaining to the Protection of Patents, inventive step is described as; "An invention shall be considered to have an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art". (see Decree-law No.551 Pertaining to the Protection of Patents, OG No. 22326, 27.06.1995, Article 9)

> numbers, which can be visible through drawing or can be expressed in a similar way as well as capable of being published and copied through printing[4].

When same or similar goods/services are in question, trademark protection prevents any similar trademarks which are not registered, from obtaining unfair advantage over the esteem of a registered trademark[5]. Thus, unauthorized use of any signs, which can damage the distinguishing character of a registered trademark, is prevented and in this way the trademark owner is legally protected against possible infringements.

- **Industrial Design:** Industrial design protection, provided that the computer programs and topographies of semi-conductors are excluded, refers to the protection of the outer appearance of the whole or part of a product that can be perceived by the human senses such as form, shape, color, flexibility, on the condition that it owns novelty or a distinguishing character. In other words, industrial design protection refers to protection of aesthetic aspect of a product, not any technical features of it.

- **Geographic Indication:** Geographical Indication refers to a sign which indicates a product that originates from a specific quality, reputation or any other feature of an area, region or a country. With the protection of geographical indications, it is provided that the production, processing and the entire or at least one of the operations regarding a product is made within the borders of the area or region from which that product originates.

- **Integrated Circuit Topographies:** An integrated circuit is an electrical circuit which is constructed in miniaturized form on a wafer or chip. As for the integrated circuit topography, it is a series of images which is fixed on any format,

[4] Decree-law No.556 Pertaining to the Protection of Trademarks, OG No. 22326, 27.06.1995, Article 5.

[5] Decree-law No.556, op. cit., Articles 7/I (b) and 8/I (a), (b). (also see Turkish Commercial Law, Article 56 regarding unfair competition)

indicating the three-dimensional arrangement of the layers forming the integrated circuit. The circuit itself may or may not be new. It is the arrangement of the circuit in this miniaturized form and the mask for creating a chip embodying that arrangement, that are the subjects of protection.

When we say technological development, it generally refers to innovations and inventions in industry, original designs and new products. Thus, considering the fact that each component of intellectual property rights has a distinct mission in terms of protection of a distinct aspect of a product, then intellectual property rights, as a whole, appears to have a crucial importance in terms of economic, technological and industrial development of a country. Because, it is a reality that granting some special rights which are legally protected, to the owners of inventions and innovations is an efficient way to encourage the continuity of technological developments. Moreover, the fact that protected information is published and presented to public, paves the way for the creation of new inventions and innovations. In this way, while each innovation further develops the results that were brought by the prior work, the results of every innovation appears to be the starting point of the subsequent ones.

2.2. The Historical Background of Patent Protection

The general definition of patent protection is granting the inventors a monopoly right to produce, use and sell the product regarding the invention for a particular period of time in return for them to explain the invention to public in a detailed manner by which the people can understand the content of the invention easily and benefit from this information to make new inventions. Hence, the purpose here is to recognize the intellectual creations, rewarding the inventors to encourage new inventions, thus, encouraging research and development and making the information resulting from research and development activities become widespread by providing the society with the detailed explanations of the inventions.

Today, the purpose of all the countries in the world is to become economically developed and progress through more development while adapting themselves to the changing conditions of business environment. Within this process, one of the most significant methods to own a properly functioning economy has been the production of various incentive mechanisms to encourage technological development. It has been well-known that today's economically developed western world was the vanguard in developing such mechanisms and accordingly, giving a monopoly right to an invention or a product was firstly seen in Europe through the end of Middle Ages and the beginning of Renaissance[6]. In the history, the understanding regarding the protection of industrial property rights was first seen in Venice in 1443 which was particularly related to the protection of inventions and the first official patent law was also accepted in Venice in 1474[7]. However, according to some other sources, Britain was the pioneer in the legalization, establishment and development of patent system[8]. According to those sources, the origins of patent protection can be traced back to the first patent certificates (Letters Patent) which were accepted in Britain in 14th century. The purpose of those certificates was to provide the ones who imports or invents a new technology with the monopoly right to use this technology for a particular period of time. Such an agreement between the state and the individuals was beneficial for both sides since while the state obtained more technological development, the individual inventor or the importer obtained the economic advantages of being the first. This system, which was principally based on special privileges, in the course of time, urged the necessity to form a regulation which sets forth the necessary conditions of granting a patent. This regulation named "Statute of Monopolies" became effective in Britain in 1623 and was put into force to provide the true and first inventor of a given item up to fourteen years of exclusive rights to their invention. Statute of Monopolies was accepted to be the second regulation in the

[6] Soyak, Alkan, "Fikri ve Sınai Mülkiyet Haklarının Tanımı ve Tarihsel Gelişimi" in Alkan Soyak, *Küreselleşme Sürecinde Ulusal Teknoloji Politikası ve Türkiye: Sınai Mülkiyet Hakları ve Ar-Ge Teşvikleri Açısından Bir Çözümleme*, İstanbul: Bilim ve Teknik Yayınevi, 2000, p.3.

[7] ibid., p.3.

[8] ibid., p.3

world regarding the protection of inventions. With this regulation, some principles were accepted with regard to patent protection such as the principles that the invention should be new for Britain and should provide some advantages for the state. In addition, Statute of Monopolies also accepted the principle that the protection is valid only within the boundaries of the country in which the patent is granted (principle of territoriality). Later, having been affected by those principles provided by the British model, other western countries also followed the developments in Britain and formed their own patent laws. After US obtained its independence, in its 1787 Constitution, it was stated that "…for the development of useful technology and sciences, the parliament will provide the inventors with exclusive rights which are limited by a particular period of time…"[9] and the "Patent Law" which became effective in US in 1790 followed the principle set forth in that statement. The "French Patent Law" which became effective in 1791 was based on the principle of granting patent to inventions without examination. In addition to these, in 1815 the Russian Patent Law, in 1864 the Italian Patent Law and in 1877 the German Patent Law, which accepted the principle of granting patent with examination, became effective. As for Japan, the inventions were started to be protected by the 1885 "Patent Monopoly Law".

Hence, it can be said that through the end of the 18th century, the period when the conditions of developing industrial revolution was reshaping the whole economic, social and legal relationships, the national legislations of patent protection started to take place. This was also the period in which the basic principles of industrial property were determined in the world. However, in the 19th century, the effects of technological inventions on the economic and social life began to force the national boundaries. In other words, as a result of the rapidly developing economic, commercial and technologic developments, the national regulations of industrial property became unsatisfactory. This was mostly because of the fact that the products of industrial property, by their nature, had a framework of usage and benefit which cannot be trapped by national boundaries. Especially, the

[9] Yalçıner, Uğur G., *Sınai Mülkiyetin İlkeleri*, Ankara, 2000. p.6.

countries which had almost completed their industrial infrastructure began to feel the necessity of cooperation in this field in order to protect the superiorities this system provided them. Thus, it was this necessity which existed behind the dynamism of international conventions and agreements in the field of intellectual and industrial property in this period which could be identified as the period of international agreements.

Within this framework, Paris Convention for the protection of industrial property was signed in 1883, which was the first international convention that emerged in the field of industrial property rights. Although it has been revised for several times until today, it is accepted as the constitution of the national patent legislations. After that, with regard to the protection of copyright, Bern Agreement was accepted in 1886. The international bureaus which were formed for the execution of both of these international conventions were brought together in 1893 under the name of "United International Bureau for the Protection of Intellectual Property" and started its activities as an international organization in Bern, Switzerland. Later, with the purpose of providing a new identity to this organization, "World Intellectual Property Organization" (WIPO) was formed and by 1974, WIPO started its activities as one of the expert organizations of United Nations. The purpose behind the establishment of WIPO was to determine the international rules for the creation of an effective environment for the protection of intellectual and industrial property rights in the international arena. Moreover, providing technical support for the developing countries in terms of protection of intellectual and industrial property rights was also determined as an important part of WIPO's missions.

For the patent protection in particular, the most important international regulation is Patent Cooperation Treaty (PCT) which was signed in 1970. The aim of this treaty is to protect the inventions by a single international patent application in the preferred member states of PCT. Thus, rather than making separate national applications, applicants obtain the advantage of protecting their inventions in more than one country by a single international patent application. This situation

significantly draws attention to the considerable savings on the part of the applicants in terms of time and money.

Finally, the Uruguay Round, which can be said to be the last evolutionary point of this process of development in the field of intellectual and industrial property, can be interpreted as the collection of previously made partial and sectoral agreements under a single roof. The purpose of Uruguay Round was basically the need to strengthen and develop the rules that are directing the international trade system. The basis of Uruguay Round, in fact, depends on the GATT Agreement (The General Agreement on Tariffs and Trade) which was signed in 1947 with the aim of forming a common trade order at the international level. However, since the approach of GATT towards international trade was only limited to the prevention of customs tariffs and non-tariff barriers which limit trade, in time, the regulations brought by GATT appeared to be insufficient for the needs that emerged as a result of rapidly globalizing economy in the 1980s. In order to cover this problem, on September 1986, 92 member states of GATT commenced the meetings which were named as Uruguay Round. As a result of these meetings, in 1994, World Trade Organization (WTO) was established as an international organization which determined the rules regulating the international trade according to the changing conditions in international economy.

The process of liberalization in trade which started with the GATT Agreement and continued with the establishment of WTO, also affected the field of intellectual property rights and in this regard, TRIPS Agreement (The Agreement on Trade Related Aspects of Intellectual Property Rights) came into existence as part of the WTO Agreement. With TRIPS, intellectual property is provided with an institutional basis which sets some international standards for the member states in terms of effective protection of intellectual property rights. By those standards, the member states of WTO became obliged to harmonize their national legislations with the rules and principles determined by the TRIPS Agreement. Thus, a series of standards regarding intellectual property were accepted at the international level. Moreover, it can be said that, the provisions of international

conventions regarding the protection of intellectual property and the basic provisions of international commercial law which are against discrimination became a united whole under the TRIPS Agreement[10].

In this 21st century, the world is now experiencing a period in which the liberal tendencies are getting stronger and technological developments are leading to significant transformations in both economic and social terms. The field of intellectual property rights is also affected from these developments. The process of protection of intellectual property rights which started with national regulations and continued with the regulations brought by international agreements, today, reached to a supranational level with the establishment of World Trade Organization. In other words, this process can also be described as composed of three periods; the national period, the international period and finally, the global period. Such a sequence is no doubt the result of the development of human mind and creativity since while human beings are trying to cover their rapidly changing social needs by developing new technologies, they also develop new modes of mutual relationships to better administer this system. In other words, the development of the process of protection of intellectual property rights in general and patent in particular indicates that the best way to develop and benefit from the advantages of this field is determined by the human beings as the enlargement of the communication networks worldwide. Thus, such an approach eventually led to the formation of worldwide principles of protection which are systematized at the international level under the administration of a supranational institution.

2.3. The Philosophy behind Patent Protection

Intellectual property surrounds us in nearly everything we do in the sense that every product or service that we use in our daily lives is the result of a long chain of big or small innovations. Patent system, in particular, is a significant part of this process since we are all surrounded by the fruits of human creativity and

[10] Yüksel, op. cit., p.569.

invention and legal protection of those creations, today, appears to be an important incentive mechanism for the encouragement of new inventions. As it has been mentioned before, the general definition of patent protection is granting the inventors certain time limited rights to make, use or sell the product regarding the invention. In return, the patent system obliges the inventor to disclose his/her innovative idea in order for the technological knowledge to spread among the other people. This definition brings us to the two main functions of patent system; the monopoly function and the information function. The fact that the inventor is provided with an exclusive right to use the invention for a particular period of time is patent's "monopoly function" and the fact that the technological knowledge regarding the invention is obliged to be presented to the public is patent's "information function". The philosophy behind patent protection is that both of these functions are serving to a significant purpose; the encouragement of research and development (R&D), thus, encouragement of new inventions and innovations. There is no doubt that creating an environment in which inventiveness and creativity are highly rewarded would lead to increased competitiveness and further technological development. Thus, the monopoly right which is granted to the inventors appears to be an important incentive system for R&D investment and encouragement of new creative works. The researchers innovate in the knowledge that they may acquire protection of their new ideas and legitimately expect the economic benefit accruing from the invention. Within this reasoning, patents also appear to be a vital part of successful commercialization since especially in cases of high development costs and start-up investment, it is hard to imagine a business even contemplating putting its products on the market without adequate patent protection[11]. Indeed, without the expectation of economic reward, the innovation itself may never have occurred. Moreover, the patent system also acts as a powerful knowledge disseminator as the act of publication of an invention which is obligatory in the patenting process serves the public's need to access the latest innovations. By publishing this vast flow of new ideas, the

[11] Kober, Ingo, "Creating, Protecting and Exploiting Intellectual Property Rights", paper presented at European Business Summit, *Research and Innovation: A European Strategy for More Growth and Jobs*, Brussels, 11 March 2004. http://smooz.4your.net/ebsummit/files/textkober.doc

patent system gives people direct information on the latest technologies and adds enormously to society's knowledge base. This situation also prevents people from discovering the already existing information by repetition and in this way, not only the process of developing new inventions accelerates, but also the improvement of the already existing ones is encouraged.

However, there are also approaches toward the patent system which claim that patent system suppresses innovation and prevents people's use of new ideas. Those arguments are mainly resulted from the oppositions against the monopoly power the patent system creates. According to those views, patent system gives rewards to few at the expense of many. In other words, the monopoly right which the patent system grants to inventors aggravates inequality. It is claimed that patent system creates competitiveness over information and ideas, whereas cooperation makes much more sense for the development of the society as a whole[12]. Moreover, it is argued that intellectual work is always built on and is inconceivable without the prior work of numerous people. It is the earlier authors and inventors who provided the foundation of today's contributions. Thus, it is pointed out that since the earlier contributors to the development of ideas are not present, today's contributor therefore cannot validly claim full credit[13]. It is accepted that people have a right to possess and personally use what they develop, but what is opposed is that this doesn't show that they deserve market values, nor that they should have a right to prevent others from using the invention[14]. In addition to these, against the argument that patent system is needed to promote the creation of innovations and that it provides financial rewards for new ideas, it is claimed that in order to promote the development of ideas, patent system finds necessary to reduce people's freedom to use them. Thus, the understanding is that patents may encourage new ideas and innovations, but they also restrict others from using them freely. Some alternative reward systems for the inventors are

[12] Martin, Brian, *Information Liberation*, London: Freedom Press, 1998, p.33.

[13] ibid., p.38.

[14] ibid., p.38.

also proposed since patent system's ability to reward the inventors for their creative work is one of the strongest arguments put forward by the defenders of intellectual property. It is argued that the creators deserve to be rewarded, but this can be achieved without creating monopolism. One proposal in this regard is a reward system under which the inventors are paid for their innovations directly by the government and innovations pass immediately into the public domain, becoming freely available to all[15]. In this way, the reward system would engender incentives to innovate without creating the monopoly power of intellectual property rights. In sum, what those arguments try to emphasize is that; "Ideas are public, but creators want private returns". In other words, what is mainly opposed is the monopolism that the patent system creates.

It can be said that both the defenders and objectors of patent system have their own consistent arguments and, in fact, the eventual purpose of both is the same; encouragement of innovations and spread of new ideas for the benefit of society as a whole. However, the problem is that the perspective each one employs in understanding the situation is different. This difference can be explained by a determination of my own that while the defenders of patent system are interested in "what exists", the objecting view is interested in "what ought to be". What exists is that we are all living in a capitalist system in which the liberal tendencies are getting stronger everyday and the government interventions in economy become considerably lower. Under such conditions, it is the market which administers the economic reward system in society, not the government. Patent protection is a significant part of this system and appears to be an efficient way for the encouragement of innovations and new ideas under the conditions of market economy. On the other hand, the opposing view towards the patent system tries to approach the issue from a more socialist perspective in which the economy would be regulated by state policies and there would be an equality of opportunity for the individuals in society. Within such a system, rather than being a commodity on the market, the scientific knowledge appears to be a public

[15] Shavel, Steven and Van Ypersele, Tanguy, "Rewards versus Intellectual Property Rights", *Journal of Law and Economics*, Vol.44, October 2001, p.525.

knowledge which can be used freely by everyone. Moreover, they see the intrinsic interest of innovators as a more powerful motivating factor than the economic rewards. Thus, the approach of objectors of patent system envisages a reconstruction of the whole economic and social relationships in society and that's why I have defined them as interested in "what ought to be".

The stance of this thesis with regard to patent protection can be defined as holding a middle way between these two opposite perspectives. My opinion is that the patent system is an efficient policy for rewarding the inventors for their creative work as well as for the encouragement of research and development. However, there is also the necessity that its implementation should be regulated in a way that would comply with the public interest. It is true that such an achievement has already been the purpose of patent protection itself, but it should also be realized that its implementation couldn't be made without considering the particular economic conditions in a given country. In other words, the dangers of monopolism that the objectors of intellectual property rights strongly emphasize should be significantly taken into consideration, especially within the process of implementation of patent system in developing countries. The monopoly right granted to inventors should not be more than a rewarding system that would usually be in favor of large capital while leading to the suffering of small producers that lack adequate resources for research and development. For this reason, since what will be examined here is the case of Turkey, the evaluation of the patent system will be made from the point of view of developing countries. Thus, the stance of this thesis would be that patent protection is a useful policy for the encouragement of research and development and new ideas, but rather than being a means for the exploitation of developing countries by the developed ones, the patent system, should serve as a means for the improvement of the economy of developing countries. Therefore, in developing countries, the patent system should be implemented together with the employment of some necessary industrial and technological strategies by the state as well as by the private sector.

CHAPTER III

PATENT SYSTEM IN TURKEY AND IN EUROPE

3.1. The European Patent System

Today, there are few patent systems which are in effect at the international level and among these, the one that is the largest and economically most known is the European Patent System which was established in 1973. The purpose behind its establishment can be explained as the harmonization of the patent laws of the European countries as well as the modernization of patent granting procedures at the European level. It is important to point out that European Patent System is not an EU institution, but an autonomous system. However, it is also significantly emphasized that;

> The European Patent System came into existence as a result of the perspective that protection of industrial and intellectual property rights is a safeguard for the continuous and dynamic adaptation of the EU single market to the requirements of the new economy based on research and innovation. Furthermore, this is also seen as a must for the maintenance of a competitive and open market where operations could function in a secure legal environment under which innovation and technological advances are promoted for the betterment of the society as a whole[16].

Hence, it has been envisaged that as long as the process of European integration continues and especially as long as the EU single market project progresses, the European Patent System will increasingly play a more significant role within this process.

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[16] Yazıcı İnan, Ela, "Development of Industrial Property Rights: The EC Point of View", *Avrupa Patent Sistemi ve Türkiye Konulu Sempozyum*, TPE Yayınları, İstanbul, 22-23 May 2001, p.43.

Since the basis of the establishment of the European Patent System, firstly, appears to be the harmonization of national patent laws, it is the purpose and reasons behind such an attempt that will be primarily focused on here.

3.1.1. The Philosophy of Harmonization

Patent law is generally known by its territorial and monopolistic nature. This is because intellectual property is principally organized around the idea of the nation state and the patent right is accepted to be valid only within the boundaries of the nation state granting the monopoly. In this way, for a specific period of time, the right holder legitimately assures a monopoly over certain economic activities related to his/her innovative idea protected by patent and during this period, he/she can prevent anyone from engaging in those activities within the boundaries of the nation state granting the monopoly.

Within this framework, the patent law in Europe was also organized around the principle of territoriality within which various nation states employed different forms and applications of patent laws and the international treaties such as the Paris Convention of 1883 were seen sufficient for organizing the regulations at the international level. However, when the Rome Treaty, which proclaimed the formation of the European Economic Community (EEC), came into effect in 1958, the political and economic conditions underlying the development of the patent law in Europe changed. The regulation existing in the Rome Treaty with regard to the intellectual property rights principally adhered to the system of national protection, but it appeared that the continuance of the principle of territoriality within the Community directly conflicted with the target of common market which aimed the free movement of goods within the borders of the EEC. For this reason, the ways to solve this conflict started to be explored by the late 1950s and in 1962 a draft agreement was prepared which envisaged the continuity of the existence of the national patent laws, but at the same time, put forward the necessity of the harmonization of the national patent laws to a certain extent for the formation of a unitary patent law at the European level.

For the achievement of this purpose, the European Patent Convention was signed on 5 October 1973 and set forth the principles of European Patent System which would not only open to the members of EEC, but also to the other non-member European countries. Harmonization of national patent laws was seen to be a necessity for the proper functioning of the system in which the national legislations of the member states would become harmonized with regard to the rules regulating the granting and protection of national patents. In fact, those efforts of harmonization did not targeted directly, but spontaneously came into existence because of the fact that the systematic operation of a separate patent system alongside the national patent systems was possible only with the harmonization of the national patent laws in nature. This is also evident from the fact that the European Patent Convention itself did not have a provision that obliges the member states to harmonize their national legislations. This situation showed that there was a pragmatic need for mutual benefits to outweigh any one party's costs. Furthermore, one significant reason behind such a pragmatism can also be stated that the circumstances and technological trends and in particular trends towards greater globalization of the world economy presented a tide which it was increasingly difficult for any one patent system to swim against[17]. Ortan explains the philosophy behind the harmonization of the national patent laws of the EPC member states as a spontaneous necessity;

> The process of harmonization was accomplished not as a result of an obligation foreseen by international law, but naturally became a reality because of its convenience for the achievement of the system's goals. In other words, the idea regarding the togetherness of the protection at the national and European level did not touch upon the original structures of the national laws, but solely trusted upon the expectation of harmonization which the model that arose out of European Patent Law would necessitate[18].

[17] Pitkethly, Robert, "The European Patent System: Implementing Patent Law Harmonization", paper presented at the International Symposium on Innovation and Patents held at The Institute of Innovation Research of Hitotsubashi University, Japan, 12-13 February 1999. http://www.oiprc.ox.ac.uk/EJWP1099.pdf

[18] Ortan, Ali Necip, *Avrupa Patent Sistemi (Cilt 1)*, Ankara: Banka ve Ticaret Hukuku Araştırma Enstitüsü Yayınları, 1991, p.33-34.

There is no doubt that the process of harmonization did not remove all the differences between the national patent laws of the member states, but some of them with regard to scope and methods of protection continue to exist alongside the unitary system. However, the harmonization of national legislations word for word does not mean so much, either. Rather, what is more significant is achieving a harmonization with regard to the interpretation and application of the legal clauses.

3.1.2. The Structure of European Patent System

The European Patent System is based on two fundamental elements:

- The European Patent Convention
- The European Patent Organization

3.1.2.1. The European Patent Convention

European Patent Convention is the basis of the European Patent System as it provides the legal background for the functioning of the system. The Convention was signed in the Munich Diplomatic Conference on 5 October 1973 and began its actual functioning in 1978. After the Convention came into effect, the European Patent Office (EPO) was established in the same year, for the operation of the European Patent System.

When the EPC was signed in 1973, the national laws of the future members of the Convention were quiet different from each other and EPC created no legal obligation for those countries to harmonize their national laws to the provisions of EPC. However, the 2nd article of the EPC states that "The European patent shall, in each of the Contracting States for which it is granted, have the effect of and be subject to the same conditions as a national patent granted by that State, unless

otherwise provided in this Convention"[19]. As an exception to this general rule, the grounds for the cancellation of European Patents and the limits and duration of the protection they provide are determined only by the European Patent Law[20]. By depending on this system, the conditions for the harmonization of national patent laws of the member states with EPC were formed and today, in practice, the national patent laws of almost all of the member states become harmonized with the principles laid down by EPC.

The main purpose of EPC is twofold; the rationalization of the patent granting procedure in Europe and to bring the quality of patent protection all over Europe to a higher level and in this way, contributing to Europe's economic integration and its industrial development. What is meant by rationalization of the patent granting procedure is to provide a unitary and central procedure for applications, where Europe-wide protection is requested. In other words, by filing a single application, an applicant can obtain patent protection in as many members as he/she would like. One crucial point here is that, while the Patent Cooperation Treaty enables the centralization of the application procedures, EPC goes one step further and in addition to the centralization of the procedures of application, it also enables the centralization of the procedures of "patent granting". Furthermore, another significant point to emphasize is that, it is known that patents are valid only in the countries where they are granted. For this reason, in order to obtain patent protection in another country, it is obligatory to make a national application in that country, too. However, for each application, the filing and examination procedures are repeated in each designated country and this leads to a considerable increase in economic burdens. With the system put forward by EPC, it is possible to obtain patent protection in all or designated members of the Convention with a single application. In this way, the time, labor and money that are spent by the applicants and national patent offices are decreased. Hence, the EPC not only strengthens the cooperation between the European states in terms of

[19] European Patent Convention, Article 2, 2nd paragraph.

[20] Schatz, Ulrich, "The European Patent System", *Türkiye'de ve Dünya'da Sınai Mülkiyet Koruması Uluslararası Konferansı*, TPE Yayınları, İstanbul, 24-25 June 1997, p.72.

the protection of inventions but also simplifies and cheapens the process of patent granting.

In addition to these, EPC also lays down the principles of European Patent in practice. It specifies the subject matter for which European patents shall be granted, determines the procedure for the grant of European patents, the grounds for revocation by the EPO in an opposition procedure and those by national courts in revocation or infringement procedures[21]. Furthermore, the Convention provides for professional representation before the EPO, creates the link between procedures under the Patent Cooperation Treaty and under the EPC, contains provisions for the accession of new member states and conditions for its revision[22].

3.1.2.1. The European Patent Organization

The European Patent Organization is an inter-governmental organization which was established for the functioning of the common law that was provided by the EPC. The reasons behind the establishment of such a new and independent organization was firstly the fact that since not all the members of the EPC are the members of the EC, the organization could not be accomplished within the framework of the Community and secondly the fact that the membership to EPC was tied to the condition of being a European country.

The European Patent Organization is made up of two organs:

- The Administrative Council
- The European Patent Office

The Administrative Council is the legislation organ of the Organization, where the Contracting States are represented as the supervisory body. While the granting of

[21] Desantes Real, Manuel, "The European Patent System", *Avrupa Patent Sistemi ve Türkiye Konulu Sempozyum*, TPE Yayınları, İstanbul, 22-23 May 2001, p.22.

[22] ibid., p.22.

European Patent, which is the fundamental duty of the Organization, is fulfilled through the EPO, it is the duty of the Administrative Council to check the working of this procedure. In addition to its duty to control the EPO, the Administrative Council also has the authority to amend the regulations regarding the EPC as well as the durations foreseen in the Convention[23]. Furthermore, approving the budget, enabling its functioning, regulating the points related to the fees and appointing the president of EPO and his assistants are also among the primary duties of the Administrative Council.

When it comes to the European Patent Office, it is the executive body of the Organization. Its center is in Munich and it has also a branch office in Lahey and two service units in Berlin and Vienna. The granting of European Patents is done through the EPO. Its official languages are English, German and French and the European patent applications can be done in one of those languages.

Although EPO is not an institution of the European Union, it closely cooperates with Brussels in all patent-related issues. The Office enjoys a large degree of administrative autonomy and is completely self-financing. Its operating and investment budgets, including a pension scheme for its employees, are funded entirely from procedural fees and from part of the annual renewal fees levied on granted European patents by the national patent authorities[24]. The EPO's competence as a patent granting authority is recognized even beyond the borders of Europe as it also plays a key role in processing of international patent applications filed under Patent Cooperation Treaty. Furthermore, as an International Search Authority and International Preliminary Authority, the EPO handles a considerable amount of worldwide workload under the PCT every year.

In addition to these, the EPO has also a significant function within the application of European Patent Information Policy whose purpose is to improve the

[23] *Sınai Haklar ile İlgili Uluslararası Anlaşmalar ve İlişkiler*, TPE Yayınları, Ankara, June 2002, p.56.

[24] Desantes Real, op. cit., p.22.

information function of patent documentation. The European Patent Information Policy was organized on the basis of the shared roles between the EPO and the national offices of the members of the EPC. Within this framework, while the EPO acts as a central data producer, the national offices disseminate the accumulated knowledge to the end users. In this way, the EPO offers a large variety of patent information products and services to the public.

3.1.3. The Advantages of European Patent System

As previously mentioned, the main objective of European Patent System is to rationalize the patent granting procedure in Europe by creating a unitary and centralized procedure for the applicants who request Europe-wide protection. Under this system, by filing a single application in one of the official languages of EPO, (English, German or French) the applicants can obtain protection in as many member states as they would like. Hence, a cost-effective and time-saving way of applying for patent protection in several different countries was created for the applicants. Furthermore, the single grant procedure for all the EPC contracting states led to not only easier enforcement of rights, but also the improvement of the quality of patents granted in Europe as every European patent has undergone substantive examination and can be obtained for countries which otherwise operate only a registration system.

From the point of view of the member states, the crucial advantage of European Patent System is that they obtain a more effective patent law through harmonization with the EPC. This situation not only led to more cooperation between the contracting states on patent documentation, but also by the harmonization of the basic standards, the existence of rights that are protected and granted according to different legal opinions, side by side, within the same territory was avoided. Thus, a convenient environment was created in terms of preventing different legal regulations from giving harm to competition. On the other hand, the fact that the systems for granting national patents in the Contracting states continue to exist alongside the central system shows that each

EPC member state is perfectly free to choose or maintain the system fitting best its own traditions and economic needs.

Another advantage of a central patent granting procedure is that it led to a significant increase in patenting activity in Europe. By simplifying and cheapening the patent granting process, the European Patent System has led to a substantial increase in the number of inventions protected in Europe and this led to the creation of an effective environment for transfer of technology both within Europe and between Europe and other regions of the world.

The rapid development of European Patent System also prepared the ground for decisive improvements in the information function of patent documentation. It is well-known that a considerable amount of technical knowledge is disclosed through the patent documents. To make this wealth of information more easily accessible to public and thereby to improve the patent-based transfer of technology in Europe, in 1988, the member states of the European Patent Organization agreed on a European Patent Information Policy with the purpose of publishing the national, European and international patent documents on CD-ROM and databases. The EPO owns one of the most comprehensive databases in the world on Patent Bibliography, which is called as EPIDOS-INPADOC (European Patent Information and Document Service). EPIDOS-INPADOC deals with all patent documents applied in 65 patent offices worldwide. The EPO collects the data from 65 countries, consolidate and disseminate this data in the form of CD-ROM on a weekly basis. Furthermore, with the Internet technology, the EPO further enhanced its patent information services. Patent data from national, European and international patent collections are made publicly accessible on esp@cenet, the world's most comprehensive free of charge patent server on the internet. Esp@cenet gives users easy access to a large number of patent documents with a user interface in the national language of each member state. In addition, by the recent development of "epoline" system, which is the e-business of EPO, not only the online filing of patent applications was provided, but also a new way of accessing patent information via Internet was made

available for public. Through those services, a large variety of patent information products and services are offered to the public and in this way, access to latest technologies is eased, technology transfer is facilitated, innovation is stimulated and R&D duplication is avoided.

3.2. The Turkish Patent System

It can be said that, as compared to the international developments, Turkey was late in forming a modern patent system for the effective protection of industrial property rights (IPRs). Until 24 June 1994, the date on which the Turkish Patent Institute (TPI) was established, in Turkey, the legal system regarding the protection of IPRs provided limited possibilities of registration and was quite outdated as compared to the developments at the international level. In this regard, becoming a party to the Agreement establishing the World Trade Organization on 1st January 1995 and the beginning of Customs Union with the European Union on 1st January 1996 were the most significant incentives for Turkey in terms of engaging in legal reforms in the IP field. By those legal reforms, the purpose was not only to integrate with the international regulations, but also to provide an effective IP protection within the country, which is in harmony with the international standards.

Within this framework, the development of patent system in Turkey can be examined by distinguishing this process into two periods:

- The period before the establishment of Turkish Patent Institute (before 1994)
- The period after the establishment of Turkish Patent Institute (after 1994)

Such a distinction makes sense since the establishment of TPI is the first step in terms of attaining the target of constituting an effective and contemporary patent system in Turkey.

3.2.1. The Period before the Establishment of Turkish Patent Institute

When the development of protection of IPRs is historically examined, the Ottomans was one of the pioneer countries with regard to the formation of national laws in the world. The "Ottoman Patent Law" (*Osmanlı İhtira Beratı Kanunu*) came into effect in 1879, which was adopted by translating from "French Patent Law" dated 1844. It was among the first few instances of patent laws adopted in the world. When the Ottoman Patent Law was adopted in 1879, characteristically, it suited to the conditions of the time as well as to the international standards. However, the advantages of being one of the initiators of patent protection in the world could not be used effectively in terms of economic and technological development, as since the date on which the Ottoman Patent Law came into effect, no significant revisions were made according to the changing conditions until 1995. Yalçıner criticizes the nonexistence of any necessary revisions or renewals in the field of patent since 1879 and views this situation as a significant loss for Turkey;

> Within 115 years during which the Law stayed in effect, although the economic conditions in the world extremely changed, the technology developed incessantly, the conditions of international commerce and transfer of knowledge progressed rapidly, and, most significantly, the political structure completely changed as a result of the establishment of Republic of Turkey in place of the Ottoman Empire, it is interesting that no revisions were made on the Ottoman Patent Law during such a long period of time[25].

The patent system in Turkey which was in effect until 1995 basically depended on the system of granting patent without examination of novelty. Furthermore, for granting patent, it was accepted sufficient that the invention was novel and capable of industrial application. Hence, having an inventive step, which was accepted by all of the contemporary patent laws as one of the criteria of granting

[25] Yalçıner, Uğur G., "Türkiye'de Patent Sistemi ve Yönetiminin Bugünü ve Yarını", *Patent Sistemleri ve Patent Ofis Organizasyonları Uluslararası Sempozyumu*, Yetkin Basım ve Yayımcılık A.Ş., Ankara, 1992, p.101.

patent, did not exist in the Turkish Patent Law until 1995. However, in 1955, Turkey became a party to the international agreement establishing the International Patent Institute in La Haye (the organization which was previously in the place of European Patent Office) and became a member of this Institute. In accordance with the provisions of this Agreement, Turkey passed to a new system of patent granting in which novelty examination would be made by the organizations at the national level and abroad when necessary. In this way, the procedure for the examination of patent applications in Turkey by the International Patent Institute in La Haye was started. Moreover, the university professors who are specialized on the subject of inventions or the patent offices of the countries which are authorized by WIPO to make patent examination were the other organs resorted for examination[26]. However, although this was a positive step in terms of increasing the quality of patents granted in Turkey, the fact that examination reports were prepared by several different organizations led to the problem that, for each application, the reports were prepared according to different views and perspectives and this considerably decreased the reliability of the patents granted. In 1977, the International Patent Institute in La Haye was abrogated and EPO was established with the EPC's coming into effect. This situation led to a vacuum in terms of novelty examination of the patent applications made in Turkey. In order to solve this problem, on 27 September 1977, an agreement was made between Turkey and EPO providing that the examination of the patent applications filed in Turkey could be made by the EPO. However, since novelty examination was not a legal obligation put forward by the Turkish Patent Law and the examination fees of the EPO were considerably high for the Turkish applicants, the reliability problem of the patents granted in Turkey continued until a modern patent system which suits to the contemporary conditions was established.

In addition to these, becoming a party to the "Paris Convention for the International Protection of Industrial Property" and "Madrid Agreement for the

[26] Decree-law No.551, op. cit., Articles 62, 63.

International Registration of Trademarks" in 1930 and agreeing to the "Convention establishing the World Intellectual Property Organization" on 12 May 1976 were the other significant developments for Turkey during this period, in terms of integrating to the international developments regarding the field of IP.

3.2.2. The Period after the Establishment of Turkish Patent Institute

The purpose of the establishment of WTO whose roots could be traced back to the GATT Agreement of 1947 was to tie the functioning of international commerce and cooperation to some specific conditions and to set forth some economic measures and sanctions for the countries which did not comply with those rules. The formation of the EU whose roots could also be traced back to late 1940s was also principally based on the regulation of economic relations in Europe. Within this process, by the 1980s, it was more clearly realized that one of the most significant factors of economic and industrial cooperation was the effective protection of IPRs at the international level. For this reason, both within the Agreement establishing the World Trade Organization and within the EU, some special regulations were put forward regarding the protection of IPRs.

By considering the significant place of effective protection of IPRs in the future of international commerce and the economic difficulties and sanctions that would be faced by the countries which did not comply with the international standards, Turkey also started its preparations to make reforms in the IP field that would pawed the way for Turkey's integration to the developments in the international arena. The first step to attain this target was the establishment of TPI.

3.2.2.1. The Turkish Patent Institute

For an effective protection of IPRs what is needed is not only amending the law, but also a well-organized patent institute for the execution of the administrative procedures. In order to cover this need, the TPI was established on 24 June 1994,

which was the first step towards the formation of a modern patent system in Turkey.

The center of TPI is in Ankara and it is affiliated to the Ministry of Industry and Trade. It has an administrative and financial autonomy and in this regard TPI is completely in harmony with the international standards. What is meant by administrative and financial autonomy is that the Institute has an administrative autonomy regarding the appointment and election of the managers and appointment and promotion of the personnel and has a financial autonomy by setting fees in return for the services provided in order to use these incomes to provide more efficient and rapid services. All of the public institutions in the developed countries, which are responsible for the execution of the operations regarding IP, have an administrative and financial autonomy. In this way, the patent offices have the opportunity to properly fulfill their functions and responsibilities.

In Decree-law No.544 For the Establishment and Functions of Turkish Patent Institute, the purpose of the establishment of TPI is explained as;

> Contributing to the technological development of Turkey, creating a competitive environment in the country, providing for the development of R&D activities, establishing the regulations for the protection of patents, trademarks and other IPRs and presenting the information regarding the IPRs, existing within the country or abroad, to the benefit of public[27].

Within the framework of this purpose, the functions of TPI are generally determined as;

> Execution of all of the operations regarding the IPRs, registration of the license and assignment agreements, monitoring the use of inventions, evaluation of the new

[27] Decree-law No.544 For the Establishment and Functions of Turkish Patent Institute, OG. 21290, 24.06.1994, Article 1.

> technologies and directing technology transfer, establishing cooperations with its counterparts abroad and with the relevant international organizations, contributing to the preparation of IP-related international agreements and providing for their implementation in Turkey, providing the public with the necessary technological information and documents, informing and directing the ones who engage in R&D activities about the national and international IP law[28].

As for the organizational structure of TPI, it is comprised of seven main organs, namely, the Managing Board, the Advisory Board, the Presidency, the Re-examination and Evaluation Board, the Main Administrative Units, the Auxiliary Service Units and the Consultancy Units[29].

In addition to these, TPI is also responsible for the participation of Turkey to the international agreements concerning IP and fulfillment of the obligations that arise out of those agreements. Moreover, within TPI, it is highly significant that the staff employed in the Institute is properly specialized and provided with the necessary education at the national and international level. Furthermore, the maintenance of the latest information concerning the IPRs and technological developments, providing for the rapid attainment of that information by the users and the formation of necessary hardware and software for the rapid transfer of information to the ones who demand them, are the other matters which are considered as highly important by TPI[30].

After TPI was established on 24 June 1994, until 7 November 1995, the legal background for the effective protection of IPRs in Turkey was formed and in this way, Turkey almost completely harmonized its national law with the international

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[28] Decree-law No.544, op. cit., Article 3.

[29] ibid., Article 4. (for details of the functions of the organs of TPI, see Decree-law No.544, Articles 4-20)

[30] Yalçıner, Uğur G., "Türk Sınai Mülkiyet Sisteminin Geçmişi, Bugünü ve Yarını", *Türkiye'de ve Dünya'da Sınai Mülkiyet Koruması Uluslararası Konferansı*, TPE Yayınları, İstanbul, 24-25 June 1997, p.20.

standards. Within such a short period of time, Turkey adopted its national legislation for patents, trademarks, industrial designs and geographical indications and achieved the necessary legal regulations for Turkey's participation to most of the international agreements concerning the IP field. After the developments that were attained in 1994 and 1995, TPI continued to work for the proper application of law amendments at home and provided for the effective representation of Turkey in the international arena with regard to the execution of the participated international agreements. Furthermore, participation to the other significant international agreements concerning the IP field as well as further developing the legal and institutional infrastructure necessary for the effective protection of industrial IPRs, were the other developments put forward by TPI since 1995.

It can be said that, since the establishment of TPI in 1994, by conforming to the developments in the world, Turkey properly formed its national legislation for the establishment of a modern and contemporary industrial property system and considerably progressed towards the achievement of an effective institutionalization within this field. However, when the historical development of industrial property protection in Turkey is examined, the most critical point is that although the national law regarding the protection of trademarks and patents came into effect concurrently with today's economically most developed countries, it is unfortunate that those regulations were applied for more than a century without any significant amendments and the formation of special legislations for the protection of industrial designs and geographical indications also waited until 1995. Hence, disregarding the developments in the world resulted in the fact that, concerning the IP field, Turkey remained quite behind the countries such as Britain, US, France, Germany and Japan, with which Turkey acted concurrently in 1800s, but failed to follow later[31].

[31] Yalçıner, Uğur G., Kurt, Zeynep, "Fikri ve Sınai Mülkiyet Korumasının Ekonomik ve Teknolojik Gelişme Üzerindeki Etkileri, Tarihsel Analiz", *Teknolojik ve Ekonomik Gelişme Fikri Sınai Mülkiyet Hakları Uluslararası Konferansı*, Ankara, 1-2 October 2004, p.33.

3.2.2.2. The Fundamentals of Patent Protection in Turkey since 1995

The current legislation for the protection of patent rights was prepared not only by considering the realities and demands existing in Turkey, but also by paying attention on the harmonization of Turkish Patent System with the modern patent system of Europe and other countries[32].

The main purpose of protection is explained in the Decree-law No.551 as;

> The encouragement of innovative activities and protection of inventions by granting patent or utility model certificate in order to provide for the technological, economic and social development with the application of inventions in industry[33].

In this way, the purpose is to create an appropriate environment for the encouragement of R&D activities, innovativeness and transfer of technology.

Within the Decree-Law No.551, utility model protection is also included alongside with patent protection. Furthermore, the concepts like the system of patent granting without examination, workers' inventions and compulsory licensing, which are applied in most of the modern patent systems of the world such as Germany and Japan, are also included in the current legislation. In addition to these, the criteria for granting patent is set forth as novelty, involving an inventive step and industrial applicability. Hence, different from the previous legislation of 1879, having an inventive step is included in the current legislation together with the criteria of novelty and industrial applicability. In this way, the criteria for granting patent were harmonized with the international standards. In this regard, Yalçın states that;

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[32] Yalçın, Mahmut, "Türkiye'de Patent Koruması ve Patent İşbirliği Antlaşması Uygulamaları", *Türkiye'de ve Dünya'da Sınai Mülkiyet Koruması Uluslararası Konferansı*, TPE Yayınları, İstanbul, 24-25 June 1997, p.195.

[33] Decree-law No.551 Pertaining to the Protection of Patents, OG No.22326, 27.06.1995, Article 1.

> When Turkish Patent Law is compared with the international regulations concerning this field, the conditions and scope of protection and the sanctions as well as the procedures that are applied after the application are completely in harmony with the international law in both formal and technical terms[34].

Furthermore, by becoming a party to the Patent Cooperation Treaty on 1st January 1996, to the Strasbourg Agreement regarding the International Classification of Patents on 1st October 1996, and to the European Patent Convention on 1st November 2000, Turkey further integrated its national law to the international law concerning the field of patent protection.

3.3. The Position of Turkey within the European Patent System

One of the most important developments in Turkey, in terms of integration to the international regulations of patent protection, was its participation to the EPC. Turkey has become the 20th member of EPC on November 1, 2000. This was an important step for both the development of the Turkish Patent System and the process of Turkey's integration to the European Union. In fact, the relations between Turkey and EU date back to 1959 when Turkey applied for membership to the European Economic Community and became an associate member following the Ankara Agreement in 1963. After that, the relations became consolidated by the Association Council Decision No. 1/95 dated 6 March 1995, which established the Customs Union between Turkey and EU. It was stated in the 29th Article of the Association Council Decision that the parties accept the necessity of the existence of an equal level of protection of intellectual property rights in both sides, for the proper functioning of the Customs Union. The obligations that were attributed to the parties were explained in Annex 8 of the Decision and within this framework significant responsibilities were attributed to Turkey in terms of completing its national regulations about the protection of intellectual and industrial property rights. These responsibilities were mainly the

[34] Yalçın, op. cit., p.200.

ones which had been attributed to Turkey in the framework of its obligations arising from the TRIPS Agreement. In this respect, Turkey undertook to fulfill its obligations arose out of TRIPS Agreement no later than three years after the Decision's entry into force. Furthermore, regarding the fulfillment of obligations, although the TRIPS Agreement provided for a five-year transition period for the developing countries until 2000, Turkey completed most of those obligations in June 1995 and made its legal infrastructure concerning the IP field, to a great extent, compatible with the EU legislation.

There is no doubt that being a part of the European Patent System provided Turkey with certain advantages, while warning about the possible challenges that Turkey might face in the near future. For this reason, the process of Turkey's EPC membership should be evaluated by taking into consideration both sides of the coin since Turkey can best benefit from the advantages only if it can cope with the challenges.

3.3.1. The Advantages

By becoming a member of the EPC, Turkey obtained certain advantages in terms of developing its own patent system as well as progressing in technological development. Therefore, it is firstly necessary to look at briefly the advantages Turkey obtained as a result of its membership to EPC:

- By becoming a party to EPC, Turkey became a part of the European Patent Law. In this way, Turkey obtained a significant position in terms of determining the future of patent law in the world since the countries which are the members of the EPC would play an important role in determining the future of that field. Furthermore, EPC membership was also an important step taken by Turkey in terms of its integration to EU.

- Turkish citizens will be able to obtain patent protection in all members of the EPC at the same time, with a single application. This is a significant advantage for

both the Turkish citizens and industry since the time, labor and money that are spent for the procedures will considerably decrease. Moreover, the citizens of the other member states will also be able to protect their inventions in Turkey through a single application and registration procedure and this will encourage the competition and flow of foreign capital to Turkey.

- Turkish citizens will have a free access to the database of the EPO. This is one of the most important advantages Turkey obtained because of the fact that reaching the technical knowledge, which is one of the most important means of technological development, freely and rapidly, is very significant for Turkish researchers and industrialists.

- The search and examination reports of Turkish patent applications, which have been prepared by various foreign patent offices, will now be prepared by the EPO. In this way, there will be no need for TPI to form such an infrastructure as well as the number of staff that is needed to be employed will decrease.

- The patent attorneys who are recorded in the registry of TPI will have the authority to make operations before the EPO. In this way, not only the obligation of the Turkish industrialists to work with foreign attorneys will be removed but also the money that will go abroad will stay in Turkey.

- As a result of EPC membership, Turkey obtained the opportunity to employ Turkish officers within EPO. This opportunity is a significant advantage for Turkey in terms of covering its need for qualified personnel in the field of patent.

- With the foresight that the patent applications in Turkey will increase with Turkey's membership to EPC, the expectation is that the revenues of the state will increase as a result of the collection of annual fees. In addition, the increase in patent applications will also lead to the spread of technical knowledge and encouragement of new inventions.

These are generally what Turkey gains or will gain from its EPC membership. However, it is early to come to the conclusion that Turkey is fully making use of those advantages since as a developing country certain economic and technological problems make the conditions in Turkey inconvenient for the proper functioning of the patent system.

3.3.2. The Challenges

During the procedure of membership to EPC, one of the most important processes that the countries experience is the formation of the necessary legal and institutional structure for the proper functioning of the system. However, it is wrong to assume that solely preparing a new patent law or renewing the already existing one would lead to a miracle in terms of technological and economic development. Because, an effective patent protection is only one of the conditions that is necessary for technological development; it should be supported by comprehensive technological and economic policies which are keys to the long-term economic growth.

When we look at the situation in Turkey, although becoming a member of EPC promises certain advantages for the technological and economic development, the exploitation of those advantages, to a great extent, depends on Turkey's ability to employ suitable national industrial and technological strategies at the national level. However, currently, although Turkey does not bring its scientific and technological capabilities to a sufficient level, by becoming a part of the European Patent System, it has entered into a technological competition with the economically developed countries of Europe. Furthermore, another problem is that concerning the patent protection and its necessity for technological growth, there is a widespread unawareness among the Turkish manufacturers. This is a significant disadvantage for Turkey since considering the fact that the number of inventions made in Turkey is low, it is the other members of EPC which will benefit more from the advantages of European Patent System than Turkey. In other words, in the short term, rather than having the status of making European

patent applications, Turkey would appear to be more having the status of accepting European patent applications from other developed members of EPC. As a result of the increase in foreign patent applications, there is no doubt that the foreign patent owners will take significant precautions in order to protect their rights against the imitators. Hence, considering the limited technological capacity of Turkish industry and the fact that imitation of foreign technology is widespread, national firms will be negatively affected from this competitive environment.

Table 1-Patent Applications and Grants in Turkey over the Years

Years	Domestic Application	Foreign Application	Total	Domestic Grant	Foreign Grant	Total
1994	148	1244	1392	61	1131	1192
1995	178	1520	1698	60	703	763
1996	187	718	905	47	554	601
1997	210	1329	1539	7	451	458
1998	214	2280	2494	32	764	796
1999	273	2755	3028	28	1114	1142
2000	266	3178	3444	26	1131	1157
2001	299	2920	3219	44	2092	2136
2002	391	1492	1883	44	1742	1786
2003	467	696	1163	79	1112	1191

Source: TPI statistics (www.turkpatent.gov.tr)

As it is seen in Table1, there is a considerable difference between the number of domestic applications and foreign applications filed before the TPI. Hence, what these statistics indicate is that the patent system in Turkey has been more under the service of foreign applicants than the domestic applicants since the establishment of TPI. Furthermore, this situation is also closely linked to the degree of importance given to the R&D activities in Turkey since the number of

patent applications in a country is one of the strongest indications of that country's R&D capacity.

Table 2-GDP Shares of R&D Expenditures in Turkey and other European Countries (%)

Country	1991	1993	1995	1997	1999	2000	2001	2002
Austria	1.47	1.47	1.56	1.71	1.86	1.86	1.92	1.93
Belgium	1.62	1.70	1.72	1.87	1.96	2.04	2.17	2.20
Denmark	1.64	1.74	1.84	1.94	2.19	2.43	2.40	2.50
Finland	2.04	2.16	2.28	2.71	3.23	3.40	3.41	3.46
France	2.37	2.40	2.31	2.22	2.18	2.18	2.23	2.20
Germany	2.52	2.33	2.25	2.29	2.44	2.49	2.51	2.52
Italy	1.23	1.13	1.00	1.05	1.04	1.07	1.11	1.10
Netherlands	1.97	1.93	1.99	2.04	2.02	1.90	1.89	1.90
Spain	0.84	0.88	0.81	0.82	0.88	0.94	0.95	1.03
Turkey	0.53	0.44	0.38	0.49	0.63	0.64	0.61	0.60
UK	2.07	2.05	1.95	1.81	1.87	1.84	1.86	1.88
Czech Republic	2.02	1.21	1.01	1.16	1.24	1.33	1.30	1.30
Hungary	1.06	0.97	0.73	0.72	0.69	0.80	0.95	1.02
Poland	0.61	0.60	0.65	0.67	0.70	0.66	0.64	0.59
Slovakia	2.13	1.38	0.93	1.09	0.66	0.65	0.64	0.58
Slovenia	1.59	1.60	1.61	1.35	1.44	1.46	1.57	1.54

Source: OECD Statistics (www.oecd.org)

When Table 2 is examined, it is seen that, compared to most of the developed countries in Europe, Turkey's GDP share of R&D expenditure is considerably lower. In this regard, Turkey is even behind the developing countries in Eastern Europe. With Turkey's EPC membership, it is claimed that the flow of foreign capital to Turkey will be encouraged and the Turkish manufacturers will act in a

more competitive environment. This has been thought to be a positive development for Turkish industry. However, with such an insufficient R&D capacity, it is impossible for Turkish industry to compete with foreign capital on equal terms since R&D is the most significant means of technological development. Furthermore, in Turkey, the fact that R&D appears to be more adaptive rather than innovative makes Turkish industry dependent on foreign technology.

In addition to these, another important point to emphasize is the regulations regarding the incentive mechanisms for the encouragement of R&D activities and patent applications. However, it is also hard to say that R&D and patent supports are at a sufficient level in Turkey. Furthermore, the currently existing support system is not so much successful in reaching the industrialists, especially the small and medium-sized enterprises (SMEs) which have a crucial place in Turkish manufacturing industry. This situation is, to a great extent, a result of the fact that the industrialists are not sufficiently informed about how the incentive system works. Moreover, the fact that the procedures are highly bureaucratic considerably decreases the enthusiasm for making applications for funds. As for the patent supports, they are not only insufficient in quantitative terms, but also the way the procedure works is not so much encouraging since the incentives are applied only after the patent application comes to an end. Hence, the costs that appear during the application process remain to be a problem and prevent most of the industrialists from making patent applications.

To sum up, it can be said that coping with the challenges that Turkey might face as a result of its EPC membership, to a great extent, depends on applying the appropriate industrial and technological policies alongside a powerful patent system. This is because of the fact that if an effective system of patent protection is not supported by other necessary mechanisms such as patent education and an effective incentive system, it is impossible for Turkey to benefit from the advantages that the European Patent System provides.

The discussions about whether the system of patent protection is suitable for the economic structure of developing countries is a current issue. And according to most of the perspectives, this system is a means of exploitation of the developing countries by the developed ones. Nevertheless, from now on, it is not so much reasonable to discuss the disadvantages of the system of patent protection in Turkey since Turkey completed its legal integration with the legislation in Europe and what remains to be done is nothing but to adapt the conditions in Turkey to this environment by employing suitable industrial and technological strategies. For this reason, what should be done is to deeply evaluate the conditions in Turkey by considering how the current technological, economic and industrial conditions can be improved; so that a suitable environment in Turkey is formed for making use of the advantages provided by EPC membership.

CHAPTER IV

THE SMALL AND MEDIUM-SIZED ENTERPRISES WITHIN THE PROCESS OF TURKEY'S INTEGRATION TO EUROPEAN PATENT SYSTEM

As it has been mentioned in the previous chapter, Turkey's EPC membership not only provided certain advantages for economic and technological development, but also led to some challenges that Turkey might face in the near future. The most important challenge is that because of the current economic and technological problems in Turkey, the foreign industrialists benefit from the advantages of European Patent System more than the Turkish industrialists and the result of this situation is the fact that domestic enterprises are negatively affected from this competitive environment. In this regard, what should be significantly focused on is the conditions of small and medium-sized enterprises (SMEs) in Turkey, since they are the ones which are affected mostly from the negative consequences of this competitive environment because of their limited economic and technological capabilities. At the same time, when considering the great share that SMEs have within the Turkish industry, the SME-oriented strategies and policies for improving their conditions appear crucial for Turkey to necessarily benefit from the advantages of current patent system. Hence, while examining the process of Turkey's integration to European Patent System and analyzing the problems that Turkey might experience within this process, there is no doubt that ignorance of the conditions of SMEs would lead to an incomplete analysis.

4.1. SMEs: The Problem of Definition

It is beyond doubt that SMEs are very important in economic development not only for they increase the rate of employment and total value-added in economy

but also they lead to the spread of individual entrepreneur mind in the community. Especially, the flexibility and innovative capacity of SMEs enables them to respond quickly to structural changes and adapt easily to changing demands in society. The importance of SMEs in addressing the triple challenge of more growth, greater competitiveness and more jobs has been brought into ever-sharper focus over the past few years[35]. However, the concept of SME has been one of the most discussed concepts in Turkish economy with regard to its definition. Hence, besides their well-known economic and technological problems, it is not wrong to say that the problems of SMEs in Turkey are firstly related to their definition.

The definition of SMEs varies according to different nations, regions and sectors. Likewise, there is not a specific definition of SME in Turkey, but it is possible to find some basic attributes to SMEs such as being managed by entrepreneur, based on internal financial resources and independency of enterprise. Despite the existence of various criteria, overall, different institutions in Turkey which provide services to SMEs take "the number of employees working in an enterprise" as the basic criterion for defining SMEs. However, there is no clarity in this regard, either. For instance, there are both blue-collar and white-collar workers in an enterprise; in other words, the ones who personally take place in the production process with their labor and the ones who solely take place in administrative procedures. There is no clarity with regard to which group will be taken into consideration when determining the number of employees in an enterprise. Furthermore, some other criteria such as fixed investment size, technological capacity, annual turnover or profit and the value-added that is created are also considered in defining SMEs. When we look at the definitions of various public and private institutions which provide services for SMEs in Turkey, it is not possible to talk about an agreement among them.

[35] Kuruüzüm, Orhan, "SME in Turkey: A Structural Evaluation", in Yavuz Tekelioğlu (ed.), *Turkish Small and Medium-Sized Enterprises in the Integration Process of Turkey with the European Union: Implications and Consequences*, Friedrich Naumann Foundation and Akdeniz University, Faculty of Economics and Administrative Sciences, Ankara, 1998, p.35.

Table 3-The SME Definitions in Turkey according to the Criterion of "Number of Employees"

Institution	Micro-sized Enterprise	Small-sized Enterprise	Middle-sized Enterprise
State Institute of Statistics	1-9	10-49	50-99
Undersecreteriat of Treasury	1-9	10-49	50-250
Foreign Trade Undersecretariat	-	-	1-200
HALKBANK	-	-	1-250
EXIMBANK			1-200
KOSGEB	-	1-50	51-150
TOSYÖV	1-5	5-100	100-200
TOBB	1-9	10-49	50-150

Source: State Institute of Statistics, Undersecretariat of Treasury, Foreign Trade Undersecretariat, HALKBANK, EXIMBANK, KOSGEB, TOSYÖV, TOBB

As it is seen in Table 3, SMEs are defined by various institutions as having up to 100, 150, 200 or 250 employees. Moreover, while the concept of "Micro-sized Enterprise" is taken into consideration by some of the institutions, it is ignored by the others. Such an inconsistency between the definitions is a significant problem since a common definition of SME is necessary for the effective organization of SME-oriented policies and state support mechanisms, planning of the programs which would be applied within framework of those policies and forming a standard for the execution of the scientific researches in this field. In other words, the consistency between the definitions of various institutions is important in terms of effective usage and systematic coordination of the resources. Furthermore, the differences in definitions result in the problem that the enterprises are exposed to different treatments from different institutions and this situation leads to an incompatibility between the perceptions of the parties and decreases the effectiveness and transparency of the services provided.

In addition, formation of a common definition of SME is also important within the process of Turkey's EU membership as Turkey has a responsibility to harmonize its SME definition with that of the EU. This issue was emphasized not only in Turkey's Progress Reports that were previously prepared by the European Commission but also within the short term measures of the Accession Partnership Document that was prepared for Turkey in 2003[36].

Table 4-The EU Definition of SME

SME Definition	Number of Employees	Annual Balance Sheet (or Turnover)	Independence
Micro-sized Enterprise	less than 10	-	To be classed as a SME, the enterprise should not belong to one or more large enterprises.
Small-sized Enterprise	less than 50	up to 7 million ECUs (or 5 million ECUs)	
Middle-sized Enterprise	less than 250	up to 40 million ECUs (or 27 million ECU)	

Source: Avrupa Birliği'nde KOBİ Destekleme Programları ve Diğer Teşvik Araçları, KOSGEB, 1997

As Table 4 indicates, the EU member states achieved a comprehensive harmonization in their definitions of SME. The common definition includes three criteria; the number of employees, balance sheet total or turnover total and the level of independence. To be classed as an SME or a micro-enterprise, an enterprise has to satisfy the criteria for the number of employees and one of the two financial criteria; either the turnover total or the balance sheet total. In addition, it must be independent, which means less than 25% owned by one large enterprise (or jointly by several large enterprises) falls outside the definition of a SME or a micro-enterprise.

The common definition of SME was developed in order to avoid confusion at both the national and union level, as in recent years, a range of programs to

[36] *SME Strategy and Action Plan*, Republic of Turkey Prime Ministry State Planning Organization, Ankara, January 2004, p.26.

support SMEs was introduced at the European level. By targeting the enterprises most in need of support because of their size, it is thought that the common definition will enhance the effectiveness of the specific measures in favor of SMEs, especially in the case where they are co-financed by the Community on the one hand, and by the Member States, the European Investment Bank (EIB) or the European Investment Fund (EIF) on the other.

In the last Progress Report prepared by the European Commission for Turkey in 2003, it was stated that the legal regulations regarding the SMEs are complicated and lack coordination. Furthermore, it was emphasized that for the proper implementation of Community Programs in Turkey, Turkey needs to harmonize its definition of SME with that of the EU. Hence, considering the significance of encouragement of innovativeness in SMEs within the process of Turkey's integration to European Patent System, harmonization with EU definition of SME, thus proper implementation of SME-oriented Community Programs is considerably important for Turkey in terms of improvement of the economic and technological conditions of SMEs active in Turkish manufacturing industry.

4.2. The Position of SMEs within the Turkish Patent System

SMEs have a considerable weight in Turkish manufacturing industry. Including the service sector, they occupy 99.8% of Turkish industry and generate 76.7% of employment[37]. Hence, the first reason why the conditions and problems of SMEs cannot be underestimated while determining the strategies for proper integration of Turkey to European Patent System is their great share within the Turkish manufacturing industry.

Alongside with the increasing significance of SMEs in the world, Turkey started to form a system oriented through supporting SMEs through the end of the 1980s and those efforts became consolidated by the beginning of Customs Union (CU) with

[37] *SME Strategy and Action Plan*, op. cit., p.9.

EU. The process of CU significantly draws attention to the increased competition in Turkish industry and the negative effects of this situation on SMEs. In fact, the discussions on Turkey's EPC membership and the position of SMEs within this process closely resemble to the previous discussions on the effects of CU in Turkey, since in both cases the problems concerning the conditions of SMEs appear as a significant barrier faced by Turkey in benefiting from the advantages of those processes. Before exploring the problematic relationship between patent system and SMEs, it is first appropriate to understand the essence of the innovative capacity of SMEs which makes them key actors in strengthening the patent system in Turkey as well as within the process of Turkey's integration to European Patent System.

4.2.1. SMEs and Innovation

Alongside with the fact that SMEs occupy 99.8% of Turkish industry, it is often their considerable innovative and creative capacity, which makes their role crucial in terms of strengthening the role of patent system for the consolidation of technological development, which will provide Turkey with a more effective position within the European Patent System.

The innovative capacity of the SMEs primarily results from the fact that their organizational structure is dynamic and flexible. In 1970s and 1980s, the labor-intensive technological structure was emphasized as the major factor behind the potential of SMEs to generate employment[38]. In recent years, the emphasis is gradually shifted towards the technological dynamism and entrepreneurial spirit of SMEs[39]. Thus, the SME sector is now hailed for its flexibility and creativity. What is meant by the concepts of dynamism and flexibility is that, bureaucracy, which is one of the most crucial factors that leads to a great trouble within the operations of large enterprises, is almost non-existent within the structures of SMEs. In other words, it does not take too long to take and apply a decision as well

[38] Taymaz, Erol, "Small and Medium-Sized Enterprises in Turkish Manufacturing Industries", *Journal of Economic Cooperation*, Vol.22 No.1, 2001, p.44.

[39] ibid., p.44.

as there is no obligation that those decisions are checked by various control mechanisms. Because of such an advantage, the ability of SMEs to keep up with the changing conditions is higher than that of the large enterprises and this doubtlessly makes them proven innovators with great creative capacity and the driving force behind many technological advances. Furthermore, currently, while the globalization and information technologies are growing rapidly, the flexible production systems, which can rapidly respond to the needs of consumers, emphasize employment and entrepreneurship and capable of product differentiation, are becoming widespread[40]. Hence, for the development of those systems, in developed countries, it is observed that the tendency is moving from the large enterprises towards the SMEs because of their said advantages. Especially, when the speed of change within the field of information technologies is considered, the fact that they are capable of quickly keeping up with the changing conditions make the SMEs key actors of the knowledge-based economies.

4.2.2. SMEs and Patent System

Regarding the relationship between patent system and SMEs, first of all, the economic and technological capacity of SMEs in Turkey is considerably low as they often use inefficient production methods and outdated equipments which lead to the production of low-quality products. For this reason, despite their great potential of creativity, their ability to use their innovative capacity and to develop new products significantly based on the existence of sufficient financial resources as well as the extent to which they are able to access technological knowledge. The financial difficulties also lead to the absence of effective R&D undertaking in most of the SMEs and the widespread adaptation of existing products in order to survive in the market. Furthermore, regarding the participation to support programs organized for increasing their R&D and innovative activities, the SMEs

[40] Baykal, Cevdet, "Cumhuriyet'in 75. Yılında DTM'nin KOBİ'lere Bakışı: İhracatta Dış Ticaret Modeli ve Devlet Yardımları", Turkish Foreign Trade Undersecretariat, 09.10.1998. http://www.forigntrade.gov.tr/ead/DTDERGI/ekim98/kobi/htm

in Turkey are rarely aware of the significance of such mechanisms in increasing their innovative and creative capacity. In fact this is a mutual problem in the sense that not only the SME-oriented training, consultancy and R&D supports are far from meeting the needs, but also there is a mentality problem on the part of the SMEs themselves, as they do not display so much enthusiasm about benefiting from the already existing services. Hence, if this situation is evaluated within the framework of the context of Turkey's process of integration to European Patent System, not only the technological capacity of Turkish SMEs is lower than their European counterparts, but also the state supports provided to SMEs in Turkey remain inadequate in both qualitative and quantitative terms vis a vis the supports and incentives provided in EU member states.

In his paper on the importance of intellectual property for SMEs, the WIPO consultant Esteban Burrone also put forward the difference between the 1st world countries and developing countries with regard to the effective use of the IP system in general, its use by the SMEs in particular;

> In general terms, both the overall applications for the protection of IP rights and the percentage of applications by the SMEs are significantly lower in developing countries than in the OECD countries. This appears to be the case also with respect to the use of technological information contained in patent documents and application/registration of other IP rights[41].

The result of this situation is that while the Turkish SMEs are still producing for the Turkish market with traditional production methods, at the same time, they face the challenge of competing with foreign firms, especially the EU firms, in domestic market as a result of the processes such as CU and EPC, which are proceeding rapidly but unobserved by the SMEs in Turkey.

[41] Burrone, Esteban, "Why Intellectual Property Matters: The Importance of Intellectual Property for SMEs", paper presented at the Virtual Congress of Entrepreneurs and SMEs organized by International Bureau of WIPO on 15 October-14 December 2001, p.2. http://www.wipo.org/sme/en/documents/pdf/ipmatters.pdf

The strategic use of patent system by enterprises, including SMEs, highly depends on the companies' overall business strategy. However, SMEs are often constrained in many more ways than large enterprises in making an effective and efficient use of the patent system and to a great extent unaware of the fact that it is their ability to use the patent system efficiently and effectively, which will largely influence their capacity to make the most of their creative and innovative capacity. Furthermore, the belief that patent protection is only relevant to large high-tech companies investing large sums of money in R&D is considerably widespread among the SMEs in Turkey, which is, to a large extent, a misperception, as there are many ways in which SMEs operating in low-tech may benefit from patent protection. In cases where the product developed is not considered to be sufficiently inventive to merit a patent, some forty countries worldwide, one of which is Turkey, offer utility model protection which applies mainly for adaptations to existing product or less significant innovations primarily in the manufacturing industries[42]. However, the fact the SMEs are considerably uninformed about the characteristics as well as the protection provided by the patent system also leads to an unawareness regarding the usage of different ways of protecting innovations such as utility model. In addition, while the consideration that patenting is mostly specific to the commercial activities of large enterprises is widespread among the SME population, there is, at the same time, a great unawareness concerning the fact that the strength of the IP portfolio is one of the most significant means of increasing a SME's competitiveness in the market, relative to larger enterprises.

Underutilization of patent system by the SMEs in Turkey is also, to a large extent, due to the lack of information on how to acquire and manage IP assets and technological information in an effective manner, absence or shortage of IP related services in SME support institutions, as well as the perception that the IP system is complex, time-consuming, expensive and of limited value. The costs of patenting are generally perceived as one of the greatest barriers to SMEs'

[42] Burrone, op. cit., p.4.

effectiveness in the patent system. Overall, the costs of protection are perceived by many SMEs as exceeding the potential benefits to be obtained from protection and the fact that patent related support mechanisms in Turkey proves insufficient to meet the demands of the enterprises has a great share in the appearance of such a perception. Moreover, even when they do make applications, factors such as insufficient information on the prior art, poorly drafted patent applications, limited access to adequate legal advice and lack of sufficient human and financial resources to follow the application through the grant stage lead to SMEs' lower success rate in terms of being granted the patent vis a vis the large enterprises[43].

The lack of adequate information on patent protection also leads to the fact that, generally, SMEs do not sufficiently benefit from the wealth of technological information available in patent databases, thus devoid of such useful information for the development of new products, processes and services. Moreover, the SMEs can also benefit from the patent databases to monitor possible infringements as well as to find out about the innovative activities of the competitors or to identify future partners. Turkey's EPC membership is especially important in this regard, since as it has been mentioned before, EPO makes available its patent database on-line for the general public free of charge. This is a significant opportunity for Turkish SMEs to access latest technological developments, but unfortunately, because of the high level of unawareness regarding the patent system as well as the lack of necessary expertise to use the patent databases, such a vast amount of technical knowledge remains unexplored by the enterprises, especially the SMEs.

There's no doubt that acquiring IP protection is a crucial initial step for the SMEs, but effective IP management is equally important for a SME as it enables the enterprise to use its IP assets to improve its competitiveness and strategic

[43] *Networks, Prtnerships, Clusters and Intellectual property Rights: Opportunities and Challenges for Innovative SMEs in a Global Economy*, Final Report for the 2nd OECD Conference of Ministers Responsible for Small and Medium-Sized Enterprises on "Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards a More Responsible and Inclusive Globalisation", İstanbul, 3-5 June 2004, p.46. http://www.oecd.org/dataoecd/6/10/31919244.pdf

advance. Effective IP management involves a company's ability to commercialize its inventions, market its brands, license its know-how, conclude joint ventures and other contractual agreements involving IP and effectively monitor and enforce its IP rights[44]. However, due to the lack of financial resources necessary for marketing the product it self as well as the unawareness regarding the increased negotiating power that patents give to SMEs in license negotiations with larger firms, the SMEs cannot adequately exploit the economic advantages of protection, which leads to the consideration of the time and money spent for obtaining protection as a loss. It is therefore necessary that the SMEs should be well-informed about the costs and benefits of the IP system or should access to adequate consultancy so that they are able to get the right advice in this matter. Furthermore, the heavy burdens resulting from the litigation costs also appear as a significant barrier to proper enforcement of SMEs' IP rights, which is necessary for the exploitation of economic returns of protection.

In consequence, in the context of the patent system, the problems of SMEs can be summarized as the insufficient economic and technological capacity on the one hand, the existence of widespread unawareness with regard to acquirement and management of the protection provided by patent system on the other. In this respect, the necessary system to be established can be explained as the providing of SMEs with sufficient R&D and consultancy supports, achievement of necessary R&D activities through those incentives, putting forward a technological innovation as a result of these activities and transforming this technological innovation into a patent application. In addition, the consolidation of the relationships between the attorney firms and the SMEs is also an inevitable necessity for the achievement of an effective IP management. Only if the proper functioning of such a process is achieved, then Turkish industry can adequately benefit from the advantages of European Patent System equally with its foreign counterparts as well as compete with them on equal terms.

[44] Intellectual Property Rights and Small and Medium-Sized Enterprises, International Bureau of WIPO, 26.05.2004. http://www.wipo.int/about-ip/en/studies/publications/ip_smes.htm

4.2.3. The SME-oriented R&D and Patent Supports in Turkey

In the context of the patent system, doubtlessly it is the financial problems that, before all else, prevent SMEs from acquiring an effective position within this system. For this reason, proper organization of SME-oriented support mechanisms, especially the R&D supports, is one of the most significant factors in terms of improving the economic and technological capacity of SMEs, thus increasing their effectiveness within the patent system. However, when compared to the incentive policies of EU and other developed countries, it is seen that the current practices as well as the planned policies and programs for SMEs in Turkey do not have the adequate capacity to meet the demands of the enterprises as well as suffering from insufficient resources and institutionalization in this field. Considering the high costs of patent protection, the shortage of patent-related supports in Turkey also appears as a significant barrier to effective usage of patent system by the SMEs. In addition, instable economic conditions in Turkey also prevent successful implementation of SME-oriented projects and support mechanisms in the sense that speculative activities become more appreciated than productive activities and the owners of enterprises become indifferent about factors like consultation, R&D, patenting, new management strategies, market researches, etc., which are inevitable for long-term growth. Moreover, the complexity and lengthy of bureaucratic procedures also complicate the proper implementation of the support mechanisms and further alienate the SME owners towards using the support system.

Although there are variety of institutions in Turkey which provide financial supports for SMEs, the organizations that mainly provide R&D and patent supports for SMEs are KOSGEB (Small and Medium Industry Development Organization), TUBITAK-TIDEB (Technology Monitoring and Assessment Directorate of Scientific and Technical Research Council of Turkey) and TTGV (Turkey Technology Development Foundation).

Foundation of KOSGEB is one of the most significant achievements of Turkey in terms of providing supports for SMEs. KOSGEB was founded on 20 April 1990

with the purpose of providing the rapid harmonization of SMEs with technological innovations, raising their competitiveness and increasing their effectiveness and contribution to economy. Furthermore, KOSGEB is the only institution in Turkey which provides financial support for SMEs' patent, utility model and industrial design applications. Through this support program, for the SMEs which want to take a patent, utility model or industrial design certificate for their inventions or original designs, KOSGEB supports 75% of the application costs up to 5000 EUR for patent certificates and up to 3000 EUR for utility model and industrial design certificates. In fact, existence of a distinct support mechanism in Turkey, which is solely oriented through supporting patent applications, is a positive step in terms of strengthening of the position of SMEs within the patent system. However, the problem with the implementation of this support program is that the financial support is provided after the grant of the registration certificate, a style that is remote from solving the main problem of SMEs, which is the inability to allocate budget for meeting the costs of obtaining protection. For this reason, it's hard to say that KOSGEB's patent, utility model and industrial design support program contributes much to the encouragement of patenting activity within the SME population.

Regarding the encouragement of R&D undertaking, KOSGEB aims to increase the innovative capacity of SMEs by organizing various support programs that would improve their economic and technological conditions. In this regard, KOSGEB provides supports for the employment of qualified personnel, meeting the costs of acquiring new machines and equipment, quality development, consultancy, publication of R&D results and participation to overseas conferences, symposiums and technology fairs. Within this framework, it can be said that, the main purpose of KOSGEB is not only to remove the widespread unawareness regarding the significance of R&D and innovativeness, but also to partially cover the basic economic needs of SMEs with regard to carrying out R&D in their companies.

Another significant institution that provides financial support for the encouragement of innovativeness and R&D activities within the SMEs is TUBITAK. However, it is

important to emphasize that, different from KOSGEB, TUBITAK is not an institution solely providing supports for SMEs, but it also financially supports the R&D activities of the large enterprises. On 3 June 1995, TIDEB was established to carry out the tasks of TUBITAK within the framework of supporting R&D activities in Turkish industry. The basic missions of TIDEB are to create and implement support mechanisms to encourage R&D, to contribute to the creation of mechanisms for university-industry cooperation and technology transfer and to create measurement-assessment-monitoring systems to measure the effectiveness of implementation tools. The purpose of the R&D Support Program organized by TUBITAK-TIDEB is to support the partial costs (maximum 60%) of the projects without payback, which are oriented through research and development of new products, production methods and innovative technologies. Regardless of their sector and size, all of the institutions which are settled within the borders of Turkey and creating value-added are entitled to benefit from the supports provided by this program. Furthermore, TIDEB also aims to consolidate university-industry cooperation by encouraging the universities and research institutions to engage in common R&D activities with industrial enterprises in Turkey. Within the framework of the international programs in which TUBITAK is also included, a support of up to 100,000 US$ is provided for the universities and/or research institutions which are carrying out a common international project with at least one industrial enterprise in Turkey.

Finally, as for TTGV, it was established jointly by the private and public sectors on 1st June 1991 in order to raise the industrial sector's awareness of R&D and to support technology development projects of the Turkish industry through the funds provided by the Undersecretariat of Treasury and Foreign Trade Undersecretariat. It is a non-governmental institution with a special status that has undertaken a national mission of fostering the continuous and effective technology development activities of companies in the industrial sector as well as strengthening their competitiveness in the international markets to develop Turkey's technological infrastructure. Although TTGV has a particular SME perspective, overall, it provides supports for both the SMEs and large enterprises, like TUBITAK. Within this framework,

TTGV provides supports for the "technological products and process innovation" projects of the industrial companies and software companies. The supported projects should be based on R&D, include technological innovation, have industrial applicability and economic value. Furthermore, alongside with KOSGEB's patent, utility model and industrial design support, TTGV is the only other institution in Turkey which supports the costs of obtaining patent or utility model certificate, despite the fact that it is an indirect support. If Patent or Utility Model Certificate is obtained for the products or processes which are developed within the framework of technology development projects, TTGV accepts these expenses as part of the project budget. However, like the support program of KOSGEB, TTGV also adopts the refunding method as the grant of registration certificate is put as a pre-condition for supporting the partial costs of obtaining protection. Hence, like KOSGEB, its contribution to the encouragement of patenting is considerably limited and remote from removing the basic financial problems of SMEs with regard to making patent, utility model or industrial design applications.

Overall, when the SME-oriented support programs are considered within the framework of SME-Patent System relationship, despite the variety of supports regarding R&D, it is seen that the support granting institutions do not display an adequate sensitiveness towards the encouragement of patenting activity within the SMEs, which leads to the fact that transformation of technological innovations into patent or utility model applications becomes difficult. Furthermore, particular importance should be given to the necessity that the SMEs should be informed sufficiently about the existence of support programs in order to increase participation. In addition, the fact that each of the support granting institutions develops different support policies as well as hold a different definition of SME further complicates the operation of SME-oriented support system, as this leads to a lack of coordination between the institutions, which prevents an effective organization of support programs according to the priority needs of SMEs.

4.3. The Position of European SMEs within the European Patent System

Similar to Turkey, in EU, SMEs have a share of 99,8% within the total number of enterprises and provide 71.5% of total employment[45]. They play a crucial role in European competitiveness and job creation, not only because they represent the overwhelming majority of enterprises in Europe, but also because they are the source of dynamism and change in new markets, particularly those at the leading edge of technology. Although a heterogeneous community, it is accepted by all of the EU member states that the SMEs are all confronted by increased competition resulting from the European internal market and they need to innovate constantly and accommodate advances in technology. For this reason EU has been producing policies since the early 1980s, which concentrate on the problems and needs of SMEs as well as carrying out various programs in this respect.

Since the majority of EPO's applicants are SMEs and since they constitute the backbone of European economy, SMEs' attitude to the patent system is a highly significant issue in EU. Furthermore, the SMEs' use of the patent system and patent information services appear crucial in terms of improvement of European innovation and competitiveness. A recent OECD paper divides the SMEs in EU into three broad groups:

- Technology developers (1-3% of the total SME population);
- Leading technology users (of varying R&D capacity, which are 10-15% of SMEs);
- Technology followers (totaling between 80-85% of SMEs)[46]

Hence, similar to the situation in Turkey, majority of the SME population in the EU has a low technological capacity, which is one of the principal reasons for the

[45] Çolakoğlu, Mustafa H., *SME Guide*, TOBB & KOSGEB, Ankara, April 2002, p.5.

[46] *Intellectual Property and Small and Medium-sized Enterprises*, document prepared by the International Bureau of WIPO for the WIPO Regional Meeting of Heads of Intellectual Property Offices of Caribbean Countries, Paramaribo, 2-3 June, 2002, p.3. http://www.wipo.int/sme/en/activities/meetings/pdf/hip_pbm02_7.pdf

underutilization of the patent system by the European SMEs. Furthermore, again in parallel fashion with Turkey, a significant problem with regard to the SME-Patent System relationship is the widespread unawareness among the SMEs in Europe regarding what European Patent System can do for them. Most of the empirical research shows that there is poor awareness and widespread misunderstanding of the patent system on the part of the SMEs in Europe. This lack of understanding of the patent system is especially seen in the under-exploitation of the EPO's patent information database which is one of the most important information dissemination tools in the world, but regrettably under-used despite being free of charge. The Commission and the EPO are taking steps, especially in the area of training, to tackle the awareness problem and bring the system closer to the users. In this regard, the main goal of the strategies appear to be the establishment of a genuine patent culture in Europe in which inventive ideas are freely acquired, bought, sold and licensed.

According to the results of a recent survey on the use of IP system by SMEs in EU, very few SMEs in Europe are using the patent system. Only 30% of the 974 companies interviewed in the UK, France, Germany, Italy, Spain, Netherlands, Sweden and Finland had ever applied for patents. Of the companies not holding patents, 89% consider them irrelevant to their business while others are skeptical about enforceability and believe patents invite copying by other, larger companies. As for the usage of patent information services, the research indicated that only 29.6% of all SMEs interviewed use patent information searches and just 52 non-patenting SMEs undertake patent information search, which takes us to the conclusion that companies having experience of the patent system are more likely to appreciate the value of patent information as a general source of market intelligence. However, it was also observed that the participant firms are more likely to carry out searches for checking for patent infringements rather than obtaining technical and commercial information[47]. Furthermore, a recent study

[47] The survey was conducted by Thomson Derwent Organization which is the world's leading patent and scientific information provider. The results of the survey was published in 2000 as a document named "Dismantling the Barriers: A Pan-European Survey on the Use of Patents and

commissioned by WIPO on SMEs and IP system in Norway draws attention to the fact that small companies apply on average 20 times less often for patents than large enterprises and their success rate, in terms of being granted the patent, was observed to be significantly lower[48]. Another study on the use of IP system by the SMEs was carried out in UK in 1996-1999, under the name of "Intellectual Property Research Program" which was jointly sponsored by Economic and Social Research Council (ESRC) and the UK Department of Trade and Industry and Intellectual Property Institute. The purpose was to learn how the prevailing system for protecting intellectual property is working, particularly for SMEs. The general conclusions were that the interviewed SMEs are making little use of the formal methods of protection, such as patents. They appear to be more likely to use informal methods such as establishing relationships with customers, suppliers and employees based on trust, since such methods are cheaper and within the control of the company. Moreover, it was seen that patent system makes no contribution to the innovation of SMEs, as they rely heavily on their own resources for innovation, which is not the kind of innovation for which the patent system was originally developed. It was also concluded that many companies lack the necessary expertise to use patent databases and dissatisfied with the services offered by patent agents[49]. Finally, in 2003, EPO published the results of a survey on patent information usage in European companies and according to the findings, European companies appear as fall short in exploiting the potential of patent information databases produced by EPO and the national patent authorities in Europe for their innovation and business strategies. Moreover, the results also indicated that 50% to 70% of the interviewed companies are not aware of the EPO's patent information services and apart from general access problems to such

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Patent Information by Small and Medium-sized Enterprises (SMEs)". The survey results are accessible at http://scientific.thomson.com/knowtrend/ipmatters/bti/8199623/

[48] The study was conducted by Eric Iversen, a Norwegian researcher, and presented at the WIPO Interregional Forum on SMEs and Intellectual Property, in Moscow, on May 22-24 2002, under the name of "Experience regarding the Norwegian SMEs and the Intellectual Property Rights System". http://www.wipo.int/sme/en/activities/meetings/moscow_02/ip_mow02_16.pdf

[49] The projects carried out within the framework of "Intellectual Property Research Program" in UK is accessible at http://info.sm.umist.ac.uk/esrcip/

information, the researchers also found that most of the companies and especially SMEs have no idea about what patent information can do for them[50].

Alongside with the overall problem of unawareness, cost considerations, procedural and legal complexity and uncertainty of the economic value of patents also make SMEs in Europe abstain from using the patent system. It is widely acknowledged that the costs of patents are high in Europe compared to its competitors in USA and Japan. Moreover, the cost of translating the granted patent into the national languages and the cost of litigation in various national legal systems represents heavy burdens on the users. For its part, the EPO tries to help the SMEs in economic terms by making reductions in the fees. The fees did not increase in the period of 1992 –2003 and EPO has also taken major initiatives in favor of a reduction of both translation and litigation costs. Furthermore, in order to take its main users' views on the European Patent System into account as well as to provide them with advice and information on patenting, the EPO has been carrying out workshops and conferences which distinctly target the SME population.

4.3.1. The EU-coordinated Programs for the Encouragement of Innovativeness and Use of Patent System by the SMEs and Turkey's Participation

Within the framework of the promotion of innovativeness and patenting in SMEs, it can be said that, similar to Turkey, despite the existence of various Community Programs for the encouragement of R&D and innovativeness in SMEs, the EU policies which are developed distinctly for the consolidation of SME-Patent System relationship is limited. Especially the high costs of obtaining patent protection through the European Patent System as well as the widespread unawareness among the SMEs regarding patent protection appear as significant challenges for EU in terms of encouragement of the usage of patent system by the SMEs. In this respect,

[50] The report on the main results of the survey on patent information usage among European companies was published by EPO in September 2003, under the name of *Usage Profiles of Patent Information Among Current and Potential Users*. The report is accessible at http://www.motivaction.nl/english/overig/media/knipsels/epo_press-releases20031105.htm

concerning the SME-Patent System relationship, the main targets of the programs coordinated by the EU are to strengthen the competitiveness of SMEs and to improve their ability to engage in R&D and innovative activities on the one hand, to remove the widespread unawareness among the European SMEs regarding patent protection on the other.

The EU's main policy for innovation is the 4-year "Framework Programs" which has been carried out since 1984 for the strengthening of scientific research and technological capacity within Europe. The framework programs are the EU's main instruments for the implementation of its common science and technology policy which was set out in the treaties of Maastricht and Amsterdam with the purpose of making research a transnational activity everywhere in Europe where it is appropriate. In this regard, one of the most significant initiatives of the EU is the "Innovation Program" whose foundation was laid during the process of implementation of Fourth Framework Program. The European Commission (EC) launched a Green Paper on Innovation in December 1995, which laid the ground for the EC's "First Action Plan for Innovation in Europe" that was approved on 20 November 1996. In this way, the EC's "Innovation Program" took effect which proposes three lines of action for tackling Europe's "innovation deficit", namely, promoting a genuine innovation culture in Europe, establishing a favorable legal, regulatory and financial environment for innovation and gearing research more closely to innovation[51]. Within this framework, the encouragement of innovativeness within the SMEs as well as the significance of IP protection across Europe has been considered as crucial factors within the process of implementation of Innovation Program. In this respect, a particular budget was allocated for the encouragement of SMEs in terms of investment in innovation and use of new technologies as well as their participation to EU-funded projects under the framework programs. Furthermore, considering the challenge of inadequate innovation funding at both national and community level, setting up of

[51] First Action Plan for Innovation in Europe, Community Research & Development Information Service, 18.08.1998. http://www.cordis.lu/innovation/src/action.htm

funding facilities for high-tech projects for SMEs was given considerable importance. As for the field of IP, an effective system for protecting intellectual property was seen as indispensable for carrying out innovative activities not only because of the necessity that the innovator should be able to derive a legitimate proof from his/her innovation, but also for the achievement of widest possible dissemination of ideas. In this regard, the Innovation Program particularly focused on the weaknesses of European Patent System as well as the necessity to raise the awareness of intellectual property especially among the participants of framework programs. It was determined that a considerable proportion of SMEs which produce inventions do not apply for patents, which is a consequence of the fact that the European Patent System is complex, expensive and only relatively effective because of its national fragmentation and the twin tracks of European Patent/National Patent[52]. For this reason, in the sprit of supporting innovation and facilitating the conduct of business throughout the Single Market, the EC adopted a Green Paper on Patent on 24 June, 1997, to present its comments on how to improve the patent system in the EU as well as whether and to what extent the interested parties would be prepared to make use of a Community Patent System[53]. In this regard, in its follow-up paper to the Green Paper on Patent, the EC proposed that there is a need for an EU-wide patent regulation that would introduce a unitary patent which would have the same impact throughout the Community[54]. The nature of the Community Patent must be affordable, must guarantee legal certainty and must co-exist with the national and European patent systems, so that the inventors would be free to choose which type of protection best suited their needs. Thereby, the inventors would have the option of obtaining

[52] Implementation of the First Action Plan on Innovation in Europe: Innovation for Growth and Employment, Community Research & Development Information Service, 18.08.1998. http://www.cordis.lu/innovation-fp4/imp-iap1.htm

[53] *Promoting Innovation through Patents: Green Paper on the Community Patent and Patent System in Europe*, European Commission, COM(97) 314, 24 June 1997. http://europa.eu.int/comm/internal_market/en/indprop/patent/paten.pdf

[54] *Promoting Innovation through Patents: The Follow-up to the Green Paper on the Community Patent and the Patent System in Europe*, Communication from the Commission to the Council, the European Parliament and the Economic and Social Committee, COM(99) 42, 5 February 1999. http://aei.pitt.edu/archive/00001215/01/patents_gp_follow_COM_99_42.pdf

a single patent legally valid throughout the EU, while innovation would be encouraged by making it cheaper to obtain a patent and a clear legal framework would be provided in case of dispute.

In addition, the Innovation Program also offered services aimed at raising the awareness for intellectual property rights and the patent system and to give companies easy access to information and advice. In this respect, one of the key priorities of the Innovation Program is to increase the awareness of companies across Europe, especially SMEs, about what the European Patent System can do for them. Within the framework of this purpose, the Innovation Program offered two main services to raise the awareness of the companies in terms of IP in general, patent protection in particular. The first one is the "Quick Scan" service which operates in close cooperation with the EPO[55]. It searches patent databases worldwide to offer companies an analysis by professional patent examiners of the current state-of-the-art of a technical field or innovation. The company initiating the scan can rapidly see the chances for patenting its idea and avoid R&D duplication. The second service is the "IPR-Helpdesk" which provides free support concerning the protection and exploitation of intellectual property and primarily assists the companies participating in the projects funded by the Fourth and Fifth Framework programs[56]. IPR-Helpdesk also assists potential applicants to Community-funded research programs, on all matters related to intellectual property. In order to be able to carry out these tasks, the IPR-Helpdesk has established wide-ranging contacts with the EPO, national patent offices, patent lawyers, universities and others involved in intellectual property within Europe.

In addition to these, another achievement of the Innovation Program is the establishment of a network of Innovation Relay Centers (IRCs) across Europe to promote innovation and technology transfer. Each local IRC is staffed by

[55] EU Patent and Intellectual Property Services, Community Research & Development Information Service, 18.08.1998. http://www.cordis.lu/cybercafe/src/ipr.htm

[56] Weir, Alexander, "IPR-Helpdesk: The Intellectual property Rights Gateway for Digital Cultural heritage", *Cultivate Interactive*, Issue 2, October 2000.

professionals with experience in business and technology and they help the companies and research organizations in their respective region to transfer technologies from other regions of Europe which are included in the network of IRCs and access the EU's research programs in a transnational framework. The main benefit of the IRCs to SMEs is rapid and free of charge access to technological information and technical advice. Moreover, the local IRCs also give advice to SMEs on all patent and IP-related issues. Turkey's participation to IRC Network was achieved under the EU's Sixth Framework Program. Within the scope of the Sixth Framework Program, the first IRC was established in Turkey through the partnership of KOSGEB, Middle East Technical University-Technopolis and Ankara Chamber of Commerce and took effect on April 1 2004, under the name of "IRC-Anatolia". Then, the second IRC in Turkey, IRC-EGE was established in the same year. With the establishment of IRCs in Turkey, it is aimed to provide services to companies, especially SMEs, universities and research institutions for the promotion of innovativeness and technology transfer in Turkey, as well as between Turkey and other regions of Europe. Furthermore, the IRCs in Turkey are also significant means for the raising of the awareness of SMEs in terms of IP protection as they can be accessed for all IP or patent-related questions.

Another point to emphasize regarding the EU's approach to innovation and technological development as well as Turkey's harmonization in this regard is the Sixth Framework Program which is the first EU framework program in which Turkey participates. In the Lisbon Summit, which was made in March 2000, a document called Lisbon Strategy was accepted, which declared that the target of EU is to become the most dynamic and competitive information economy in the world by 2010[57]. To attain this target, it was decided that the strategy of scientific and technological R&D in the near future would be planned within the framework of a project named "European Research Area" (ERA). As a tool for the application of ERA project, the Sixth Framework Program was designed for the period of 2002-

[57] *SME Strategy and Action Plan*, op. cit., p.34.

2006, whose principles are to increase the competitiveness of EU vis a vis USA and Japan and to develop a knowledge-based economy and society in EU member states. In this regard, the perceived strategies were to determine priority research areas and to give precedence to the projects that concentrate on these fields as well as to develop more effective R&D management strategies in order to use the resources more efficiently. Within this framework, the Sixth Framework Program attaches great importance to the participation of SMEs. In this respect, a considerable proportion of the budget allocated for the priority research areas was decided to be dedicated to SMEs in order to encourage and develop their research and innovation activities and to take special precautions to strengthen their economic conditions. Furthermore, it was accepted that the SME-sourced projects would be supported also outside the priority areas.

Regarding the field of IP, patents play a key role in the EU's Lisbon Agenda, as they have a crucial role for the achievement of the major aim of Lisbon Strategy, which is turning the European economy into the world's most competitive knowledge-based economy by 2010. For this reason, improving the IP system and its use in Europe, especially by the SMEs, was accepted to be an important dimension of European research and technological development policy and the creation of the ERA.

Turkey participated in the Sixth Framework Program under the coordination of TUBITAK. To institutionalize Turkey's participation, "The Sixth Framework Program National Coordination Office" was established within the structure of TUBITAK, whose tasks are to inform and direct the related persons and organizations in order to provide for effective participation to the program and to contribute to the implementation of ERA project by getting in touch with the national coordination offices of other participating countries. Furthermore, within the scope of the Sixth Framework Program, TUBITAK organizes support mechanisms to encourage development of project proposals to the Program as well as supports the traveling costs of university professors and employees of public R&D organizations and SMEs who travel abroad with the purpose of

creating common projects with the national teams of other countries which participate in the Sixth Framework Program[58].

[58] For the detailed information about Turkey's participation to EU's Sixth Framework Program as well as the activities of TUBITAK in this regard, see http://www.fp6.org.tr/web/

CHAPTER V

THE FIELD RESEARCH ON THE USE OF INDUSTRIAL PROPERTY SYSTEM BY THE SMALL AND MEDIUM-SIZED ENTERPRISES IN TURKEY

The central premise of this thesis is that, improvement of economic and technological capacity of SMEs as well as achieving a more effective usage of patent system by them is crucial in terms of Turkey's proper integration to European Patent System. However, strengthening of the effectiveness of SMEs within the IP system in Turkey, especially the patent system, has various parameters such as the systematic coordination of SME-oriented state policies, sufficiency of support programs, level of R&D activities and most importantly the widespread unawareness with regard to how the patent system works and the its scope of protection. In order to understand and evaluate how these parameters operate and interact with SMEs in Turkey, a field research was conducted in Ankara, the capital city of Turkey, with the participation of 136 SMEs active in manufacturing industry.

5.1. The Methodology

The field research conducted for this thesis generally aims to measure the effectiveness of SMEs within the IP system in Turkey by focusing on their R&D capacity and the level of awareness with regard to industrial property in general, patent protection in particular. For the conduct of the field research, survey technique was employed which was supported by deep interviews. Furthermore, before starting the survey projected for this thesis, a pilot study was performed with 20 SMEs in two industrial areas in Ankara, in order to test the efficiency of the questionnaire form in terms of measuring the level of R&D as well as the IP awareness of the participant firms.

While determining the sample, since a nation-wide research exceeds the purposes of this thesis, the boundaries of the sample was limited to Ankara, which is one of the most industrialized cities of Turkey. However, while choosing the sample, particular attention was paid to the necessity that the chosen sample is truly representing the SME population in Ankara. In this regard, the participant firms were chosen from three different industrial areas in Ankara, which are composed of firms that display distinct characteristics in terms of company size as well as the economic and technological capacity. Thereby, alongside with the general evaluations about SME-R&D or SME-Patent System relationships, the field research also provides for making comparisons between the firms from each different industrial area. Furthermore, while choosing the firms which would be interviewed, KOSGEB's definition of SME was adopted, that is to say the interviews were made with the firms whose number of employees is up to 150.

In implementing the survey technique, a 25-question questionnaire form was used, which is composed of two main sections. The first section aims to measure the R&D capacity of the sample by focusing on the level and characteristics of R&D activities, participation to R&D support mechanisms and relationships with research institutions. As for the second section, the purpose is to understand the extent to which the sample is active within the IP system in Turkey, by focusing on their activities regarding the three main fields of industrial property, namely, patent, trademark and industrial design. Although the main focus of the field research is on the relationship between the SMEs and patent protection, in order to understand the overall approach of the sample towards IP protection, their activities within the field of trademark and industrial design were also questioned. Furthermore, the extent to which the sample is aware of and using the online patent information services is also a significant part of the second section.

Among the 25 questions existing in the questionnaire form, there are only 3 questions which are open-ended. The other 22 questions were prepared as close-ended questions in order to ease the analysis. Except for the Yes/No questions, for each of the other close-ended questions, the respondents were presented with a

number of options among which they can make more than one choice. In fact, it was known that allowing the respondents to prefer more than one option carries the risk to complicate the evaluations, as it would become hard to determine the general tendency over the proportion of the answers. However, it was understood during the pilot study that the nature of the subject necessitates such a methodology since it was observed that allowing the respondents to prefer only one option considerably narrows the scope of the study in terms of determining the main problems or needs of the participant firms regarding R&D or IP. An example can clarify the essence of adopting such an approach. For instance, the respondents were asked to specify the reasons for their non-usage of the patent system and the options include various possible reasons that may be put forward by a SME in this regard, such as their lack of knowledge about the uses of patent protection, the length of the grant procedure, the high costs or the non-existence of innovation-oriented activities in the firm. In this respect, it was observed during the pilot study that if the respondents were restricted to prefer only one option, they could not sufficiently express the difficulties they suffer from regarding their relations with the patent system, as most of the time, they have more than one reason, such as the high costs and length of the grant procedure, for their non-usage of the patent system.

5.2. The Characteristics of the Sample

The three industrial areas in Ankara, from which the sample was chosen, are Middle East Technical University-Technopolis (Metutech), OSTIM Organized Industrial Zone and SINCAN Organized Industrial Zone. The interviewed firms were active in various sectors of manufacturing industry such as construction, electronics, mechanics, chemistry, automotive, furniture, textiles, etc. Among the 136 firms participated in the field research, 25 are from Metutech, 61 are from Ostim and 50 are from Sincan. In fact, it was tried to balance the number of participated firms from each industrial area, but the firms from Metutech were not so eager to participate. Although the expectation was a high level of participation from Metutech because of their close cooperation with universities, it was understood in the field that since the firms active in Metutech basically engage in R&D based

projects, they do not display so much enthusiasm about giving information regarding their firms' activities. Such a tendency was especially seen in the firms active in defense industry.

It is important to emphasize that the areas where the field research was conducted were carefully chosen by taking into consideration the characteristics of each one. Each area can be regarded as displaying distinct characteristics with regard to their company size, R&D capacity, approaches to technological innovativeness and level of awareness concerning the intellectual property in general, patent protection in particular.

Firstly, Metutech is basically composed of micro-sized enterprises and expected to be the most conscious group with regard to issues like R&D and patent protection. The reason for holding such an expectation is that the sole purpose of establishment of these areas is technology development, strengthening the R&D capacity of Turkey and consolidation of university-industry cooperation. Secondly, OSTIM Organized Industrial Zone is basically composed of small-sized enterprises and expected to have the lowest level of awareness with regard to intellectual property protection. The firms in this area are generally structured as workshops rather than factories, having poor R&D capacity, using outdated production methods and equipments and basically producing for domestic market. Finally, SINCAN Organized Industrial Zone is basically composed of medium-sized enterprises and expected to display a moderate level of awareness with regard to intellectual property protection. The firms in this area generally have a high level of R&D capacity and are structured as factories organized within the framework of highly professional management strategies.

The purpose behind choosing areas displaying different economic and technological characteristics is not only to draw the general profile of the SMEs in Ankara with regard to their capacity for innovativeness as well as effectiveness in the patent system, but also to determine the links between the economic and technological

capacity and patent awareness. The distribution of the participant firms according to their company sizes and can be seen in Table 5.

Table 5-Distribution of Participant Firms according to their Company Sizes

Company Sizes (number of employees)	Metutech	Ostim	Sincan	Total (%)
Micro-sized Enterprise (1-9)	15	31	2	35.3
Small-sized Enterprise (10-49)	8	28	23	43.4
Medium-sized Enterprise (50-150)	2	2	25	21.3

5.3. R&D Activities and Participation to Support Mechanisms

Considered from the perspective of enterprises, R&D can be expressed as the group of all systematic and creative activities oriented through generating new products and production processes. As mentioned previously, in the context of the patent system, R&D has a crucial significance in terms of strengthening of the innovative capacity of SMEs. For this reason, before exploring the relationship of the sample with the industrial property system, firstly, the level of R&D capacity of the participant firms as well as the characteristics of their R&D activities were tried to be understood.

5.3.1. The R&D Profile of the Sample

The field research indicated that among the 136 participant firms, 74% declared that they engage in R&D and 26% stated that they do not carry out any R&D activities in their companies. Furthermore, the distribution of R&D engagements according to three industrial areas shows that the level of R&D engagement in each industrial area is also high.

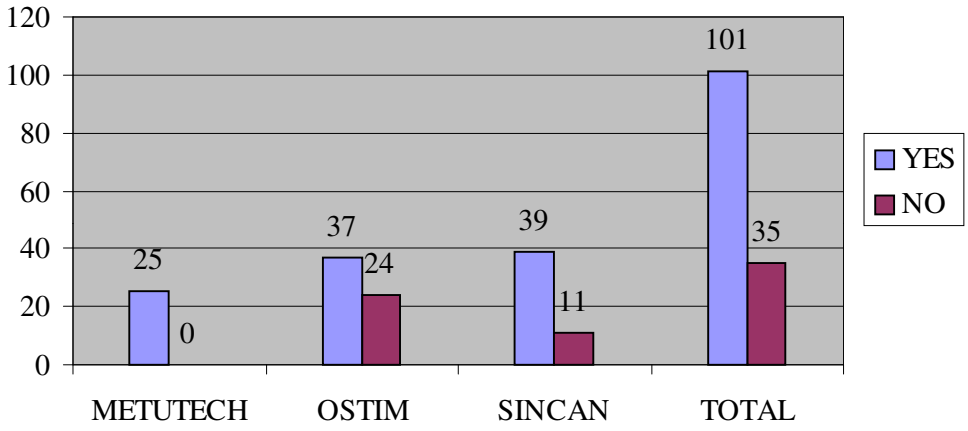

Figure 1-Distribution of Firms according to whether they undertake R&D (n=136)

Figure 1 indicates that 35 of 136 ("n" refers to the number of participant firms respond to this question) participant firms do not carry out any R&D activities in their companies. It is not surprising that most of them are from Ostim which displays a lower profile in economic and technological terms vis a vis Metutech and Sincan. In order to understand the reasons behind being unable to undertake R&D, those firms were asked to specify the reasons behind non-existence of R&D engagement in their companies. The results indicated that it is primarily the financial insufficiencies which the SMEs mostly suffer from in carrying out R&D.

Table 6-Distribution of Firms according to their Reasons for not engaging in R&D (%)

The Reasons	Metutech	Ostim	Sincan	Total
Insufficiency of Knowledge	-	54.2	36.4	48.6
Insufficiency of Financial Resources	-	87.5	72.7	82.9
It takes a long time	-	12.5	18.2	14.3
Absence of Qualified Personnel for carrying out R&D	-	70.8	63.6	68.6
There's no need for R&D Engagement	-	45.8	27.3	40.0

Table 6 indicates that among the 35 firms which stated that no R&D activities are carried out in their companies, approximately 82.9% suffers from financial difficulties, which is a clear indication of the fact that economic problems rank first within the problems of SMEs in strengthening their technological capacity. The fact that 68.6% complains about the absence of qualified personnel can also be evaluated as an extension of the economic problems suffered by SMEs. Furthermore, as an indication of the low level of awareness with regard to R&D, 48.6% stated that they do not have sufficient knowledge regarding the scope of R&D and how it is carried out and 40.0% declared that they do not view R&D as important for their industrial activities. In addition, it was observed that the widespread tendency is to consider R&D as a field which is mostly associated with the commercial activities of the large enterprises, which is an indication of the fact that, usually, the economic difficulties push the SMEs to underestimate their innovative and creative capacity as well as their structural advantages vis a vis the large enterprises.

Considering Figure 1 again, it is seen that the level of R&D engagement among the participant firms is high not only in total, but also within their own industrial areas. However, regarding the SME-R&D relationship, the main purpose of the field research is not only to measure the level of R&D undertaking among the sample, but also the purposes or characteristics of the R&D activities, in order to understand the approach of the participant firms towards innovativeness. For this reason, to clarify the firms' perception of R&D, the companies which stated that they engage in R&D were firstly asked whether they have a distinct R&D department solely responsible for R&D activities of the firm. Nevertheless, the results put forward by the answers to this question were not as optimistic as the level of R&D engagements.

The firms active in Metutech generally stated that they were already established as micro-sized R&D firms with the sole purpose of technology development. For this reason, they were accepted as answering positively to this question. As for Ostim and Sincan, the number of firms that have a distinct R&D department are

considerably low. Especially among the firms participated from Ostim, almost none of the firms has a distinct R&D department.

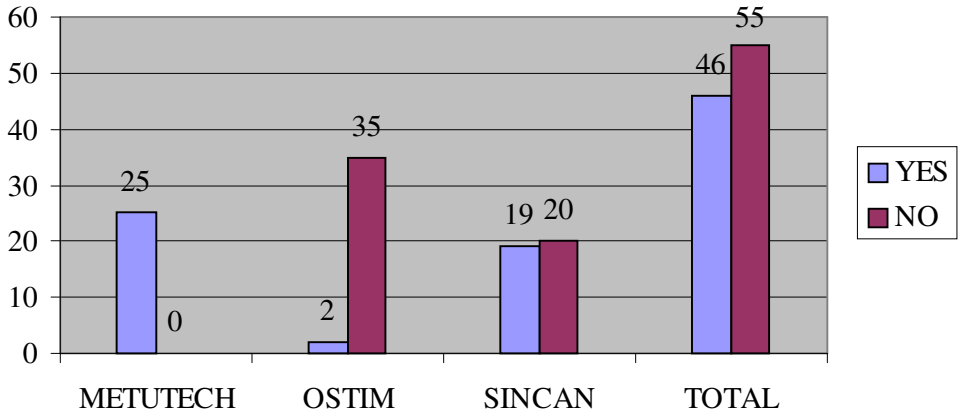

Figure 2-Distribution of Firms according to whether they have a distinct R&D Department (n=101)

As Figure 2 shows, among the 37 firms from Ostim which stated that they engage in R&D, only 2 have a distinct R&D department and for Sincan, there is a distinct R&D department only in 19 of 39 firms which declared that they carry out R&D activities. In total, it appears that only 45.5% of all the participant firms, which declared that they have R&D engagement, have a distinct department within their structures which is solely responsible for the firm's R&D activities. Considering the fact that 24.8% of this percentage is already composed of the firms active in Metutech, generally, the sample's capacity of R&D organization appears as considerably low.

The purpose of determining the level of awareness in SMEs with regard to R&D also necessitated the questioning of the characteristics of R&D undertaken in participant firms. For this reason, the firms, which stated that they have R&D engagement, were also asked to specify the characteristics of their R&D activities. The purpose was to understand what kind of activities are carried out by the

participant firms under the name "R&D" and to what extent their R&D activities are oriented through developing new products or production processes.

Table 7-Distribution of Firms according to the Characteristics of their R&D Activities (%) (n=101)

Characteristics of R&D Activities[59]	Metutech	Ostim	Sincan	Total
Basic Research	12.0	24.3	28.2	22.8
Applied Research	84.0	35.1	56.4	55.4
Experimental Development	88.0	32.4	53.8	54.5
Other	-	64.9	43.6	40.6

Table 7 indicates that approximately half of the firms who stated that there is R&D engagement in their companies defined their R&D activities as basically composed of applied research and experimental development. In this regard, while most of those firms' R&D activity focuses on improvement of an existing product or production method, the others stated that, most of which are Metutech firms, they were working on a specific product or process innovation project. Furthermore, it was observed that the "so-called R&D" activity of a considerable proportion of the firms, all of which are the firms active in Ostim and Sincan, is not included in any one of the types of R&D mentioned here. Those firms were

[59] R&D basically covers three types of activities, namely, basic research, applied research and experimental development. Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena or observable facts, without any particular application or use in view. Applied research is also original investigation undertaken in order to acquire new knowledge, but directed primarily towards a specific practical aim or objective. As for experimental development, it is systematic work, drawing on existing knowledge gained from research and/or practical experience, that is directed to producing new materials, products and devices; to installing new processes, systems and services; or to improving substantially those already produced or installed which will lead to an extension of knowledge. Because of the technical nature of those terms, during the survey, before asking the characteristics of the R&D undertaken, firstly, the activities included within the scope of R&D were explained to the respondents and then they were asked to specify the characteristics of their specific R&D activity within the context of those terms. However, because of the fact that what some of the participant firms understand from R&D is not included in any one of the terms explained here, an "other" option was added to indicate the different understandings of R&D.

asked to explain the activities executed in their companies, which they named as R&D, and it was seen that all of the simple amendments on products or modifications undertaken for sole technical purposes without any systematic investigation as well as the improvements on the means of production were defined as R&D. Hence, no significant extension of knowledge or methodical resolution of a scientific or technological uncertainty is achieved. Moreover, especially among the firms in Ostim, it was considerably widespread that what is undertaken under the name R&D is the adaptation of an existing technology without searching whether it is a protected industrial property right of others and raising of efficiency in this way. Thus, it is not so much possible to consider all of the firms which declared that they undertake R&D as performing it in the true sense of the term.

In drawing the R&D profile of the sample, finally, they were asked to specify the difficulties experienced during the execution of their R&D activities. According to the answers, it was seen that the financial problems appear not only as a primary obstacle to undertake R&D, but also as a major difficulty encountered during the course of the R&D process. In parallel fashion, the difficulty with regard to employing sufficient number of qualified personnel appears as a significant barrier to the respondent firms' proper execution of R&D activities.

Table 8-Distribution of Firms according to the Difficulties they encountered during the Execution of their R&D Activities (%) (n=101)

The Difficulties Encountered	Metutech	Ostim	Sincan	Total
Insufficiency of Knowledge	8	59.5	43.6	40.6
Insufficiency of Financial Resources	76	81.1	61.5	72.2
Insufficiency of Qualified Personnel	56	78.4	53.8	63.4
Technical Difficulties	36	48.6	69.2	53.5
In-house Bureaucracy	4	8.1	17.9	10.9

Table 8 indicates that difficulties with regard to financial resources and qualified personnel are the primary problems experienced especially by the participant firms from Ostim during the course of their R&D process. In fact, these difficulties can be accepted as the overall problems experienced by the firms in Ostim, whether or not they undertake R&D, within their general process of production. Furthermore, emphasizing the technical difficulties encountered and the appearance of knowledge deficit in various stages of R&D process, the firms in Ostim strongly stressed their need for regular consultancy support for the proper proceeding of R&D activities. The firms in Sincan and Metutech also emphasized the financial difficulties as an inescapable problem of SMEs, but their conditions with regard to employing sufficient number of qualified personnel is relatively better than the firms in Ostim, as the staff of the entire firms in Metutech are already composed of qualified persons and the relatively better economic conditions of the firms in Sincan give them more chance to employ qualified personnel. When it is looked at the problem of in-house bureaucracy, as expected, a considerably small proportion of the participant firms suffers from this problem and the ones which preferred this option were among the middle-sized enterprises whose number of employees is between 100-150.

5.3.2. Participation to Support Mechanisms

After drawing the R&D profile of the sample, as a significant factor in strengthening their economic technological capacity, the participant firms' level of participation to R&D support programs as well as the difficulties they experience with the support granting institutions were tried to be understood.

First of all, the participant firms were asked whether they have previously participated in R&D support programs, from which institution they received support and the nature of the support granted.

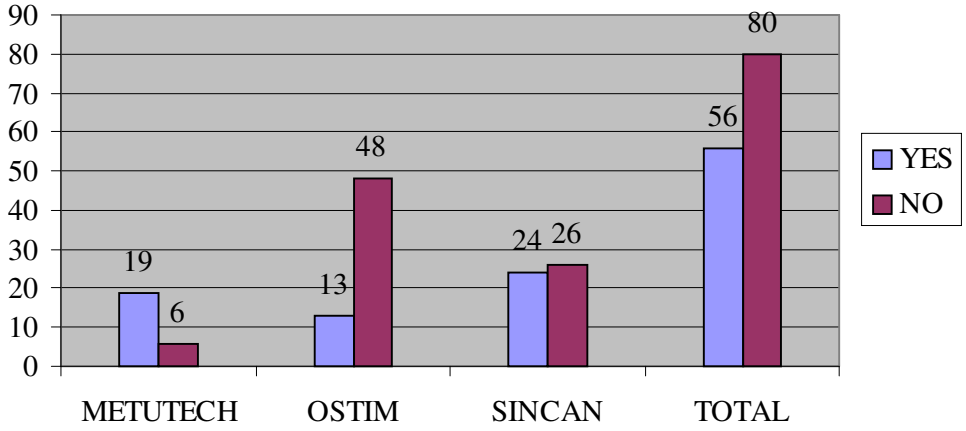

Figure 3-Distribution of Firms according to whether they have participated in R&D Support Programs (n=136)

According to the data displayed in Figure 3, only 41.2% of the sample benefits from R&D supports, and 58.8% have never participated in support programs. Furthermore, among the 56 firms which have participated in support programs, 4 are among the firms which stated that there is no R&D engagement in their companies. Those firms expressed that they have received consultancy and machine-equipment support from KOSGEB within the framework of its Technological R&D Support Program, but no specific R&D purposes were pursued while participating in the program. Since one of the primary purposes of the establishment of Metutech is already the formation of a systematic relationship between the SMEs and support granting institutions, a high proportion of the firms in Metutech participate in the support mechanisms in order to receive financial support for their R&D projects. As for Ostim, the firms displayed an overall indifference to support mechanisms and while the ones which replied negatively to this question generally stated that they do not have sufficient knowledge about how the application and subsequent procedures of support mechanisms work, the ones which replied positively mostly complained about the length of the procedures. In Sincan, there was a moderate level of participation to support mechanisms, and, here also, the length of the bureaucratic procedures appears as the primary complaint of the firms. However, different from the firms

in Ostim, the firms, which did not participate in any support mechanism in Sincan, did not display an explicit unawareness regarding how the support mechanisms work. Rather, a high level of reluctance to involve in the bureaucracy of the support granting institutions was observed and the firms generally declared that they have sufficient financial resources to carry out their R&D activities themselves. The details of the reasons of the firms for not participating in R&D support programs can be seen in Table 9.

Table 9-Distribution of the Firms according to their Reasons for not participating in R&D Support Programs (%) (n=80)

The Reasons	Metutech	Ostim	Sincan	Total
Insufficiency of Knowledge	-	54.2	23.1	40
Rejection of the Applications	16.7	-	3.8	2.5
Insufficiency of the Quantity of Supports	16.7	14.6	11.5	13.8
Length of the Bureaucratic Procedures	83.3	45.8	73.1	46
Absence of Qualified Personnel for making R&D Support Applications	-	54.2	19.2	37.5
R&D Activities are carried out by the Firm's own Financial Resources	100	45.8	76.9	60

It is seen in Table 9 that, overall, the length of the bureaucratic procedures is one of the major problems emphasized by the participant firms regarding their reasons for not participating in support programs. However, while bureaucracy was strongly stressed by the firms in Metutech and Sincan, it was not a major reason expressed by the firms in Ostim, given their insufficient knowledge about how the support system works. Accordingly, the insufficiency of knowledge regarding how to make applications as well as the absence of qualified personnel to overcome this problem are the major difficulties suffered by the firms in Ostim

which are unable to participate in the support mechanisms. Furthermore, it was also expressed by a considerable number of the firms in Ostim that, although they tried to contact with the authorities working in KOSGEB's branch office in Ostim Organized Industrial Zone, their inquiries were left unanswered. For this reason, it was observed in Ostim that, among the firms which have not participated in support programs, there was an overall negative attitude as well as a lack of confidence towards KOSGEB and its activities. As for the firms in Metutech and Sincan, owning sufficient financial resources for carrying out R&D was the most emphasized reason for not participating in the R&D support programs. Generally, this reason was indicated together with the problem of bureaucracy, which is an indication of the fact that if the firms have sufficient financial resources for carrying out their R&D activities, they do not display so much enthusiasm to engage in partnerships with the research institutions within the framework of their innovative ideas. Hence, it can be said that the reluctance to involve in the bureaucracy of the support granting institutions leads to the underestimation of the significance of research institution-SME cooperation in terms of technological development and reduction of such partnerships to sole economic relationships.

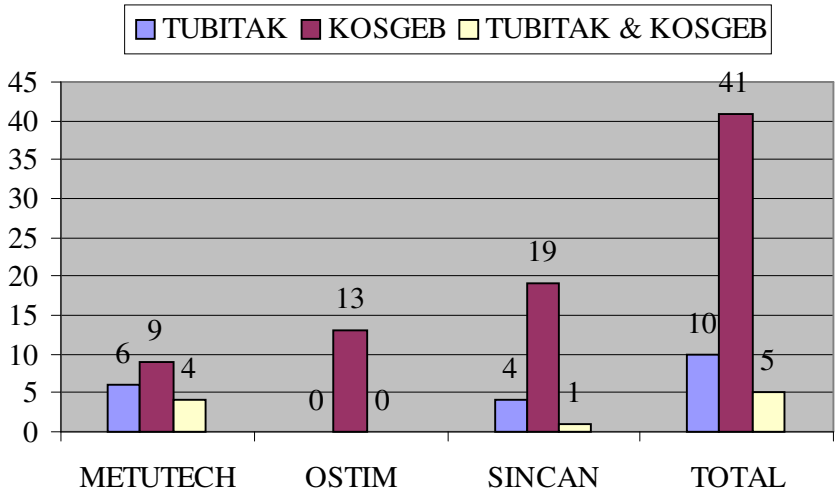

Figure 4-Distribution of Firms according to the Institutions from which they received R&D Support (n=56)

Table 10-Distribution of Firms according to the Kinds of Support they received (%) (n=56)

The Supports Received	Metutech	Ostim	Sincan	Total
Project-based Financial Support	52.6	-	20.8	26.8
Consultancy Support	57.9	61.5	66.7	62.5
Qualified Personnel Support	10.5	30.8	33.3	25
Machine-Equipment Support	26.3	84.6	70.8	58.9

Figure 4 and Table 10 indicates the profile of the supports granted to the firms which stated that they have previously participated in R&D support programs. Figure 4 shows the specific institution from which R&D support was received and in Table 10, the particular program that was participated is indicated. When the support granting institutions' distribution according to the industrial areas is considered, it is seen that while KOSGEB is mostly preferred by the firms in Ostim and Sincan, the firms in Metutech mostly received support from TUBITAK. Most probably, the reason behind this situation is that the purpose of the supports granted by KOSGEB within the framework of its Technological R&D Support Program is the encouragement of R&D in SMEs, not to financially support the already prepared R&D projects based on a specific product or process innovation. Thus, the supports granted by KOSGEB are mostly oriented through strengthening of the technological capacity of SMEs for the encouragement of innovativeness. On the other hand, the R&D supports administered by TUBITAK are granted on the condition that the applicant firm should have a specific project which is oriented through research and development of a new product or production method. That's why the proportion of participating in project-based financial supports is considerably higher in Metutech than Ostim and Sincan. In Ostim, among the 13 firms which declared that they have previously received R&D support, there is no firm that has engaged in project-based R&D and received financial support for that. The main reason behind this situation is not only the low

innovative capacity of the firms in Ostim, but also their lack of knowledge and qualified personnel for the preparation of project documents. Thus, in parallel to the characteristics of their R&D activities, the firms in Ostim more tend to benefit from consultancy, qualified personnel and machine-equipment supports in order to cover their need for knowledge deficit as well as financial resources to increase the in-house quality and efficiency within the production process. As for the firms in Sincan, similarly, the proportion of receiving financial support for project-based R&D is considerably low and the firms which utilized from KOSGEB supports are considerably higher than the ones that have received R&D support from TUBITAK.

The firms which have utilized from R&D supports were also asked to specify the difficulties they encountered during the process of implementation of support programs, whose details can be seen in Table 11.

Table 11- Distribution of Firms according to the Difficulties they encountered during the Implementation Process of the Support Programs (%) (n=56)

The Difficulties Encountered	Metutech	Ostim	Sincan	Total
Communication Problems with the support granting Institutions	5.3	7.7	4.2	5.4
Difficulties Regarding the Preparation of Project Documents	21.1	7.7	16.7	16.1
Length of the Bureaucratic Procedures	84.2	84.6	79.2	82.1
Inflexible Rules	21.1	15.4	29.2	23.2
Insufficiency of the Quantity of Supports	15.8	23.1	20.8	19.6
Payment Delays	57.9	38.5	41.7	46.4

It is seen in Table 11 that the length of the bureaucratic procedures is not only a principal factor that discourages the firms from participating in the support programs, but also a major problem suffered by the firms which previously received supports. Furthermore, although the factors except for the problem of

bureaucracy were not so much emphasized, the payment delays were also indicated as a major difficulty encountered, which can be accepted as a natural consequence of the problem of bureaucracy, as payment delays also appear as a result of the slow progress in bureaucratic procedures.

Finally, since the proportion of participation in support programs is considerably low among the sample, as a significant part of the implementation of R&D support programs, the methods by which the SMEs are informed about the support mechanisms gains considerable importance. For this reason, understanding of the methods, which are mostly used by the participant firms in being informed about the support programs, was seen as necessary.

Table 12-Distribution of Firms according to their Sources of Information about the R&D Support Programs (%) (n=136)

The Sources of Information	Metutech	Ostim	Sincan	Total
Conferences/Seminars	56	19.7	28	29.4
Media	40	86.9	46	63.2
Other Firms	32	52.5	26	38.9
Internet	92	31.1	62	53.7

It is seen in Table 12 that the overall participation of the sample in the conferences or seminars, which are organized for informing companies about the support programs, is considerably low. Given their closer relations with research institutions, participation to conferences or seminars is relatively higher in Metutech. This is a significant point to emphasize since it is the conferences and seminars in which the most detailed and accurate information about the support programs is presented. Therefore, the introductory conferences and seminars appear to be a more reliable source of information vis a vis the media or other firms whose means of obtaining information would be too general and remote from attracting the

attention of the companies. The firms mostly stated that they have no time for participation to such conferences or seminars because of the intensity of their workload. Furthermore, a considerable number of the firms in Ostim stated that they found such conferences and seminars too long and boring, thus, a waste of time. Accordingly, the sources of information they use mostly appear to be the media or other firms. In parallel fashion, the usage of Internet, which is one of the most simple and effective ways of obtaining information in the era we live, is considerably low in Ostim. Besides, some of the firms in Ostim have no access to Internet, so that they already have no chance to use Internet as a way for obtaining information about support programs. On the other hand, Internet usage as a source of information about support programs is widespread in Metutech and Sincan, given their better economic conditions and higher level of awareness regarding the uses of Internet usage.

5.4. University-Industry Cooperation

It is the university-industry cooperation which is one of the most emphasized issues regarding the raising of the awareness of SMEs concerning the patent system as well as technological innovativeness. Universities not only educate the human resources that the enterprises need, but also considerably contribute to the production of information and technology needed by the enterprises for the proper execution of their innovative activities. Therefore, establishing cooperation with universities is considerably important as it provides the enterprises with various advantages such as better educated personnel, the opportunity to examine the results of the researches conducted by universities, getting consultancy from the experts provided by universities, participating in the conferences or seminars organized by universities, etc. In this regard, the participant firms were also questioned with regard to their relations with universities and to what extent they engage in partnerships with these institutions.

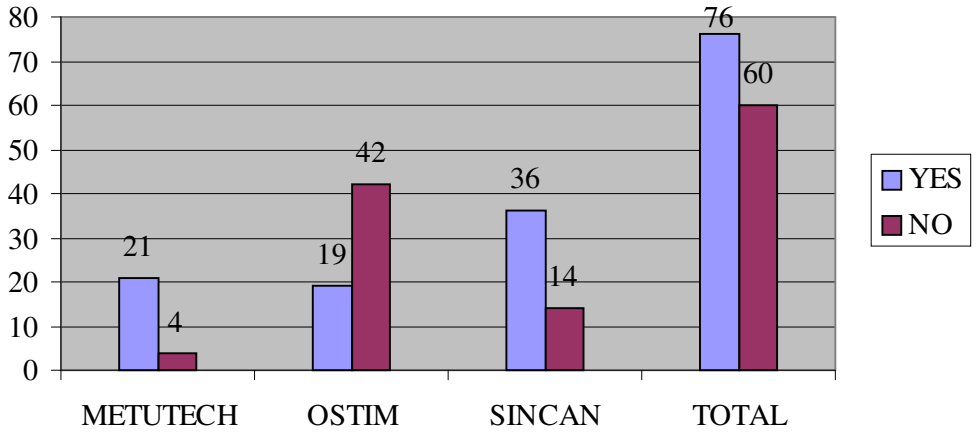

Figure 5-Distribution of Firms according to whether they have engaged in Partnership with Universities (n=136)

Figure 5 indicates that the proportion of engaging in partnerships with universities is not low among the sample. Of all the participant firms, 55.9% stated they have previously established partnerships with universities and some of them declared that their partnership was still going on. It is only the firms in Ostim which display an insufficient profile in this regard. However, when the forms of cooperation are considered, it is seen that, majority of the firms defined their partnerships with universities as taking university students as interns in their firms, which is relatively a less effective form of cooperation in terms of the role of university-industry cooperation in raising the awareness of SMEs with regard to patenting or technological innovativeness.

Table 13-Distribution of Firms according to the Form of Cooperation they established with Universities (%) (n=76)

The Forms of Cooperation	Metutech	Ostim	Sincan	Total
Examination of University Research Results	52.4	21.1	22.2	30.3
Taking Consultancy Service	19.1	31.6	55.6	39.5
Participating in Conferences or Seminars Organized by Universities	80.9	36.9	30.6	46.1
Project Partnership	90.5	26.3	25	43.4
Taking University Students for Internship	76.2	89.5	88.9	85.5

As university-industry cooperation is already one of the most significant purposes of the establishment of Metutech, most of the firms active in this area systematically enter into partnerships with universities within the framework of technology development projects. As Table 13 also indicates, it is the project partnership which the firms in Metutech mostly defined as their form of cooperation with universities. Furthermore, the proportion of the examination of the university research results as well as participating in the conferences or seminars organized by universities are also higher in Metutech than Ostim and Sincan. As for taking consultancy service, the firms in Metutech generally stated that, rather than taking consultancy from universities, they often provide consultancy to universities.

When the situation in Ostim and Sincan is considered, it is seen that the primary form of cooperation with universities is taking university students for internship. In fact, such form of partnership is also significant in terms of the accomplishment of exchange of information between university and industry as well as an appropriate solution for SMEs' need for qualified personnel. However, what is problematic is the fact that university-industry cooperation for the firms in those areas is considerably limited to providing internship facilities for university students and partnerships in the form of project partnerships or examination of

university research results appears as considerably insufficient, which are relatively more important in terms of strengthening of the technological capacity of SMEs. Furthermore, participation to the conferences or seminars organized by universities, which is the most efficient way to access scientific knowledge, also appears insufficient among the firms in Ostim and Sincan.

In addition, it is significant to emphasize that a considerable number of the firms in Ostim and Sincan complained that they considerably suffer from communication problems with the university authorities as they stated that they often encounter an indifference on the part of the university authorities against their attempts to establish partnerships, either in the form of project partnerships or inviting to conferences organized in industrial areas. Hence, considering the fact that both the enterprises and universities are mutually responsible for the systematic progress of university-industry cooperation, universities should also display sensitiveness against the inquiries coming from industry.

5.5. The Position of the Sample within the Industrial Property System in Turkey

As mentioned previously, with their dynamic and flexible structures, SMEs are the key actors for technological growth in Turkey. In this regard, the SMEs' capacity to display an effective position within the industrial property system, especially the patent system, has a great significance in terms of production as well as spread of technological knowledge. However, the effectiveness of SMEs within the industrial property system depends on various parameters, such as the R&D capacity, participation to support mechanisms, employing sufficient number of qualified personnel, etc., which were examined in detail in the previous section. It was observed that, mostly because of their economic problems, SMEs suffer from various difficulties until they achieve to provide the suitable conditions for making a patent application. However, what is more important is that the widespread unawareness among the SMEs, with regard to the field of industrial property, is an indication of the fact that the problems of SMEs do not come to an end with the

removal of the economic and technological difficulties. Because, the development and spread of technological knowledge can be achieved as long as the obtained technological innovations are transformed into a patent, utility model or industrial design application. For this reason, after drawing the R&D profile of the sample, it is their relations with the industrial property system which constitutes the central focus of the field research.

First of all, how much knowledge the participant firms have in respect of the concepts regarding the field of industrial property was tried to be understood. The purpose behind this question was to understand the extent to which the participant firms are familiar with those concepts as well as aware of the characteristics of the protection provided.

Table 14-Distribution of Firms according to whether they have knowledge about the Concepts regarding the Field of Industrial Property (%) (n=136)

The Concepts	Metutech		Ostim		Sincan		Total	
	Yes	No	Yes	No	Yes	No	Yes	No
Patent	100	-	93.4	6.6	98	2	96.3	3.7
Utility Model	68	32	23	77	50	50	41.2	58.8
Trademark	100	-	100	-	100	-	100	-
Industrial Design	100	-	80.3	19.7	92	8	88.2	11.8

It was seen in Table 14 that, generally, the participant firms are familiar with the industrial property system in conceptual terms. However, the crucial fact is that this familiarity mostly comes from the frequent usage of those concepts in daily language rather than a particular background of the firms regarding the field of industrial property. In this regard, what is remarkable is that more than 50% of the sample does not ever heard of the concept of utility model, which can be linked to the fact that it does not appear in daily usage as frequently as the other concepts.

Furthermore, although the other concepts seem to be widely known, most of the participant firms appeared to be confused about the differences between the concepts, especially patent and trademark. It was observed that these two concepts are mostly used interchangeably in the sense that having trademark registration was viewed synonymous with obtaining patent protection. As for the concept of industrial design, after utility model, it is the second concept about which the participant firms' knowledge is limited. Furthermore, among the firms which stated that they have knowledge about the concept of industrial design, it was observed that they were considerably uninformed about its position within the industrial property system, in other words, the characteristics of the protection it provides. Hence, it was determined that the data shown in Table 13 does not have a reliability on its own and the contradictions of the participants firms with regard to the concepts in question become more clarified when their specific activities in the field of industrial property was questioned.

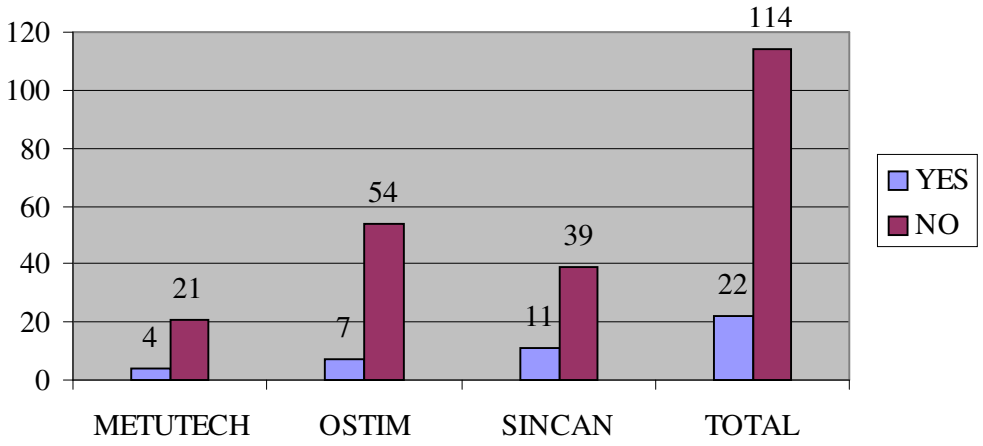

Figure 6-Distribution of Firms according to whether they have made Patent/Utility Model Application (n=136)

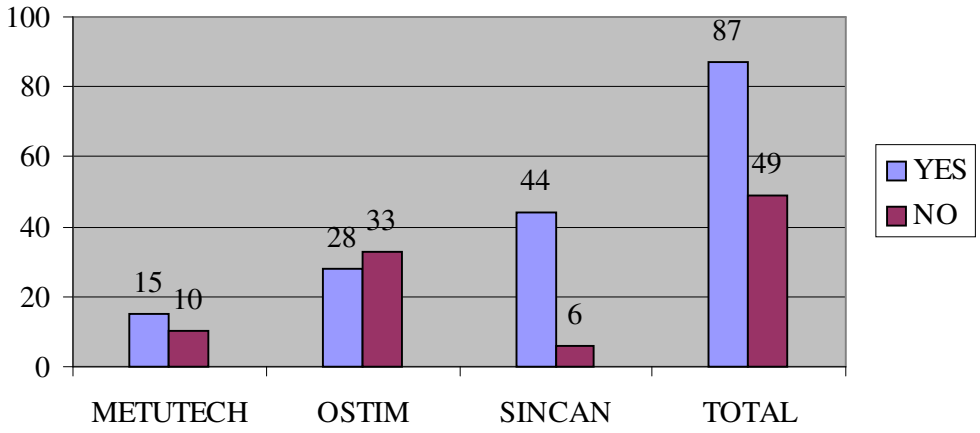

Figure 7-Distribution of Firms according to whether they have applied for Trademark Protection (n=136)

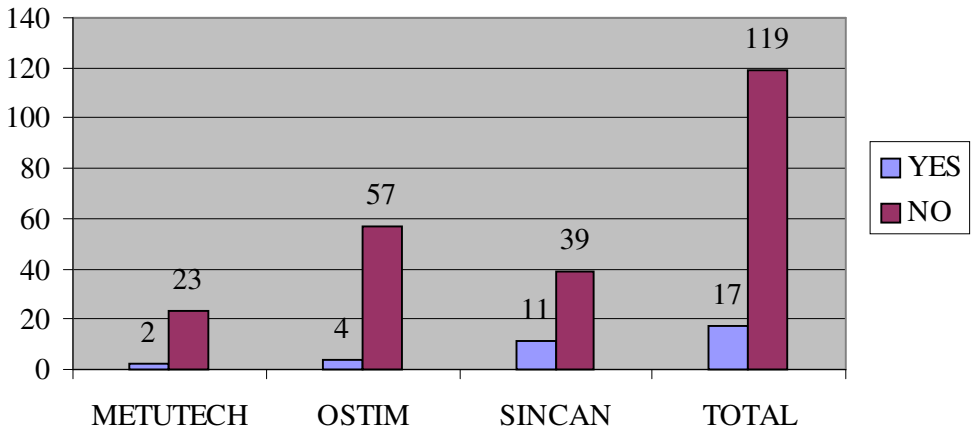

Figure 8-Distribution of Firms according to whether they have made Industrial Design Application (n=136)

The above figures indicate the profile of the sample in terms of their activities within the industrial property system. In general, it is apparent that the effectiveness of the sample within the industrial property system is considerably limited. This is especially seen in patent and industrial design applications. When compared to the R&D profile of the sample, it is observed that only 21.8% of the

participant firms, which engage in R&D, have made patent/utility model application. Furthermore, of all the firms which stated that they make product or process innovation within the framework of their R&D activities, it is determined that only 38.6% of them have made patent/utility model application. Moreover, among the 22 firms which have made patent/utility model application, 17 of them are among the firms which received R&D support. This can be accepted as an indication of the fact that the firms, which establish partnerships with the research institutions, become more aware about transforming the technological innovations they created into patent/utility model applications. Another point to emphasize is that all of the patent/utility model applications made by the participant firms were national applications and no PCT or European Patent applications were encountered, which can be linked to the limited exportation capacity of SMEs in Turkey. In addition to these, the confusions of the participant firms regarding the difference between patent and trademark became more clarified when their particular activities within the patent system are questioned, as some of the firms in Ostim and Sincan gave misleading answers to this question because of their tendency to view patent protection as synonymous with trademark registration. Such contradictions were realized when the firms' activities in the field of trademark were questioned.

Considering Figure 7, it is seen that, within the industrial property system, it is the field of trademark where the activities of the sample reach maximum, as 63.9% of the sample have applied for trademark protection Especially in Sincan, it was observed that trademark registration is given a considerable importance within the framework of the firms' marketing strategies. This is most probably because of the fact that the firms in Sincan are generally medium-sized enterprises, most of whose number of employees is between 50-100 and in accordance with their size, they have relatively better market shares vis a vis the firms in Metutech and Ostim. This situation not only leads to the fact that owning a well-known trademark becomes crucially important for these firms' position in the market, but also the cost of trademark registration is not seen as much as it is seen by the firms in Metutech and Ostim. However, although the sample displays an overall

effectiveness in the field of trademark, it was also observed that some firms are considerably uninformed about the content of trademark protection as what is understood from trademark registration appeared to be registering their business name in the chamber of commerce. Such a tendency was seen especially among the firms in Ostim, given their lower level of awareness regarding the operation of the industrial property system, vis a vis Metutech and Sincan.

When it comes to the position of the sample within the field of industrial design protection, it is seen in Figure 8 that only 12.5% of the participant firms have made industrial design application. Although most of the firms stated their reason for not making industrial design application as the non-existence of design-oriented activities in their companies, the principal problem with the field of industrial design is that, within the SMEs' understanding of industrial property, industrial design remains to be the most marginal field. Although most of the participant firms are familiar to industrial design in conceptual terms, the concept is not sufficiently understood when it comes to making sense of it in the context of industrial property. In other words, what is not adequately understood is not the concept of industrial design, but industrial design "protection". For this reason, the non-existence of design-oriented activities in most of the participant firms is not completely a natural consequence of their style or sector of protection, but to a certain extent, a result of the firms' unawareness about the characteristics and scope of industrial design protection.

In order to understand the reasons behind the limited effectiveness of the sample within the IP system, the firms which are not active within the field of industrial property were asked to specify their reasons for holding such a tendency.

Table 15-Distribution of Firms according to their Reasons for not making Patent/Utility Model Application (%) (n=114)

The Reasons	Metutech	Ostim	Sincan	Total
Insufficiency of Knowledge	-	70.4	30.8	43.9
Considering Patent Protection as irrelevant to the Business	14.3	85.2	56.4	62.3
High Costs	87.5	29.6	69.2	53.5
Length of the Patent Granting Procedure	76.2	25.9	64.1	48.2
Thinking that no Sufficient Protection is provided	80.9	27.8	66.7	50.9

Table 16-Distribution of Firms according to their Reasons for not applying for Trademark Protection (%) (n=49)

The Reasons	Metutech	Ostim	Sincan	Total
Insufficiency of Knowledge	-	30.3	-	20.4
Considering Trademark Protection as irrelevant to the Business	60	81.8	83.3	77.6
High Costs	40	18.2	16.7	22.4
Length of the Trademark Registration Procedure	10	15.6	16.7	14.3
Thinking that no Sufficient Protection is provided	-	6.1	-	4.1

Table 17-Distribution of Firms according to their Reasons for not making Industrial Design Application (%) (n=119)

The Reasons	Metutech	Ostim	Sincan	Total
Insufficiency of Knowledge	17.4	82.5	43.5	57.1
Considering Industrial Design Protection as irrelevant to Business	91.3	91.2	64.1	82.4
High Costs	8.7	8.8	15.4	10.9
Length of the Industrial Design Registration Procedure	-	5.3	10.3	5.9
Thinking that no Sufficient Protection is provided	-	3.5	35.9	13.4

The above tables indicate the reasons put forward by the participant firms for being inactive within the IP system. The reasons were specified for each field of IP separately. What is striking is that consideration of IP protection as irrelevant is considerably widespread for each of the field of IP. Overall, the firms believe that IP protection would provide no significant economic advantages for them, but only lead to the waste of their time and money. Furthermore, it was observed that IP protection, especially patent, is viewed by the firms as mostly associated with the commercial activities of the larger enterprises, and a considerable proportion of the firms believe patent system is only a tool for the consolidation of larger enterprises' monopoly in the market.

Regarding the field of patent, it is seen in Table 15 that of the companies not holding patents 62.3% consider patenting as irrelevant to their business. In this regard, the firms explained this irrelevancy as either that no innovation-oriented activities are carried out in their companies or that they do not believe patenting would provide them with significant economic returns. Furthermore, the reluctance to dedicate time and money for the registration procedure was also observed to be one of the principal factors which lead to the consideration of patenting as irrelevant. Hence, it can be said that, overall, the costs of protection are perceived by the majority of the firms as exceeding the potential benefits to be obtained from patent protection. This is also evident from the fact that 53.5% of the companies not holding patents indicated the costs of patenting as one of the greatest barriers to their effectiveness in the patent system. Furthermore, a considerable number of the firms are skeptical about enforceability of the patent system and believe patents invite copying by the large enterprises.

High costs of obtaining patent was strikingly emphasized by the firms in Metutech, given the fact that most of them are micro-sized enterprises which are characterized as knowledge-intensive firms rather than capital-intensive. Only 14.3% of the firms in Metutech stated that patenting is irrelevant to their business and their reason was basically the fact that they are software firms and softwares cannot be protected by patent according to the Turkish Patent Law. Furthermore,

the length of the patent granting procedure was another factor which the firms in Metutech were strongly complained about the patent system. It was firstly stated that the two-year period for obtaining a patent is too long when the rapid change in technological developments is considered. Secondly, the length of the patent granting procedure was also found problematic in terms of the importance of the time, labor and money that is dedicated to a patent application. Moreover, rejection of the applications in subsequent stages was found too risky for a SME, especially in economic terms.

In Sincan, high costs and length of the patent granting procedure were also among the most stressed problems regarding the patent system, nearly with similar reasons put forward by the firms in Metutech. However, different from the firms in Metutech, 30.8% of the firms in Sincan stated that they have no knowledge about how the patent system works and what kind of advantages would be gained as a result of obtaining patent protection. Furthermore, 56.4% stated that they found patenting as irrelevant to their business. Within this percentage, while one group of firms explained the irrelevancy of patenting to their business with the non-existence of R&D engagement or innovation-oriented activities in their companies, a second group of firms stated that since they found patent system as too expensive and distrustful, they do not believe it is worth dedicating time and money to obtain protection. In fact, most of the firms active in Sincan are medium-sized enterprises which have fine economic conditions as well as sufficient awareness regarding the significance of innovativeness. However, what is problematic is that the same level of awareness is not observed with regard to patenting. In other words, there is an unawareness regarding the transformation of innovations into patent or utility model applications and it is largely believed that patenting would not make considerable improvements on their economic conditions.

As for Ostim, since product innovation is considerably low among the firms active in this area, the absence of invention or innovation-oriented activities were indicated as the primary reason for considering patenting as irrelevant.

Furthermore, in Ostim, the proportion of the firms which suffer from insufficiency of knowledge regarding the protection provided by the patent system as well as how to acquire patent protection is considerably high. Those firms are informed neither about the main features of patent protection, nor about the existence of patent agents which provide consultancy regarding the IP field. Furthermore, the factors such as high costs, length of the patent granting procedure and the insufficiency of protection were not so much emphasized by the firms in Ostim, because of the limited number of firms which have knowledge about the characteristics of the patent system.

One crucial point to emphasize is the fact that most of the firms in Metutech and Sincan think that the protection the patent system provides is insufficient. This is an important problem as it indicates the fact that there is a lack of confidence towards the system. In this regard, what is mostly emphasized was the firms' fear for the copying of their innovative ideas. This situation indicates that there is a significant problem with the comprehension of the patent system as rather than a protection against copying, it is seen as leading to copying. In other words, publication of the technical information regarding an invention is seen as giving way to copying rather than encouragement of new inventions. In this regard, it can be said that there is a serious misunderstanding among the SMEs regarding the functions of the patent system, especially its information function. In fact, the appearance of such a distrust towards the system is basically derived from the general problems that Turkey experiences with regard to the implementation of the patent system. In other words, because of the widespread copying activity in Turkey as well as the problems with effective monitoring and enforcement of IP rights leads to the understanding that while obliging the inventor to disclose his/her innovative idea to public, the patent system, at the same time, proves insufficient in terms of protecting the invention against imitators. Furthermore, since some of the participant firms are themselves infringers, they stated that they have no reason for trusting the patent system. Most of the firms in Metutech and Sincan were observed to be even reluctant to share their innovative ideas with the attorney firms. Thus, alongside with the distrust towards the protection that the

patent system provides, the problem of confidence in societal terms is also a significant difficulty that should be overcome. Hence, in the context of the problem of unawareness, the ineffectiveness of SMEs within the patent system seems to be twofold; they are either unaware of the significance of patent system within their industrial activities, or even if they are aware of the characteristics of the system, they have a considerable distrust to the protection it provides.

Regarding the field of trademark, first of all, the insufficiency of knowledge does not appear to be a major problem here, given the fact that trademark registration is the most widespread activity of SMEs within the field of industrial property. Only a small proportion of the firms in Ostim suffer from knowledge deficit regarding how to acquire trademark protection. Furthermore, regarding trademark protection, the characteristics of the system, namely, the high costs, length of the trademark registration procedure and the sufficiency of the protection provided were not questioned as much as they were questioned when patent protection is in question. This can be linked to the fact that, since the time, labor and money that is spent for obtaining a patent is considerably higher than those spent for having a trademark registered, the economic risks of making a patent application is seen by the SMEs as considerably higher than registering their trademarks. However, a crucial point to emphasize is that, consideration of trademark protection as irrelevant is considerably widespread among all of the three industrial areas. Of the companies which have not applied for trademark protection, 77.6% considered trademark registration as irrelevant to their business. In this regard, the firms in Metutech mostly expressed that they do not need trademark protection because of the fact that they are basically working on technology development and that marketing activities is considerably limited within their business strategy. As for the firms in Ostim and Sincan, trademark registration is mostly seen as an unnecessary activity, which would make no significant contributions to the economic conditions of the company, thus would only lead to a waste of time and money. Hence, among those firms, there is no significance that is attributed to branding as an effective marketing strategy, which is a consequence of the

unawareness regarding the role of trademark registration in increasing the market value of the company.

When the field of industrial design is considered, it is seen in Table 17 that, industrial design protection appears to be the most uncertain field in the minds of the SMEs, as the proportion of the insufficiency of knowledge turns out to be the highest, when compared to the other fields of industrial property. In this regard, it was observed that a considerable number of the firms from all of the three industrial areas are not clearly aware of the nature of industrial design protection, namely, its aim to protect the outer appearance or the aesthetic aspect of a product, not any technical features of it. It was observed that even some of the firms active in furniture sector were not aware of the fact that they can legally protect their original designs against copying by industrial design certificate. Linked to the overall indifference to industrial design protection, 82% of the firms not holding design protection stated that no design-oriented activities take place in their firms, thus industrial design protection is irrelevant to their business. Furthermore, it was the Sincan Organized Industrial Zone, in which the firms which carry out design-oriented activities were mostly encountered and, rather than the costs, their primary complaint was the insufficiency of the protection provided. Regarding the problem of insufficient protection, the firms had two main criticisms against the system of industrial design protection. The first one is that the registration of the industrial designs which are basically similar, but display differences only in small details leads to the encouragement of copying and the second one is that the registration of industrial designs which should be produced in indispensable shapes and dimensions because of the fulfillment of some of its technical functions lead to the infringement of the rights of the other producers in the same sector. Because of the frequent observance of such cases in the market, the firms stated that they have no confidence towards the system, so that they do not want to spend their time, labor and money for industrial design registration procedures. In fact, such criticisms of the producers against the system of industrial design protection basically derives from the fact that industrial design applications are not exposed to any examination procedure by

the Turkish Patent Institute in terms of the criterion of novelty and the rejection of the applications depends solely on the oppositions of third parties. Therefore, if no oppositions are encountered, all of the industrial design applications result in registration. Thus, the registration of similar industrial designs is frequently encountered not only because of the operation of the system, but also because of the fact that no systematic monitoring tradition exists among the right-holders in Turkey.

In drawing the profile of the sample in terms of its effectiveness within the IP system, the difficulties experienced by the applicants as well as the right-holders during or after the registration procedures were also questioned in order to examine the approach of the SMEs towards the IP system also from the perspective of the firms which are active within this field.

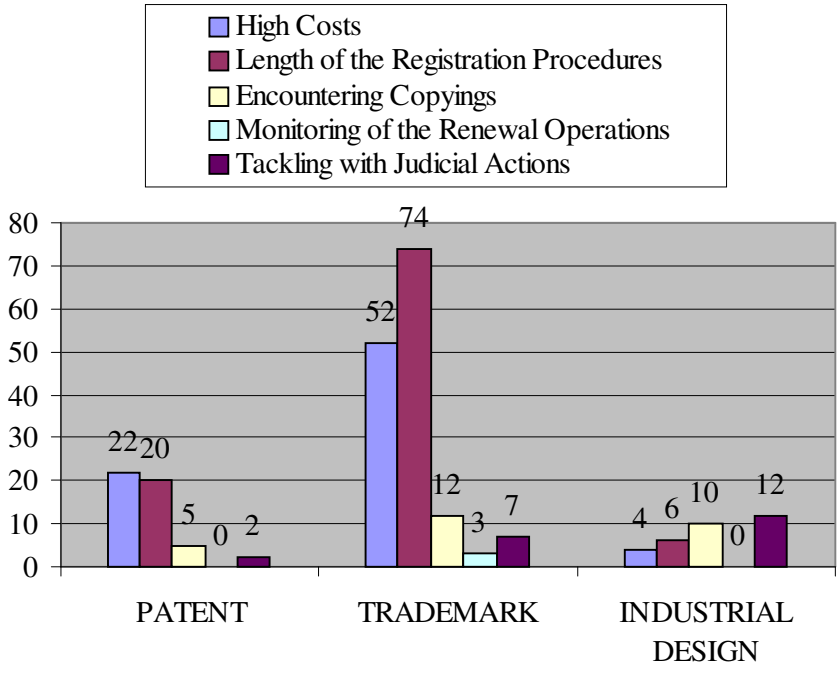

Figure-9 Distribution of Firms according to the Difficulties they encountered during or after the Registration Procedures n(patent)=22, n(trademark)=87, n(industrial design)=17

Figure 9 indicates that, regarding the field of industrial property, the most emphasized difficulties experienced by the right-holders are not so much different from the problems put forward by the firms which are inactive within the IP system. It is again the high costs and length of the registration procedures which were mostly stressed among the overall difficulties experienced. Among the 22 firms which had one or more patent/utility model applications (Figure 6), all of them complained about the high costs and 20 of them indicated the length of the registration procedure as a major difficulty. 5 firms stated that they encountered copying of their products under protection and 2 of these firms stated that they engage in judicial action to stop infringement of their rights. The other 3 firms expressed that they encountered similar patent applications made to TPI and stated that they opposed to those applications through their consulting firms. Furthermore, some of the firms complained that despite the considerable costs they made for obtaining patent/utility model, they saw no explicit advantages of having patent/utility model certificate in economic terms. This situation can be seen as an indication of the fact that the problem of awareness is not only a significant reason for SMEs' ineffectiveness within the field of industrial property, but also can be an important problem of the ones which are active in this field. The unawareness here regards the effective management of IP assets. In other words, being unaware of the economic returns of patent protection such as know-how licensing or other contractual agreements involving IP, as well as being unable to successfully commercialize their products because of insufficient economic conditions leads to a disappointment in terms of economic expectations, for the SMEs which own patent/utility model certificate.

When the field of trademark is considered, among the 87 firms, which had their trademark(s) registered (Figure 7), more than the costs, it is the length of the trademark registration procedure which was mostly emphasized as the principal difficulty. 12 firms stated that they encountered copying of their protected trademarks in the form of similar trademark applications made to TPI and 8 of them expressed that they gave opposition to those applications through their consulting firms. The other 4 firms declared that although they encountered the

usage of similar trademarks in the same sector, they did not need to take any action against this situation, as they did not see the firm using the similar trademark as a threat to their position in the market. As for the 7 firms which indicated tackling with judicial actions as a difficulty encountered, they stated that they were exposed to judicial action filed by other companies for the cancellation of their trademark rights. Regarding the monitoring of renewal operations, only a small number of firms stated that they had difficulty with monitoring this procedure. This is partly a consequence of the fact that among the 87 firms, which had their trademarks registered, almost none of the firms has a trademark that has been registered for more than 10 years.

Finally, regarding the field of industrial design, different from the other two fields, what is crucial is that rather than the costs and length of the registration procedure, it is the copying and judicial actions which were mostly emphasized among the difficulties encountered by the firms regarding their protected industrial designs. In this regard, it was observed that, the right-holders seriously suffer from the previously mentioned characteristics of the industrial design registration system. Among the 17 firms which stated that they have made industrial design application (Figure 8), 10 of them declared that they encountered copying of their products and 12 of them either took action on the court against copying or were exposed to judicial action by other firms for the cancellation of their industrial design rights. Furthermore, it was observed that the criticisms against the Turkish Patent Institute were considerable in this regard, as the principal complaint of the firms was that the economic disadvantages derived from time, labor and money that is spent for the judicial actions far exceeded the advantages that could be obtained from industrial design protection.

Finally, the participant firms were asked whether they have knowledge about the SME-oriented Patent, Utility Model and Industrial Design support of KOSGEB which covers 75% of the costs of those operations without payback.

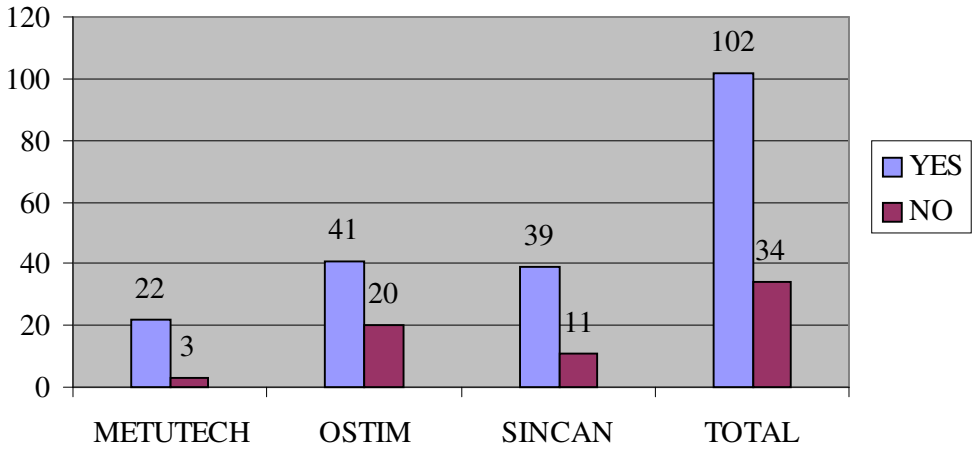

Figure 10-Distribution of Firms according to whether they have knowledge about Patent, Utility Model and Industrial Design Support of KOSGEB (n=136)

It was seen Figure 10 that majority of the participant firms were informed about the Patent, Utility Model and Industrial Design Support of KOSGEB. However, none of these firms, including the patenting firms, stated that they have applied for this support. Furthermore, it was observed that the payment of the costs after the grant of registration certificate does not make this support program so much attractive for SMEs in terms of encouragement of patent/utility model applications as they are often unable to allocate budget for transforming their technological innovations into patent or utility model applications.

5.6. The Use of Patent Information Services

As it is the information function of the patent system, which is principally focused on in terms of technological development, the SMEs' usage of online patent information services is considerably important in terms of development of their technological capacity. In this regard, the participant firms were firstly asked whether they have regular access to Internet, in order to understand whether they have the in-house technical hardware to reach online patent information services.

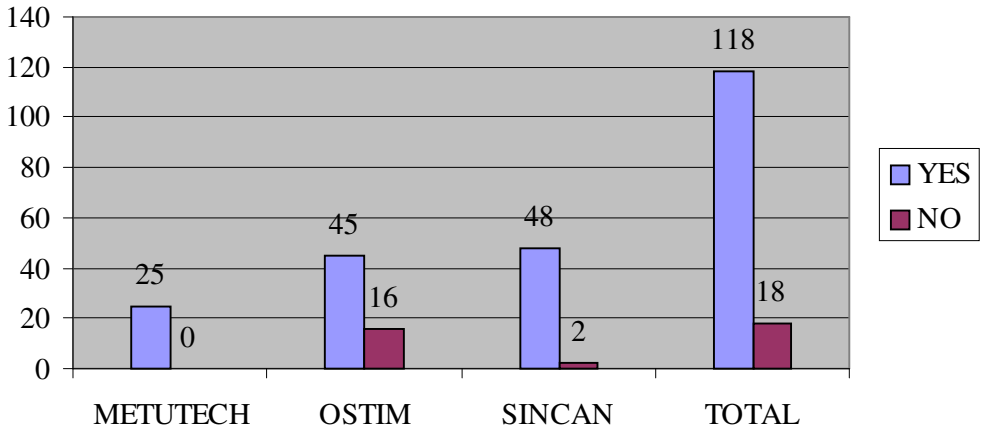

Figure 11-Distribution of Firms according to whether they have regular access to Internet (n=136)

As Figure 11 indicates, most of the participant firms have access to Internet and only a small proportion of firms from Ostim and Sincan stated that no regular Internet access exists in their firms. Upon this background information, the firms were asked whether they use the online patent information services. The firms that have no regular access to Internet were also asked the same question in order to understand whether they are aware of the existence of such a service.

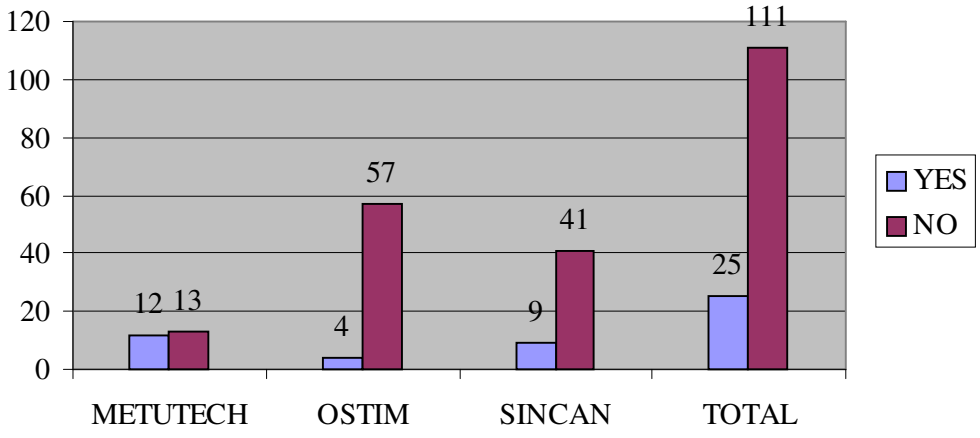

Figure 12- Distribution of Firms according to whether they use Online Patent Information Services (n=136)

It was seen in Figure 12 that the usage of patent information services is considerably low among the sample. Only 18.4% of all the participant firms use online patent information services. Among the 25 firms which use patent information services, 14 of them are patenting firms and 11 are non-patenting firms. Considering the fact that there are 22 patenting firms in total among the sample (Figure 6), it can be said that the companies having experience of the patent system are more likely to be aware of the patent information services and appreciate its value as a general source of market intelligence.

Among the 12 firms which use patent information services in Metutech, 4 of them are patenting firms and the remaining 8 are non-patenting firms. Hence, all of the patenting firms in Metutech (Figure 6) use patent information services. Among the 13 firms which replied negatively to this question, 4 of them stated that they have no knowledge about the online patent information services, 6 of them stated that they could not find time for such activities, and the remaining 3 firms stated that although they are aware of those services, since they have no patenting activity, they have no need for using them. Hence, although Metutech are established to increase the R&D and technological innovativeness capacity of Turkey, it is unfortunate that some firms even active in Metutech are unaware of the online patent information services. Furthermore, the consideration of patent information services solely in relation to patenting activity is also problematic as it is an indication of the unawareness regarding the significant function of those services in disseminating technical information.

In Ostim, the usage of patent information services is considerably low as only 4 firms among the 61 interviewed firms in Ostim stated that they use patent information services and all of these firms are patenting firms. Although there are 7 firms in Ostim which are active in patent system (Figure 6), the other 3 firms stated that they are not aware of the existence of online systems for monitoring patent applications worldwide. Among the remaining 57 firms, including the 16 firms which have no Internet access, most of them are unaware of the existence of online patent information services, while others lack the necessary expertise to

access and use online patent searches, despite being aware of their existence. Thus, it can be said that, in Ostim, the weakness of relations with research institutions as well as the insufficiencies regarding the employment of qualified personnel have significant roles in the firms' inadequate use of online patent information services.

A low level of usage of patent information services was also observed among the firms in Sincan. Among the 9 firms which use those services, 6 are patenting firms and 3 are non-patenting firms. The remaining 41 firms, including the 2 firms which do not have Internet access, were observed to be unaware of the existence of online patent information services.

When the overall purposes of the usage of patent information services were questioned, it was observed that those which are active in the patent system are more likely to carry out searches, firstly for checking on existing patents or patent infringements and then as a source of technical information. As for those which have no patenting activity, it was observed that they generally use patent information as a way of finding out the state-of-the-art before embarking on any R&D activity.

CHAPTER VI

CONCLUSION

Today, patent system is accepted as one of the most effective policies for the achievement of technological development as the legal protection provided by the patent system for inventions appears to be an important incentive mechanism for the encouragement of innovativeness. Furthermore, patent system also acts as a powerful knowledge disseminator as the publication of the technical knowledge regarding an invention provides the public with direct access to latest technological information, thus considerably adds to the society's knowledge base. In this regard, Turkey's membership to EPC on November 1, 2000 is one of the most important developments for Turkey in terms of not only developing its own patent system, but also integration to the one of the most important international regulations of patent protection. By becoming a member of the EPC, Turkey obtained certain advantages in economic and technological terms. However, EPC membership also makes Turkey face the challenge of entering into a technological competition with the economically developed countries of Europe, which would negatively affect the national industry because of its limited economic and technological capabilities. Furthermore, training of the Turkish manufacturers about how the patent system operates and what it can provide to its users in economic terms also appear to be a significant problem to be solved, as there is a high level of unawareness among the Turkish industrialists regarding the characteristics of patent protection. In this respect, the central premise of this thesis is that Turkey's proper integration to European Patent System, to a large extent, depends on the improvement of economic and technological capacity of SMEs in Turkey as well as raising their awareness with regard to the significance of patent protection. Hence, it is the achievement of a more effective use of the patent system by the SMEs, which would be the key for coping with the challenges put forward by Turkey's EPC membership. Within this framework, the

main purpose of the field research conducted for this thesis was to understand the extent to which the SMEs, active in three important industrial areas of Ankara, are aware of and effective within the IP system, especially the patent system, in Turkey. Furthermore, since R&D and patenting are closely interpenetrated, a significant part of the field research was dedicated to the examination of the R&D capacity of the participant firms as well as the difficulties encountered in this respect.

Based on the results of the field research, it is primarily determined that economic difficulties appear as the basic problem of SMEs in terms of their effectiveness both in the field of R&D and in the field of patent. For this reason, if the purpose is to provide the SMEs in Turkey with an innovative vision as well as to encourage them to transform their technological innovations into patent applications, first of all, what should be done is to improve the coordination of R&D and patent-oriented support mechanisms. In this regard, the first step should be the adoption of an official definition of SME in Turkey, according to the criteria of sector, region, the number of employees and the capital owned, which would be in harmony with the EU definition of SME. Furthermore, this official definition of SME should be accepted by all of the institutions in Turkey, which provide services for SMEs, and regularly revisioned according to the changing economic conditions. Thereby, not only a more systematic organization of SME-oriented support mechanisms would be achieved within the country, but also the implementation of SME-oriented programs coordinated by the EU would be more effective. In this regard, on 21 October 2004, a draft resolution was presented to the Turkish Government concerning the adoption of a common definition of SME, which would be in harmony with the EU definition of SME. In this respect, it is aimed to achieve a unity and equality in implementation with regard to the integration of Turkish SMEs to the EU as well as development of their competitiveness. The draft resolution obtained force of law on 16 April 2005 and it was decided that the SME definition is specified through the regulation prepared by the Ministry of Industry and Trade and enforced by the Council of Ministers, by taking into consideration the sales revenue, the balance sheet and the number

of employees as the criteria for defining and classifying SMEs[60]. This is a significant step taken in terms of the implementation of a systematic SME policy in Turkey that is in harmony with the EU policies and it is important to emphasize that the institutions which carry out SME-oriented activities in Turkey need to harmonize themselves with the recently adopted regulation as soon as possible, for the proper implementation of the law in question.

Secondly, as the survey results indicate, the primary difficulties that the SMEs encounter with regard to R&D are the insufficiency of financial resources and, linked to the inadequate economic conditions, the inability to employ qualified personnel which is necessary for the development of innovative ideas as well as for the proper execution of R&D activities. Furthermore, it was observed that especially among the firms in Ostim and partially among the firms in Sincan, what is understood from R&D is not a systematic activity oriented through producing new products or processes or to develop the already existing products or systems, but the small-scale modifications which are occasionally made on the products or production methods with the purpose of solving some technical problems. Hence, it can be said that, except for the firms in Metutech, the perception of the idea of R&D is quite problematic, which leads to a low level of innovativeness among the sample. In addition, it was also determined in some cases that, under the name of R&D, what is done is the adaptation of an already existing technology, without searching whether it is legally under protection on behalf of another firm or individual. In fact, considering the insufficient economic conditions of SMEs in Turkey, copying frequently appears as the only way of surviving in the market for many of the SMEs. However, what is problematic here is twofold; firstly, copying is not viewed by most of the SMEs as a means for creating new ideas, but practiced as a daily habit; secondly, Turkey is rapidly integrating to the international regulations of IP protection, which is negatively affecting the SME population, most of which are accustomed to copying without being exposed to any legal sanctions. In this regard, it's not wrong to say that Turkey's failure to

[60] see "Sanayi ve Ticaret Bakanlığının Teşkilat ve Görevleri Hakkında Kanuna Bir Ek Madde Eklenmesine İlişkin Kanun", Act No. 5331, OG. 25788, 16.04.2005.

pursue the developments in the world regarding the field of IP, for a long period of time, has a great role in the appearance of such a situation. Within this process, no social awareness was formed in the society regarding IP protection as no necessary significance was given to the training of industrialists in this regard. Moreover, the non-existence of a systematic SME policy in Turkey further complicated the disadvantageous position of SMEs within the process of Turkey's rapid integration to international regulations of IP protection, as they were left considerably unprepared for the consequences of this process, especially, the increasing competition in the market. In parallel fashion, despite being one of the founding members of European Patent System in 1973, the fact that participation to EPC was delayed until 2000 led to the nonobservance of the developments in Europe regarding the field of patent by Turkey.

For the solution of those problems, a well-coordinated support system is an inevitable necessity which would not only cover the SMEs' knowledge deficit regarding the meaning and significance of R&D, but also meet their needs for sufficient financial resources and qualified personnel for a proper R&D undertaking. However, according to the results of the survey, it was observed that the sample's level of participation to R&D support programs is considerably low and it is the bureaucracy within the support granting institutions which was the most emphasized problem that not only discourages the firms from participating in the support programs, but also makes the already participating firms highly uncomfortable. For this reason, what is principally needed is either a centralized support system for SMEs, or the development of strategies which would pave the way for a more systematic coordination between the support granting institutions that would be based on the common purpose of developing innovativeness within the SMEs. In this regard, the support granting institutions can develop common strategy programs which would focus on the priority needs of SMEs in terms of engaging in systematic R&D, thus, acquiring an innovative vision. Furthermore, particular attention should be given to the fact that the owners/managers of SMEs should be sufficiently informed about the support programs in order to achieve widespread participation. In this respect, conducting well-planned pilot studies in

specific industrial areas can be an effective method in terms of not only consolidation of the relationships between the SMEs and support granting institutions, but also increasing the SMEs' knowledge about the services organized for the development of their economic and technological capabilities. The pilot studies' coming to a successful conclusion would raise the awareness of SMEs about R&D and innovativeness as well as encourage the other SMEs' participation to the support programs.

Raising the awareness of SMEs' in terms of R&D and innovativeness as well as improving their economic conditions in this regard constitute a significant part of the policies that should be developed in order to increase the effective usage patent system by the SMEs. However, raising the awareness of SMEs in terms of the relevance of IP in their day-to-day business is equally important, as they often lack the in-house capacity to access patent databases, evaluate the true value of their technological innovations as well as many SMEs are either unaware of the IP system or the protection it can provide for their inventions, brands and designs. The survey results indicated that the ineffectiveness of SMEs within the patent system depends on the insufficient information on the protection provided by the patent system on the one hand, high costs associated with obtaining patent on the other. Furthermore, the perceptions that the patent system is complex, too cumbersome and time-consuming are among the other factors that discourage the participant firms from making patent applications. Moreover, concerning the usage of patent information, it was observed that there is a considerably low level of awareness regarding the existence of online patent databases, which leads to the underutilization of present day's one of the most important technological information dissemination tools, despite being free of charge. As for the other two main fields of IP, the situation is no different as most of the participant firms found trademark and industrial design protection as irrelevant to their business and were considerably unaware of the significance of those IP assets in terms of increasing the market value of the company. Hence, it is significant that the SMEs should be properly informed about not only patent protection, but also about the other fields of IP, as the SMEs with varying sizes and levels of technology may

benefit from different aspects of the IP system according to their specific needs and technological capacity. In other words, since there is a heterogeneity among the SME population in Turkey in terms of their ability to innovate, while the ones with high innovative capacity can obtain patent protection for their inventions, the others may benefit from trademark and design protection for developing their distinctive image and identity.

Regarding the problem of unawareness, Turkish Patent Institute should play a vanguard role in promoting the use of IP system by the SMEs. In this regard, TPI should develop a systematic SME program which is designed to raise the awareness of SMEs on the significance of IP protection in their business strategy. Within this framework, a specifically SME-oriented training program can be put into effect, which would mainly focus on the significance of creation, use and protection of IP from a managerial perspective, with an emphasis on the role of patents in product development strategy as well as the use of trademarks and designs as marketing tools. In order to increase participation, the training program can be supported by distribution of publications, pilot training workshops, web-based dissemination of information and press campaigns. In order to increase the number of SMEs attained, TPI can also cooperate with the relevant public, private and civil society institutions, such as business and industry associations, to encourage them to provide IP-related services to SMEs, namely, organization of awareness raising campaigns, introductory seminars, etc. Furthermore, particular attention should be given to the raising the awareness of SMEs in terms of the existence of patent information databases and their significance for accessing latest technological information. TPI is preparing for providing online patent, trademark and industrial design search, which would be a significant development if achieved, since, even if they are aware of online patent information services, many SMEs have difficulty with accessing them because of the fact that all currently available patent databases are of foreign origin. Therefore, the demand for “user-friendliness” of patent information systems should be significantly taken into consideration in order to increase the number of users.

Another important point to emphasize is that, considering the fact that high costs of obtaining patent is one of the most emphasized reasons for being inactive within the patent system, Turkish Patent Institute should also work for the implementation of an effective support system for IP protection. Currently, the supports granted for the encouragement of patent, utility model and industrial design applications are considerably limited in both qualitative and quantitative terms. It is only KOSGEB, which organizes a distinct support program which partially covers the patent, utility model and industrial design applications of SMEs. In addition, within the framework of its technology development projects support, TTGV accepts the costs of obtaining patent or utility model certificate as part of the project budget. However, the disadvantage of those programs is that the supports are provided after the grant of registration certificate. Hence, considering the fact that high costs is one of the most emphasized difficulties which prevents the innovative SMEs from making patent applications, the style of patent support programs are considerably remote from serving their principal purpose, which is the encouragement of more effective use of patent system by the SMEs. In other words, rather than rewarding the firms which obtain patent, utility model or industrial design certificate, the primary purpose should be to remove the problem of financial insufficiency which prevents many innovative SMEs from making patent, utility model or industrial design applications. In this regard, a support mechanism can be organized, which is based on providing financial support for the patent, utility model or industrial design applications of innovative SMEs during the registration procedure, not after it is concluded. The quantity of supports can be determined according to the total costs that should be paid for each phase of registration procedure and than the determined amount of support can be granted to the applicant SME before the beginning of each stage. In this way, not only the financial problems of SMEs with regard to obtaining protection for their technological innovations would be removed, but also there would be a chance for the support granting institutions to observe the progress of the applications which they financially support.

In addition to these, although acquiring IP protection is a crucial initial step for SMEs, informing them about effective IP management is equally important, as uncertainty of the economic value of IP assets is also a significant barrier to obtaining protection. As the survey results indicate, on the one hand, there is an unawareness regarding the possible economic returns of patenting, such as licensing, franchising, technological alliances or joint ventures, which leads to the comprehension of patenting as a waste of time and money, on the other hand, the lack of information on how to manage IP effectively leads to an understanding on the part of some patenting SMEs that the patent or utility certificate was obtained for nothing. Furthermore, problems with effective monitoring and enforcement of IP rights, as well as the widespread copying activity in the market leads to the appearance of a considerable distrust towards the IP system, which was clearly observed among the firms active in Metutech and Sincan Organized Industrial Zone. In addition, the heavy burdens created by the litigation costs for the enforcement of rights as well as the reluctance to be involved in the bureaucracy of the legal system for a long period of time further complicated the implementation of the IP law and prevent the right-holders from adequately enforcing their rights, which is necessary for the exploitation of the economic returns. In this respect, possible solutions can be firstly to encourage the consolidation of the relationships between the attorney firms and SMEs, both during and after the registration procedures. In this way, not only the SMEs would be adequately informed about how to manage their IP assets and exploit their economic value, but also the regular partnerships with consulting firms would provide for systematic monitoring of rights and encouragement of the right-holders to intervene in case of infringements. Secondly, as for the litigation costs, when the considerable expenses are taken into consideration, use of arbitration or mediation wherever possible may be a one way of solution. Besides, another solution can be to make the compensation revenues adequately attractive, which would convince the right-holders that it is worth to litigate against an infringement.

Finally, the last point to emphasize regarding the triple relationship between SMEs, R&D and patenting is the university-industry cooperation as an alternative solution to SMEs' problems regarding R&D as well as their need for qualified personnel. According to the survey results, it was seen that the participant firms' cooperation with universities is limited to taking university students as interns. Considering many SMEs' insufficient financial resources for employing qualified personnel, providing internship facilities to university students is an appropriate solution. However, it was also observed that the level of participation to conferences and seminars organized by universities, project partnerships or examination of university research results is considerably low among the sample, which is an indication of the fact that there is an insufficient cooperation between universities and enterprises in terms of solution of the SMEs' problem of access to scientific information. Furthermore, considering the fact that some of the participant firms complained about the indifference of university authorities against their inquiries, it can be proposed that there is a need for a proper institutionalization for the organization of university-industry cooperation. In this way, a more systematic form of relationship between the universities and industry would be achieved, which could operate as an efficient system in terms of informing both sides about each other's activities.

In conclusion, it can be said that development of a systematic SME policy in Turkey for the solution of the economic and technological problems of SMEs is the key for coping with the challenges put forward by Turkey's EPC membership. However, within the framework of the process of integration to European Patent System, the significance of IP protection should also be seriously taken into account while developing policies for the encouragement of innovativeness within the SMEs. This is because what is observed among the SMEs participated in the field research is that the usage of patent system is considerably low even among the innovative SMEs, which is a consequence of their low level of awareness with regard to the what the patent system can do for them. Hence, only if it is achieved to combine innovativeness with a sufficient level of awareness of IP protection, then the Turkish industry would be able to compete with its rivals on equal terms

in the context of Turkey's EPC membership. In addition, it is important to emphasize that the field research conducted for this thesis reflects the opinions and conditions of a considerably small proportion of the SMEs in Turkey. Thus, it is not so much possible to arrive at absolute generalizations by taking into consideration the results of the survey conducted among the SMEs in Ankara. Therefore, if SME-based strategies are to be developed for a more effective usage of patent system in Turkey as well as for the achievement of a successful integration of to the European Patent System, there is an urgent need for more comprehensive, nation-wide surveys on the triple relationship between SMEs, R&D and patenting.

BIBLIOGRAPHY

Akbulut, Enis, "KOBİ'lere Yönelik Teşvik Uygulamaları", in Yavuz Tekelioğlu (ed.), *Turkish Small and Medium-Sized Enterprises in the Integration Process of Turkey with the European Union: Implications and Consequences*, Friedrich Naumann Foundation and Akdeniz University, Ankara, 1998.

Akgemci, Tahir, *KOBİ'lerin Temel Soırunları ve Sağlanan Destekler*, KOSGEB, Ankara, 2001.

Aktan, Okan, "Customs Union: Impacts for Small and Medium-Sized Enterprises" in Yavuz Tekelioğlu (ed.), *Turkish Small and Medium-Sized Enterprises in the Integration Process of Turkey with the European Union: Implications and Consequences*, Friedrich Naumann Foundation and Akdeniz University, Ankara, 1998.

Anık, Gülgün, "The Intellectual Property Rights in European Community and Competition Law", *Ankara Bar Association Journal of Intellectual Property and Competition Law*, Vol.1 No.3, 2001.

Avrupa Birliği KOBI Destek Politikası: Ekonomik Büyümenin Motoru, Representation of European Union to Turkey, Ankara, 2000.

Baykal, Cevdet, "Cumhuriyet'in 75. Yılında DTM'nin KOBİ'lere Bakışı: İhracatta Dış Ticaret Modeli ve Devlet Yardımları", Turkish Foreign Trade Undersecretariat, 09.10.2004. http://www.forigntrade.gov.tr/ead/DTDERGI/ekim98/kobi/htm

Bijlani, Subash K., "The Innovation Potential of an SME and the Value of the Intellectual Property Right", paper presented at the WIPO Asian Regional Workshop on the Strategy for the Management of Industrial Property Rights by Small and Medium-Sized Enterprises (SMEs), Manila, October 23-24, 2000.

Boldrin, Michele, Levine, David K., "The Case Against Intellectual Property", University of Minnesota and UCLA, January 14, 2002.

Burrone, Esteban, "Why Intellectual Property Matters: The Importance of Intellectual Property for SMEs", paper presented at the Virtual Congress of Entrepreneurs and SMEs, International Bureau of WIPO, 15 October-14 December 2001.

Busse, York, "European Patent Organization", *Patent Sistemleri ve Patent Ofis Organizasyonları Uluslararası Sempozyumu*, Yetkin Basım ve Yayımcılık A.Ş., Ankara, 1992.

Çapanoğlu, Sema Gençay, *Avrupa Birliği'nin KOBİ Politikası*, İktisadi Kalkınma Vakfı, İstanbul, 2003.

Çelik, Adnan, Akgemci, Tahir, *Girişimcilik Kültürü ve KOBİ'ler*, Nobel Yayın Dağıtım, Ankara, 1998.

Çolakoğlu, Mustafa H., *SME Guide*, TOBB & KOSGEB, Ankara, 2002.

Decree Law No. 544 For the Establishment and Functions of TPI, OG No. 21290, 24.06.1994.

Decree Law No. 551 Pertaining to the Protection of Patents, OG No. 22326, 27.06.1995.

Decree Law No. 556 Pertaining to the Protection of Trademarks, OG No. 22326, 27.06.1995.

Decree Law No. 554 Pertaining to the Protection of Industrial Designs, OG No. 22326, 27.06.1995.

Decree Law No. 555 Pertaining to the Protection of Geographical Indications, OG No. 22326, 27.06.1995.

Desantes Real, Manuel, "European Patent System", *Avrupa Patent Sistemi ve Türkiye Konulu Sempozyum,* Türk Patent Enstitüsü Yayınları, İstanbul, 2001.

Dismantling the Barriers: A Pan-European Survey on the Use of Patents and Patent Information by Small and Medium-sized Enterprises (SMEs), Derwent Thomson Scientific, 2000.

EU Patent and Intellectual Property Services, Community Research & Development Information Service, 18.08.1998. http://www.cordis.lu/cybercafe/src/ipr.htm

First Action Plan for Innovation in Europe, Community Research & Development Information Service, 18.08.1998. http://www.cordis.lu/innovation/src/action.htm

Implementation of the First Action Plan on Innovation in Europe: Innovation for Growth and Employment, Community Research & Development Information Service, 18.08.1998. http://www.cordis.lu/innovation-fp4/imp-iap1.htm

Fiquet, Anne-Marie, "European Union Enterprise Policy and Programs for SMEs" in Yavuz Tekelioğlu (ed.), *Turkish Small and Medium-Sized Enterprises in the Integration Process of Turkey with the European Union: Implications and Consequences*, Friedrich Naumann Foundation and Akdeniz University, Ankara, 1998.

Gürak, Hasan, "Economic Growth & Productive Knowledge (Technology): A Simple Growth Model Based On Technological Change", *YK-Economic Review*, Vol.11, No.1, June 2000.

Hangard, Daniel, "The European Patent System: An EPO Member State Point of View", *Avrupa Patent Sistemi ve Türkiye Konulu Sempozyum,* Türk Patent Enstitüsü Yayınları, İstanbul, 2001.

Intellectual Property Rights and Small and Medium-Sized Enterprises, International Bureau of WIPO, 26.05.2004. http://www.wipo.int/about-ip/en/studies/publications/ip_smes.htm

Intellectual Property and Small and Medium-sized Enterprises, document prepared by the International Bureau of WIPO for the WIPO Regional Meeting of Heads of Intellectual Property Offices of Caribbean Countries, Paramaribo, 2-3 June, 2002.

Iversen, Eric, "Experience regarding the Norwegian SMEs and the Intellectual Property Rights System", paper presented at the WIPO Interregional Forum on SMEs and Intellectual Property, Moscow, May 22-24, 2002.

Ketelsen, Jörg Volker, "The Instruments of the European Community for Turkish Small and Medium-Sized Enterprises", in Yavuz Tekelioğlu (ed.), *Turkish Small and Medium-Sized Enterprises in the Integration Process of Turkey with the European Union: Implications and Consequences*, Friedrich Naumann Foundation and Akdeniz University, Ankara, 1998.

Kober, Ingo, "Creating, Protecting and Exploiting Intellectual Property Rights", paper presented at European Business Summit on "Research and Innovation: A European Strategy for More Growth and Jobs", Brussels, 11 March 2004.

Kuruüzüm, Orhan, "SME in Turkey: A Structural Evaluation", in Yavuz Tekelioğlu (ed.), *Turkish Small and Medium-Sized Enterprises in the Integration Process of Turkey with the European Union: Implications and Consequences*, Friedrich Naumann Foundation and Akdeniz University, Ankara, 1998.

Küçükyılmazlar, Aysun, *Avrupa Birliği'nin Türk KOBİ'lerine Yönelik Programı*, İstanbul Ticaret Odası, İstanbul, 2004.

Lerner, Josh, "Patent Protection and Innovation over 150 Years", National Bureau of Economic Research Working Paper Series, Working Paper 8977, June 2002.

Long, Roderick T., "The Libertarian Case Against Intellectual Property Rights", *Formulations*, Vol.3 No.1, Autumn 1995.

Martin, Brian, *Information Liberation*, Freedom Press, London, 1998.

Networks, Partnerships, Clusters and Intellectual Property Rights: Opportunities and Challenges for Innovative SMEs in a Global Economy, Final Report for the 2nd OECD Conference of Ministers Responsible for Small and Medium-Sized Enterprises on "Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards a More Responsible and Inclusive Globalisation", İstanbul, 3-5 June 2004.

Okongwu, David A., "Fostering the Innovation Potential of SMEs in the Globalisation Era: The Role of Patents", paper presented at WIPO Milan Forum on Intellectual Property and Small and Medium-Sized Enterprises, Milan, February 9-10, 2001.

Ortan, Ali Necip, "Teknik, Ekonomik ve Sosyal İlerleme Açısından Türk Patent Hukukunun Durumu", *Batıder*, Vol.8 No.2, 1985.

Ortan, Ali Necip, "Turkish Patent Law and European Patent System", *Patent Sistemleri ve Patent Ofis Organizasyonları Uluslararası Sempozyumu*, Yetkin Basım ve Yayımcılık A.Ş., Ankara, 1992.

Ortan, Ali Necip, *Avrupa Patent Sistemi Cilt I: Avrupa Patent Antlaşması (Münih Antlaşması)*, Ankara Üniversitesi Banka ve Ticaret Hukuku Araştırma Enstitüsü, Ankara, 1991.

Ortan, Ali Necip, *Avrupa Patent Sistemi Cilt II: Lüxemburg Antlaşması/Patent İşbirliği Antlaşması/Strasburg Antlaşması*, Ankara Üniversitesi Banka ve Ticaret Hukuku Araştırma Enstitüsü, Ankara, 1991.

Özcan, Mehmet, *Avrupa Birliği'nde Fikri ve Sınai Haklar*, Nobel Yayın Dağıtım, Ankara, 1999.

Pitkethly, Robert, "The European Patent System: Implementing Patent Law Harmonization", paper presented at the International Symposium on Innovation and Patents, Japan, 12-13 February 1999.

Promoting Innovation through Patents: Green Paper on the Community Patent and Patent System in Europe, European Commission, COM(97) 314, 24 June 1997. http://europa.eu.int/comm/internal_market/en/indprop/patent/paten.pdf

Promoting Innovation through Patents: The Follow-up to the Green Paper on the Community Patent and the Patent System in Europe, Communication from the Commission to the Council, the European Parliament and the Economic and Social Committee, COM(99) 42, 5 February 1999. http://aei.pitt.edu/archive/00001215/01/patents_gp_follow_COM_99_42.pdf

Raith, Raimund, "Avrupa Birliği'ndeki Sınai Mülkiyet Hakları", *Türkiye'de ve Dünyada Sınai Mülkiyet Koruması Uluslararası Konferansı*, Türk Patent Enstitüsü Yayınları, İstanbul, 1997.

Sanayi Politikası ve KOBİ'ler Konulu Eğitim Semineri Bilgi Notu, İktisadi Kalkınma Vakfı, 08.06.2004. http://www.ikv.org.tr/faaliyetler/projeler/8haziransemineri.htm

Sayın, Meral, Fazlıoğlu, Mustafa Akan, *Avrupa Birliği'nde KOBİ Destekleme Programları ve Diğer Teşvik Araçları*, KOSGEB, Ankara, 1997.

Schatz, Ulrich, "Avrupa Patent Sistemi", *Türkiye'de ve Dünyada Sınai Mülkiyet Koruması Uluslararası Konferansı*, Türk Patent Enstitüsü Yayınları, İstanbul, 1997.

Shavel, Steven, Van Ypersele, Tanguy, "Rewards versus Intellectual Property Rights", *Journal of Law and Economics*, Vol.44, October 2001.

Sınai Haklarla İlgili Uluslararası Antlaşmalar ve İlişkiler, TPE Yayınları, Ankara, 2002.

SME Strategy and Action Plan, Republic of Turkey, Prime Ministry State Planning Organization, Ankara, 2004.

Snijders, Jacgueline, *SMEs in Focus: Main Results from the 2002 Observatory of European SMEs*, Office of Official Publications of the European Communities, Luxemburg, 2003.

Soyak, Alkan, "Küreselleşme, Teknoloji Politikası, Türkiye: Sınai Mülkiyet Hakları ve Ar-Ge Destekleri Açısından Bir Değerlendirme" in Alkan Soyak (ed.), *Küreselleşme: İktisadi Yönelimler ve Sosyopolitik Karşıtlıklar*, Om Yayınevi, İstanbul, 2002.

Soyak, Alkan, *Küreselleşme Sürecinde Ulusal Teknoloji Politikası ve Türkiye: Sınai Mülkiyet Hakları ve Ar-Ge Teşvikleri Açısından Bir Çözümleme*, Bilim ve Teknik Yayınevi, İstanbul, 2000.

Taymaz, Erol, "Small and Medium-Sized Enterprises in Turkish Manufacturing Industries", *Journal of Economic Cooperation*, Vol.22 No.1, 2001.

Tekinalp, Ünal, *Fikri Mülkiyet Hukuku*, Beta Basım Yayım Dağıtım A.Ş., İstanbul, 2002.

Tuğcu, Kemal, "Türk Sanayiinde Fikri ve Sınai Mülkiyet Uygulamaları", *Türkiye'de ve Dünyada Sınai Mülkiyet Koruması Uluslararası Konferansı*, Türk Patent Enstitüsü Yayınları, İstanbul, 1997.

Usage Profiles of Patent Information Among Current and Potential Users, Report on the main results of the survey on patent information usage among European companies, EPO, Amsterdam, September 2003.

Vohrer, Manfred, "Small and Medium-Sized Enterprises in the Interrelation of Globalisation, Harmonisation and National Policy", in Yavuz Tekelioğlu (ed.), *Turkish Small and Medium-Sized Enterprises in the Integration Process of Turkey with the European Union: Implications and Consequences*, Friedrich Naumann Foundation and Akdeniz University, Ankara, 1998.

Weir, Alexander, "IPR-Helpdesk: The Intellectual property Rights Gateway for Digital Cultural heritage", *Cultivate Interactive*, Issue 2, October 2000.

WIPO Survey of Intellectual Property Services of European Technology Incubators, International Bureau of WIPO, 2003.

Yalçın, Mahmut, "Türkiye'de Patent Koruması ve Patent İşbirliği Antlaşması Uygulamaları", *Türkiye'de ve Dünyada Sınai Mülkiyet Koruması Uluslararası Konferansı*, Türk Patent Enstitüsü Yayınları, İstanbul, 1997.

Yalçıner, Uğur G., "Türk Sınai Mülkiyet Sisteminin Geçmişi Bugünü ve Yarını", *Türkiye'de ve Dünyada Sınai Mülkiyet Koruması Uluslararası Konferansı*, Türk Patent Enstitüsü Yayınları, İstanbul, 1997.

Yalçıner, Uğur G., "Türkiye'de Patent Sistemi ve Yönetiminin Bugünü ve Yarını", *Patent Sistemleri ve Patent Ofis Organizasyonları Uluslararası Sempozyumu*, Yetkin Basım ve Yayımcılık A.Ş., Ankara, 1992.

Yalçıner, Uğur G., Kurt, Zeynep, "Fikri ve Sınai Mülkiyet Korumasının Ekonomik ve Teknolojik Gelişme Üzerindeki Etkileri, Tarihsel Analiz", *Teknolojik ve Ekonomik Gelişme Fikri Sınai Mülkiyet Hakları Uluslararası Konferansı*, Ankara, 2004.

Yalçıner, Uğur G., *Sınai Mülkiyet'in İlkeleri*, Ankara, 2000.

Yamankaradeniz, Kemal, "Avrupa Patent Sözleşmesi'nin Türkiye Üzerindeki Etkileri", *Sınai Haklarda Son Gelişmeler*, FISAUM, Ankara, 2001.

Yazıcı İnan, Ela, "Development of Industrial Property Rights: The EC Point of View", *Avrupa Patent Sistemi ve Türkiye Konulu Sempozyum,* Türk Patent Enstitüsü Yayınları, İstanbul, 2001.

Yüksel, Mehmet, "Historic Grounds of Intellectual Property Rights", *Ankara Bar Association Journal of Intellectual Property and Competition Law*, Vol.1 No.2, 2001.

Yüksel, Mehmet, "Küreselleşme Sürecinde Fikri Mülkiyet Hakları", *Türkiye Barolar Birliği Dergisi*, Vol 14. No.2, 2001.

APPENDICES

APPENDIX A

The SURVEY QUESTIONNAIRE

Name of the Firm :
Field of Commercial Activity :
Number of Employees :
The Area of Location :

1. Do you undertake R&D in your company?

Yes No

2. What are your reason(s) for not engaging in R&D in your company?

Insufficiency of Knowledge
Insufficiency of Financial Resources
It takes a long time
Absence of Qualified Personnel for carrying out R&D
No need for R&D Engagement

3. Is there a distinct R&D Department in your company?

Yes No

4. Which one of the following(s) best define the characteristics of your R&D activity?

Basic Research
Applied Research
Experimental Development

5. What are the difficulties that you encounter during the execution of your R&D activities?

Insufficiency of Knowledge

Insufficiency of Financial Resources

Insufficiency of Qualified Personnel

Technical Difficulties

In-house Bureaucracy

6. Have you ever participated in R&D support programs?

Yes No

7. What is (are) your reason(s) for not participating in R&D support programs?

Insufficiency of Knowledge

Rejection of the Applications

Insufficiency of the Quantity of Supports

Length of the Bureaucratic Procedures

Absence of Qualified Personnel for making R&D Support Applications

R&D Activities are carried out by the Firm's own Financial Resources

8. What is (are) the institution(s) from which you have received R&D support?

…….

9. What kind of a support program have you participated in?

…….

10. What are the difficulties that you encounter during the implementation process of the support programs?

Communication Problems with the support granting Institutions

Difficulties Regarding the Preparation of Project Documents

Length of the Bureaucratic Procedures

Inflexible Rules

Insufficiency of the Quantity of Supports

Payment Delays

11. What is (are) your source(s) of information about the R&D support programs?

Conferences/Seminars

Media

Other Firms

Internet

12. Have you ever engaged in partnerships with universities?

Yes No

13. What is (are) the form(s) of cooperation that you have established with universities?

Examination of University Research Results

Taking Consultancy Service

Participating in the Conferences or Seminars organized by Universities

Project Partnership

Taking University Students for Internship

14. Do you have knowledge about the below mentioned concepts?

Patent	Yes	No
Utility Model	Yes	No
Trademark	Yes	No
Industrial Design	Yes	No

15. Have you ever made Patent/Utility Model application?

Yes No

16. Please mention the type and quantity of the Patent/Utility Model application that you have made since the establishment of your company.

National Application ……

PCT (Patent Cooperation Treaty) ……

European Patent ……

17. What is (are) your reason(s) for not making Patent/Utility Model application?

Insufficiency of Knowledge

Considering Patent Protection as irrelevant to the Business

High Costs

Length of the Patent Granting Procedure

Thinking that no Sufficient Protection is provided

18. Have you ever applied for trademark protection?

Yes No

19. What is (are) your reason(s) for not applying for Trademark protection?

Insufficiency of Knowledge

Considering Trademark Protection as irrelevant to the Business

High Costs

Length of the Trademark Registration Procedure

Thinking that no Sufficient Protection is provided

20. Have you ever made Industrial Design Application?

Yes No

21. What is (are) your reason(s) for not making Industrial Design application?

Insufficiency of Knowledge

Considering Industrial Design Protection as irrelevant to the Business

High Costs

Length of the Industrial Design Registration Procedure

Thinking that no Sufficient Protection is provided

22. What are the difficulties that you encounter during or after the registration procedures?

	Patent	**Trademark**	**Industrial Design**
High costs			
Length of the Registration Procedures			
Encountering Copyings			
Monitoring of the Renewal Operations			
Tackling with Judicial actions			

23. Do you have knowledge about the Patent, Utility Model and Industrial Design Support Program of KOSGEB?

Yes No

24. Do you have regular access to Internet in your company?

Yes No

25. Do you use the online patent information services?

Yes No