T.C
YEDİTEPE UNIVERSITY
GRADUATE INSTITUTE OF SOCIAL SCIENCES

EUROPEAN INNOVATION AND ENTREPRENEURSHIP STRATEGY: IMPLICATIONS FOR TURKEY

by

Ömer AYDIN

Submitted to the Graduate Institute of Social Sciences
In partial fulfillment of the requirements for the degree of
Master of
Business Administration

İSTANBUL, 2006

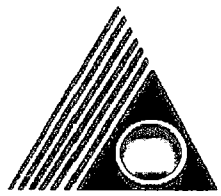

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TABLE OF CONTENTS

LIST OF ABBREVIATIONS

4G	4th Generation Connection
ADSL	Asymmetrical Digital Subscriber Line
AI	Artificial Intelligence
E-BUSINESS	Electronic Business
EC	European Commission
EEA	The European Environment Agency
EFTA	European Free Trade Association
EIC	Euro Info Center
EIS	European Innovation Scoreboard
ERA	European Research Area
ESF	European Science Foundation
EU	European Union
FP6	6th Framework Programme
FP7	7th Framework Programme
GNI	Gross National Income
GNP	Gross National Product
I-BUSINESS	Intelligent Business
ICGEB	International Centre for Genetic Engineering & Biotechnology
ICT	Information and Communication Technologies
IPR	Intellectual Property Rights
IRE	Innovating Regions in Europe
IT	Information Technologies
ITP	Industrial Technology Project
KDV	Katma Değer Vergisi
M-BUSINESS	Mobile Business
NGO	Non-Governmental Organization
NSF	National Science Foundation
OECD	the Organization for Economic Co-operation and Development
ÖİV	Özel İletişim Vergisi
PC	Personal Computer
PDA	Personal Digital Assistants
PPP	Purchasing Power Parity
PR	Public Relations
R&D	Research and Development
SII	Summary Innovation Index
SME	Small and Medium Enterprises
TQM	Total Quality Management
USAMP	University-Industry Joint Research Programme

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

During the last few decades, the world has been experiencing a socio-economic transform and, knowledge has become the most precious asset for all organizations.

This transformation has created many opportunities and threats. In the new dynamic economy, the policy makers in the European Union have made significant progress in generating strategies and action plans for "job creation", "innovation" and "entrepreneurship". According to the findings of the European Commission (2002), between 1988 and 2001, most jobs in Europe were created by micro-enterprises (enterprises having less than 10 employees) whereas large enterprises lost jobs. Innovation and entrepreneurship might be the concepts to drive the economy of the EU, as well as that of Turkey, to the expected levels.

The main objective of this thesis is to examine the innovation and entrepreneurship strategies of the European Union, and their implications for Turkey.

The method of study will be literature survey and qualitative data analysis. In the last section of the study, findings will be interpreted and future estimations will be given.

Keywords: Entrepreneurship, entrepreneur, innovation, knowledge-based economy, knowledge economy, the new economy, European Union, EU innovation strategies…

ÖZET

Son birkaç on yıldır, dünya bir sosyo-ekonomik dönüşüm yaşamaktadır. Günümüzde, bilgi tüm organizasyonlar için en değerli varlık haline gelmiştir.

Bu dönüşüm süreci kendine özgü fırsat ve tehditler yaratmaktadır. Ortaya çıkan daha dinamik ve yeni ekonomi içinde Avrupa Birliği'ndeki siyasetçiler "iş yaratma", "inovasyon" ve "girişimcilik" adına yeni stratejiler ve politikalar üretmede önemli ilerlemeler kat etmişlerdir. Avrupa Komisyonu'nun bulgularına göre (2002) 1988 ve 2001 yılları arasında, Avrupa'daki büyük işletmeler "iş" kaybederken, yeni işlerin çoğu mikro-işletmeler (çalışanı 10 dan az olan işletmeler) tarafından yaratılmıştır. AB ve Türkiye ekonomilerini beklenen seviyelere taşıyacak olan faktörler inovasyon ve girişimcilikle yakından ilgili görünmektedir.

Bu tezin amacı Avrupa Birliği'nin inovasyon ve girişimcilik stratejileri ve bunların Türkiye'deki olası etkilerini incelemektir.

Çalışmanın metodu literatür taraması ve niteliksel veri analizi olacaktır. Çalışmanın son kısmında, bulgular yorumlanacak ve geleceğe dair yargılarda bulunulacaktır.

Anahtar kelimeler: Girişimcilik, girişimci, inovasyon, bilgi-temelli ekonomi, bilgi ekonomisi, yeni ekonomi, Avrupa Birliği, AB inovasyon stratejileri...

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I would like to thank Prof. Dr. İ. Atilla DİCLE, who guided and helped me to find my way through completing this study.

I would also like to thank Euro Info Center, 6th framework office of Tübitak and Marmara Research Center for sharing their information.

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I owe a great deal of gratitude to my family for their support, motivation and patience and for the time and understanding they gave me.

This work is dedicated to my father.

1. INTRODUCTION

This study deals with the European innovation and entrepreneurship strategies and their implications for Turkey. The aim is to build a structure that interprets Turkey's present innovative, entrepreneurial background and vision, regarding the European strategies.

This chapter covers definitions, Turkey's socio-economic state in brief, 6th framework programme of EU, European Union's "Green Paper", Turkey's participation to European Union's strategies, the purpose of the study, research methodology, and the limitations of the study.

1.1 Definitions

The term entrepreneur refers to a person who is ready to take risk for profit in order toget new things done. The word "entrepreneurship" is derived from the term "entrepreneur". Both "entrepreneur" and "entrepreneurship" are concepts of an idealized personality and may exist anywhere, anytime.

Innovation refers to something introduced new, or introducing things in a new way.

"Knowledge-Based Economy" refers to an economy in which the production, distribution, and use of knowledge is the main driver of the economy across all industries.

1.2 Background

In March 2000, the European Union members declared a mission which they agreed in Lisbon: "Europe will become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion" (Commission of the European Communities, 2001, p. 2). The deadline was 2010 and the key message of the mission was to build strategies to adapt all jobs to the information society.

To reach that goal the European Union built framework programmes, which are to fund researchers to make projects in collaboration with the other member and candidate countries across Europe. Being a candidate country, Turkey participated in the programmes.

For the European Union, entrepreneurs are the main economical source which is needed to build competitiveness and innovation in Europe. Gunter Verheugen (2005) stated that, entrepreneurship can be exciting and rewarding, but it also involves risks and hard work. EU entered this challenge for member states and the Commission to ensure that entrepreneurship is encouraged by providing a supportive environment for those choosing to take the risks (http://europa.eu.int/comm/enterprise/enterprise_policy/survey).

The European Union does have a clear vision for meeting the "entrepreneurial economy" with the "knowledge-based economy" because for them it is a positive and critical force in that economy. This requires a shift in mindset from the economic issues of today to those of tomorrow. For A. Lundström and L. Stevenson (2001), it is not sufficient to sit and wait for the natural selection process to produce the new entrepreneurs who will filter through existing structures. It is necessary to create change in the EU's existing structures to accelerate this selection process and to make it possible for more segments of the population to acquire the necessary confidence, ability and resources to move along the continuum to the nascent, start-up and early growth stages of business development.

1.2.1 Turkey's socio-economic state in brief

Regarding the Purchasing Power Parity (PPP), the socio-economic position of Turkey in the developed countries, is in "low income countries" classification (see figure 1.2.1.0). Also in table 1.2.1.0, the current deficit/Gross National Product (GNP) of four new member countries and Turkey are given. Almost all countries have higher values than Turkey has. Economist M. Eğilmez explains that, these deficits are no longer a problem to focus on for the new members of EU, because, when they become members, current deficits will not be a problem for their global trade relations. The countries investing on these four countries, are assuming that they are investing on EU. Then the problem is not finding the necessary funds close the deficits, yet until membership the gap must not get bigger.
(http://www.radikal.com.tr/haber.php?haberno=173608)

Table 1.2.1.0: Current Deficit/GDP Ratios of Hungary, Slovak Republic, Romania, Bulgaria and Turkey

	2004	**2005**	**2006**
Hungary	8.8	8.5	8.0
Slovak Republic	3.5	6.3	6.4
Romania	7.5	7.9	7.8
Bulgaria	7.5	9.0	8.5
Turkey	**5.1**	**5.6**	**5.3**

(Source: http://www.radikal.com.tr/haber.php?haberno=173608)

Regarding the indicators of the National Statistics Institute (DİE) Turkey's permanent economic problem unemployment is a getting bigger (see table 1.2.1.1).

Figure 1.2.1.0: GDP Comparisons Based on Purchasing Power Parities for the Year 2002

(Source: http:/www.oecd.org/std/ppp)

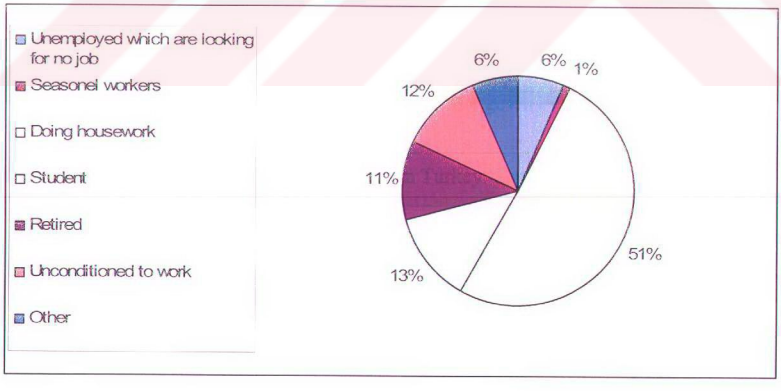
To view Turkey's unemployment problem, a compilation is prepared from the National Statistics Institute of Turkey DİE. Period is narrowed to avoid confusion.

Table 1.2.1.1: The Source of Unemployment in Turkey (in thousands)

	2004				2005			
	III. Period		IV. Period		AUGUST		SEPTEMBER	
	Value	(%)	Value	(%)	Value	(%)	Value	(%)
(Thousands)	TOTAL							
Total	**24.678**	**100,0**	**25.891**	**100,0**	**25.719**	**100,0**	**26.002**	**100,0**
Unemployed which are looking for no job	917	3,7	1.059	4,1	1.509	5,9	1.686	6,5
Seasonal workers	126	0,5	510	2,0	165	0,6	232	0,9
Doing housework	13.248	53,7	13.670	52,8	13.290	51,7	13.161	50,6
Student	3.037	12,3	3.248	12,5	3.183	12,4	3.325	12,8
Retired	2.971	12,0	3.086	11,9	2.948	11,5	2.890	11,1
Unconditioned to work	2.855	11,6	2.895	11,2	2.998	11,7	3.069	11,8
Other	1.524	6,2	1.423	5,5	1.626	6,3	1.640	6,3

(Source: http://www.die.gov.tr)

Figure 1.2.1.1: The Source of Unemployment in Turkey: September 2005



Therefore the source of unemployment in Turkey (see figure 1.2.1.1), reflects the big effect of the unemployment of 13.161.000 house working women while house working men

are exceptions according to the statistics. There are more than 13 million house working women in Turkey and this is the half of Turkey's unemployed figure. While we do not have control over all groups, the second unemployment problem is the "unemployed who are looking for no job". This group is comprised of 1.5 million people having no hope for finding a job they want. However, they are expected to join the working group, when the **employment demand increases** and **better jobs are created**. Also, the retired unemployed remain high with 2.8 million, because of the early retirement system in Turkey.

Turkey also should to be competitive and innovative to have a presence in the changing world. This obligation may be better clarified in table 1.2.1.2 by viewing Turkey's competitive rank around the world.

Table 1.2.1.2: Competition order for countries having higher than 20 million people

Country	**1999**	**2000**	**2001**	**2002**	**2003**
Southern Africa	22	20	17	16	18
Spain	7	8	7	8	9
Taiwan	16	13	14	13	10
Turkey	**18**	**21**	**20**	**23**	**25**
England	6	5	6	5	7
USA	1	1	1	1	1
Venezuela	24	25	26	24	30

(Source: http://www.imf.org)

1.2.2 European Union's actions

To comprehend the European Union's entrepreneurial actions, viewing some findings will be helpful. In table below, the SMEs and large enterprises comparison in Europe is revealed.

Table 1.2.2.0: The basic facts about SMEs and large enterprises in Europe - 19, 2000

		SME	Large	Total
Number of enterprises	(1000)	20415	40	20455
Employment	(1000)	80790	40960	121750
Occupied people per enterprise		4	1020	6

Turnover per enterprise	Million	0.6	255.0	1.1
Share of exports in turnover	%	13	21	17
Value added per occupied person	1000	65	115	80
Share of labor costs in value added	%	63	49	56

(Economic Outlook, No.65, June 2001)

SME work force is the double of large enterprises in Europe. However the handicap is that the occupied person's value addition and the labor costs in value added are lower in SMEs. Therefore SMEs are a big opportunity for Europe, yet some actions must be gathered.

Figure 1.2.2.0: Employment Growth by Size-Class, Europe-19

(Source: Economic Outlook, No.69, June 2001)

According to the EU research "Observatory of SMEs 2002" (European Commission, 2002) most jobs in Europe are created by micro enterprises (enterprises having less than 10 employees) whereas large enterprises have lost jobs (figure 1.2.2.0). There is another important result derived from the research, which is that the average enterprise size in the candidate countries (including Turkey) is smaller. That means candidate countries have more micro enterprises.

In 2001, the four major business constraints according to SMEs were described in "Observatory of European SMEs 2002" (European Commission, 2002) as follows;

Major Business Constraint	%
Lack of skilled labor	20%
Access to finance	13%
Administrative regulations	12%
Infrastructure	6%

The number of SMEs with access to the internet has grown rapidly. In 2002, SMEs used the following forms of Information and Communication Technologies (ICT) (European Commission, 2002)

Used ICT Tool	%
Mobile phones	83%
Internet	74%
E-mail/Electronic data Interchange	71%
Stand alone PCs	69%
Network of PCs	52%
Own website	43%
Card swipe	34%

The figure below shows that 1.7 million jobs will be unfilled in Europe because of the lack of skilled employees. On the other hand, the rising shortage can be fixed with ICT technicians (see table 1.2.2.1), that's because ICT Technicians react fast and can be found more in number compared to ICT Professionals (with a degree at university level)

Figure 1.2.2.1: IT Skills in Western Europe: Demand and Supply

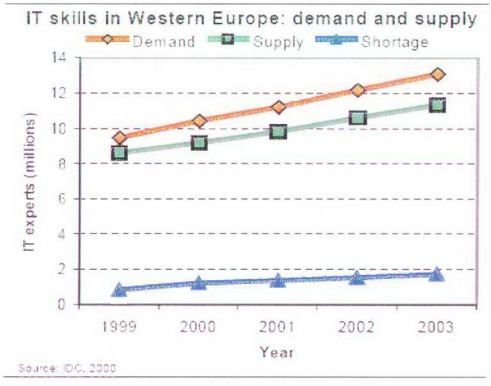


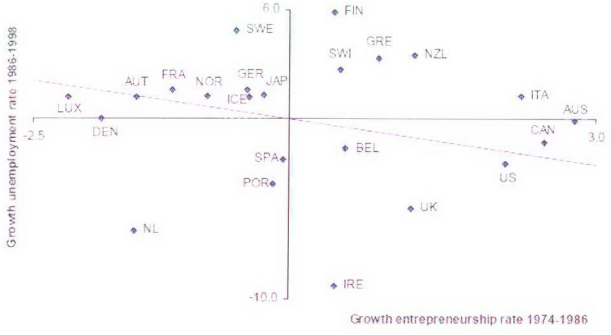
Table 1.2.2.1: Skilled Employee Shortages of EU

Skill type	Estimated shortages	Actors Involved	Time scale to react
ICT Technician	600.000 – 1 million	Both sides of industry; education and training institutions; professional bodies; public authorities.	6 months to 1 year (Short to Medium)
ICT Professional	300.000 – 500.000	Training institutions; higher education bodies; professional bodies; public authorities.	5+ years (Medium to Long)

(Source: Commission of the European Communities, 2001)

According to Audretsch et al. (2002), there is a negative relation between unemployment and entrepreneurial activities in the OECD countries (see figure 1.2.2.2). The figure below reflects that those countries exhibiting a greater increase in entrepreneurship rates between 1974 and 1986 also tended to exhibit greater decreases in unemployment rates between 1986 and 1998.

Figure 1.2.2.2: Entrepreneurship and Unemployment Rates in OECD Countries



(Source: Audretsch et. Al., 2002)

Regarding all the tables and figures above; growing ICT usage, the major business constraint "Lack of skilled labour", the growing IT skill's shortage, and the negative relation between entrepreneurial activity and subsequent unemployment - it can be said that **entrepreneurial and innovative policies and actions should be developed for solving the problems of labor and unemployment.**

According to the Work Programme for Enterprise Policy 2000-2005 (European Commission, 2000), the solution does not only lie in education or better education but is through an entrepreneurial policy comprising knowledge-based economy.

"Enterprise policy will also encourage a better match of skills to the needs of enterprises. It is not just that better education leads to a longer effective working-life and higher lifetime earning. The ability for life-long learning meets a need of enterprises in the growing 'knowledge-based economy', whether by developing the particular skills of dynamic sectors such as biotechnology, by adapting to the needs of a culture of service, or elsewhere."
(European Commission, 2000)

Thus, the plan for will concentrate on:

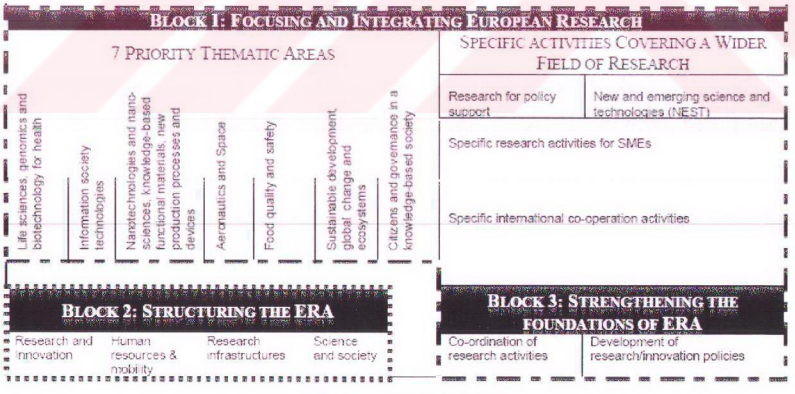
- Encouraging entrepreneurial activity;
- Providing an environment which is supportive to innovation and change;
- Ensuring access for goods and services to markets.

1.2.2.1 Sixth Framework Program of EU

"The Sixth Framework" is the EU's 17.5 billion euro-budget-program (also called FP6) for 2002 to 2006; it represents about 4 to 5 percent of the overall expenditure on Research & Technological Development (R&D) in the EU Member States. The main objective of FP6 is to contribute to the creation of the European Research Area (ERA) by improving integration and coordination of research in Europe which is so far largely fragmented. At the same time research will be targeted at strengthening the competitiveness of the European economy, solving major societal questions and supporting the formulation and implementation of other EU policies.

EU covers 7 priority Thematic Areas in the programme (see figure 1.2.2.1.0) to reach their target which is being the most competitive and dynamic, knowledge-based economy in the world till 2010. As one of the measures is to implement the international dimension of FP6, this block is open to participation by organizations from third countries with substantial funding included in the budget.

Figure 1.2.2.1.0: FP6 - Three Main Blocks of Activities



(Source: www.fp6.org)

To join FP6 governments transfer some credit to EU. Then the participators meeting the requirements get the funds for their work which must be utilized collaboratively. The budget

of FP6 is designed (see Appendix 1) for a sum of 17.5 billion euros. The procedures of participation process are explained in the website of FP6 (www.fp6.org) in detail and in many languages as everyone in the world may participate in the program. And yet there are some restrictions for some countries and organizations (see Appendix 2).

There is a clear opportunity in FP6 for Turkey while there are no restrictions for candidate countries (see Appendix 2). Also the returning benefit of the participating countries is not going to be funds only but "European Added Value" as European call for gathering know-how from these programmes. In theory, Turkey participated in all the programmes except EURATOM. EURATOM has a share of 1.23 billion euros, so the funds that Turkey participates are 16.27 billion euros (http://www.fp6.org.tr/web/sss.htm). But, in practice the participation of Turkey to the programme is not sufficient as the opportunities display great benefit. Mrs. Teymüroğlu from the 6th Framework Office in the Scientific and Research Council of Turkey (Tübitak) (personal communication, May 2, 2005), declares that the real earned benefit is the "European Added Value" but financially only 30 percent of granted funds are returned back. Turkey received 50 million euros while was promised 250 million to pay for membership fee to FP6, but in practice paid 170 million and agreed on paying only 5 installments of 8.

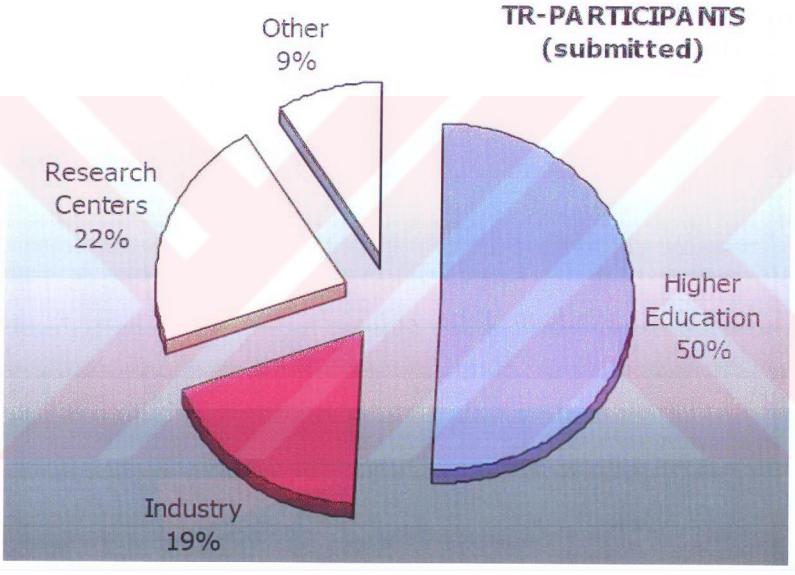
The acceptance rate of programmes is sufficient, 323 of the 2.174 projects are accepted, which is same with the average of Europe by 15%. Though the advantages had to be considered for long-time period, by the end of 2005, 120 million euros of Turkey's membership fee, has gone to other countries works. There are two reasons for Tübitak (2005, p. 7);

1. Insufficiency of researchers: There are not enough full time researchers. There are 27.000 full time researchers in Turkey. The figure is 480.000 in Germany. Also in Germany 20.596 applications are made to FP6 while this is 1.214 in Turkey.
2. Inexperience: Most of the Turkish researchers are having their first international competition experience. They cannot compete with European scientists, who participated in such projects and lobby activities in many projects.

In Appendix 2, participation and funding of FP6 is shown with a table which is edited from European commission, "The 6th framework programme in brief" (2002, p. 23)

In addition, the EU's new framework programme FP7 with an estimated budget of 72 billion euros from 2007 to 2013 is ready. Looking into the participation allocation of FP6 in figure 1.2.2.1.1, 50% of the submitted projects is from universities and only 19% is from the industry. Also in table 1.2.2.1.0, 209 of 314 applications to Tübitak's 430.000 euro-prized "Project Encouraging Program" were from the universities, whereas only 34 were from SMEs and 9 from public. (F. Arınç, 2005)

Figure 1.2.2.1.1: Turkey's Participation in FP6



(Source: F. Arınç, 2005)

Table 1.2.2.1.0: Tübitak's "Project Encouraging Program" Results

	APPLICATIONS	WINNERS
University	209	169
SME	34	27
Institute	61	46

NGO	1	0
Public	9	7
TOTAL	314	249

(Source: F. Arınç, 2005)

The importance of FP6 is that it will remain a valuable feedback for FP7. Regarding the lessons learned, Tania Friederichs (2005) from the European commissions DG Research lists the following for Turkey:

- Involving more industry/SMEs and entrepreneurs
- Address Human Resources problem
- Do benchmarking and mapping
- Identify priority areas
- Research through collaboration
- Prepare well in advance for FP7

1.2.2.2 Green Paper and the Entrepreneurship Action Plan of the European Union

"Green Paper" on entrepreneurship (European Commission, 2003) was published in January 2003. The work was on fostering an entrepreneurial drive and emphasized 10 questions (see Appendix 3).

A year later, from the "Green Paper" an action plan was published which was called "Action plan: The European agenda for entrepreneurship" (October 2004, pp. 6-16). The plan was basically aiming to encourage more people to start businesses and to help entrepreneurs thrive by helping them to fully realize their ambitions and by providing an enabling business climate. In the action plan "Five Strategic Areas" and their "Key Actions" were determined separately.

In table 1.2.2.2.1 these two tables are matched for an easy overview of the strategies and actions related to them;

Table 1.2.2.2.1: "Five Strategic Areas" and their "Key Actions"

	STRATEGIC AREA	KEY ACTION
1.	Fuelling entrepreneurial mindsets	- Fostering entrepreneurial mindsets among young people
2.	Encouraging more people to become entrepreneurs	- Reducing the stigma of failure - Facilitating business transfers - Reviewing social security schemes for entrepreneurs
3.	Gearing entrepreneurs for growth and competitiveness	- Providing tailor-made support for women and ethnic minorities - Supporting businesses in developing inter-enterprise relations
4.	Improving the flow of finance	- Creating more equity and stronger balance sheets in firms
5.	Creating a more SME-friendly regulatory and administrative framework	- Listening to SMEs - Reducing the complexity of complying with tax laws

(Source: Commission of the European Communities)

The European Commission also stated concrete results for Europe's entrepreneurs in "Green Paper".

(1) More people to be informed about entrepreneurship and have the opportunity to acquire entrepreneurial skills through education and promotion activities;

(2) A fair environment for risk-taking and no unreasonable barriers for new entrepreneurs who start or take over a firm;

(3) Ensuring top-class support, specifically for cross-border trade and innovation, for entrepreneurs from all backgrounds and sectors;

(4) Sufficient finance and guarantees to finance all viable entrepreneurial ventures, also under the 'Basel II' capital adequacy framework and greater neutrality in the tax treatment of different financing options;

(5) A substantial reduction of regulation and administrative procedures and better consideration of SME needs in policy-making

1.2.3 Turkey's participation to European strategies

Excluding the government, the main coordinator of framework programmes and European innovation strategies in Turkey is the Scientific and Research Council of Turkey (Tübitak). The main objectives of Tübitak are stimulating competitive power, making progresses on economy, society, security, human and environment health issues in Turkey (http://www.tubitak.gov.tr).

Also, Tübitak have nearly 100 scientific and technique collaboration agreements with almost 60 countries. Cebeci (2004, p. 4) listed Tübitak's collaborative dual-sided agreements, which are compiled in the following table;

Table 1.2.3.0: Collaboration with Dual-Sided Agreements

USA – NSF (National Science Foundation)	HUNGARY – Education Ministry
BELARUS – Science Academy	MACEDONIA – Science and Education Ministry
BULGARY – Science Academy	
GERMANY ○ DFG (Deutsche Forchungsgemeinschaft) ○ Julich Research Centre	PACHISTAN – Science and Technology Ministry
	SLOVAKIA – Science Academy
	SLOVENIA – High Education Scientific Research and Technology Ministry
FRANCE ○ CNRS (Centre national de la Recherché) ○ Minister of Foreign Affairs	TUNUSIA – High Education, Scientific Research and Technology Ministry
	UKRANIA ○ Science Academy ○ Education and Science Ministry
INDIA – CSIR (Council of Scientific and Industrial Research)	
ITALY – CNR (Consiglio Nazionale delle Ricerche)	GREECE – GSRT (General Secretariat for Research and Technology)

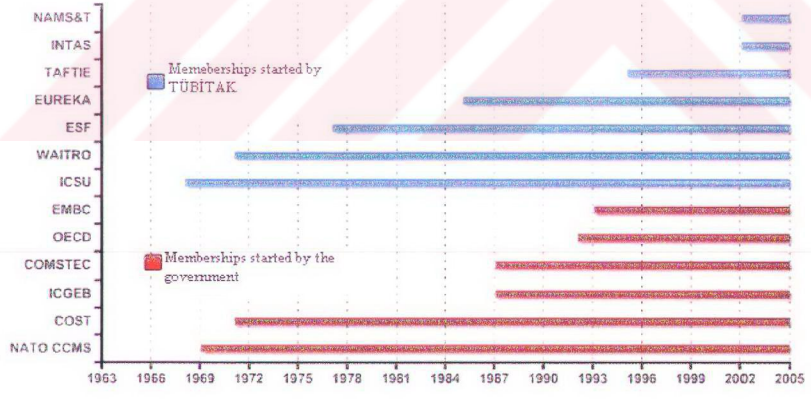
(Source: http://www.tubitak.gov.tr)

Collaborations with multiple-sided agreements are as the following;

- Regional Collaboration with Black Sea Economic Collaboration, developing countries: D-8, Economic Collaboration Organization
- UN, UNESCO, UNIDO, etc.
- NATO (North Atlantic Treaty Organization)
- COST (European Cooperation in the field of Scientific and Technical Research)
- ESF (European Science Foundation)
- EMBC (European Molecular Biology Conference)
- ICSU (International Council for Science)
- COMSTECH (Organization of Islamic Conference – OIC / Standing Committee on Scientific and Technical Cooperation)
- Twas (The Third World Academy of Sciences)

Turkish government and Tübitak's contribution and payments are also given in figure 1.2.3.0 and table 1.2.3.1, collected from the work of Prof. Dr. Ö. Z. Cebeci (2004, pp. 21-23);

Figure 1.2.3.0: National foundations with membership by payment contributions



(Source: http://www.tubitak.gov.tr)

Therefore, Tübitak's contributions are as much as government's contributions. The contribution payments of National Foundations in 2005 are as follows;

ICGEB – International Centre for Genetic Eng. & Biotechnology	40.000 $
COST – European Cooperation in the Field of Scientific and Technical Research	94.996 €
COST 5th Fund (first Installment)	4.804 €
OECD Global Science Forum	3.610 €
ESF General Budget	120.804 €
ESF / Functional Genomics (2000-2005)	7.625 €

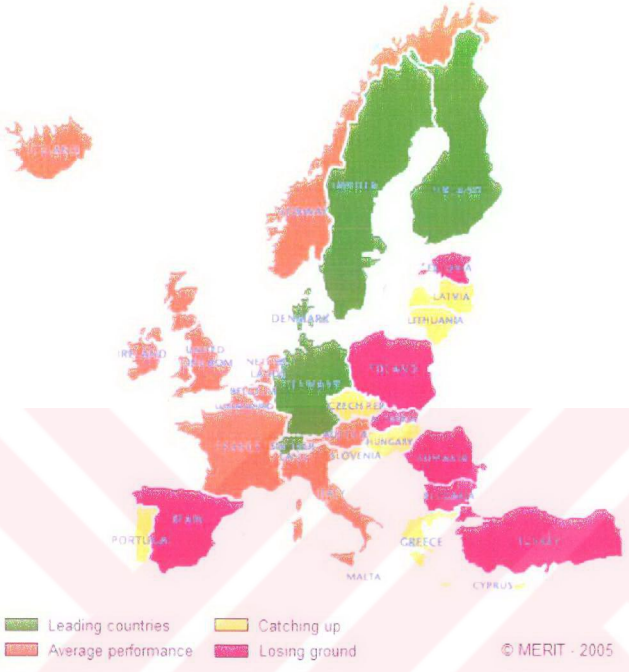
(Source: http://www.tubitak.gov.tr)

Therefore the contributions to European Programmes (ESF, COST and ICGEB) are still with the biggest payments.

However, the European Commission's view on Turkey's participation to their innovation strategies is not optimistic. This may be examined by looking at European Innovation Scoreboard (EIS). The EIS is the instrument developed by the European Commission, under the Lisbon Strategy, to evaluate and compare the innovation performance of the Member States (European Commission, 2005). According to the country classification for the innovation performance of all members and candidates, Turkey is a "Losing ground" (see figure 1.2.3.1).

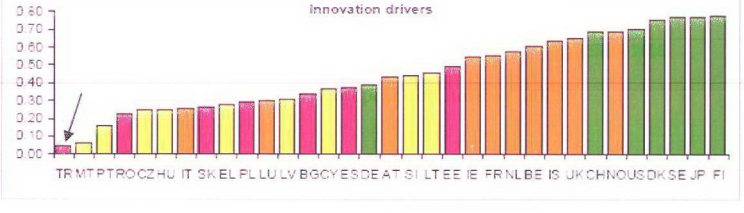
For EIS (2005), there are five key dimensions for innovation. These innovation performance indicators are; Innovation drivers, knowledge creation, innovation & entrepreneurship, application and intellectual property. Figure 1.2.3.2 shows the ranking of countries for each of these groups from the worst to the best performer.

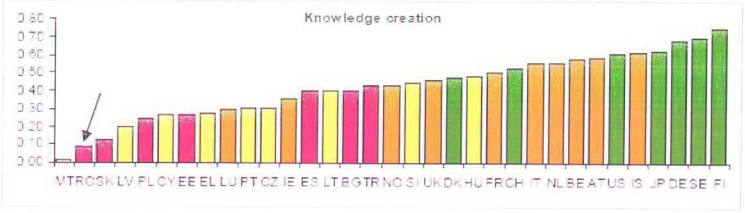
Figure 1.2.3.1: EIS Country groupings

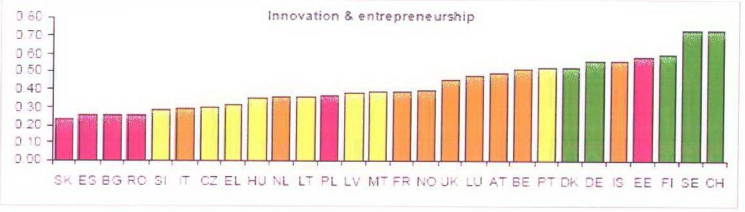


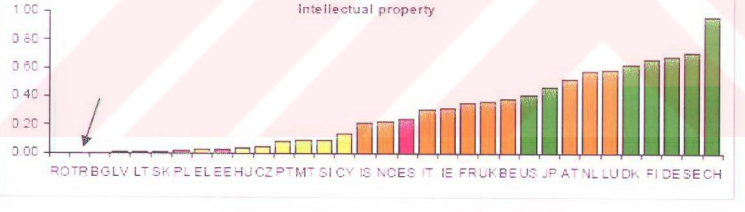
(Source: European commission, 2005)

Figure 1.2.3.2: Key innovation performance indicators with ranking of European countries









(Source: European commission, 2005)

According to EIS (2005) the key innovation performance indicators measure the following;

- Innovation drivers; measure the structural conditions required for innovation potential,
- Knowledge creation; measures the investments in R&D activities,
- Innovation & entrepreneurship; measures the efforts towards innovation at the firm level,

- Application; measures the performance expressed in terms of labour and business activities and their value added in innovative sectors,
- Intellectual property; measures the achieved results in terms of successful know-how.

As seen in the figure 1.2.3.2 above, according to the European innovation performance indicators, Turkey's innovation performance remains as one of the worst countries.

Another problem of Turkey's participation to EU's innovative strategies for European Commission is the lack of data for a reliable statistical research. In European Commission's "Innovative Strengths and Weaknesses" report, it is stated that very poor data availability for Turkey prevents the computation of a reliable "Summary Innovation Index". Also, information is not available for "explaining the determination of a peer group for performance, results for innovation governance, demand and modes, the identification of countries with a similar pattern of strengths and weaknesses, and it is impossible to assess Turkey's main challenges, other than a few brief comments."
(European Commission Enterprise Directorate-General, 2005, p. 147)

1.3 Purpose of the Study

Though, innovation and entrepreneurship are issues at firm level, governmental strategies are known to have deep impact on building an innovative and entrepreneurial structure. Considering this, the study is dealing with Turkey's transactions with the European Union.

Therefore, the main goal of this study is, to trace and analyze the European innovation and entrepreneurship strategies applied to the European countries under the coordination of the European Commission and to examine the implications of these strategies for Turkey.

1.4 Research methodology

In this study **literature survey** method is used. The studies of European innovation and entrepreneurship strategy's concrete results will be collected, examined and interpreted. The data for the study is collected from;

- Reports published by European Union, to be found at updated web databases,
- The Euro Info Center (EIC) in Taksim / İstanbul.
- Books, internet, reports, journals, newspapers, interviews, symposium notes, observations.

1.5 Limitations

Europe has the most complicated and distinct strategies for building an innovative, entrepreneurial culture in the world and Turkey is preparing to join the European Union; therefore, it will be appropriate to limit the research area, with Europe. But some other regions in the world will be discussed in literature review.

Regarding the broad scope and concept of the study and the limited sources, literature survey is preferred as European Union is keen on sharing their collected data. This study will be centered on innovation, knowledge-based economy and entrepreneurship.

2. LITERATURE REVIEW

Literature review deals with term definitions and the literature's discussions. Basically, this section is divided into two parts; entrepreneurship and knowledge-based economy. Since the terms entrepreneurship, innovation and knowledge-based economy are highly correlated, this study will not separately focus on the term "innovation".

2.1. Entrepreneurship

As the study is dealing with a multi-dimensional term like "entrepreneurship", it will be necessary to include as many aspects as possible. Therefore, entrepreneurship will be extensively identified in this section.

2.1.1. Understanding entrepreneurship

2.1.1.1 What is entrepreneurship and who is entrepreneur?

According to, Wheelen and Hunger (2000) "*An entrepreneur is the person, who organizes and manages a business undertaking and who assumes risk for the sake of a profit*", which means that an entrepreneur should take responsibilities of the enterprise's routine tasks and the risks for profit. 18th century businessman Richard Cantillon took this question as a more complex and multifaceted matter. According to Cantillon's classification (R.F. Hebert & A.N. Link, 1989) there are three different traditions in entrepreneurship literature: German Tradition, based on von Thuenen and Schumpeter, the Chicago Tradition, based on Knight and Schultz, and the Austrian Tradition, based on von Mises, Kirzner and Shackle. Also, Kirzner (Kirzner, 1983) attributed the entrepreneur functions as being a specific kind of labor service, an assuming risk person, an innovator and coordinator, while Schumpeter defines it as a change-oriented behavior (J.A. Schumpeter, 1934).

Identifying entrepreneurship is not easy. Countless entrepreneurship definitions have been made in the literature and all are different. The term diversity might be understood by looking at some of the following definitions below.

- Richard Cantillon; "*Entrepreneurs are 'undertakers' engaged in market exchanges at their own risk for the purpose of making a profit*" (R. Cantillon, 1931),
- Low and Macmillan; "*The creation of new enterprise*" (M.B. Low & I.C. MacMillan, 1988),
- Stevenson and Jarillo; "*The process by which individuals (either on their own or inside organizations) pursue opportunities without regard to the resources they currently control*" (H.H. Stevenson & J.C. Jarillo, 1990),
- Hisrisch & Peters; "*The process of creating something different with value by devoting the necessary time and effort; assuming the accompanying financial, psychological, and social risks; and receiving the resulting rewards of monetary and personal satisfaction*" (R.D. Hisrisch & M.P. Peters).

It seems that the diversity of definitions come from the abstractness of the term or its multi-dimensionality. But, according to McDaniel (2000) the Schumpeterian tradition has been the most influencing and significant tradition in the whole entrepreneurship scene. McDaniel stated as follows:

"Much of the more recent literature concerning entrepreneurship and innovation can be traced in origin to Schumpeter's work in the 1930s and much of the literature on innovation of the 1960s and 1970s either resembles or builds on the works of Schumpeter and the impending debate by economic scholars about his criteria for innovation and its relevance to economics."
(B.A. McDaniel, 2000)

This work will approach entrepreneurship, in the sense of Schumpeterian tradition. Also, it is necessary to separate the Small and Medium Enterprises (SMEs) and entrepreneurship here. According to Carland and Boulton (1984) the small-business firms are "independently owned and operated, not dominant in its field, and does not engage in innovative practices" but the entrepreneurial venture, in contrast, is "any business whose primary goals are profitability and growth and that can be characterized by innovative strategic practices". Therefore, basically it can be stated that entrepreneurship differs from SMEs in the sense of **innovation**.

2.1.1.2 Entrepreneurship phenomena in economic society

2.1.1.2.1 Entrepreneurial retrospective

Entrepreneurship is relatively a new term in economic history, because of its abstract sense and difficulty in measuring. The root of the definition goes to a French word *'Entreprendre'* meaning: "to take into ones own hands". Entrepreneurship had always been a discussion topic in history. Mark Blaug figures out a Smith vs. Ricardo comparison;

"Adam Smith in the Wealth of Nations clearly separated the functions of the capitalists from those of the manager and emphasized the fact that the 'profits' of the capitalist exclude the 'wages' of management as a payment for 'the labor of inspection and direction'. However, Smith did not distinguish in any way between the capitalist as the provider of the 'stock' of the enterprise and the entrepreneur as the ultimate decision maker. He did use the terms 'projector' and 'undertaker' as English equivalents of the French word 'entrepreneur' but only as synonyms for the business proprietor. This failure to isolate the entrepreneurial function from that of pure ownership of capital became the standard practice of all the English classical economists. Thus, the term 'entrepreneur' or any of its English equivalents is totally absent in the writings of Ricardo and so is the concept of the businessman as the principal agent of economic change."
(M. Blaug, 1997)

But, certainly the most influential ideas and progresses have been made from Schumpeter. In his essay "Change and the Entrepreneur" Schumpeter (1951), indicated the potential diversity of entrepreneurs and what he means from innovation as follows;

"I have always emphasized that the entrepreneur is the man who gets new things done and not necessarily the man who invents. As a matter of history, the entrepreneur is almost as often an inventor as he is a capitalist but it seems to me that analysis shows that neither of these capacities is essential to him. I can adduce plenty of examples by which to illustrate what seems to me to be the true relation, but only extensive research can present really reliable results."
(J.A. Schumpeter, 1951)

In his work "Capitalism, Socialism and Democracy" Schumpeter (1942) also pointed the difference of the entrepreneur from ordinary people;

"To undertake such new things are difficult and constitute a distinct economic function, first because they lie outside of the routine tasks which everybody understands, and secondly, because the environment resists in many ways."
(J.A. Schumpeter, 1942)

Therefore from the Schumpeterian view, entrepreneurship is highly related with **innovation** by means of getting new things done, either economically, strategically etc... History is full of innovation related entrepreneurship stories. According to Alan Stone (1931) the telecommunication sector's start-up had been an example to how innovation occurs;

"Innovation appears in both large firms, such as AT&T or IBM, as well as upstarts who face initial difficulty in obtaining venture capital; nowhere is this more the case than in telecommunications, where the telephone, invented in 1876, was first conceived as a supplement to the telegraph. Its initial uses were thought to be as a toy for the rich and a vital instrument for physicians, as well as a device that could be employed as a burglar alarm. Within short order, new uses were seen largely due to the foresight of Theodore J. Vail, one of the greatest managers in American business history. Telecommunications from its outset to the present day has frequently innovated in all the ways that; Schumpeter described. Entrepreneurship has appeared in old and new firms and companies of every size."
(A. Stone, 1931)

2.1.1.2.2. Entrepreneurial Behavior

Being an entrepreneur, the person adds his/her self-identity, a new value. Thus, the added value - entrepreneurship - creates a new identity of itself by rising in individual's state of mind or so called "personality" by which the individual gets connected and become one with his/her new identity. So, the more responsible, passionate, creative, or courageous the person is, the more the enterprise and its economic environment will get affected.

While understanding the importance of entrepreneur's personality on economy, we also must examine the effect of economic/social environment on entrepreneurial activity. In one of

his essays Schumpeter mentions the role of social environment stating that every social environment has its own ways of filling the entrepreneurial function, also Schumpeter mentioned the distinctive characteristic of entrepreneurship;

"It is clear that if all people reacted in the same way and at the same time to the presence of new possibilities, no entrepreneurial gain would ensue: If everybody had been in a position to develop the Watt condenser, prices of products to be produced with the new steam engine would have adjusted themselves instantaneously and no surplus over costs would have arisen for the firm of Boulton and Watt. Therefore, entrepreneurial gain may also be called a monopoly gain, since it is due to the fact that competitors only follow at a distance".
(J.A. Schumpeter, 1951)

From that point of view, an entrepreneur should have unique actions for her/his success which refers to innovation.

2.1.1.2.3. Schumpeter's "Creative Destruction"

"In his 1911 classic treatise, Theory of Economic Development, Joseph Alois Schumpeter proposed a theory of creative destruction, where new firms with the entrepreneurial spirit displace less innovative incumbents, ultimately leading to a higher degree of economic growth."
(R.F. Hebert & A.N. Link, 1989)

For David A. Reisman Schumpeter identifies 'capitalism' with 'entrepreneurship' and it can be said that both are almost the same for Schumpeter's point of view. Reisman compares Marx and Schumpeter in the following statement;

"In the case of Marx things somehow happen and the bourgeoisie wakes up in charge. In the case of Schumpeter, however, it is the entrepreneur who creates the creative destruction that makes economic history stand up and cheer."
(D.A. Reisman, 2004)

So, what is the 'creative destruction' that Schumpeter mentioned? He defines it with capitalism. For Schumpeter (1942) capitalism is a system that incessantly shifts its ground

that incessantly revolutionizes the economic structure from within, incessantly destroying the old one and creating a new one. This process of creative destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in."

Therefore, it can be said, neither capitalism nor entrepreneurship is phenomenal of peace and silence. They move like protons of an exploded atom bomb with continuousness. Thus, entrepreneurs are 'the agents of change' for Schumpeter;

"The function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention or more generally an untried technological possibility for producing a new commodity or producing an old one in a new way, by opening up a new source of supply of materials or a new outlet for products, by reorganizing an industry and so on."
(J.A. Schumpeter, 1942)

2.1.2. Intrapreneurship

As mentioned before, entrepreneurship deals with the human behavior and it can be found everywhere. In 'Green Paper' (Commission of the European Communities, 2003, pp. 6-8) it is stated that entrepreneurship is important because entrepreneurship contributes to job creation and growth and is crucial to competitiveness, unlocks personal potential, increases social interests. Yet, the aim of this study is not to look forward to reach some goals such as proving the importance and advantages of entrepreneurship as they seem apparent.

There is a willingness and tendency for entrepreneurship, as much as there is a resistance for the things representing the opposite, like; having less ability to prove individual innovation and creativity, or losing "working pride" which Deming mentioned (W.W. Scherkenbach, 1986) in almost all his works (Deming's 12th point of his "14 Points for TQM" deals with giving back employees working pride: "*Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from stressing sheer numbers to quality. Remove barriers that rob people in management and engineering of their right to pride of workmanship. This means, inter alia, abolishment of the annual merit rating and of management by objective*. Also, these effective options are a must for high-tech companies which are very important for a knowledge-based

economy. For M.J.C. Martin (1994) the works for improving the performance of employees are particularly considerable for high technology firms which run the risks of becoming technologically moribund and losing their capacity for innovation.

In their book "Corporate Creativity" A.G. Robinson and S. Stern (1997), searched the motivation for creativity, supporting their idea with many surveys and they found that the answer for an employee's motivation for creativity, depends on not salary satisfaction (not to mention that, a sufficient level of satisfaction is necessary) but on the intrinsic-motivation, the desire to work on something for its own sake. For Robinson and Stern, extrinsic motivation damages creativity. Furthermore they proposed removing numerical barriers just like Deming mentioned in most of his works. According to Robinson and Stern a company's creativity is limited to the same extent that it acts on preconceptions about who will be creative, what they will do, and when and how they will do it. Therefore, a creativity and innovation oriented company must not put rigid objectives for their employees as Deming recommended.

All these approaches seem to reveal the 'Maslow's hierarchy of needs' last level: "Self-Actualization", giving us a notion in understanding entrepreneurs/intrapreneurs. For M.J.C. Martin (1994) not all entrepreneurially-motivated individuals wish to set up their own independent ventures. Some are attracted by the relatively high community status enjoyed by individuals holding middle or senior management positions in larger recognized corporations and their ambitions may motivate them to seek advancement in larger organizations which offer increased formal power and internal status. So, now it is important to retain entrepreneurial talent and to consider alternative organizational mechanisms for stimulating intra-corporate entrepreneurship.

Guth and Ginsburg (W.D. Guth & A. Ginsburg, 1990) used the term 'Corporate Entrepreneurship' as; "*the birth of new businesses within existing organizations, that is, internal innovation or venturing; and the transformation of organizations through renewal of the key ideas on which they are built, that is, strategic renewal.*"

Pinchot (G. Pinchot, 1985) coined a more succinct word 'Intrapreneurship' to describe this intra-corporate entrepreneurship activity, and suggested that the above barriers constitute a corporate immune system which must be considered for intrapreneurial endeavors to succeed.

Pinchot had listed some advices for intrapreneurs known in the literature as "Pinchot's ten commandments for intrapreneurs" as follows;

1) Be willing to risk being fired.
2) Circumvent orders aimed at stopping your dream.
3) Do any job necessary to make your project work – forget your job description.
4) Find helpers.
5) In choosing helpers, rely on your intuitive people judgment and pick only the best.
6) Work underground as long as you can – publicity triggers the corporate immune system.
7) Never bet on a race in which you are not running.
8) Requests for forgiveness come easier than requests for permission.
9) Be true to your goals, but realistic about means.
10) Honor your sponsors.

Whether it is called "intra-corporate entrepreneurship" or "corporate entrepreneurship", intrapreneurship gives opportunity to companies and especially high-tech companies, to close their innovation gap in the present competitive market.

Regarding to three types of entrepreneurs (see table 2.1.2.0), Wennekers and Thurik (A.R.M. Wennekers & A.R. Thurik, 1999) only excludes 'Executive Managers' from entrepreneurship thus intrapreneurs are employees, but still entrepreneurs.

Table 2.1.2.0: Three Types of Entrepreneurs

	Self-employed	Employees
Entrepreneurial	Schumpeterian entrepreneurs	Intrapreneurs
Managerial	Managerial business owners	Executive managers

The intrapreneurs are employees but these entrepreneurial employees may become 'Schumpeterian Entrepreneurs' while they are also risking their reputations, their time and sometimes their job.

After realizing their goals, Schumpeterians often develop into 'Managerial Business Owners' but some may again start new ventures and go on as Schumpeterians, which are the absolute entrepreneurs. 'Managerial Business Owners' are also entrepreneurs in a formal way, like intrapreneurs. They are franchisees, shopkeepers and people in professional occupations.

2.1.3. Social Entrepreneurship

Social entrepreneurship is a new term and like 'social responsibility' it has a 'charity and taking care of the others' motto. Yet it can be said that it is more a definition of individual efforts. For 'The Jobs Letter' magazine's special issue on social entrepreneurs (The Jobs Letter (147), 2001), it is stated as follows: "*The title of 'social entrepreneur' may be new, but these people have always been with us, even if we did not call them by such a label. Like business entrepreneurs, they combine creativity with pragmatic skills to bring new ideas and services into reality. Like community activists, they have the determination to pursue their vision for social change relentlessly until it becomes a reality society-wide.*"

For Thompson (J. Thompson, 2002), a social entrepreneur's main difference from conventional ones is that they are operating in communities and are more concerned with caring and helping than with making money.

For Roberts and Woods (D. Roberts & C. Woods, 2005) it is not necessary that a 'Social Entrepreneurship' organization be a not-for-profit one. They give an example to a social entrepreneurship case; Bill Drayton, ex McKinsey & Co consultant, is well known in the social entrepreneurship circles. He is the founder of Ashoka, a global non-profit organization that scours the world looking for social entrepreneurs and invests in them when no one else will. Ashoka provides stipends which allow 'Fellows' to focus full time on their ideas for leading social change in everything from education, youth development, health care, environment, human rights, access to technology and economic development. To receive a stipend the candidates must be "*extraordinary individuals with unprecedented ideas for change in their communities*" and pass a stringent selection process focusing on a core question: "*Do we believe that this person with this idea will change the pattern in this field, at the rational level or beyond?*" Decisions to elect fellows are made by a panel and must be unanimous. Currently Ashoka operates in 46 countries across Asia, Africa, the Americas and Central Europe and has worked with 1,400 social entrepreneurs providing approximately

US$40 million in funding and additional services. Roberts and Woods also mentioned the difference of 'Social Entrepreneur' from 'Conventional Entrepreneur'. For Roberts and Woods (2005), social entrepreneurs use many of the tools and language of business but their motivation and what they see as important are quite different from those with a commercial intent. Both social and conventional entrepreneurs are visionary; tend to be opportunistic rather than sticking to a predefined plan or strategy, and pay great attention to building alliances and networks of contacts. However, social entrepreneurs tend to communicate their visions in moral terms, driven by a desire for social justice rather than the money. They are sometimes described as "ideological chameleons" avoiding any particular political stance that could cut them off from potential supporters.

Roberts and Woods, described the entrepreneurial perspective from their point of view (see table 2.1.3.0.), by dividing entrepreneurship to conventional (also called commercial) and social parts. Also by regarding Social Entrepreneurship's 'practical' and 'academic' aspects, they blend all perspectives to make their definition: "*Social entrepreneurship is the construction, evaluation and pursuit of opportunities for transformative social change carried out by visionary, passionately dedicated individuals.*"

Table 2.1.3.0: Perspectives on Entrepreneurship

Perspectives	Focus	Primary interest	Defining Features
Academic view of 'conventional' entrepreneurship	Activity in the economic sphere	The connection between an opportunity and the entrepreneur; focus on profitable opportunities	'How, by whom, and with what effects opportunities to create future good and services are discovered, evaluated and exploited'
Practitioner view of 'conventional' entrepreneurship	Activity in the social sphere drawing on the principles of conventional entrepreneurship	The connection between an opportunity for social change and the entrepreneur	Construction, evaluation and pursuit of opportunities for social change
Practitioner view	Activity in the	The attributes of	Walking anecdotes, people

of social entrepreneurship	social sphere drawing on the actions of practitioners	the practitioners and the process they follow to drive social change	with new ideas to address major problems, who are relentless in the pursuit of their vision, people who simply will not take no for an answer and who will not give up until they spread their ideas as far as they possibly can

(Source: D. Roberts & C. Woods, 2005)

2.1.4 Macro effects of entrepreneurship

Since we are seeking the entrepreneur, mostly in a macro level and regarding the knowledge-based economy, innovation is the strongest factor. Looking at one of the most famous entrepreneurs in history, Henry Ford, we may realize how Ford effected the economy by **getting new things done** by lowering the prices of automobiles, creating new investment opportunities in steel, rubber, paint, petroleum, and plastics, as well as road construction and tourism. Looking at Ford, it can be said that the innovative entrepreneur is the central figure in macroeconomics who accelerates the economic growth. Innovation must be conceived as a process of small steps whereby existing goods and services are improved and upgraded to better satisfy consumer tastes.

The process of innovation requires three steps for the National Council on Economic Education (1991);

1) *Conceptualization*: Seeing a need and having an idea for a product, service, or technology to meet that need.
2) *Perfection*: The idea then must be developed and tested for its feasibility and whether or not a market actually exists that will justify the costs of bringing the innovation to the marketplace. This is the longest and most frustrating part of the entrepreneurial process. Thomas Edison experienced over 2000 failures before he perfected the electric light bulb.

3) *Commercialization*: To have a good idea is only the beginning of the entrepreneurial process. The idea must be converted to a product or a service, taken to a market, and effectively distributed and sold. Each stage requires entrepreneurial behavior.

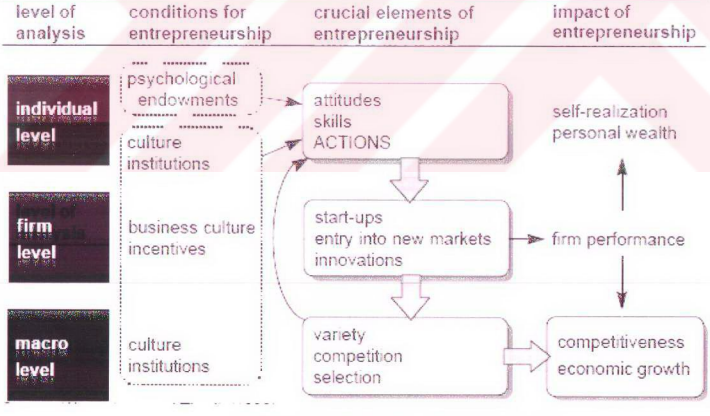
Innovation is a criterion of the third stage, for the model of Wennekers and Thurik (1999), shown in figure 2.1.4.0 and 2.1.4.1, which identifies the way to economic growth.

Figure 2.1.4.0: Framework for Linking Entrepreneurship to Economic Growth - 1.

Conditions (personal, cultural, institutional)
⇩
Entrepreneurship (multidimensional)
⇩
Intermediate linkages (innovation, variety, competition, entrepreneurial efforts, etc)
⇩
Economic growth

(Source: Wennekers and Thurik, 1999)

Figure 2.1.4.1: Framework for Linking Entrepreneurship to Economic Growth - 2.



(Source: Wennekers and Thurik, 1999)

The output is not only competitiveness and economic growth but firm performance at firm level progresses results in self-realization and personal wealth for individuals as in well as leading to an economic growth and competitiveness itself.

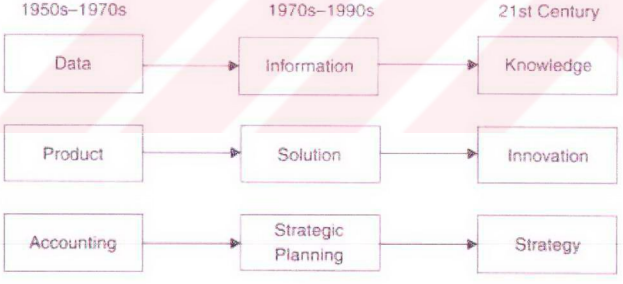
Therefore entrepreneurship's macro effects are multidimensional and linked together, gathering not one result but many values.

2.2. Knowledge-based economy

2.2.1. Definition of knowledge-based economy

The Organization for Economic Co-operation and Development (OECD, 1996) considers 'a knowledge-based economy' as "*an economy in which the production, distribution, and use of knowledge is the main driver of growth, wealth creation and employment across all industries*". The term is referred to "post-industry" as well. Presently, gaining knowledge is a very popular business even itself and also perception of businesses have changed in time. For D.M. Amidon (2005) there has been an evolution in minds (see figure 2.2.1.0). Now, it is not only about gaining knowledge, but about minds which are analyzing, querying, and processing knowledge.

Figure 2.2.1.0: Evolution of Thought



(Source: D.B. Amidon, 2005)

To perceive the transformation, 4 major requirements must be considered for (Dahlman & Andersson, 2000), these are;

- A corporative and economic environment that promotes creating new knowledge
- An educated and entrepreneurial society that creates and uses new knowledge

- A dynamic knowledge mainframe that supports the communication and mining of knowledge
- An innovation system that adopts the rapidly growing global knowledge stock with the requirements of the country, using them for creating knowledge and technology and containing firms, science and technology centers, think-tanks and other institutes.

2.2.2 Knowledge-based society

D.M. Amidon (2005, pp. 2-4), interprets the transformation as follows;

"*In the 1960s, we were activists. In the 1970s, we were described as change agents. In the 1980s, we became strategists, envisioning a future others may not yet see. Today, we are the architects of transformation, pioneering a future based on collaborative but not competitive strategy... No longer can mechanistic, linear management strategies survive. In fact, strategic planning as a profession has undergone a dramatic transformation. Strategy is now a matter of leadership more than plans, the ability to inspire vision more than to articulate it, and the notion of sustained movement over time more than financial short-term successes.*"

The Economic and Social Council (2000) defines a 'knowledge and information society' as: "*a society endowed with the ability, capacity and skills to generate and capture new knowledge and to access, absorb and use effectively information, data and knowledge with the support of information and communication technology (ICT).*"

A knowledge-based society's transformation is already an e-government transformation, which also meant the 'transformation of government state missions'. Binali Yıldırım (2005), who is the responsible minister for knowledge-based issues in Turkey, declares; "Turkey is a little bit late for knowledge-based technologies so much like everything else, like the industry revolution, but we are aware of the reality, even the mission of the government is changing with the transform. With e-government, transparency will come and ordinary people will have the right to call the government for account, the bureaucracy will be very much less by means of the applications which will also reduce/terminate paper work, the service quality will rise up and participation of citizens will occur at a higher level."

2.2.3 Network Approach

Networks have high priority in all types and scales of economies and also in a knowledge-based economy. There is a strong correlation between networks, knowledge-based economy, innovation and entrepreneurship. According to A. Lundström and L. Stevenson's "Swedish Foundation for Small Business Research" (2001), in the new economy, networks are a key factor in the success of a business. According to their research, "*individual entrepreneurs are limited in their personal capacity (so many things to take care of) that they often do not have time to take care of their own networking needs. There may be a role for government to assist in the facilitation of these opportunities. As well, with the rapid growth in global knowledge, business support professionals and government officials also need more sophisticated networks to stay abreast of the latest research, trends and best practice. Websites and knowledge portals provide a vehicle for forming virtual networks that can help address our needs.*"

Networks are also indispensable for innovation. Not because only co-operation with knowledge institutes and universities are important, but also networking, in a broader sense, is a necessity for high-tech SMEs to implement innovation projects and to collect the required information and know-how. Networks make it possible to share knowledge, costs and risk and they contribute to business success.

Networking is common among high-tech companies in Europe, although it is oriented mainly towards customers and suppliers. In particular, smaller innovative enterprises are not very enthusiastic about co-operation. They fear a loss of autonomy. According to the 'Observatory of European SMEs 2002' (European Commission, 2002) the following barriers, specific to smaller high-tech enterprises, to networking can be identified:

- Small enterprises, in contrast to large ones, often have a short-term perspective and expect quick and concrete results. Research networking however is rather generally time-intensive and results are not immediately visible. To reduce efforts co-operation is kept simple and built with only very few partners.
- It is difficult to find a balance between confidentiality (hiding information) and sharing knowledge and information, which is essential for successful networking.

- Governments try to stimulate co-operation and networking between SMEs and large enterprises as well as with knowledge institutes. One of the vehicles used is regional clusters. In the Observatory of European SMEs 2002, 34 regional clusters all over Europe have been studied and compared.

Nowadays, doing business is more related with collaboration. Ideas are easier to trade. An entrepreneur in a knowledge-based economy can easily trade on a foreign company to develop the product rather than sell the finished product to another foreign company. Internet made processes easier than ever, with its tools like e-mail, instant message services, search engines and endless web sites. Especially for a single entrepreneur or with a micro enterprise (enterprises with less than 10 employees) these cheap, easy and effective tools are worthwhile whereas this is not so for larger firms.

Innovation and collaboration, is the key to making difference. It is possible to create a product in easy ways but with insufficient innovation the finished product will be worthless. Also without collaboration, the product may not meet the market. The role of an entrepreneur for Mr. Selim Güven (2005) can be allegorized with mice whereas firms are allegorized as lions. Mice can move fast, fit in every hole, have abilities like gnawing, sharp smelling etc. while lions are strong but lazy. It can happen as it is told in the famous fable where lion refuses the mouse's friendship proposal and tries to get rid of it, but later mouse saves lion's life by rescuing the lion from the trap, gnawing ropes. Therefore, bigger firms require flexibility and fast response, whereas entrepreneurs are looking for stronger structures. Together they form a perfect match and synergy with this symbiotic relation.

In addition, a related term "**network effect**" has a multiplier value benefit in some businesses. For Hamel (G. Hamel, 2002), in some cases, the value of a network increases as the square of the growth of the number of "nodes", or members in the network and if you model the growth of a business concept that exploits the network effect, you get a diagram that looks like the power curve for nuclear fission or the infection curve for a virulent virus. For example considering eBay you would not go to an auction site that had only a dozen items for sale. But as the number of participants (nodes) increases, the chance of finding what you want or finding a buyer for what you do not want, goes up geometrically. Also network effect accounts for the Visa, Master-Card and American Express. The more merchants who

accept these cards, the more likely you are to carry them, and the more merchants are apt to accept them.

2.3 The social transformation

2.3.1 A separation in mind

The developments from the morality point of view in the "knowledge-based" world are also comprehendible. Now, if an argument starts anywhere in the world, and calls our interest, we may easily join in it while time and space got smaller but more concentrated. We may say that even only internet made these developments so fast that it can be compared with the discovery of printing which helped renaissance. Continuously, mass of information is transferred in the speed of light all over the world every day and people put their opinions and passions in them to participate and take action.

The case of Second Vermont Republic (http://www.vermontrepublic.org) is impressive as it also exhibits an entrepreneurial reaction against the most evolutionized country of the world USA. The SVR is a movement in Vermont USA, leaded by Thomas H. Naylor. It is a radical and secessionist reaction to the "destructive" growth oriented government policies of USA. In brief, they accuse the government for being "too big, too centralized, too powerful, too intrusive, too materialistic, and too unresponsive to the needs of individual citizens and small communities" and offer to form a new independent republic other than USA called Second Vermont Republic. They declare their manifest using the Thomas Jefferson saying as follows;

"Whenever any form of government becomes destructive, it is the right of the people to alter or abolish it, and institute a new government," said Thomas Jefferson in the Declaration of Independence. Just as a group has a right to form, so too does it have a right to disband, to subdivide itself, or to withdraw from a larger unit."
(http://www.vermontrepublic.org/writings/thevermontmanifesto.html)

Not only Vermont's citizens are so courageous but these people react in comfort with the same reason that this occurrence is not as surprising as it would be 20 years ago. It might not be much too futuristic to say that in an absolute knowledge-based world, things will not be the same, as they were not after the discovery of printing.

2.3.2 The new economy: employment or unemployment

The new economy has a capacity to change the life style of world population with its impact to employment. For Vivarelli and Pianta (2000), sometimes, it is the same technological device which has a **dichotomic impact** on employment. An important example is the telecommunication industry; in that sector, the transition from electromechanical to electronic switching has implied dramatic cuts in employment levels. However, the new telecommunication infrastructure (like ISDN) provides the basis for the diffusion of new, value-added services such as data banks, e-mails, multi-media services and so on. Therefore present technological change is both **job destructive** and **job creative**.

Also, according to Rifkin (J. Rifkin, 1996), this information age's technologies are rapidly replacing humans, especially in the manufacturing sector. The number of factory workers in the United States has declined from 33% of the work force to under 17% in the past 30 years, even as U.S. companies have continued to increase output and overall production, maintaining the country's position as the number-one manufacturing power in the world.

Rifkin also opposed Peter Drucker for his saying: "the disappearance of 'labor as a key factor of production' is going to emerge as the critical 'unfinished business of capitalist society'." Rifkin pointed that the end of the industrial age also meant the end of 'mass production' and 'mass labor', as earlier futurists Alvin Toffler and John Naisbitt stated. Furthermore, he searched for the hard question "what 'the masses' should do after they become redundant". Rifkin (1996) gave an example from two European companies;

"Companies like Hewlett-Packard in France and BMW in Germany have reduced their workweek from 37 to 31 hours, while continuing to pay workers at the 37-hour rate. In return, the workers have agreed to work in shifts. The companies reasoned that if they could keep the new high-tech plants operating on a 24-hour basis, they could double or triple productivity and thus afford to pay workers more for working less time."

Rifkin (1995) stated that the answer to this question "lies in our hands", that is because the public and public policy makers are much too preoccupied with the workings of market economy, instead of focusing greater attention on social economy and productivity. Gains of

corporations have been used primarily to enhance corporate profits, to the exclusive benefit of stockholders, top corporate managers and the emerging elite of high-tech knowledge workers. According to Rifkin, if that trend continues, the widening gap between the haves and the have-nots is likely to lead to social unrest and more crime and violence. This could be changed by such as; shortening the workweek to 30 hours, providing an income voucher for the permanently unemployed in return for retraining and service in the Third Sector (Non Governmental Organizations), and extending a tax credit for volunteering time to neighborhood nonprofit organizations, because the road to an almost workerless economy is within sight.

2.3.3. A New Term on Rise: Parecon (Participatory Economics)

By the beginning of the industry age, many economic theories are discussed, and some of them become commandments of economics. As John Maynard Keynes states in the early 20th century:

"Capitalism is not a success. It is not intelligent. It is not beneficial. It is just not. It is not virtuous and it does not deliver the goods. In short, we dislike it and we are beginning to despise it. But when we wonder what to put in its place we are extremely perplexed."
(As cited in M. Albert, 2004)

Still the answer is not clear. Socialism played its role in governing and economy more than a century but especially after S.S.C.B. broke up; it seems that the remaining socialism could no longer be an alternative. However, the search for a better social and economic future doesn't always have to be a fight of capitalism versus socialism, or somewhere in the middle. A different approach comes from M. Albert, the founder of Znet (http://www.znet.org).

Albert (2004) reads the matter different in his 433 page book: "Participative Economics: Life after Capitalism". He states that first there would be social ownership of the productive assets so there would be no class of private proprietors or of capitalist owners. Nor, secondly, would there be a separate class of coordinators, managers or decision-makers. This is because the work organization in a participative economy would be entirely different. There would be balanced job complexes to replace the present division of labor where the coordinating class performs only the fulfilling and empowering task of decision-making while the working class

engaged in the drudgery of debilitating and depressing task of routine work, the day-to-day grind without any access to information or knowledge of the overall goals. Everyone would have his or her share of routine task and decision-making.

For Albert, the reward system would also be entirely different. In the capitalist economy the reward system is based on ownership of property, bargaining power, difference of circumstances or different characteristics of individuals. On the other hand, in the participative economy the reward would be for effort and sacrifice. This is despite the fact that there may be differences in talent or in education or training. Training and educational opportunities would be socially provided and would be available to all. Similarly, healthcare and social amenities like public parks would be free for all; special needs of people like the handicapped would also be taken care. Thus the reward system would aim at justice for all. Lastly, the participative economy would be self-managed through decisions by workers' and consumer's councils helped by cooperative communication and facilitation boards. The decisions would be based on indicative prices reflecting social opportunity costs and benefits. They would be arrived at through a process of successive iteration and approximation to a balance between demand and supply. (http://www.zmag.org)

2.4 Entrepreneurship in a knowledge-based economy

Harmony clearly exists for entrepreneurship, knowledge-based and innovative economy in means of their 'creative' and 'destruction of the past' sense. Like technology, entrepreneurship too has an infinite and evolutionary movement. Kirzner (1973) stated that; "*In equilibrium there is no room for the entrepreneur.*" Agreeing with Kirzner, Schumpeter (1954) thinks the term evolution may be used in a wider and in a narrower sense. In the wider sense it comprises all the phenomena that make an economic process non-stationary. In the narrower sense it comprises these phenomena, minus those that may be described in terms of continuous variations of rates within an unchanging framework of institutions, tastes or technological horizons and will be included in the concept of growth.

Referring to the entrepreneur in a knowledge-based economy, "knowledge entrepreneurs" need to understand the following for C. Thomas (2003);

- acquire, develop, package, share, manage and exploit information, knowledge and understanding, and related support tools;
- help and enable others to use and apply them effectively;
- communicate and share information and complex knowledge in ways that assist comprehension and increase understanding;
- create, badge, protect, manage and exploit intellectual capital and 'best practice'-based job support tools;
- identify and exploit market opportunities for distinctive information and knowledge-based products and services;
- develop and launch new information and knowledge-based offer
- use combinations or emerging technologies to network people, organizations and relevant sources of information, knowledge and support tools together;
- handle knowledge in multiple formats, including animation audio and video material;
- develop and use appropriate job support tools to increase individual productivity and corporate performance;
- collaborate with others, and work and learn in new ways in order to create and deliver greater value;
- Lead and manage knowledge workers, network organizations and virtual teams.

Also, Thomas offered many business opportunities for the "knowledge entrepreneurs" in his book "the knowledge entrepreneur" (C.C. Thomas, 2003, pp. 6-11), which might be useful for the knowledge entrepreneurs.

2.5 Producing more entrepreneurs

It is obvious that building an entrepreneurial culture requires patience. Nevertheless, education and manner of critical decision makers has a strong effect on culture. To acquire entrepreneurs, in 'Green Paper' which the European Union published (2003, pp. 10-15) the pinpoints for "producing entrepreneurs" are stated as follows;

- **Entry barriers**: Despite recent improvements, Europeans still consider administrative barriers as a major hurdle to starting a business. Business start-ups

have difficulties in getting the seed and early-stage finance they need. Risk-sharing between public and private sectors can help increase the availability of finance.

- **Risk and reward**: In Europe, the risks associated with entrepreneurship are not adequately offset by the prospect of reward. This calls for a re-examination of the balance of the risks and rewards associated with entrepreneurship.
- **Fostering capacity and skills**: Education and training should contribute to encouraging entrepreneurship, by fostering the right mindset, awareness of career opportunities as an entrepreneur and skills.
- **Making entrepreneurship accessible to all members of society**: Entrepreneurship should be widely promoted, with particular focus on women and other underrepresented groups. Ethnic minorities display high levels of entrepreneurial flair and even greater potential. The business support services available seem to respond less well to their specific needs.

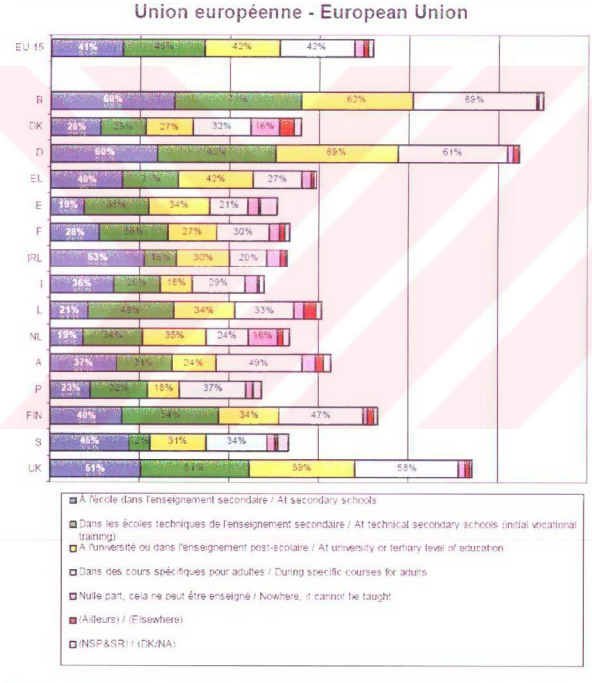
2.5.1 Education Effect

The educational system of an entrepreneurial economy should work to help individuals to become enterprising individuals, maybe just because it takes more than knowledge to be an entrepreneur. Growing an entrepreneur must be the term, as it requires creating emotions to make an entrepreneur. For the social and economic integration of young people community (Center for Educational Research and Innovation, 1988) this personality is defined as 'the enterprising individual'; having a positive, flexible and adaptable disposition towards change, seeing it as normal and as an opportunity rather than a problem. To see change in this way, an enterprising individual has a security borne of self-confidence and is **at ease when dealing with insecurity, risk, difficulty, and the unknown**, they have the **capacity to initiate creative ideas, develop them**, either individually or in collaboration with others, and they are also able, even anxious, to take responsibility, and effective communicator, negotiator, influencer, planner, and organizers.

Still, it is a mystery whether entrepreneurs are born that way or are they made entrepreneurs. We must admit that education of the entrepreneurial culture is a must for an entrepreneurial society, but it is not enough. In April 2004 a survey has been made called "Flash Eurobarometer on Entrepreneurship 160" (European Commission, 2004, p. 61), over 21.000 people were interviewed by telephone which included 18.500 EU citizens, 1.000

Americans and 1.500 EEA/EFTA citizens. One of the results from the 124 page survey is; **the older the people get, the more transition to becoming self-employed seems difficult**. Also the findings tell us that the perception of self-employment varies strongly between Americans and the citizens in the 25 European Union Member States. European Union citizens explain their preference for employee status by the stability of income. On the other hand, Americans who would like to set up their own business consider self-employment as being an opportunity to create their own working environment.

Figure 2.5.1.0: European Flash Barometer Survey: In your opinion, where should basic knowledge of how to run a business be taught?

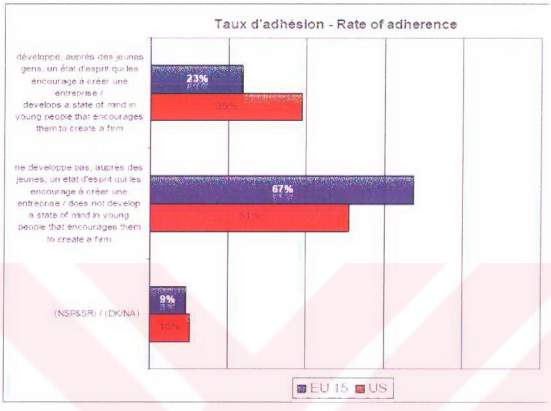


(Source: Flash Eurobarometer 146 entrepreneurship, 2004, p. 40)

An exceptional part of Europeans think entrepreneurship cannot be taught anywhere (9%), but on the other hand according to the survey, 48% believe that entrepreneurship can be

taught with specific courses for adults and 46% think universities are the most suitable places to receive that training (see Figure 2.5.1.0 & 2.5.1.1).

Figure 2.5.1.1: European Flash Barometer Survey: Which of the following propositions do you feel closest to? Aside from subjects taught the education system…



(Source: Flash Eurobarometer 146 entrepreneurship, 2004, p. 41)

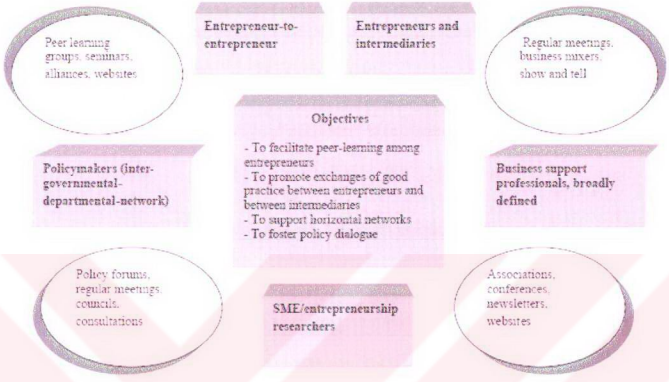
Then, regarding the differences between two western cultures – EU and US – we may say; it is about the genes and age of the population but especially about culture, yet measuring which is most effective, is a hard task.

2.5.2 Networks

Networks have strong effects in building entrepreneurial communities. According to Lundström and Stevenson (2001), networks are made up of several environmental issues (see figure 2.5.2.0) and there are a number of types of network-based activity. Firstly, there is networking of the entrepreneur-to-entrepreneur type; secondly, the entrepreneur to-professional business environment type; thirdly, the network activity between small business support intermediaries (advisers, support professionals, financiers, government officials, etc.), fourthly, networking among members of the SME/entrepreneurship research community; and lastly, there is a networking among government officials and policy-makers. Although most discussions of networking refer only to the first two types, as business support professionals

and governments realize the importance of sharing experiences and learning from 'best-practices', more attention is being paid to the networking activity of the latter three types.

Figure 2.5.2.0: Framework of network options for entrepreneurship development



(Source: A. Lundström & L. Stevenson, 2001 p.191)

The literature suggests that networking activity is very important to entrepreneurs for two major reasons; first, entrepreneurs indicate a preference for learning from each other and second, the extent of interaction between entrepreneurs and the density of their networks is an indicator of entrepreneurial vitality. In addition, networking can;

- reduce the risk of ineffective use of resources
- create possibilities for making contact with the best sources of assistance independent of organizations or location,
- promote good opportunities for decentralizing decision making,
- Be a vehicle for more effective dissemination of knowledge about projects and programs and best practices.

Building 'density' in the entrepreneurial sector is in itself an important factor. According to Lundström and Stevenson (A. Lundström & L. Stevenson, 2001, p. 187) researches revealed that the more business owners one knows, the more likely they are to consider

business ownership or self-employment as a viable option for themselves – exposure leads to a higher propensity to start a business, like growing up in an entrepreneurial family, knowing a lot of entrepreneurs in one's personal social network, etc.

Having entrepreneurs as role-models is also a factor in one's learning the path to success. Thus helping networks form and facilitating opportunities for the exchange of information and experience is an important priority. However, the networking concept can be applied to all target groups – **future entrepreneurs, women, youth, the media, educators** and **teachers**, small business support professionals, corporate leaders and service providers (like banks) and government departments.

The key networking-related questions for Lundström & L. Stevenson (2001) are:

- How to facilitate the creation of more informal and formal networks in which entrepreneurs can participate for mutual learning;
- How to encourage more entrepreneurs to adopt professional networking practices and to make use of outside professional advice;
- How to reflect the networking practices and preferences of particular subgroups of entrepreneurs, e.g., women, youth, ethnic groups, in the design of initiatives to broaden network exposure and reach;
- How to incorporate recent learning about the use of clusters and networks in the design of effective programs to formalize goal-directed business growth and economic development;
- How to best foster and support the exchange of experience and best-practice among business support professionals, researchers, educators, and government officials;
- Identifying the appropriate role for government in the networking arena.

2.5.3 Entrepreneurship policy and regulations

For Wennekers, Sander and R. Thurik (as cited in A. Lundström & L. Stevenson, 2001) measuring the level of entrepreneurship is still difficult due to the imprecise ability to measure start-up and exit rates and the fact that knowledge is still being created about the factors which give rise to entrepreneurship in an economy. What we do know is that a number of social, cultural and political factors influence entrepreneurship and that the vitality of the

entrepreneurial sector drives business dynamics and fuels growth, e.g., the birth, expansion, contraction, and death of SMEs.

Wennekers, Sander and Thurik's approach is realistic, yet D.J. Storey (as cited in Z.J. Acs & D.B. Audretsch, 2003) searched for the role of public policy on entrepreneurship. Storey made a useful comparative guide for public programs that effect on entrepreneurship. (See table 2.5.3.0)

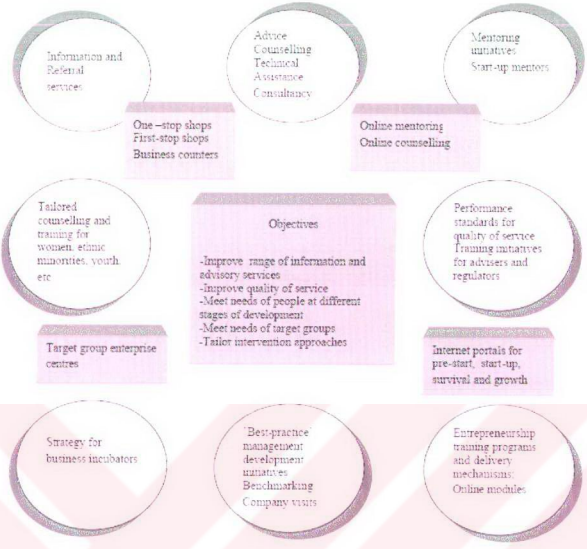
Table 2.5.3.0: Illustrations of public programmes to assist SMEs, enhance entrepreneurship

Problem	Programme	Description	Country	Success
Access to Loan Finance	Loan Guarantee Scheme	SMEs without access to own collateral obtain access to bank loans by state acting as guarantor	UK USA Canada France Netherlands	Yes, generally viewed as helpful, but small scale impact on the overall financing of SMEs in most countries
Access to Equity Capital	Enterprise Investment Scheme	Tax breaks for wealthy individuals to become business angels	UK	Unknown
Access to Markets	Europartenariat	Organisation of Trade Fairs to encourage cross-border trade between SMEs	EU	General satisfaction amongst firms that participated
Administrative Burdens	Units established within government to seek to minimise administrative burdens on smaller firms	Sunsetting Legislation deregulation Units	Netherlands Portugal, UK	The view of small firms themselves is that bureaucratic burdens have increased markedly in recent years
Science Parks	Property based developments adjacent to Universities	Seek to promote clusters of new technology based firms	UK, France, Italy and Sweden	Conflicting findings on impact of SPs on performance of firms
Managed Workspace	Property provision to assist new and very small firms	Often called business incubators, these provide premises for new and small firms on 'easy' terms	World-wide	General recognition that such initiatives are of value
Stimulating Innovation and R&D in small firms	Small Business Innovation Research Program	$1 billion per year is allocated via a competition to small firms to stimulate additional R&D activity	USA	Lerner implies SBIR enhances small firm performance, but Wallsten is unable to show it leads to additional R&D
Stimulating Training in small firms	Japan Small Business Corporation (JSBC)	JSBC and local governments provide training for owners and managers of small firms. The training programme began in 1963	Japan	Unknown
Entrepreneurial Skills	Small Business Development Corporations (SBDCs)	Counselling is provided by SBDC mentors to small business clients who may be starting a business or be already trading	USA	This study finds SBDC clients have higher rates of survival and growth than might be expected. Reservations over these findings are found in the text
Entrepreneurial Awareness	Entrepreneurship Education	To develop an awareness of enterprise and or an entrepreneurial spirit in society by incorporating enterprise into the school and college curriculum	Australia, Netherlands, but leading area was Atlantic Canada	Conventional assessments are particularly difficult here because of the long "lead times"
Special Groups	Law 44	Provides finance and mentoring advice to young people in Southern Italy, where enterprise creation rates were very low	Southern Italy	This is an expensive programme, but most studies show the survival rates of assisted firms to be well above those of "spontaneous" firms

(Source: Z.J. Acs & D.B. Audretsch, 2003)

In addition to Storey's work, A. Lundström and L. Stevenson's (2001) figure shows how to support entrepreneurship placing objectives in the middle. (See figure 2.6.3.0)

Figure 2.5.3.0: Entrepreneurship Support Options



(Source: A. Lundström & L. Stevenson, 2001, p.172)

Therefore entrepreneurship might be supported by coordination offices, by government or communities. So, there are many tasks for building an entrepreneurial culture and supporting entrepreneurs, like consultancy services, training programs and as mentioned above but first objections must be defined and clarified. A government's or community's policy and regulation standards will play the biggest role for building an innovative and entrepreneurial nation. In the latter sections European Community's innovation policies will be focused.

2.6 Strategies of China, Japan, Russia, Singapore and Hong Kong

As open markets mean competition, almost every country in the world is aware of knowledge-based economy and entrepreneurship in the sense of innovation. According to V.I. Ivanov and K.S. Smith (1999) Japan has repeatedly proved its adaptability over the past 14 centuries and the Japanese media are abuzz with all the right slogans like liberalization, deregulation, government downsizing, and techno-entrepreneurship. For Ivanov and Smith, Japan's economists and businessmen acknowledge that progress is less than meets the eye, because its group culture is better at task-setting than stimulating individual. Innovative

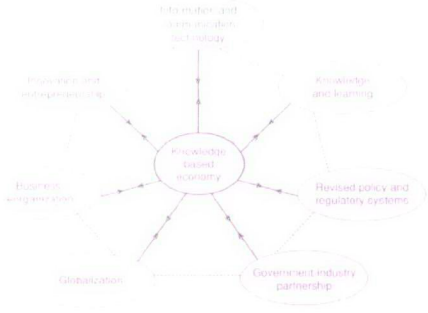
initiative and the Japanese are also keenly aware that the Chinese are positioned to make rapid inroads into their traditional export markets, particularly the U.S. market. Ivanov also thinks that this may galvanize Japan's will to break with tradition and develop a vibrant techno-entrepreneurial culture.

However, we are also aware from the Europe experience that developing an entrepreneurial culture is a hard task. On the other hand Ivanov and Smith say, Russia might capitalize on its location, prospering as a Eurasian land bridge, or use its military-industrial know-how as a platform for techno-entrepreneurship with its engineering potential.

Also for Miles (as cited from Balazs, 1964), China has to find its way through a better society to adapt into an entrepreneurial culture. Miles stated as follows:

"*What was chiefly lacking in China for the further development of capitalism was not mechanical skill or scientific aptitude, nor a sufficient accumulation of wealth, but scope for individual enterprise. There was no individual freedom and no security for private enterprise, no legal foundation for rights other than those of the state, no alternative investment other than landed property, no guarantee against being penalized by arbitrary exactions from officials or against intervention by the state bureaucracy, which maimed from the start any attempt of the bourgeoisie to be different, to become aware of themselves as a class and fight for an autonomous position in society. Free enterprise, ready and proud to take risks, is therefore quite exceptional and abnormal in Chinese economic history.*"

Figure 2.6.0: Features of the Knowledge-Based Economy for Singapore's Construction Industry



(G. Ofori, 2002)

George Ofori (2002), structures Singapore's construction industry in a knowledge-based economy in figure 2.6.0. Innovation and entrepreneurship, knowledge and learning, government-industry partnership sets around the knowledge-based economy resemble with European models.

Another example for a new economy's entrepreneurial development is the case of Hong Kong's entrepreneurial city strategies. In 1997, China's biggest city Hong Kong's public organizations (e.g. Trade Development Council and Hong Kong Productivity Centre) and governmental departments (e.g. the Trade and Industry Departments), sponsored and/or supported to publish two consultancy reports by Harvard and MIT which represented alternative entrepreneurial city strategies to insert Hong Kong into a changing global-regional division of labor.

The competition-based Porterian-inspired, Harvard report was sponsored by the "Vision 2047 Foundation" which combined commercial and financial capital interests: "The Harvard consultant's strategy named "The Hong Kong Advantage", promoted a re-visioning of Hong Kong's future time and space, favoring service and multinational interests. The report noted Hong Kong's manufacturing decline and the challenge of interurban competition from Shanghai, Singapore, Taipei and Sydney. It promoted a market-oriented vision of the city's new identity as a "business/service/financial centre" with "hub" functions. In entrepreneurial

terms, it portrayed Hong Kong as a type of urban economic space that would manage ever-expanding global-regional-local flows of production and exchange.

The MIT report, entitled "Made by Hong Kong", offered a more place-based account of Hong Kong's entrepreneurial future (see Appendix 4). This report was sponsored by manufacturing / industrial capital and supported by parts of the bureaucracy (most notably the Hong Kong Government Industry Department and the Hong Kong Productivity Council). It portrayed Hong Kong as locked into a "Made by Hong Kong" manufacturing trajectory, i.e. as organizing the low-cost manufacture of "Hong Kong" goods in offshore locations such as southern China and other parts of Asia (J.R. Logan, 2002).

2.7 Promising areas

2.7.1 Internet evolution

Like many other big inventions, internet is evolving too. Yet, the evolution process is faster than inventions like telephone, automobile or TV. Nicholas Evans (2001) has made a four-phased model of this fast evolving evolution:

- **Phase 1 – Internet:** Static web pages, presenting product, company information, some B2B applications.
- **Phase 2 – E-Business:** Dynamic business applications, B2C, B2E applications, phone, fax, and paper-based processes were re-designed and often eliminated in order to take advantage of E-Business processes.
- **Phase 3 – M-Business:** In this phase, the time and location advantages of mobility revealed. E-Business technologies are also maturing and continuing to evolve alongside mobile technologies. Data-mining can be an example… We are currently in the beginning of this stage.
- **Phase 4 – I-Business:** This is the theoretical end-state beyond M-Business, where companies are on an equal footing terms of their leverage of technology and are forced to compete solely on intellect and corporate strategy. The "i" can be considered as standing for intellect, ideas, and innovation. The corporation is entirely virtual and business decisions can be executed at the speed of thought. (N.D. Evans, 2001)

2.7.2 M-Business

M-Business (Mobile Business) is a term referred to post-internet meaning: "*content delivery (notification and reporting) and transactions (purchasing and data entry) on mobile devices*" (N.S. Shi, 2004). M-Business is expected to grow $200 billion worldwide by 2004. For Nan Si Shi, the major factors that drive the growth of m-business include;

- Mobile devices such as internet-enabled handsets, personal digital assistants (PDA), and portable computers are gaining popularity among business and consumer users.
- The wireless infrastructure and support are constantly being upgraded by vendors in order to provide seamless and affordable access. Advances in mobile and wireless technologies are making anywhere, anytime computing a reality
- Companies want to remove delays and inefficiencies from traditional business processes and explore new business opportunities by allowing employees and consumers to access critical business information from anywhere at anytime.

Mobile applications will create many business opportunities with a rich variety. Also having many impacts on efficiency, effectiveness and innovation (see table 2.7.2.0) m-business applications are likely to generate the most revenues in the new economy area.

Table 2.7.2.0: A framework for m-business applications

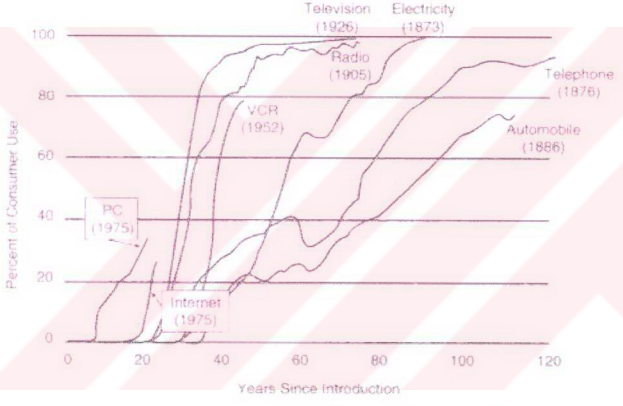
		Value		
		Efficiency	**Effectiveness**	**Innovation**
Impact	**Time**	Reduce Business Process Cycle Time	Reduce Information Float	Enhance Service Quality
	Mobility	Capture Information Electronically Anytime-Anywhere	Access Critical Information Anytime-Anywhere	React to Problems and Opportunities Anytime-Anywhere
	Relationship	Enhance Connectivity and Communication	Increase Collaboration	Increase Information Transparency to Improve Supply Chain
	Location	Track and	Alert Marketing	Localize

	Leverage	Surveillance	Campaigns	

(Source: N.S. Shi, 2004)

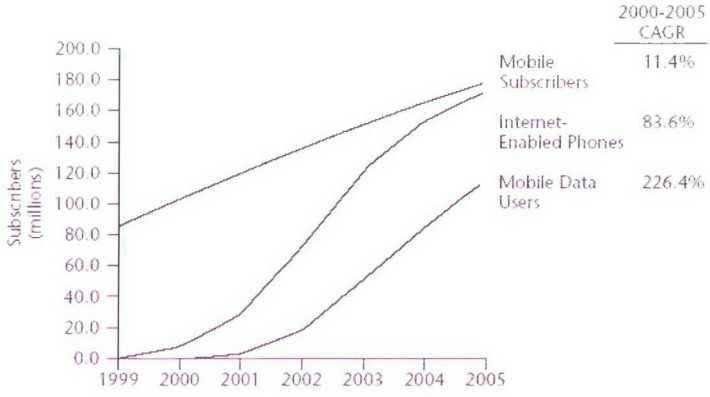
M-business can be comprehended as an innovation mainframe, because many businesses will follow this trend. For Nicholas Evans, every business will become an m-business. In his book "Business Agility", Evans stated that m-business is on its early adoption stage and the business value is not well proven or understood yet (N.D. Evans, 2001). Many inventions took some time for adoption (see figure 2.7.2.0). Instead m-business was adopted in a few decades in some countries (see figure 2.7.2.1).

Figure 2.7.2.0: Various Product Adoption Rates



(Source: N.D. Evans, 2001)

Figure 2.7.2.1: US Mobile and Wireless Growth



(Source: A. Kornak, 2004)

Mobile growth curve will be more distinctive when 'Content Providers' will increase. Content providers are already collecting the information and that is costing them money. This cost will increase when companies demand customized solutions.

"Content providers are companies that provide the information and applications the end-user is accessing via the hand-held device. As such, content providers can be categorized into content creators, aggregators/portals, and application developers".
(A. Kornak, 2004)

Content providers and especially content creators (this group may be major carriers, entertainment companies or entrepreneurial enterprises), have many tools/options (see table 2.7.2.1) if they have enough innovation and entrepreneurship ability. The following table is generated from Adam Kornak, as it is showing all content providers.

Table 2.7.2.1: M-Business Content Providers

Content Creators	Content by Form/Format	Written	Books, newspapers, etc
		Audible	Songs, speeches
		Visual	Video, photograph, painting

	Content by Function		SMS, text-based games, advertisements using push technology…
	Merchants		Anything that can be sold
	End-Users		Any information on the web, e-mail, websites, online information forms
Content Aggregators/Portals		Referencers	Websites organizing data (Yahoo, MSN.com)
		Publishers	Aggregating news, travel products (CNN, MSNBC)
		Retailers	Merchants selling multiple brands.
		Community Builders	Hobbies, professional interest, self-help issues.
Application Developers			Programs that interact with on the cell phone or PDA like entertainment and educational softwares.

(Source: A. Kornak, 2004)

Players who will be successful in the wireless portal game (mobility is strongly related and highly require wireless systems, but wireless issues are so extensive to argue that it is dismissed here) are the ones who establish alliances with the major content providers (upstream sourcing) mentioned above and carriers and wireless service providers (downstream distribution) to tap into fresh content from the former, and an already existing customer base from the latter (A. Kornak, 2004).

Customer habits is one of the highest barrier of reaching a full loaded, Phase 3 – mobile business era. Customers are not satisfied nor have what they need yet. The mobile connection quality which is required as minimum as desktop pc's is still poor and security matters are not clear in customers mind and it just needs some time to have better connections and performance from mobile devices. PDA or cellular phones will soon take the place of

notebooks or desktop pc's. With the progresses in wireless connections, 4G and digital-signatures, market will grow. Even today, we may use special glasses for monitors and touch on virtual air keyboards for keyboards. Soon processors will become smaller, high-quality wireless connections will be everywhere and the next era will rise.

2.7.3 Quantum Computing

For the future of mobility, ubiquitous computing and ambient intelligence environment the microprocessors must get smaller. Though the progress in processors came to a point in respect with the 'Moore Law' (in 1965 Gordon E. Moore stated that for every year the transistors will get half smaller, than it became true but revising with 1.5 years), now it is time to deal with quarks because atoms are not small enough.

The quantum physics or mechanics is simply related in this work by economic and social perspectives. If we may discover a quantum computer (there is none at the moment), processors will get smaller and faster and the whole ICT market scenario will change. Because, in quantum computing every processing unit is a computer (with a wireless network ability) itself, therefore the quantum computer will be very small at a high percentage. Also in quantum computing, there is no need for 1 or 0 (open or close) logic, since qubits (this is similar to bits in classic computing), maybe both 1 and 0. So, if we suppose qubits as atoms, since we can change an atom's superposition, it will be possible to make a calculation in a very small area with many parallel computers. Therefore, this is not only a device technology revolution but also a wireless technology revolution (scientists work on quantum beam technologies). With its new navigation (search engine facilities) and crypto possibilities and effects in AI (Artificial Intelligence) and virtual reality, the stages mentioned before may evolve faster.

3. CONCEPTUAL FRAMEWORK

In this section of the thesis, the problem will be outlined.

3.1 Outline

The aim of this thesis is to describe the strategies and entrepreneurial actions that European Union takes to create a more fluid, strong, stable economy and implications for Turkey. Turkey needs an authentic strategy and action plan relying on its own economic structure.

Considering that the Turkish government is in a transaction with European Union, and for that Europe has mass of strategies for innovation and entrepreneurship, the thesis focused on European innovation and entrepreneurship strategies and the implications for Turkey.

In table 3.1.0 below, the construction of the study is presented.

Table 3.1.0: Outline of the study

The Process	Category
Objectives	Conceptual Framework
Definitions	
Research Area Codes	
Collecting Data	Data Gathering
Exhibition of the Raw Data	
Descriptive Analysis	Data Analysis
Conclusions	Conclusion

3.2 Objectives

The objectives of this study are listed as follows:

- To identify the current European innovation and entrepreneurship strategies applied to different European countries.

- To Examine European strategy's implications for Turkey.
- To state the performance, relations and gaps between European strategies and implications for Turkey.

To reach the given objectives, qualitative data was gathered and analyzed. Data was obtained from the meetings with Euro Info Center in İstanbul, and reports which the European Union published.

3.3 Definitions

The European Union's main objective of being the most competitive knowledge-based economy till 2010 is supported by programme and activities, like frameworks, action plans, workshops and evaluation reports. The main purpose of the existence of EU is to build a socially and economically prosperous network. Therefore, to reach this mission, member and candidate countries are being traced and evaluated by the EU.

The organization of the "European TrendChart on innovation" was utilized for tracing the member country's performance for building EU's social and economic network. For the Data Analysis section of this study, TrendChart data is going to be used for analyzing Turkey's position in EU.
(http://trendchart.cordis.lu/)

The innovation and entrepreneurship strategies of EU are action plans implicated to every country. Therefore there is not a single strategy, but every country or region builds its own strategy regarding the country/regions strengths, weaknesses, opportunities and threats. EU instituted the Innovating Regions in Europe (IRE) network as the joint platform for collaboration and exchange of experience for regions that are developing or implementing regional innovation strategies and schemes. According to the IRE network the aim of the network is to give member regions access to new tools, schemes and inter-regional learning opportunities on innovation promotion, in order to improve their ability to boost innovation and competitiveness among regional companies.
(http://www.innovating-regions.org)

3.4 Research area codes

See Appendix 5 for the list of research area's codes.

3.5 Collecting data

The data required for the data analysis of the study is gathered with guidance of the Euro Info Center (EIC) in İstanbul (Z. Akgül, personal interviews, April 2, 2005 & February 2, 2006). EIC offered to use the most recent and updated data which is available in the websites of EU instead of their hardcopy libraries. The TrendCharts for innovation in Europe (http://trendchart.cordis.lu) and the IRE network (http://www.innovating-regions.org) websites share all the information they have gathered as collaboration is one of their main mottos.

Also feedback from "Şirin Elçi" (from Tübitak 6th framework office in Ankara, administrator of www.focusinnovation.net, also the reporting coordinator of TrendCharts evaluations in Turkey) is used in evaluating the TrendCharts data. After a couple of e-mail conversations, Şirin Elçi, listed my classification from the most important to less important.

3.6 Exhibition of the raw data

TrendChart-Innovation Policy Measures

See Appendix 6 for a table of all policies "TrendChart-Innovation Policy in Europe".

"TrendChart innovation policy in Europe" is a center for developing EU's innovation activities. For analysis TrendChart's dataset for the frequencies of evaluation results are shown in the data analysis section from the data in Appendix 8. The table in Appendix 7 is created from the evaluations of European Commission. To reach the final diagram first the evaluation results are classified, and coded. The coded and elected evaluations are valued with a plus (+), or minus (-); to indicate the positive or negative comments. The highest positive number (7) shows the most positive comment, the highest negative number (-16) shows the most negative comment. Then, the coded evaluation result's frequencies are calculated (see Appendix 8).

For each sub-policy's evaluation criteria codes matching for Turkey see Appendix 7.

Contribution to IRE network

A table (see Appendix 9) is computed and formed from the dataset of the contributing regions quantity in a country in IRE network. (http://www.innovating-regions.org)

See Appendix 9 for the number of contributed regions in each country which took strategic actions in IRE network.

Internet Usage, prices and performance

See Appendix 10 for "Internet Usage for EU Members and Candidate Countries", Appendix 11 for "Internet Access prices and Internet host penetration per 1,000 inhabitants" and Appendix 12 for "ADSL Service Cost Comparison".

Turkey's ADSL internet performance is examined in the analysis as it is the most widely used and preferred connection type. For the analysis of ADSL performance in Turkey, the GNI percentage is calculated by dividing the monthly "Per Capita Gross National Income according to Purchasing Power Parity" (Economist Magazine, July 21, 2004) of 2002. Purchasing Power Parity (PPP) is considered because of the high inflation in the country. GNI with PPP in Turkey is $555 in 2002.

Also, in all prices all taxes (ÖİV: 15%, KDV: 18%) are included to make an easier comparison with Appendix 12.

4. DATA ANALYSIS

4.1 Introduction

In this section the gathered data will be interpreted by using descriptive and statistical analysis.

The collected data was also exhibited in section 3.6. Here, the exhibited data will be examined in the same order. Therefore, the following will be analyzed;

- TrendChart-Innovation Policy Measures
- Contribution to IRE network
- Internet usage, prices and performance

4.2 TrendChart-Innovation Policy Measures

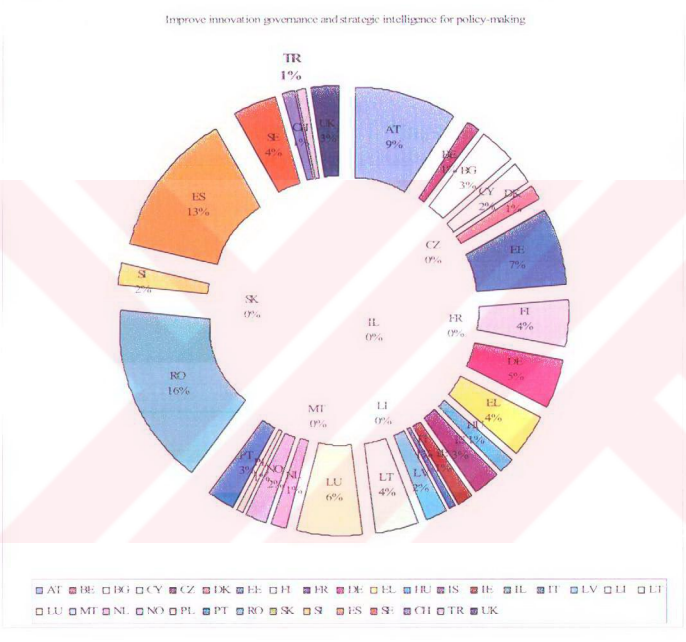
The European TrendChart on Innovation is an initiative of the European Commission, Enterprise Directorate General an innovation policy unit, and a measurement center of innovation in Europe. According to TrendChart there are five main innovation policy measures, these are:

- Improve innovation governance and strategic intelligence for policy-making
- Foster an innovation friendly environment
- Encourage technology and knowledge transfer to enterprises and development of innovation poles and clusters
- Promote and sustain the creation and growth of innovative enterprises
- Strengthen entrepreneurial innovation including the protection and commercialization of intellectual property

For measurement each country's innovation activities/projects/titles are traced and classified under main and sub-policy measures. When analyzing this section, it must be considered that each policy which a country's title is classified in may be classified under another policy measurement. Therefore; the more titles are suitable with main and sub policy

measurements, the more overall percentage the country will get. There are 36 measured titles for Turkey regarding the policies. The following figures will help to examine 33 EU members and candidate country's innovation performance by quantity or in other words, quantity of the titles under each measurement.

Figure 4.2.1: Main-policy measurement I. "Improve innovation governance and strategic intelligence for policy-making"



Turkey has 1 title under that main measurement and this is referred to as **field research project aiming at implementing the needs analysis for selected 40,000 SMEs throughout the country**. According to TrendChart (http://trendchart.cordis.lu) the project has not been evaluated yet as it only started in 2004. This project has been classified under the sub-policy measurement I.2 which is: "Increase understanding of the nature of drivers and barriers of innovation activity in enterprises with a view to informing the policy-making process".

Figure 4.2.2: Main-policy measurement II. "Foster an innovation friendly environment"

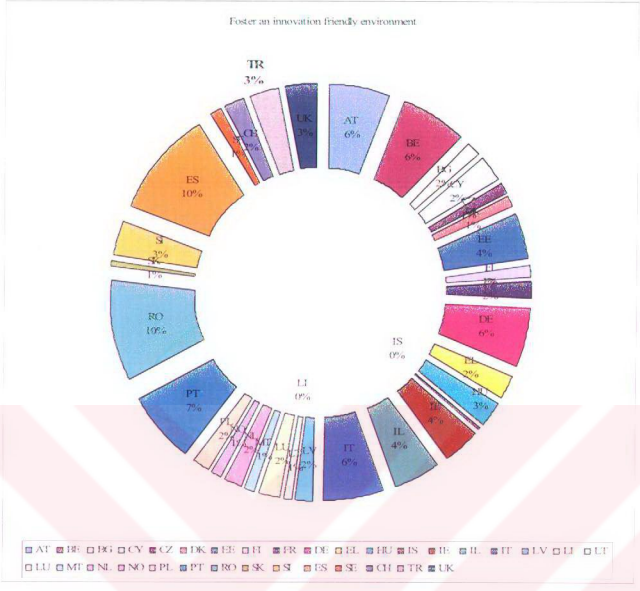
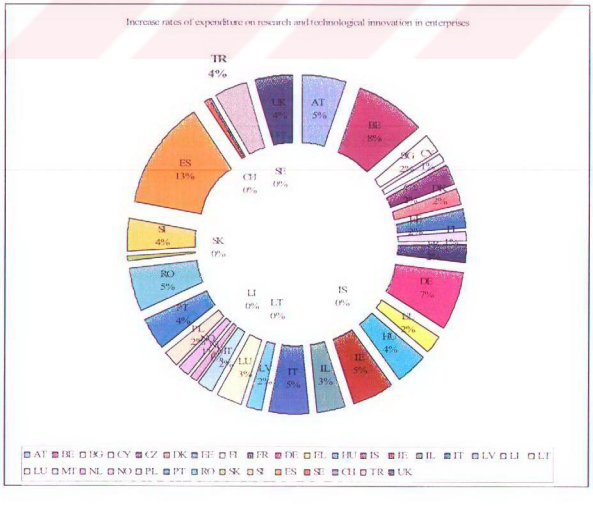


Figure 4.2.3: Sub-policy II.4. "Increase rates of expenditure on research and technological innovation in enterprises"



Turkey has 11 titles under main measurement II. Only 8 of the titles are classified under the sub-policy II.4 which is "Increase rates of expenditure on research and technological innovation in enterprises"

The titles and EU's evaluation under II.4 is compiled in table 4.2.0.

Table 4.2.0: Evaluation of Sub-policy II.4. For Turkey

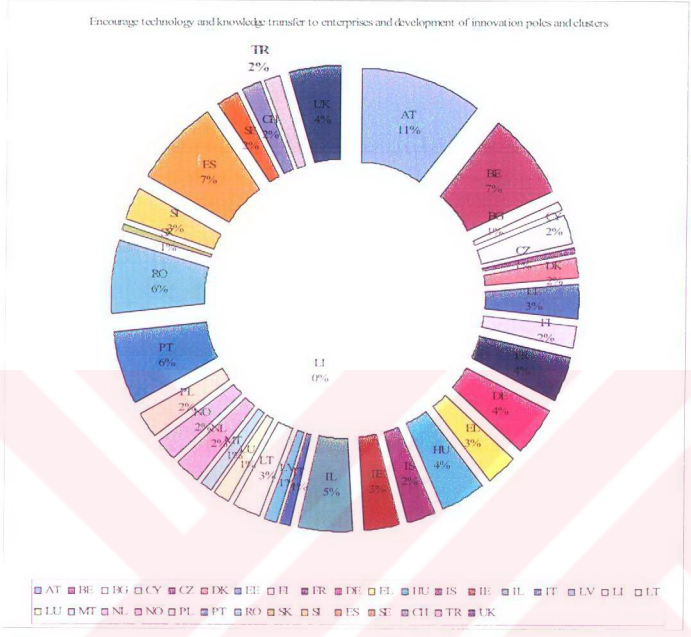
Title	Last Update	Evaluation/Evidence/Success of the measure
Support for establishment of technology parks (Law on Technology Development Zones)	9.29.2005	Take up of the measure by the universities is quite high. There is also high demand by the private sector due to strong tax incentives. However, the need for establishing a systematic monitoring and evaluation mechanism for the measure is highlighted as an important issue in peer studies
State Support for R&D (grant by TUBITAK-TIDEB)	9.29.2005	R&D support measures have a positive impact on R&D spending, the commercial success rate of TUBITAK-TIDEB supported-projects is high (83%), project application and disbursement claim forms should be simplified, project evaluation duration should be shortened, disbursement intervals should be shortened, disbursements should not be delayed.
State Support for R&D (loan by TTGV)	9.29.2005	R&D support measures have a positive impact on R&D spending, the commercial success rate of TTGV supported-projects is high (88%), project application forms should be simplified, project evaluation and monitoring durations should be shortened, disbursements should not be delayed.
Technology Development Project Support	9.29.2005	The majority of firms are not informed about Industrial Technology Project (ITP) services, majority of firms who have information about ITP services do not take the benefit of these services because they think they do not need ITP services, majority of firms benefit from the measure seem to demand "practical" assistance either in solving their technical/operational problems, or adapting regulations (certification, etc.). However, the characteristics of ITP client firms are quite different from the rest of the firms in Turkish manufacturing industries.
R&D Tax Exemption	4.14.2005	Too early to appraise the success of the measure as it was only launched in May 2005

Support for R&D Investment	1.27.2005	Demand for the measure is low mainly due to lack of awareness on R&D among the private sector. Based on the report of the Ad Hoc Committee on Evaluation of State Aids" (http://ekutup.dpt.gov.tr/ekonomi/politika/devletya.pdf) it is recommended to redesign and implement the measure considering regional needs.
Technology Research and Development Support	1.27.2005	Demand for the measure is limited and unsatisfactory mainly because of the lack of awareness on investment in R&D among SMEs. The management process is efficient, however lacking a systematic monitoring and evaluation mechanism is considered as an important weakness of the measure.
R&D Tax Postponement	1.27.2005	The measure is proved to be ineffective as only 125 companies benefited between 1997 and 2002, which is very low compared to the number of companies conducting R&D. The interviews on the subject indicated that the main reason for low application to the scheme is that, in general, SMEs do not have separate R&D departments and are not accustomed to account R&D expenditures as separate items in their balance sheets. This is also evident with the figure that only 1.5 percent of the companies benefited from the scheme are SMEs.

There are 3 more titles under main-policy II. 2 of them are under sub-policy "Encourage the uptake of strategic technologies, notably ICT". These 2 titles are **"Software support for SMEs"** and **"Information network and e-business support"**. While information network measurement is not evaluated yet, the software support for SMEs is regarded to be managed effectively, on the other hand the evaluation states that not having a systematic monitoring and evaluation mechanism for the policy makes it difficult to appraise the effects and outcomes of the measure and to improve it.

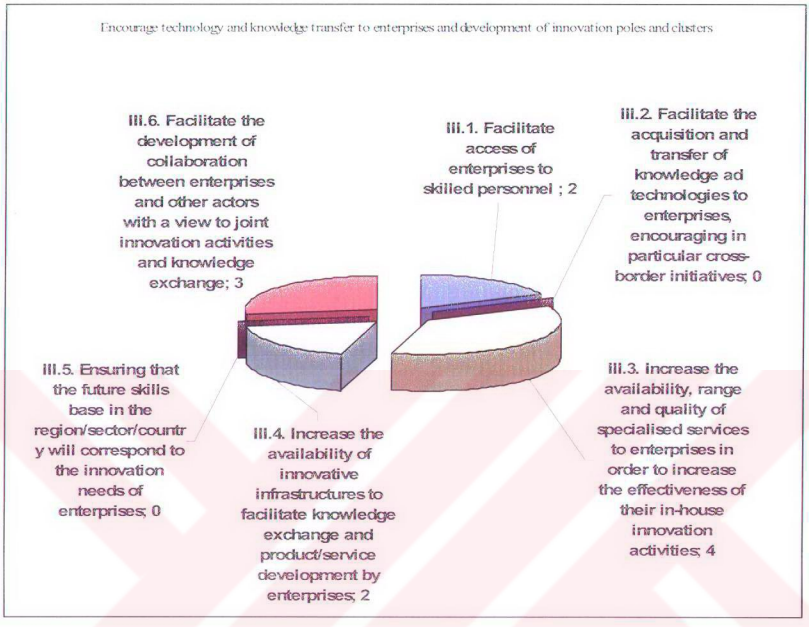
The other title under the main-policy II is **"E-Transformation Turkey Project"** which is in the class of the sub-policy "Reducing the administrative and transaction costs for enterprises in fulfilling their legal, administrative, fiscal, etc. obligations". This project is considered to be effective in coordination with information society and knowledge economy activities. According to the evaluation, the major problem reported is the lack of a monitoring and evaluation system with clearly defined indicators.

Figure 4.2.4: Main-policy measurement III. "Encourage technology and knowledge transfer to enterprises and development of innovation poles and clusters"



Turkey's numerical performance under that main-policy is 2% between EU countries and there are 11 titles for Turkey under that policy. There are also mutual titles which can be found under main-policy II.

Figure 4.2.5: Turkey's contribution of sub-policies under main-policy III.



To view the evaluation of the titles under main-policy III the following table is generated.

Table 4.2.1: Turkey's evaluation regarding main-policy III given with sub-policies

Title	Last Update	Evaluation/Evidence/Success of the Measure	Sub-Policy
Support for establishment of technology parks (Law on Technology Development Zones)	9.29.2005	**see table 4.3.0**	**III.1**
Support for Hiring Qualified Personnel by SMEs	9.29.2005	Too early to appraise the success of the measure as it has been started in 2003. It is managed effectively and the main concern is to raise the demand which is quite low.	**III.1**
Technology Management Programme	9.29.2005	Too early to appraise the success of the measure as it was only launched in April 2004	**III.3**

Consultancy Support for SMEs	9.29.2005	The measure is managed effectively and there is demand by the SMEs. However, not having a systematic monitoring and evaluation mechanism makes it difficult to appraise the effects and outcomes of the measure and to improve it	**III.3**
General Training Programmes and Training Support	9.29.2005	The measure is managed effectively and there is demand by the SMEs. However, not having a systematic monitoring and evaluation mechanism makes it difficult to appraise the effects and outcomes of the measure and to improve it	**III.3**
Trade Mark Development Support	9.29.2005	Too early to appraise the success of the measure as it was only started in 2003. It is managed effectively and the main concern is to raise the demand which is quite low	**III.3**
Strengthening Metrology Services	9.29.2005	**see table 4.3.0 - Title "Technology Development Project Support"**	**III.4**
Restructuring R&D Institutions	9.29.2005	**see table 4.3.0 - Title "Technology Development Project Support"**	**III.4**
University-Industry Joint Research Programme (USAMP)	9.29.2005	The main problem faced in implementation of the measure is the lack of strategy and long-term commitment by the universities to co-operate with the industry. On the other hand, there are also problems in bringing the industrial companies together to establish a centre for carrying out joint R&D projects with universities, as they do not open for co-operation with the others due to their conservative structures. On the other hand the measure has been very important to demonstrate success stories on university-industry collaboration	**III.6**
Machinery/Equipment Support for Common Use by SMEs	9.29.2005	Since inter-firm cooperation has been difficult for Turkish business sector due to their conservative structures as family-owned and owner-managed companies, the measure has not been quite successful.	**III.6**
Bartın Regional Development Project	9.29.2005	Too early to appraise the success of the measure as it was only started in 2003.	**III.6**

Figure 4.2.6: Main Measurement IV. "Promote and sustain the creation and growth of innovative enterprises"

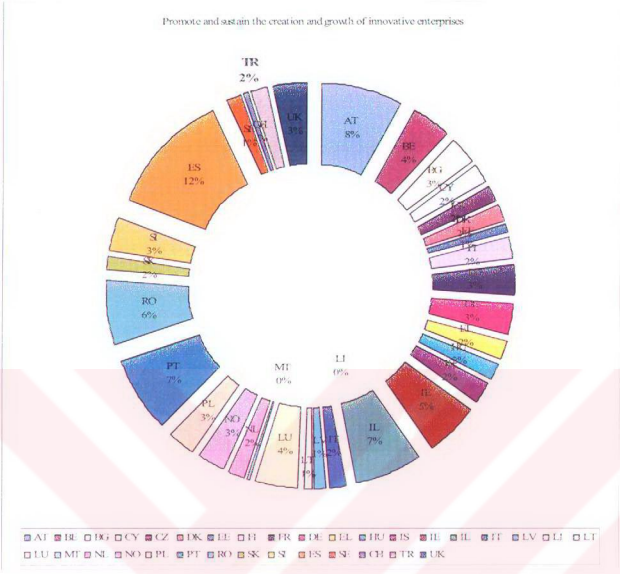
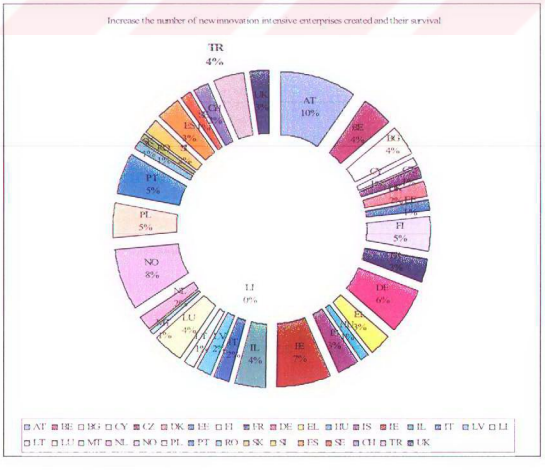


Figure 4.2.7: Sub-policy IV.1 "Increase the number of new innovation intensive enterprises created and their survival"



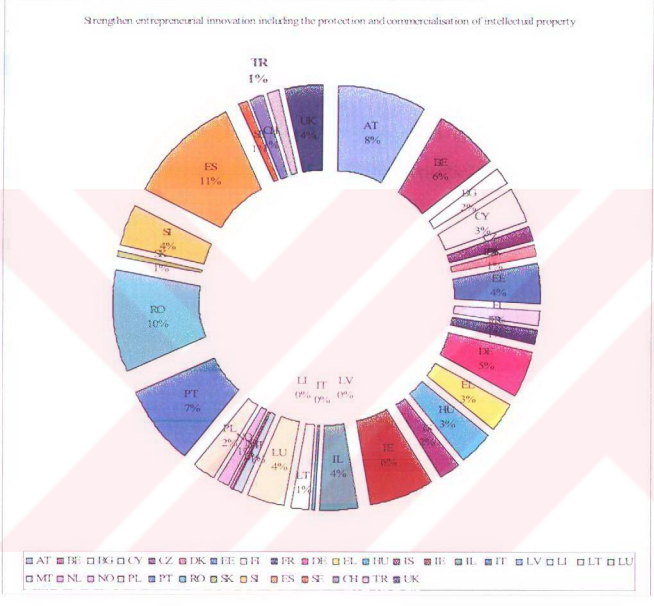
Turkey's contribution to sub-policy IV.1 is with 6 titles with 4% in EU (see figure 4.2.6) and evaluated with 8 titles under main-policy IV (see in table 4.2.2).

Table 4.2.2: Turkey's evaluation regarding main-policy IV given with sub-policies

Title	Last Update	Evaluation/Evidence/Success of the Measure	Sub-Policy
Establishment of Technology Development Centres (TEKMERs)	9.29.2005	In general, TEKMERs are quite successful in creation and development of new-technology based firms and university spin-offs. For example, 80% of the tenants of METU-KOSGEB TEKMER (www.tekmer.gov.tr/) are new companies and 40% of these companies are university spin-offs. On the other hand, their success mainly depends on the effectiveness of the centre management and that of the cooperation between the industry and university. Lacking of a systematic monitoring and evaluation mechanism is considered as one of the major weaknesses that hampers improvement of the measure	**IV.1 IV.2**
Young Entrepreneur Development Programme	9.29.2005	Demand for the measure is insufficient since entrepreneurship is perceived as a risk by university students. Not having a systematic monitoring and evaluation mechanism makes it difficult to appraise the effects and outcomes of the measure and to improve it.	**IV.1**
Privatization Social Support Project	9.29.2005	Demand for the measure is insufficient due to perceived risk of entrepreneurship. There is one Business Development Centre established under the measure. On the other hand, "Small Business Start-up Consultancy Support" has been relatively successful where 40 businesses were started up and 120 jobs were created by mid-2004	**IV.1**
TTGV Girişim fund (VC fund)	9.29.2005	Too early to appraise the success of the measure as it was only announced in June 2004	**IV.1**
New Entrepreneur Support	9.29.2005	In 2003, 5 entrepreneurs in 3 regions were supported under the measure. As noted by KOSGEB, the existing and potential beneficiaries of the programme find it difficult to provide collaterals asked for the loan part of the support.	**IV.1**
Technopreneurship Competition	4.14.2005	Too early to appraise the success of the measure as it was only launched in May 2005	**IV.1**

Support for establishment of technology parks (Law on Technology Development Zones)	9.29.2005	**see table 4.3.0**	**IV.2**

Figure 4.2.8: Main Measurement V. "Strengthen entrepreneurial innovation including the protection and commercialization of intellectual property"



Turkey's participation to the main-policy V is the poorest with 1% across Europe. The evaluation of European Commission for titles regarding sub-policies is as follows:

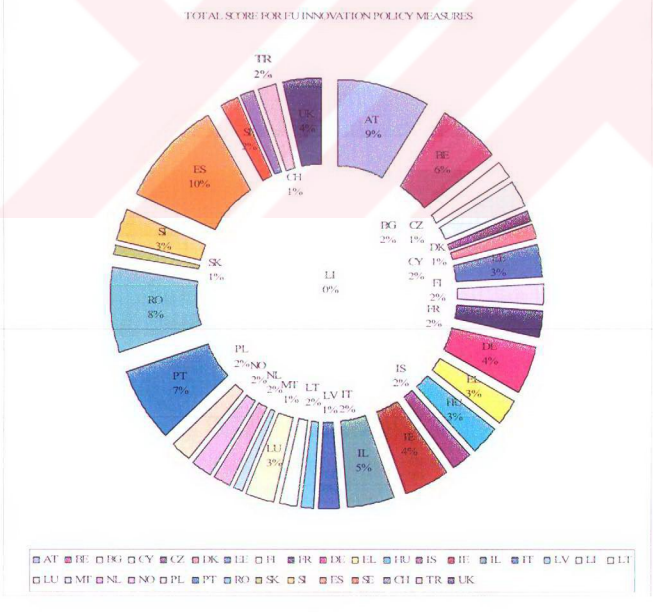
Table 4.2.3: Turkey's evaluation regarding main-policy IV given with sub-policies

Title	Last Update	Evaluation/Evidence/Success of the Measure	Sub-Policy
Technology Management Programme	9.29.2005	Too early to appraise the success of the measure as it was only launched in April 2004	V.1

Machinery/Equipment Support for Common Use by SMEs	9.29.2005	Since inter-firm cooperation has been difficult for Turkish business sector due to their conservative structures as family-owned and owner-managed companies, the measure has not been quite successful	**V.1**
Trade Mark Development Support	9.29.2005	**see table 4.3.1**	**V.2**
Support for Patent, Useful Model and Industrial Design	9.29.2005	There is low demand by SMEs for the measure mainly because of lack of awareness on intellectual property rights. It requires supportive efforts to leverage the demand by training and education SMEs on IPR	**V.3**
Strengthening Industrial Property Rights Services	9.29.2005	**see table 4.3.0 - Title "Technology Development Project Support"**	**V.3**

In overall, Turkey' performance is 2% in EU for innovation policy measures regarding the quantity of actions (see figure 4.3.8).

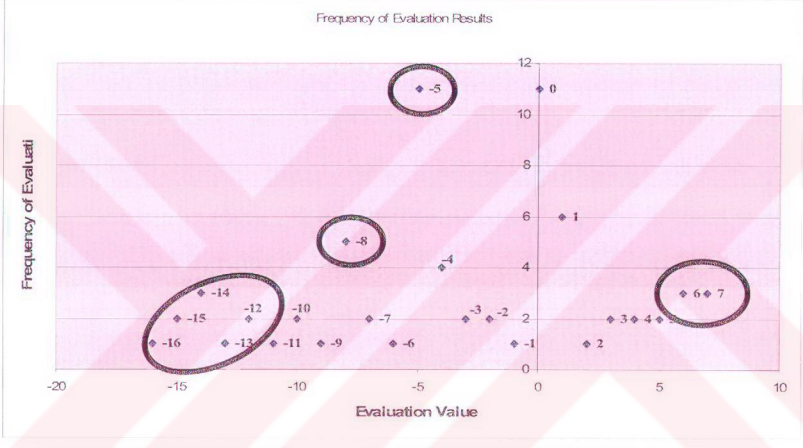
Figure 4.2.9: Overall Score for EU Innovation Policy Measures in quantity



The overall score reveals the performance by Turkey's number of actions regarding innovation policies. Above, in the given tables, the evaluations of the actions/titles have been exhibited.

The overall look to Turkey's performance regarding the frequencies of evaluation results is given in figure 4.2.10.

Figure 4.2.10: Turkey's innovation performance regarding the evaluations of EU.



Evaluation Code	Evaluation	Frequency	Magnitude
7	Contribution of private sector is high due to strong tax incentives.	3	POSITIVE
6	Contribution of universities is high.	3	
5	Commercial Success Rate of supported projects is high.	2	
4	Successful in creation and development due to effective center management, co-operation between industry and university.	2	
3	R&D Support measures have positive impact.	2	
2	Support programme, is relatively successful.	1	
1	Effective in management and/or coordination.	6	

0	Too early to appraise	11	NEUTRAL
-1	Demand is low.	1	NEGATIVE
-2	Demand is low due to SMEs not having separate R&D departments.	2	
-3	Regional needs are not considered.	2	
-4	Majority of firms think they do not need these services.	4	
-5	Lack of monitoring system, clearly defined indicators and evaluation performance to prove success.	11	
-6	Training and education is required.	1	
-7	Project application forms should be simplified.	2	
-8	Majority of firms are not informed about the project.	5	
-9	Low demand due to lack of awareness on intellectual property rights.	1	
-10	Entrepreneurship is percieved risky by university students.	2	
-11	Beneficiaries found it difficult to provide collaterals asked for the loan part of the support.	1	
-12	Not successful for that the co-operation between firms is low due to conservative structured, family-owned and owner-managed companies.	2	
-13	The co-operation of firms with the universities is low due to their conservative structure.	1	
-14	The co-operation of universities with the industry is low	3	
-15	Contribution of SMEs is low due to lack of awareness on investment in R&D.	2	
-16	Contribution of private sector is low due to lack of awareness on investment in R&D.	1	

There are 6 activities which are managed or coordinated effectively. **Tax incentives** play role on the contribution of private sector; also in 3 activities the contribution of universities is high.

However, considering figure 4.2.10, negative comments for Turkey's actions are more distinct.

The evaluation "-8" with frequency 5 shows that "**Majority of firms are not informed about the project**." Also, if the most important negative evaluations "-12", "-13", "-14", "-15" and "-16" are collected in one group, the frequency of that group will be "9" and it can be said that there is an information and network bottle neck, in other words the most important problem is said to be; "**The lack of co-operation between firms, industry and university whereas there is a problem in the contribution of SMEs and private sector due to lack of awareness on investment on R&D**". The highest frequency with 11 is with code "-5", therefore another most considerable problem is; "**Lack of monitoring system, clearly defined indicators and evaluation performance to prove success.**" The most important positive evaluations with high frequencies for Turkey's programs are with codes "6" and "7", therefore it can be said; "**Contribution of private sector is high due to strong tax incentives as well as contribution of universities is high too**".

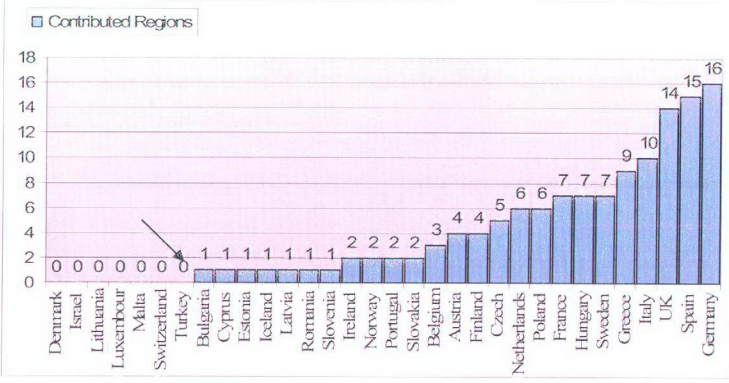
Finally, a statistical quantitative rank can be computed between the negative and positive evaluations. The positive evaluation frequency sum is 19, negative evaluation frequency sum is 41, and the neutral evaluation frequency (0) is 11 therefore it can be said that; "**Turkey's strategic innovation actions have mostly problems than having good results.**"

4.3 Contribution to IRE network

IRE network is the joint platform for collaboration and exchange of experience for regions that are developing or implementing regional innovation strategies and schemes (http://www.innovating-regions.org/network/presentation/index.cfm). 33 member and candidate countries of Europe are included in this network. The contribution of countries and the contribution of regions are ranked in figure 4.3.0:

To join IRE network an 'awarded Regional Innovation Strategy project' with co-funding from the European Commission must be implemented by the region. Regions that wish to become members of the IRE network should apply to the European Commission.

Figure 4.3.0: Ranking of the contribution of European countries to IRE



As seen in Figure 4.3.0, Turkey is one of the countries that have no regional or nation-wide participation to IRE Network.

4.4 Internet usage, prices and performance

Innovation process is increasingly dependent on information and communication technologies (ICT). The capacities in producing ICT and related services represent potential advantage in using it. Therefore the internet performance in Turkey will be examined here as internet is the main utility of ICT.

Regarding the internet hosts (number of internet hosts reflects the quality and capacity of internet, higher the hosts, faster and more stable internet will be) in 1995-2000, Turkey is the worst in Europe but prices seem reasonable (see Appendix 11). The internet hosts were only 3.3, while there was 159.1 in Finland and 234.2 in USA.

Despite the prices of internet which seem at the average level when compared to other countries; internet host insufficiency caused a poor capacity for internet in years 1995-2000. But, Türk Telekom A.Ş. (the governmental telecommunication corporation of Turkey) made a progress after 2000 and lowered the prices of internet by offering ADSL (a faster internet access compared to dial-up connection, the penetration is also high while it requires a telephone line and a modem).

Türk Telekom's second progress with the latest tariffs stated in November 2005 (table 4.4.4), still points a digital divide. The divide is distinctive even if we consider Per Capita Gross National Income rates according to Power Purchasing Parity (the GNI in 2002 was 2.5 times lower than 'GNI according to PPP' in 2002). In UK an ADSL user will pay 0.75% of his/her salary while an ADSL user in Turkey had to pay 12.9% for an unlimited 512K connection (this is a poor connection speed for ADSL in most of the developed countries).

Table 4.4.4: Türk Telekom A.Ş. – ADSL Prices with Per capita gross national product and national income

COUNTRY	SPEED	CAP	PRICE/mo	FREE	% of the GNI
Turkey					
512/128		3GB	**29YTL (21$)**	-	3.7%
512/128		none	**99YTL (72$)**	-	12.9%
1024/256		none	**168YTL (122$)**	-	21.9%
2048/512		none	**268YTL(195$)**	-	35.1%

Therefore, a 3GB limited 512/128K connection is promoted.

5. CONCLUSIONS

In this section of the study, summary, results and discussion of the findings will be presented.

5.1 Summary, result and interpretations

The purpose of this study is to research European innovation and entrepreneurship strategies and their implications for Turkey. To reach that objective, qualitative methods are used. First, a review of the literature was held for the related subjects. Then in data analysis, Turkey's position in "TrendCharts-Innovation Policy Measures", the IRE network and internet usage were revealed.

In literature review, it was stated that entrepreneurship is an abstract term. Measuring entrepreneurship is hard and building an entrepreneurial culture requires patience. SMEs and entrepreneurship are also separate forms. Yet, as we cannot count entrepreneurs, SMEs are the measurement scale by quantity for entrepreneurs. There are more SME employees than there are large enterprise employees both in Europe and in Turkey. Also most jobs were created by micro-enterprises in Europe between 1988 and 2001. On the other hand, picturing the unemployment status of Europe and Turkey we stated that in Europe there is a shortage in IT skilled labor and especially in ICT technicians. Furthermore, we already pointed the importance of the entrepreneurial and innovative policy and actions for closing the gap by supply and demand of unemployed. By that means, the mobility of workers is a related term with unemployment and innovation strategies. On the other hand the search for this relation is excluded. The house-working women are also significant as they consist half of the unemployed in Turkey. The house-working women might join the work force with educational programmes while there are special stimulating activities for minorities, woman and young entrepreneurs in Europe.

Literature review covered entrepreneurship, intrapreneurship, social entrepreneurship, knowledge-based economy, network approach and a section about producing entrepreneurs. Also innovation was explained with the works of Schumpeter and European Commission's definitions.

In data analysis section of the study, Turkey's contribution and the evaluation of EU for Turkey is analyzed using TrendCharts data. The distinctive findings and problems for Turkey's innovative and entrepreneurial actions/strategies are listed as follows;

- The lack of monitoring system, clearly defined indicators, and evaluation performance to prove success.
- The majority of firms were not informed about the projects
- The preconception of the firms about the uses of programmes and lack of information transferred to firms about the programmes and activities.
- Conservative structure of firms, family-owned and owner-managed companies which cause a low co-operation level between universities, industry and firms.
- There is a lack of co-operation between firms, industry and university whereas there is a problem in the contribution of SMEs and private sector due to lack of awareness on investment on R&D.
- "Contribution of private sector is high due to strong tax incentives as well as contribution of universities is high too".
- With some exceptions, like tax incentive's success, Turkey's innovative and entrepreneurial actions are said to be not successful, and the reasons for failure are heterogeneous. Turkey's strategic innovation actions have mostly problems than having good results.
- The number of activities is not sufficient regarding the overall score for EU Innovation Policy Measures, which is 2%.
- There are many relatively new activities that are not evaluated by EU.

Secondly, it is observed that Turkey has not contributed to the IRE network, but the contribution of other European member and candidates by the contribution of regions was given for comparison.

Lastly, the following can be stated for ADSL internet usage, prices and performance in Turkey;

- The internet performance is not at satisfactory levels compared to European countries.

- Prices are still high, considering an individual entrepreneur or a micro enterprise.
- Promotion of a 3GB limited connection might refer to insufficient capacity of hosts.

5.2 Future estimations

To get ready for FP7, there should be a wider and intensive campaign to inform industry and public, as innovative entrepreneurs can be found everywhere. Using the tools like mass media and Public Relations (PR) professionals, potential entrepreneurs who haven't contributed in FP6 should be persuaded to join in FP7. The researchers must be stimulated to join the programme, but industry's low contribution rate should also be increased.

As it was stated by Tübitak, the "low-success" of Turkey's low contribution rate to FP6 was based on insufficiency and inexperience of researchers. Therefore, the following should be considered for FP7 in short term:

- Start a nation-wide promotion campaign for FP7 before 2007. Campaign should be coordinated by professionals. The main object should be; stimulating innovation oriented entrepreneurs.
- Campaign should include very simplified training for topics such as "How to apply FP7?" since industry's low contribution to FP6 is highly related with the complications of the programmes (Z. Akgül, Euro Info Center, personal communication, 2006).
- Feedback gained from FP6 should be shared in the campaign. Build a database and share it on web.
- Support for employers that develop skills of employees, and promote intrapreneurship and framework programmes
- Increase the number of full-time researchers by giving awards and scholarship for researching abroad.

And also the following should be considered in advance, for the mid and long term;

- For evaluations, the performance indicators for innovation and entrepreneurship should be clearly defined

- 'Collaboration culture' should be fostered. Conservative structure of firms should be transformed to a more dynamic, collaborative structure with stimulators like tax incentives.
- Public, industry and universities should be included in networks. Contribute regions to IRE network.
- As a long term goal; new education models should be searched. Reduce the distance between school and business-life for university students.
- Internet mainframe capacity and service quality should be developed; prices for unlimited connections should decrease.
- Every student with no computer should have at least the "green machine", which is a laptop costing 100 dollars. (http://news.bbc.co.uk/1/hi/technology/4445060.stm)
- The barriers for starting-up a business should be destroyed. An enterprise must be ready by 1 or 2 days.
- The unemployed house-working women and the unemployed youth should be included in the work-force to increase the entrepreneurial base.

APPENDICES

APPENDIX 1

The Budget of FP6

	EUR million
EC Framework Programme	**16 270**
1. Focusing and integrating Community research	13 345
1.1 Thematic priorities[2]	11 285
1.1.1 Life sciences, genomics and biotechnology for health	2 255
1.1.1.1 Advanced genomics and its applications for health	*1 100*
1.1.1.2 Combating major diseases	*1 155*
1.1.2 Information society technologies[3]	3 625
1.1.3 Nanotechnologies and nanosciences, knowledge-based multifunctional materials and new production processes and devices	1 300
1.1.4 Aeronautics and space	1 075
1.1.5 Food quality and safety	685
1.1.6 Sustainable development, global change and ecosystems	2 120
1.1.6.1 Sustainable energy systems	*810*
1.1.6.2 Sustainable surface transport	*610*
1.1.6.3 Global change and ecosystems	*700*
1.1.7 Citizens and governance in a knowledge-based society	225
1.2 Specific activities covering a wider field of research	1 300
1.2.1 Policy support and anticipating scientific and technological needs	555
1.2.2 Horizontal research activities involving SMEs	430
1.2.3 Specific measures in support of international co-operation	315
1.3 Non-nuclear activities of the Joint Research Centre	760
2. Structuring the European Research Area	2 605
2.1 Research and innovation	290
2.2 Human resources and mobility	1 580
2.3 Research infrastructures[4]	655
2.4 Science and society	80
3. Strengthening the foundations of the European Research Area	320
3.1 Support for the co-ordination of activities	270
3.2 Support for the coherent development of policies	50
Euratom Framework Programme[5]	**1 230**
1. Priority thematic areas of research	890
1.1 Controlled thermonuclear fusion	*750*
1.2 Management of radioactive waste	*90*
1.3 Radiation protection	*50*
2. Other activities in the field of nuclear technology and safety	50
3. Activities of the Joint Research Centre	290
Total	**17 500**

(Source: http://fp6.cordis.lu)

APPENDIX 2

Participation and Funding of FP6

Participant's country of establishment	**Participation**	**Financing**
European Union member states (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Portugal, Spain, Sweden, United Kingdom), Joint Research Centre	No restriction	No restriction
Associated candidate countries (Association to FP6 in force: Estonia (not Euratom FP6), Hungary, Latvia, Lithuania (not Euratom FP6), Poland (not Euratom FP6), Romania, Slovenia; Association not yet in force: Bulgaria, Czech Republic, Cyprus, Malta, Slovakia, **Turkey** (Turkey will enter into force when the countries inform the Commission that their internal adoption procedures are finalized))	No restriction	No restriction
Other associated candidate countries (foreseeable (association to FP6 is not yet in force for any of these countries, final list may change): Iceland, Israel, Liechtenstein, Norway and Switzerland)	No restriction	No restriction
International organizations of European interest	No restriction	No restriction
Russia, new independent states, Mediterranean countries, Western	No restriction over and above the minimum	Within the limits of the budget available for

Balkans, developing countries	consortium composition	specific measures in support of international cooperation
Third countries having a cooperation agreement (Argentina, Australia, Brazil, Canada, China, Chile, India, Japan, Kazakhstan, Russia South-Africa, Ukraine, USA)	No restriction over and above the minimum consortium composition	If community contribution is necessary and foreseen by the work programme
Other third countries	If participation is foreseen or if it is necessary for carrying out the project	If community contribution is foreseen by the work programme or if it is essential for carrying out the project
Other international organizations	No restriction over and above the minimum consortium composition	If community contribution is foreseen in the work programme or if it is essential for carrying out the project

(Source: European commission, 2002)

APPENDIX 3

10 Questions for the European Agenda on Entrepreneurship

1.	What should be the key objectives for an agenda for entrepreneurship in the European Union and how should these relate to other political ambitions? How can we build a model for entrepreneurship in an enlarged Europe?
2.	How can we improve the availability of finance (tax measures, public-private partnerships, stronger balance sheets, guarantees) and what alternatives to bank loans should be promoted (business angel finance, leasing, factoring and micro-loans from non-bank lenders)? How can entrepreneurs be supported in obtaining external finance?
3.	Which factors most hinder growth ((lack of) mutual recognition and EU rules or their (non-)implementation at national level, national tax provisions or the situation on the labour markets)? What actions are best suited to supporting growth and internationalization (trade missions, market analyses, clustering and networking, information and consultancy services)?
4.	To ensure high quality businesses, what training and support should be offered for a business start-up (basic training - compulsory or voluntary, incubators, mentoring) and business development (networks, courses, mentoring, distance learning, e.g. e-learning)? Should there be services tailored to the needs of specific groups (women, ethnic minorities, unemployed or socially disadvantaged people) or businesses (knowledge-based activities)? Should the quality of delivery of support services be improved (using ICTs, professional standards)?
5.	Are the obstacles and incentives for business development and growth in the European Union similar for entrepreneurs in the Candidate Countries, and does the forthcoming enlargement call for specific measures in the Candidate Countries?
6.	What can EU Member States do to make the balance between risk and reward more favorable to promoting entrepreneurship (reducing the negative effects of bankruptcy, making more social benefits available for entrepreneurs, reducing the tax burden either in terms of administration or rates)?
7.	How might more prospective entrepreneurs be encouraged to consider taking over rather than starting a new firm (buyers and sellers databases or marketplaces, special training for family-owned businesses, management or employee buy-outs)?

8.	How can spin-offs be made more attractive (management buy-outs, showcasing, specialized advice, tax or other provisions for employees and their employers whilst starting a business)?
9.	How can education support the development of the awareness and skills necessary for developing an entrepreneurial mindset and skills (entrepreneurship training as part of a school's curriculum, getting entrepreneurs into the classroom, apprenticeships for students to work with experienced entrepreneurs, more entrepreneurial training in universities, more MBA programmes, matching entrepreneurial training with public research programmes)?
10.	What could business organisations, the media and public authorities do to promote entrepreneurship (role models, media campaigns, open door days of firms, award schemes for entrepreneurs) and at what level (European, national, regional or local)?

(Source: Commission of the European Communities)

APPENDIX 4

Two contested entrepreneurial city strategies for Hong Kong in 1997: services versus manufacturing

	"The Hong Kong Advantage"	*"Made by Hong Kong"*
Object(s) of entrepreneurial intervention	Decline of manufacturing: promote trade, finance, and high technology industry	From "Made by Hong Kong" to "Made in Hong Kong"
City identity	Business/service/finance center Information hub Logistic hub (Metropolitan economy)	Hi-tech manufacturing center brand-name production original design manufacture
Innovative practices		
Purpose	Manage the flows	Fix capital/technology in place
New scales of activities	Global-regional-local (re-)articulation	Regional-local technology diffusion (with hints of global)
New temporal horizons	Re-articulating factory pipeline/logistic time Importance of electronic time	Research and training time for higher-value products Development of electronic time
New governance capacities	Dynamic clusters and linkages Property, construction, finance and business	R&D base
	Input to all industries location (promixity to China) infrastructure (airport port, telecom) capital and finance capital goods and components human resources regional and international specialists	Input to technology government fundings private R&D investment incentives for research information services and technologies
Form of competitiveness	Space-based form of trading competitiveness	Place-based form of industrial competitiveness
Fraction(s) of capital	Commercial and financial capital (and its associated networks)	Industrial capital (and its associated networks)

(J.R. Logan, 2002)

APPENDIX 5

Abbreviations for European countries

AT	AUSTRIA
BE	BELGIUM
BG	BULGARIA
CY	CYPRUS
CZ	CZECH REPUBLIC
DK	DENMARK
EE	ESTONIA
FI	FINLAND
FR	FRANCE
DE	GERMANY
EL	GREECE
HU	HUNGARY
IS	ICELAND
IE	IRELAND
IT	ITALY
LV	LATVIA
LI	LIECHTENSTEIN
LT	LITHUANIA
LU	LUXEMBOURG
MT	MALTA
NL	NETHERLANDS
NO	NORWAY
PL	POLAND
PT	PORTUGAL
RO	ROMANIA
SK	SLOVAK REPUBLIC
SI	SLOVENIA
ES	SPAIN
SE	SWEDEN
CH	SWITZERLAND
TR	TURKEY
UK	UNITED KINGDOM

APPENDIX 6

Innovation policy measures – typology of objectives

AT	BE	BG	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IS	IE	IL	IT	LV	LI	LT	LU	MT	NL	NO	PL	PT	RO	SK	SI	ES	SE	CH	TR	UK
I. Improve innovation governance and strategic intelligence for policy-making																																
I.1. Development of a strategic medium-to-long term vision of innovation challenges and innovation potential																																
6	1	2	3	0	1	3	0	0	6	2	2	1	0	0	0	2	0	4	2	0	1	0	1	2	10	0	2	4	1	0	0	1
I.2. Increase understanding of the nature of drivers and barriers of innovation activity in enterprises with a view to informing																																
6	1	1	0	0	0	1	2	0	1	2	0	0	0	0	0	0	0	0	3	0	0	2	0	0	3	0	0	4	1	0	1	0
I.3. Improve the effectiveness of the policy-cycle in order to increase the impact of public intervention activity and outputs in																																
2	0	1	0	0	1	4	3	0	0	1	0	2	2	0	1	1	0	2	1	0	0	1	0	2	2	0	1	9	4	1	0	3
I.4. Encourage mutual policy learning and networking between policy-making at regional, national and EU levels																																
0	0	1	0	0	0	3	1	0	0	1	0	1	0	0	0	0	0	0	3	0	1	0	0	0	10	0	0	3	0	1	0	0
AT	BE	BG	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IS	IE	IL	IT	LV	LI	LT	LU	MT	NL	NO	PL	PT	RO	SK	SI	ES	SE	CH	TR	UK
II. Foster an innovation friendly environment																																
II.1. Enhancing the role of public procurement and standardisation as drivers of new innovative products services by enterprises																																
0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	3	0	0	0	1
II.2. Reducing the administrative and transaction costs for enterprises in fulfilling their legal, administrative, fiscal, etc.																																
1	1	0	0	0	0	5	1	0	1	0	0	0	0	3	1	1	0	0	0	0	0	0	1	6	4	0	0	1	1	0	1	0
II.3. Maximising the positive influence of new legislation or regulations on innovation activity in enterprises																																
0	0	0	2	0	0	1	0	0	2	0	2	0	0	2	2	0	0	1	1	0	0	0	0	1	9	0	0	0	0	1	0	2
II.4. Increase rates of expenditure on research and technological innovation in enterprises																																
11	17	5	2	5	4	5	2	5	14	5	8	0	10	7	10	4	0	0	6	4	2	3	4	8	11	1	8	27	1	1	8	9
II.5. Encourage the uptake of strategic technologies, notably ICT																																
11	6	1	5	0	0	4	1	1	5	4	0	1	4	5	10	1	0	2	1	0	3	1	1	12	12	1	5	9	2	5	2	0
AT	BE	BG	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IS	IE	IL	IT	LV	LI	LT	LU	MT	NL	NO	PL	PT	RO	SK	SI	ES	SE	CH	TR	UK
III. Encourage technology and knowledge transfer to enterprises and development of innovation poles and																																
III.1. Facilitate access of enterprises to skilled personnel																																
6	11	3	2	0	0	2	0	6	2	4	5	1	5	3	1	0	0	2	1	5	3	0	0	6	3	0	4	6	1	1	2	6
III.2. Facilitate the acquisition and transfer of knowledge ad technologies to enterprises, encouraging in particular cross-border																																
19	10	1	3	0	5	4	5	6	10	2	4	4	9	5	1	0	0	2	0	2	3	1	1	14	12	0	3	22	2	1	0	7
III.3. Increase the availability, range and quality of specialised services to enterprises in order to increase the effectiveness of																																
6	13	1	4	1	1	5	4	4	3	7	2	1	4	7	1	0	0	4	7	0	1	1	9	8	9	1	4	11	2	4	4	5
III.4. Increase the availability of innovative infrastructures to facilitate knowledge exchange and product/service development																																
2	0	0	4	1	1	2	0	1	0	0	2	0	0	7	0	1	0	4	0	0	1	0	1	5	4	0	0	2	2	0	2	1
III.5. Ensuring that the future skills base in the region/sector/country will correspond to the innovation needs of enterprises																																
15	1	1	2	0	0	5	1	5	2	4	5	8	3	5	0	4	0	4	0	0	2	3	0	5	3	1	3	5	3	1	0	6
III.6. Facilitate the development of collaboration between enterprises and other actors with a view to joint innovation																																
29	19	0	3	2	6	3	5	6	13	3	10	4	2	6	3	3	0	3	1	3	6	9	4	9	14	3	6	8	5	4	3	7
AT	BE	BG	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IS	IE	IL	IT	LV	LI	LT	LU	MT	NL	NO	PL	PT	RO	SK	SI	ES	SE	CH	TR	UK
IV. Promote and sustain the creation and growth of innovative enterprises																																
IV.1. Increase the number of new innovation intensive enterprises created and their survival																																
15	6	6	2	2	3	2	7	5	9	4	2	4	11	6	3	3	0	2	6	1	3	12	7	8	2	1	3	5	2	3	6	4
IV.2. Provide adequate infrastructure to new technology based firms to facilitate their survival and growth																																
10	2	6	1	1	1	1	2	1	1	1	0	5	8	7	4	2	0	2	4	0	1	2	4	9	2	4	7	17	1	0	2	2
IV.3. Favouring the entry of innovative enterprises and business models to sectoral, regional or national markets																																
4	6	0	0	5	0	0	0	1	0	0	2	2	5	3	0	0	0	0	2	0	0	0	0	8	13	0	1	1	1	0	0	1
IV.4. Increase the availability of private sector innovation financing to enterprises																																
6	7	1	3	1	2	1	2	6	5	5	0	1	2	7	2	1	0	0	5	0	3	1	2	7	3	2	2	21	2	0	0	6
IV.5. Optimising the legal/regulatory framework for the development of private innovation financing																																
4	0	1	2	0	2	0	0	2	1	0	0	0	1	6	0	0	0	0	5	0	2	0	1	4	3	1	3	19	1	0	0	4
IV.6. Promote adequate support to enterprises aimed at new and developing markets																																
3	0	0	2	0	0	1	1	0	0	0	5	0	0	6	0	0	0	0	0	0	0	0	1	3	10	0	1	1	0	0	0	1
AT	BE	BG	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IS	IE	IL	IT	LV	LI	LT	LU	MT	NL	NO	PL	PT	RO	SK	SI	ES	SE	CH	TR	UK
V. Strengthen entrepreneurial innovation including the protection and commercialisation of intellectual																																
V.1. Upgrading innovation related skills and diffusing new technologies in enterprises																																
13	10	2	7	2	1	6	3	4	3	7	6	4	8	5	0	1	0	4	4	0	1	3	1	11	16	3	4	13	1	3	2	5
V.2. Increase rates of non-technological innovation in enterprises																																
9	1	0	3	1	0	3	0	0	0	0	1	0	4	1	0	0	0	1	3	0	0	1	4	6	7	0	2	4	0	1	1	2
V.3. Favouring the protection and optimising the exploitation of intellectual property as a driver for innovation																																
3	7	0	1	0	1	3	0	1	5	1	1	0	1	3	0	0	0	1	2	0	0	0	0	4	3	0	1	1	0	1	2	3
V.4. Increase the rate of commercialisation/marketing of the results of innovation activity in enterprises																																
10	7	5	3	2	3	4	3	0	11	3	6	4	12	7	0	0	0	0	6	4	0	1	4	10	14	0	8	26	3	0	0	5

(Source: http://trendchart.cordis.lu)

APPENDIX 7

Sub-policy evaluation criteria code matching for Turkey

Sub-Policy	Evaluation Code		
I.2	0	-5	
II.2	1		
II.4	6	7	-5
II.4	3	5	-7
II.4	3	5	-7
II.4	-8	-8	-4
II.4	0		
II.4	-16	-3	-3
II.4	-5	-15	-2
II.4	-2		
II.5	-5	1	
II.5	0		
III.1	6	7	-5
III.1	1	0	-14
III.3	0		
III.3	1	-5	
III.3	1	-5	
III.3	0	-15	-1
III.4	-8	-4	
III.4	-8	-4	
III.6	-14	-13	
III.6	-12		
III.6	0		
IV.1	-5	4	
IV.1	-10	-5	
IV.1	-10	2	
IV.1	0		
IV.1	-11		
IV.1	0		
IV.2	6	7	-5
IV.2	-5	4	
V.1	0		
V.1	-12		
V.2	0	1	-14
V.3	-9	-6	
V.3	-8	-4	

APPENDIX 8

Frequencies of evaluation results

Evaluation Code	Frequency of Evaluations
7	3
6	3
5	2
4	2
3	2
2	1
1	6
0	11
-1	1
-2	2
-3	2
-4	4
-5	11
-6	1
-7	2
-8	5
-9	1
-10	2
-11	1
-12	2
-13	1
-14	3
-15	2
-16	1

APPENDIX 9

Number of contributed regions in each country which took strategic actions in IRE network

Contributed Country	Contributed Regions
Denmark	0
Israel	0
Lithuania	0
Luxembourg	0
Malta	0
Switzerland	0
Turkey	0
Bulgaria	1
Cyprus	1
Estonia	1
Iceland	1
Latvia	1
Romania	1
Slovenia	1
Ireland	2
Norway	2

Contributed Country	Contributed Regions
Portugal	2
Slovakia	2
Belgium	3
Austria	4
Finland	4
Czech Republic	5
Netherlands	6
Poland	6
France	7
Hungary	7
Sweden	7
Greece	9
Italy	10
United Kingdom	14
Spain	15
Germany	16

APPENDIX 10

Internet Usage for EU Members and Candidate Countries

EUROPEAN UNION	Population (2005 Est.)	Internet Users	Penetration (% Population)	Usage (% in EU)	User Growth (2000-2005)
Austria	8,163,782	4,650,000	57.0 %	2.0 %	121.4 %
Belgium	10,443,012	5,100,000	48.8 %	2.2 %	155.0 %
Cyprus	950,947	298	31.3 %	0.1 %	148.3 %
Czech Republic	10,230,271	4,800,000	46.9 %	2.1 %	380.0 %
Denmark	5,411,596	3,762,500	69.5 %	1.7 %	92.9 %
Estonia	1,344,840	670	49.8 %	0.3 %	82.8 %
Finland	5,246,920	3,286,000	62.6 %	1.4 %	70.5 %
France	60,619,718	25,614,899	42.3 %	11.3 %	201.4 %
Germany	82.726,19	47,127,725	57.0 %	20.8 %	96.4 %
Greece	11,212,468	3,800,000	33.9 %	1.7 %	280.0 %
Hungary	10,083,477	3,050,000	30.2 %	1.3 %	326.6 %
Ireland	4,027,303	2,060,000	51.2 %	0.9 %	162.8 %
Italy	58,608,565	28,870,000	49.3 %	12.7 %	118.7 %
Latvia	2,306,489	810	35.1 %	0.4 %	440.0 %
Lithuania	3,430,836	968	28.2 %	0.4 %	330.2 %
Luxembourg	455,581	270,8	59.4 %	0.1 %	170.8 %
Malta	384,594	301	78.3 %	0.1 %	652.5 %
Netherlands	16,322,583	10,806,328	66.2 %	4.8 %	177.1 %
Poland	38,133,691	10,600,000	27.8 %	4.7 %	278.6 %
Portugal	10,463,170	6,090,000	58.2 %	2.7 %	143.6 %
Slovakia	5,379,455	2,276,000	42.3 %	1.0 %	250.2 %
Slovenia	1,956,916	950	48.5 %	0.4 %	216.7 %
Spain	43,435,136	16,129,731	37.1 %	7.1 %	199.4 %
Sweden	9,043,990	6,800,000	75.2 %	3.0 %	68.0 %
United Kingdom	59,889,407	37,800,000	63.1 %	16.7 %	145.5 %
European Union	**460,270,935**	**226,890,983**	**49.3 %**	**100.0 %**	**143.5 %**
Bulgaria	7,506,098	2,200,000	29.3 %	11.8 %	411.6 %

Croatia	4,459,137	1,303,000	29.2 %	7.0 %	551.5 %
Romania	21,377,426	4,940,000	23.1 %	26.5 %	517.5 %
Turkey	73,556,173	10,220,000	**13.9 %**	54.8 %	411.0 %
Total EU Candidate Countries	**106,898,834**	**18,663,000**	**17.5 %**	**100.0 %**	**444.1 %**

(Source: compiled from http://www.internetworldstats.com/stats4.htm)

APPENDIX 11

Internet Access prices and Internet host penetration per 1,000 inhabitants

Country	Average price for 20 hours of Internet access, 1995–2000 (U.S. $PPP)	Internet hosts
Australia	38,65	75,0
Austria	73,51	57,6
Belgium	72,84	39,7
Canada	29,93	127,2
Czech Republic	88,33	12,9
Denmark	54,15	72,5
Finland	30,30	159,1
France	54,06	19,2
Germany	64,59	31,7
Greece	58,41	13,0
Hungary	84,55	15,4
Iceland	32,71	130,8
Ireland	78,75	31,1
Italy	48,78	32,6
Japan	59,17	32,5
Korea	37,04	10,8
Luxembourg	80,61	30,5
Mexico	65,09	3,8
Netherlands	48,84	81,6
New Zealand	42,25	92,6
Norway	47,53	116,5
Poland	57,53	8,2
Portugal	66,75	13,4
Spain	78,32	15,7
Sweden	36,89	106,3
Switzerland	66,40	63,5

Turkey	**57,58**	**3,3**
United Kingdom	49,65	52,5
United States	31,71	234,2
OECD average	56,37	81,5

(Source: http://www.nsf.gov)

APPENDIX 12

ADSL Service Cost Comparison

COUNTRY	SPEED	CAP	PRICE/mo	FREE	% of the GNI
South Africa					
192/64			**R537**		37%
384/128			**R626**		42%
512/256		3GB	**R744**		51%
Japan					
1500/1500		none	R198 (¥3979)	modem	1.09%
47Mbit/5Mbit		15GB	R212 (¥4242)	modem	1.17%
100Mbit/100Mbit		none	R699 (¥7140)	modem	3.85%
UK					
512/256		none	R111 (£9.99)	-	0.75%
512/256		none	R313 (£27.99)	dialup	2.1%
512/256		15GB	R280 (£24.99)	dialup	1.88%
4000/400		none	R336 (£30)	dialup	2.25%
8000/400		500GB	R335 (£29.99)	-	2.25%
1024/512		none	R279 (£24.99)	connection	1.87%
512/256		none	R179 (£15.99)	connection	1.49%
Switzerland					
500/100		none	R245 ($39)	connection	1.17%
1000/200		none	R333 ($53)	connection	1.59%
2000/400		none	R415 ($66)	connection	1.98%
3000/800		none	R831 ($132)	connection	3.96%
Germany					
3072/384		2GB	R31 (€3.99)	connection	0.23%
3072/384		4GB	R54 (€6.99)	connection	0.40%
3072/384		8GB	R101 (€12.99)	connection	0.76%
1024/128		none	R233 (€29.99)	connection	1.75%
2048/384		none	R280 (€35.99)	connection	2.11%
3000/512		none	R358 (€45.99)	connection	2.70%

Canada					
5000/640		15GB	R209 ($44.95)	-	1.66%
10Mb/1Mb		30GB	R325 ($69.95)	-	2.58%
4000/768		none	R377 ($59.95)	installation kit	3.00%
USA					
768/128		none	R250 ($39.95)	installation kit	1.26%
1500/128		none	R314 ($49.95)	installation kit	1.59%
3000/128		none	R251 ($39.95)	-	1.27%
Egypt					
256/64		none	R151 (150L.E.)	-	20.69%
512/192		none	R251 (250L.E.)	-	34.40%
2048/512		none	R754 (750L.E.)	-	103.35%
India					
384/128		2GB	R137 (1000INR)	-	49.23%
512/256		5GB	R246 (1800INR)	-	88.40%
1024/512		10GB	R452 (3300INR)	-	162.44%
The Netherlands					
416/160		5GB	R234 (€29.95)	connection	1.69%
2240/416		AUP	R468 (€59.95)	connection	3.38%
4480/704		AUP	R623 (€59.95)	connection	4.51%
New Zealand					
512/256		none	R272 ($69.95)	-	3.26%
256/128		3GB	R194 ($49.95)	-	2.32%
Australia					
512/128		none	R303 ($69)	-	2.66%
1500/256		none	R655 ($149.95)	-	5.76%
512/256		none	R307 ($69.95)	SLA	2.70%
8000/1000		40GB	R347 ($79)	-	3.05%

(Source: compiled from http://www.worldbank.org/data/databytopic/GNIPC.pdf)

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