

**INVESTIGATION OF THE RELATIONS BETWEEN SMES
AND MAIN CONTRACTORS ON THE INNOVATION
MANAGEMENT AND INNOVATION POLICIES**

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**TEDARİKÇİ KOBİ'LER İLE BÜYÜK YÜKLENİCİ FİRMALAR
ARASINDAKİ İNOVASYON YÖNETİMİ VE İNOVASYON
POLİTİKALARI KONUSUNDA İLİŞKİLERİN İNCELENMESİ**

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ABBREVIATIONS

AWU	: Annual Work Unit
EEA	: European Economic Area (EEA)
EU	: European Union
FILAS	: Finanziaria Laziale di Sviluppo
GDP	: Gross Domestic Product
KOSGEB	: Turkish Republic's Industry and Commerce Ministry's Directory for Small and Medium Sized Industry's Support and Development
OECD	: Organisation for Economic Co-operation and Development
R&D	: Research and Development
SMB	: Small and Medium Business
SME	: Small and Medium Enterprise
TPP	: Technological Product and Process
TUBITAK	: The Scientific and Technological Research Council of Turkey
VAT	: Value Added Tax

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INVESTIGATION OF THE RELATIONS BETWEEN SMALL AND MEDIUM ENTREPRISES AND MAIN CONTRACTORS ON THE INNOVATION MANAGEMENT AND INNOVATION POLICIES

SUMMARY

In this study, innovation was investigated as one of the most popular topics of our century. After the research about the Innovation's place on the world and the interest of the companies to the innovation, Small and Medium Enterprises' works on the innovation was shown. As an addition to this, it is also investigated the known outcomes of innovation collaborations. At the end of the background research, four questions were stated:

Q1: Are main contractor companies in favor of cooperating with their suppliers for the product and process innovation?

Q2: Are Small and Medium Enterprises in favor of cooperating with their main contractors for the product and process innovation?

Q3: Are Small and Medium Enterprises well informed by the existence of innovation collaborations?

Q4: Can Small and Medium Enterprises benefit with innovation focused strategies while working together with other business partners?

After this step, two surveys were fastidiously prepared in order to reach several companies and on the level of main contractors, this aim was relatively reached. However, the interest of SMEs stayed even under the minimum level. That's why outcomes of the project stayed as the description of the current situation.

As a result, project became a valuable resource for the future researchers and a good basis for the possible research projects on this topic. Moreover, together with several good examples and analysis of the current situation, either SMEs, either main contractors can use the project in order to have an idea on the innovation.

TEDARİKÇİ KÜÇÜK VE ORTA BÜYÜKLÜKTEKİ İŞLETMELER İLE BÜYÜK YÜKLENİCİ FİRMALAR ARASINDAKİ İNOVASYON YÖNETİMİ VE İNOVASYON POLİTİKALARI KONUSUNDA İLİŞKİLERİN İNCELENMESİ

ÖZET

Bu çalışmada, öncelikle çağımızın en popüler konularından olan inovasyon üzerinde durulmuştur. İnovasyonun dünyadaki yeri ve firmaların buna ilgisi üzerine yapılan çalışmaların incelenmesi sonrası Küçük ve Orta Büyüklükteki İşletmelerin bu konuda yaptıkları çalışmalar ortaya konmuştur. Ayrıca inovasyon konusundaki ortak çalışmaların bilinen sonuçları da ortaya konmuştur. Buna göre, dört soru ortaya konmuştur:

S1: Ana yüklenici firmalar, tedarikçileri ile ortak ürün ve süreç inovasyonu yapma taraftarı mıdır?

S2: Küçük ve Orta Büyüklükteki İşletmeler, ana yüklenicileri ile ortak ürün ve süreç inovasyonu yapma taraftarı mıdır?

S3: Küçük ve Orta Büyüklükteki İşletmeler inovasyon platformlarının ve ağlarının varlığından haberdarlar mı?

S4: Küçük ve Orta Büyüklükteki İşletmelerin, diğer iş ortakları ile ortak çalışarak inovasyon odaklı stratejiler geliştirmesi, kendi yararlarına mıdır?

Daha sonrasında titizlikle hazırlanan iki anket çalışması ile çeşitli firmalara ulaşılmaya çalışılmıştır. Anket dağıtımı sonrası, firmalardan alınan cevaplar, ana yüklenici düzeyinde göreceli olarak başarılı olunmuştur. Ancak, KOBİ'lerin ilgisi minimum düzeyin de altında kaldığından istenilen sonuçlara ulaşılamamıştır. Bu nedenle de çalışma, mevcut durumun tanımlanması şeklinde sonuçlanmıştır.

Sonuç olarak, proje, gelecekteki araştırmacılar için düzgün bir kaynak ve de olası araştırma çalışmaları için sağlam bir başlangıç noktası olarak ortaya çıkmıştır. Ayrıca değişik örnekleri ve de mevcutun analizi ile de gerek Küçük ve Orta Büyüklükteki firmalara, gerekse ana yüklenici firmalara inovasyon konusunda bir fikir sahibi olabilmelerini sağlayacak bir çalışma olmuştur.

1 INTRODUCTION

Today, one of the most fashionable words in our society is the innovation. If a reader opens the newspapers, he or she can see the interviews on the “innovation revolution” in Toyota (Milliyet, 2007) or about creating a national innovation ecosystem (Milliyet, 2007b). More than this, from Businessweek to Financial Times, from TIME to Le Monde, every newspaper and magazine are publishing the news related innovation. Every businessman, every politician, every academician are talking about the possible innovation in their fields and also a total change in the mentality. They are calling this change innovation and they are all pushing to establish innovation policies in their fields.

For the management field, it is possible to describe two attitudes of the innovation policies which are the scientific and technological ones. Those policies are fairly based on the linear model of innovative process. (Rolfo and Calabrese, 2003) However, researches in the last decade showed us that technological part of the innovation policies became more important and turned into a true technological policy for companies and countries which influence the decision process of the industrial bodies. (Mowery, 1994)

Actually, the majority of the community idealizes some fashionable notion when they heard the word innovation or the expression innovation policy. The misunderstanding on that point is that innovation was presented as it is a scientific and technological development. However, the scale which the innovation covers as a notion is more than these fields because it has to have a big interaction with economical aspects of the innovated process or innovated product. (World Bank, 2007) That's why the policy concept of the innovation has to be taken in two ways; the relations of stakeholders of the innovation and the sustainability of the innovative product and process development.

Today, the globalization brings also the need of the innovation. It's widely accepted that the innovation in the products and in the processes is the key concept for the European Industry in order to compete with the other competitors. However,

sometimes, the case changes and the innovation becomes a cooperation way. The multinational companies are looking for a way to distribute the innovation processes they have to their different production centers. (Nicoletti, 2007)

Accordingly to the need of the innovation, in most of the developed countries and in the developing countries, there are laws to encourage Small and Medium Enterprises (SMEs) for joining to innovation groups or creating their own innovation systems. However, this is not enough for many cases. In the case of a developed country which is Italy, SMEs are having difficulties to reach current innovation. It is recommended to the policy makers to enlarge the understanding of innovation more than the improvement of machinery technologies (Rolfo and Calabrese, 2003). In the case of a developing country such as Turkey, thanks to the laws, the trend for innovation in SMEs are in a positive way. However it is still far from the developed countries related to the index of innovation on Europe in 2004. (Çalipınar and Baç, 2007)

Even if it is possible to create a connection between size and innovation, the results of the researches on the performance of innovation are indefinite or quite fuzzy. (Vossen, 1996) For this, the main reason is the insufficiency of the tools to measure the performance. (Kleinknecht and Reijnen, 1992) For SMEs, this measure is becoming more difficult because SMEs are quite different from each other and they have different environment and decision making process. Moreover, SMEs are “over conditioned by the type of industry and the presence of big buyers and suppliers”. (Quayle, 1998) On that matter, the question can be that how much SMEs are influenced by their big buyers for their innovation policies and the R&D tasks. Furthermore, the process innovation in SMEs is still unknown from many other industrial bodies. The product innovation is logically done in many SMEs due to non regulated internal innovation policies of the company or the “Me Too” marketing strategy which pushes the market follower to have a tactic of copying the market leader’s products. Thus, either making small changes on their product, either creating a new product from stretch, by using also new, innovative marketing strategies, companies are doing “something” new for their business, their own environment. Of course, that can be another topic of research.

Theoretically, it is easy to define the contribution of the innovation to the profit of the company via ROI, share price, market share, etc... (Tidd, 2001)

However, for SMEs, those criteria are also quite fuzzy. That's why; this project wanted to investigate the understanding of the innovation notion inside of SMEs and also to investigate the relation of them with their main contractor on the innovation policy level. That thesis has three steps basically. The first step is the definition of the problems and the needs in order to define the methodology of the thesis. Then, a survey is created and applied to the several enterprises. The last phase of the thesis is the analysis of the survey results and conclusion.

The aim of this survey is also to create basic information for the further researches on the innovation in SMEs and opening discussions for the possible PhD. Projects.

Anyhow, the understanding of the project has to start from the beginning which is the clarification on the innovation. It is stated that innovation is actually different than the way that the majority of the society knows and understands.

2 UNDERSTANDING THE INNOVATION

2.1 The Definition of the Innovation

Most of the people who read newspapers or watch news on TV will read and hear the word Innovation with different forms such as innovative solutions, innovative dimensions, innovation in education, etc... It's true that it is a very fashionable word for everybody, especially the politicians. However, this brings a very big misunderstanding of the notion's meaning. Innovation is sometimes taken only something new, or another word, it is called in some languages as "Newness" such as in Turkish (Yenilik); in Spanish (Novedad) or in Greek (νεοτερισμός)... Although this translation is a widely general explanation of the innovation, it also covers non innovative developments too.

There are several definitions for the innovation. The innovation is the design, products and services which "are new to their competitors, their country or the world". (Mytelka, 2000) Beside this definition, another opinion pops up saying that the innovation has to have a designing part with a diffusion of a technology which has to be questioned by the society and also, it has to be taken as a new thing by the society. (Aubert, 2005)

On that point, the best definition was made by OECD. In the Oslo Manual, published by OECD in 2005, innovation is presented like: "Technological product and process innovations comprise implemented technologically new products and processes and significant technological improvements in products and processes. A TPP innovation has been implemented if it has been introduced on the market (product innovation) or used within a production process (process innovation). TPP innovations involve a series of scientific, technological, organizational, financial and commercial activities." (OECD, 2005) The same year, World Bank added another significant definition to OECD's one: "Innovation appears to result from the interaction of people who have different competences". (World Bank, 2007)

From that point it is clearly stated that innovation has to have a commercial dimension and a financial benefit. There are many Research and Development processes on world and each year, only in United States, there were 265 billion USD spent during 2005. In Japan, the Research and Development expenses are more than 3.2% of the whole GDP. (Plunkett, 2006) By the end of 2004, the Governorship of the California launched the project of the “California Institute for Regenerative Medicine”, together with the \$3 billion in funding for stem cell research at California universities and research institutions. (Cirm, 2007) We can increase the number of the examples on that field. Actually, we do not know the exact financial outcomes of those researches. That’s why, innovation comes here as a key player.

Many companies started to discuss Research and Development in the last century, but then despite the high expenses, due to the low revenue for the companies, especially industrial enterprises decided to focus on the innovation. They wanted to see the financial revenues from those investments.

Another main reason on that change was also the customer requests. The people who want to sell their products realized that customers are looking for solutions in a format which they can use practically. This format can either be a product format or a service format. However, the work to reach this format failed after a while as via R&D, as it can not always be reached to the desired format. So, instead of the formats looking from customers, solutions were started to be considered for the work. (Ulwick, 2002) Thus, enterprises reached to a basis which gives an innovative mentality to them.

Nowadays, innovation is seen an inestimable part of the business because of its need in the global competition. It has been considered as a key actor for the global commercial and industrial sectors for reaching lower production expenses, better performance and also new services and products. (Thamhain, 2005) But the researches prove that R&D works and co-operations have a significant effect on the dramatically increase of the outcomes from innovations via the achievements in the sales of the companies. (Aschhoff and Schmidt, 2006)

The conclusion from that significant research is that R&D and the innovation are two things together which makes separation as not a right choice. Innovation can

be seen as a second step of R&D. The estimated prediction for R&D expenses returns to the success in the market is less than 15 percent. (Thamhain, 2005) Thus, if the definition is taken as OECD did, then from the global research and development studies, the market is getting 15 percent of those works. So it is not wrong to call that part “innovation”.

What it is called Innovations, they have to be related on new knowledge with a significant effect on the marketplace. However, it is a reality that sometimes it can take years for an idea to become a product or service for the market. That’s why in general innovation sourced from easy and simple ideas which don’t request too much managing skills, or at least it can look obvious outcome of the product or process life cycle to people. On that point, innovators can seek the opportunities by focusing too complicated details of the research. (Drucker, 1998)

On the one hand, there is a reality on the world for the innovation issues. That reality is that the turnover of the previous performance innovations in the product development is quite low. Because of the need of producing more efficiently and continuously, the performance incensement methods can not be used again and again. However, in the last decade, the enterprises decided to implement standardized processes, together with planned time lines and also limited design procedures. Those processes are worked by the matrix formatted teams from different fields of the companies. So with the return from those improvements are small but noticeable.

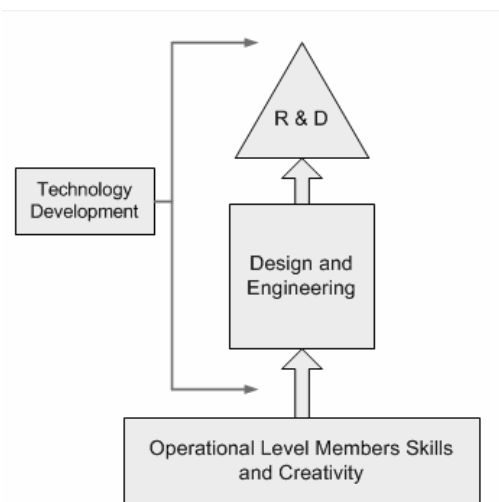


Figure 2.1 :Industrial Structure’s Levels for Innovation

On the other hand, there is another proposal for the definition of the innovation and its position inside of industrial structure. It is an objective remark that the R&D guided innovation can mostly be true for the developed countries. So a general innovation definition is needed inside of the industrial structure. The innovation can be presented either a new introduction or advanced step in any level of the structure where either technology is used or technology developed. (Figure 2.1) (World Bank, 2007)

Another good example for the R&D investment which turned into good solutions for the market as innovation is the Intel Research Network. There are three labs in this network dedicated themselves to different research projects, meanwhile collaborating with each other in order to reach more successful innovative solutions. The one in Berkeley is working for extremely networked systems, the Pittsburgh laboratory is focused to the software for widely distributed storage systems and the last but not the least, the Seattle one is working for new technologies and usage models for ubiquitous computing environments. (Figure 2.2)



Figure 2.2 :Intel Research Network of Laboratories

However, this network is a good example not only because of its work, but also another reason: The Intel network is based on laboratories founded inside of the university research labs which are a very good example for the new trend of industry-university collaboration. There are more information on the network at their web page: <http://www.intel-research.net/>

Obviously, this is not the only example for the innovation cooperation. Actually, each day, we are meeting with more examples for those collaborations.

2.2 Innovation Types

As a summary from the previous chapter, it will be logical to say the notion innovation is based to the increase your market, sales etc... while creating another value for your product or the increasing the production/service deliverance efficiency. Bob Nelson gave an important motto in his book on innovation: "Without innovation, new products, new services, and new ways of doing business would never emerge, and most organizations would be forever stuck doing the same old things the same old way." (Nelson, 1999)

Actually, the argument of Bob Nelson can be a good basis for another discussion, not directly the aim of this thesis. However, he mentioned the multidimensional side of the innovation. This is quite important as it is in general forgotten part of the innovation as a notion.

So, from the definition we concluded previously, we can define the innovation types. Innovation can be made basically for product and for process. That's why, in the literature, it is possible to see the product innovation and the process innovation as the major types of the innovation. However, in the last years, one more type was raised to be added to this diversification: The process innovation for the product innovation. However, there is not so much research on that field until now.

The product innovation is used for the improvements done in the goods or services which were presented to the market. Contrary to this innovation type, there is process innovation also which is the improvement in the production way or the supply chain of this manufacture. However, there is also a third dimension as it is mentioned before which is the "The process innovation for the product innovation". On that matter, the innovation is a mixture of the product development and the process improvement. Most of the cases met in the industrial field are the improvements in the processes in order to improve the product quality or the product rate. More than this, when enterprises are looking for the first presentation of a product in a market, they already made their process changes in order to support the competitive production rate and the marketing procedures.

Meanwhile, the innovation can also be not only for the product and the process, but also for the organizational behaviors. On that matter, the management of

cultures and the internal company cultures passed many evaluations. There were small improvements in the organizational strategies of the companies, mostly on the management side. For example, when Peter Drucker proposed the “management with objectives”, the system was seen as a perfect solution for the managerial problems. (Drucker, 1954) However, as Fons Trompenaars mentioned “for the societies who see the performance of the individuals related to their relations to their superiors and who dedicated the perfectionalism to the whole family or to the whole relation”, this system did not work. So, companies from those societies created their own “management by objectives”. (Trompenaars and Turner, 1997) Thus, they made a kind of innovation, not on process or on products but on the organizational behavior. However, it can not be right to open a new category for them on the moment because still those changes can be taken as a part of the process innovation. Researchers have to be encouraged to make researches on that topic.

Beside on what innovation is made, there is also another aspect how innovation is made also. Innovation can be small improvement in existing products and processes. On that matter, it is called an “incremental innovation”. However, if it is a major change or a new product, then the innovation is called “radical”.

For “radical innovation”, it is needed to have a fresh view on old problems, or a sudden invention which brings business opportunities. The knowledge needed for that innovation is quite variable, because in general that kind of innovation is coming to life with an unpredicted usage of a technology or tools and it is in general developing in specific areas of industries. Another fact on that innovation is that criticism on the job or specific mission-oriented teams are creating it without having specific guidelines. It is preferably to be the child of the creativeness.

On the other hand, the incremental innovation is taking their basis from the reason to solve a specific problem or basic needs due to the market request. In some companies, it can be seen as a given framework in order to improve the quality regularly, systematically decreasing the costs of the production, etc... The knowledge creating this type of innovation is quite specific and more than this, it is created and used by the Operational Level of the company structure.

In the classical innovation theory or with a well known name, the linear model of the innovation theory is allowing us to create that kind of categories for innovation with strict distinctions (Figure 2.3). That theory was criticized by Kline

and Rosberg as the environmental factors of the relationship between technology and science are quite diversified so the innovation can not be classified on that way. (Rolfo and Calabrese, 2003) However, the theory which is still accepted by the governments, creating their own technology politics is this linear model:

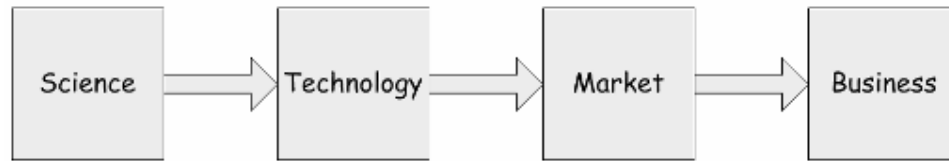


Figure 2.3 :Linear Model of Innovation Theory

Innovation is first created via Scientific Research and then has to be applied to the technical field which makes the improvement suitable for the market in order to make it available for the business.

However, that system actually has a kind of failure with the current global realities. It's because the technological part of the system significantly passed in front of scientific part. The policy with a scientific basis only is not addressing to the needs of the current global competition. As a translated to a policy, technological part of the innovation is the main resource to the decisions made for the improvement of products, sale strategies and also other processes. (Mowery, 1994)

That's why the current innovation model accepted by the industrials and the innovation decision makers is that all of those factors can somehow differently and separately influence the innovation process in any step of it. (Figure 2.4)

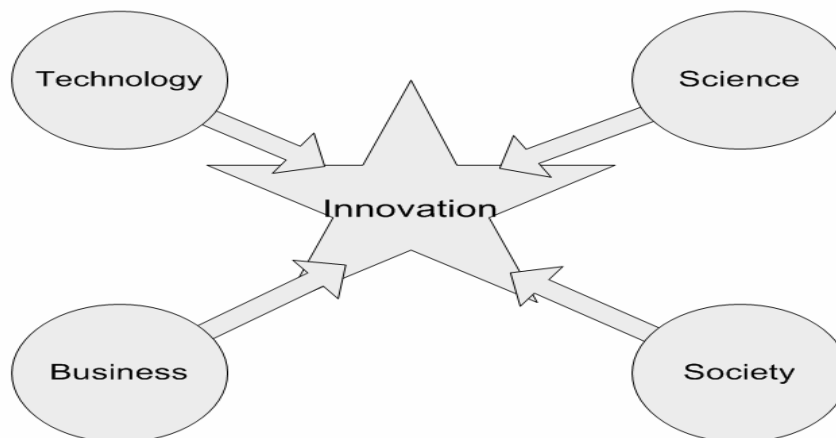


Figure 2.4 :New Model of Innovation Theory

2.3 Innovation Collaborations

"It's very hard for any company, even one that spends as much as we do on R&D, to do everything," Those words belong to Paul Horn who is the senior vice-president and the director of research at IBM (IBM). IBM spent over 4.5 billion USD on Research in 2002. (Business Week, 2003)

In fact, IBM spent more than 6 billion USD in 2006 for Research and Development and in 2007, IBM earned 3,125 US patents which is the patent leadership number in United States and on the World too. (IBM, 2008) Actually, to that number, IBM and several partners' joint projects are not committed which are "dozens of innovative, environmentally responsible patents to the public domain". (IBM, 2008)

Consolidated statement of earnings (audited)

<i>(Dollars in millions except per share amounts)</i>				
For The Year Ended December 31:	Notes	2006	2005	2004
Revenue:				
Global Services		\$48,247	\$47,407	\$46,283
Hardware		22,499	24,343	31,193
Software		18,204	16,830	16,141
Global Financing		2,379	2,407	2,808
Other		94	147	68
Total Revenue		91,424	91,134	96,293
Cost:				
Global Services		34,972	35,093	35,078
Hardware		14,175	15,803	22,008
Software		2,693	2,534	2,489
Global Financing		1,182	1,091	1,046
Other		107	81	103
Total Cost		53,129	54,602	60,724
Gross Profit		38,295	36,532	35,569
Expense and Other Income:				
Selling, general and administrative		20,259	21,314	20,079
Research, development and engineering	Q	6,107	5,842	5,874
Intellectual property and custom development income		(900)	(948)	(1,169)
Other (income) and expense		(766)	(2,122)	(23)
Interest expense	K & L	278	220	139
Total Expense and Other Income		24,978	24,306	24,900

Figure 2.5 :Audited Budget of IBM

The 16% of the Gross Profit of IBM is actually going to the Research and Development projects of the company. (Figure 2.5) However, is this applicable for

every company on the market or at least for large scale ones who are having their own R&D departments?

Recently, innovation is getting faster and faster distributed among different partners and more enterprises are losing the “Go it alone” way of innovation due to the needs of the global competition in the market. (Tether, 2001)

There are moments when the “Scale of Economy” goes bankrupting for the innovative works. That’s why it changes too much the diffusion of the innovation works’ outcomes. These outcomes are related to the internal structure of the partners and also their knowledge and experience level. (Rolfo and Calabrese, 2003) However this is not a reason to give up from the innovation collaborations.

Actually, due to the management theories of Schumpeter, the size of the organization has a parallelism with the innovation activities. However, there is not any concrete solution for this as due to the scarcity of the measurement resources, so far, there is no scientific proof for this. (Rolfo and Calabrese, 2003) Schumpeter thought that the institution who has enough vision for granting the needs to realize it has to acquire the resources for the entrepreneur. On that matter, we can think that if the enterprise is big enough, it has to finance its own innovation or even if it is not enough, the innovation will be parallel to the size of the investment on it. However, we do not know yet if this hypothesis is true or not with our current scientific knowledge.

2.3.1 Management of Innovation

Basically, everybody who is ready to invest money can make Research and Development. However, important is to canalize the outcomes from it to the market. For most of the industrial cases, the main competition is not the generation of the innovative ideas from R&D step, but mostly to canalize them to the usable ideas pool for the market. Thus, the problem creates a need for the management of innovative works. (Thamhain, 2005)

However, most of the studies done on the topic were based on “generic best practices” and those examples are mostly from specific business sectors. (Tidd, 2001)

In order to manage innovation, companies have to accept innovation as a true policy. A true innovation policy passes from having a technology policy which

includes the funding of private R&D, the creation of innovation centers and transfer agencies with the help of venture capital. Because of the risk of market failure, government refunding is used for the fundraising of the innovation projects. (Diederer et al. , 2000)

While talking about the management of the innovation, several instruments have to be taken into consideration. If the governmental help does not exist, companies can not implement easily the innovation policy inside of their corporate culture.

On the other hand, an innovation policy has to be together with a technology policy which is indispensable from an education policy and a competition policy. A procurement policy has to supply also the innovation policy in order to influence technological development.

Inside of a company, the management of innovation can also be taken as a personal responsibility, but then the chance to reach to the ultimate aim of high competitiveness will be low.

2.3.2 Cooperation with Others on Innovation

Today's competitive world brings us in a situation where SMEs are having a big risk of crush because of the result of industrialization. The ones which are supported from a big enterprise or which are inside of some clusters are in a better position to compete on the level of prices. (Esposito and Passaro, 2007)

Many researches showed that many of the main buyers are looking for the cooperation between their suppliers for the research and development issues. (Choi et al., 2002) However, there is a small group of companies which don't want that kind of cooperation. On that case, the options are cooperating with other companies or working together with the main buyer. There are good examples on the market where main buyer creates that kind of cooperation environments for its suppliers under its umbrella like Toyota Case where they create a knowledge sharing network with a competitive environment for their suppliers. (Dyer and Nobeoka, 2000)

As the population grows, it produces not only new needs but also the improvements and expansions of knowledge and tools in order to satisfy the new lack occurred after this growth. (Burns and Stalker, 1994)

2.3.2.1 Local Networks

Unfortunately, there is no such a research or investigation on possible local innovation networks, smaller than regional ones. There can be one idea to promote these networks and encourage small companies for the collaborative work and knowledge sharing.

2.3.2.2 Regional and National Dimension of the Collaborations

Sometimes, regional or national governments have to create some tools for their industry in order to motivate them for the innovation. Those instruments have to be innovation friendly or a better way, creators of the motivation for the innovation.

- Financial Measures: Granting an innovation activity has to give a specific advantage to this sector among its foreigner competitors.
- Special R&D programs: Governments have to aim country's or region's competitive position. For this, Special R&D and innovation programs are used by governments in order to promote the technological progress in specific areas.
- Special Measures for SMEs: There are always innovation problems on the level of SMEs. In order to prevent those problems, governments are offering special helps and facilities to SMEs with laws and regulations.
- Provision of venture capital: Venture capital is today's world's one of the most popular investment methods. However, governments have to encourage private investors and protect them if it is needed.
- Knowledge Transfer: Via some infrastructural policies, the dissemination of new technologies has to be facilitated. (Diederer et al., 2000)

From Turkey, the example of KOSGEB (Turkish Republic's Industry and Commerce Ministry's Directory for Small and Medium Sized Industry's Support and Development) is a very well example for this type of innovation collaborations helped and protected by the government. More than 75 Million Euros was in the SME support budget of the state through this agency. (Sabah, 2005) Beside KOSGEB, there are supports of TUBITAK (The Scientific and Technological Research Council of Turkey) and many other governmental granting resources for innovation.

Beside all, specifically, regional governments and even national governments are encouraging regional cooperation, by promoting technological developments in specific, mostly disadvantaged regions. Or sometimes, regional governments are focusing to increase their competitiveness advantages among other parts of the country like West Midlands Innovation Consortia. Example of FILAS from Italy can be taken as a prototype for all European Regions.

FILAS is the consortia founded in Lazio region of Italy in order to guide the economy of Lazio and promote development and innovation, especially through the adoption of new technologies. They are creating tools related to innovation, new technologies and the net economy. Then, they share those tools in order to strengthen the competitiveness of regional SMEs both in terms of regional product growth and external investment. Actually, there are several strategies of the agency in order to support SMEs. The first one is providing financial assistance to them, and also creating special Lazio Region funds for SMEs. Beside financial aspects, promoting and supervising measures for the development of industrial areas and productive sectors are also in the strategies of FILAS. The last but not the least strategy is to implement EU programs.

The strength of FILAS is coming from the laws which give FILAS its financial and structural power. Regional Laws such as 2/85 which aims to help financially all Small and Medium Enterprises of Lazio Region and National Laws such as 140/97 which provides tax incentives to the industrial enterprises' expenses for research and development, are used by FILAS in order to promote technological innovation, industrial research, pre-competitive research, the introduction of environmental and quality control systems in enterprises and the introduction of tools to increase the potential of e-commerce. (FILAS, 2007)

2.3.2.3 Worldwide Examples for Innovative Collaborations

Innovation Collaborations can also be out of countries borders. There are many example of innovation collaboration out of our countries such as PIM Project or APEC SME Innovation Center. Through bilateral agreements or EU Grants, called Framework Programs, companies can open their doors to the foreigner based financial resources and information. With a well developed legal framework, this opportunity have to reach to all Italian, Turkish and at the end, all European SMEs in order to let them survive and continue to be the main actors of our economies.

For this kind of Cooperation, this project worked together with PIM Project. The PIM project aims “facilitating the adaptation of industrial changes” through the development of a technological infrastructure enabling e-collaboration among small and medium enterprises (SMEs). The project started with a Consortium of European enterprises and business schools, granted by the European Commission’s Sixth Framework Program. The partners of the Consortium, made up of Technology Providers, Business Schools, Certification Bodies and Trade Unions, have been selected to be the most capable to provide and “supply” information regarding innovation to SMEs. The projects starts from an extensive requirement analysis carried out in five East European Countries (Czech Republic, Hungary, Poland, Romania, and Slovenia) and proceeds with the creation of a software platform providing a way for SMEs to interact among themselves and with specialized innovators, such as universities and consultants in a multilingual and multi-cultural environment. This innovative technology allows for a continuous dynamic upgrade of users profiles and knowledge. That’s how, users of this virtual platform are exchanging information and experience through the online forums, seminars and training activities. (PIM Project, 2007)

Beside continental projects, there are worldwide initiatives for innovation too. On this matter, the theme of World Economic Forum Annual Meeting 2008 in Davos was “The Power of Collaborative Innovation”. The worldwide leaders got together in order to discuss the collaborative innovation and showed how much importance they give to collaborations on this field. (WEF, 2008)

3 SMALL AND MEDIUM ENTERPRISES

The notion of the Small and Medium Enterprises (SMEs) which can also be seen as, small and medium-sized enterprises or small and medium-sized businesses or small and medium businesses (SMBs), took a great place in today's industrial discussions. The abbreviation SME occurs commonly in the European Union Area and also in some international organizations, such as the United Nations, the World Bank, the World Trade Organisation, etc... Today it has a standard definition for each developed and developing country.

3.1 Small and Medium Enterprises' Definition

Due to the changes on the global market and the creation of a borderless Europe as a unification project, there is a need of standardizing the notions in order to balance the understanding between member states. Until 1996, what is called Small and Medium Enterprises (SMEs) or in Turkish KOBİ which is an abbreviation for "small and medium-sized businesses", it was differentiating from state to the state on Europe. And even for some countries, it was not existed as a notion. For example, before the definition of European Union was accepted and started to be used in member countries, Germany's upper limit for SMEs was 500, meanwhile, in Belgium, that number was only 100.

The first recommendation done by European Commission was in 1996 as "Recommendation 96/280/EC". It was the first basis for the whole accepted recommendation on Europe. Then, on 6 May 2003, the Commission adopted a new guideline for member states as "Recommendation 2003/361/EC" in order to replace the SME definition from 1 January 2005. EU member countries and candidate countries such as Turkey finished their implementation during 2005. (Resmi Gazete, 2005) The reason behind the revision and upgrade of the definition with more explanations and guidelines were the reality of the economic developments since 1996 and more than this, the lessons drawn of the results from the practice of the

previous definition. European Commission decided to increase legal certainty while limiting the possibility of a misusing the rules. (European Commission, 2003)

Then the question is what Small and Medium Enterprises mean. SMEs are considered as a real dynamo of the economy, but more than this, there is no strict definition on it which can be taken globally. The reason for this is that the criteria for defining a SME are changing from country to country. That's why it is more logical to rely to one of the key definitions as OECD did for their expert meeting.

European Commission defines SME as a “any entity engaged in an economic activity, irrespective of its legal form”, defined by its size and its economical activities. What is called “Small and Medium Size” is that a business which is not more than 250 employees and not more than 50 Million Euros turnover in a balance sheet total of less than 43 Million Euro. As an addition to this, a SME has to have less than 25% of the shares of such an enterprise which are in the ownership of another enterprise. (OECD, 2005) European Commission focused on three different major criteria on the definition of SMEs which are the number of working people, the situation of the balance sheet and the total of annual turnovers.(Figure 3.1)

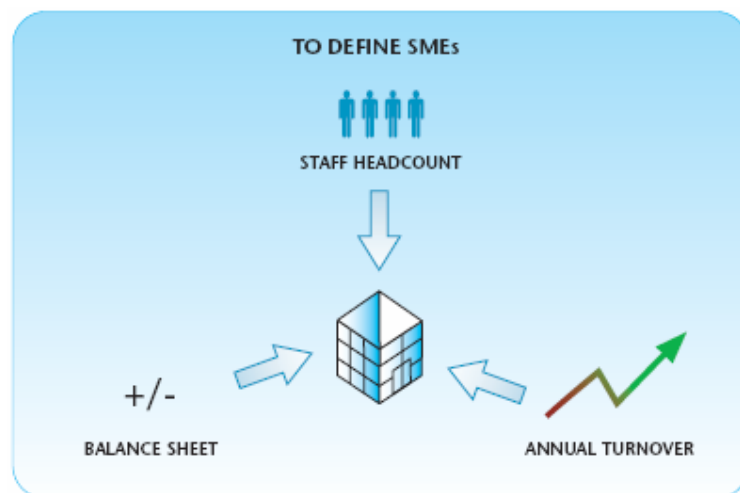


Figure 3.1 :Definition Criteria of a SME by EC

For the number of staff, the Commission took the total number of Annual Work Unit (AWU) and the major change of the definition of the Commission from 1996 is that creation of the micro size of enterprises and new values of financial numbers. For example, in 1996, to be small sized enterprises, an entity has to have either maximum of 7 million Euros for the annual turnover or 5 million Euros for the

total of the Annual Balance Sheet. However, those numbers in 2003, were equalized both to 10 million Euros. And the financial range for Medium Sized Business was also increased from 40 to 50 million Euros for the annual turnovers and from 27 to 43 million Euros for the total of the annual balance sheet.

So as a result, the new segmentation in 2003 with new thresholds become standardized (Table 3.1)

Table 3.1 Segmentation of SMEs for European Commission

Enterprise Category	Number of Staff	Annual Turnover	Annual Balance Sheet Total
Medium Size	< 250	≤ €50 million	≤ €43 million
Small Size	< 50	≤ €10 million	≤ €10 million
Micro Size	< 10	≤ €2 million	≤ €2 million

The staff headcount is the main and the first decision imperative for a vital opinion on which category the enterprise is belonging. Actually, the Commission decided that all full-time, part-time and seasonal staff including employees, people who work out sourced and owners and partners who are engaged regularly basis to the activities of the enterprise. As an addition to this, apprentices or students engaged in vocational training with temporary contracts are not included in the headcount of the Commission.

The Commission accepted a calculation of the income in the numbers of the sales and services paid. Of course, the taxes like VAT are included into this calculation. Nevertheless, the annual balance sheet total refers to the value of the company's main assets like accepted everywhere on the world. (European Commission, 2003)

However, it was seen as not enough explanation by OECD, that's why they proposed another segmentation of enterprises. Due to the ownership differences of SMEs and structural differentiation, it was proposed to divide enterprises into three different groups:

a. Type 1 (or Family Enterprises) where the manager is also the owner or at least a member of the owner family. That manager is the only one who decides the short and long term plans of the company and the investments of the company.

b. Type 2 is the SME where the short term strategically decision power is in the manager who is also responsible to plan the long term ones in order to present to the owners of the entity. For the case of those SMEs, the idea is mainly the maximization of the profit of the company.

c. Type 3 companies are the ones who belong to a group where decisions are made for the sake of the group politics and done in the headquarters of the group. On that matter, the important aim for strategic decisions is not the maximization of the profit, but the market share and also the general position of the group. (OECD, 2005)

If we think globally, there are more than 55 million Small and around 1.2 million medium sized companies are on the whole world, existing and making the business. As an addition to this, more than more than 60.000 companies are big sized players and around 20.000 multinational global player companies are inside of this competition too. (Shamia, 2007)

For example, when European Commission published the “Observatory of European SMEs” which consists a survey done during 3 months (from November 2006 to January 2007). There was a very large participation of European Enterprises from 27 European Union Members and Iceland, Norway and Turkey. Gallup who made the interviews via phone calls, reached 17283 enterprises in which 16 339 are SMEs Eligible respondents were top company managers, responsible for strategic decision-making, who are typically General Managers, owners or financial managers. (Gallup, 2007)

As an addition to this situation, if we think on the subject without the numbers, but looking it with a subjective way or a better saying; with an industrial point of view, SMEs can also have a clear definition such as; enterprises which are presenting products and services to its own market and to international markets while surviving with limited resources and marketing opportunities where there is always a danger of bankrupt, financial crisis, capital lack, but also the production. SMEs are also producing more added value for the society on a proportional way than big enterprises (Kobitek, 2008)

3.2 Structure of SMEs

The SME can be basically as an autonomous enterprise where they can act freely and independent from other enterprises. The European Commission describes that type of companies as if they are totally independent, which means there is no participation in other enterprises from the SME or there is no participation inside of the SME from other enterprises. Even if the enterprise is not independent, still it can be autonomous which means the enterprise can be a holding without having more than 25% of the capital or voting rights in one or more other enterprises. This also covers the 25% or more of the capital or voting rights doesn't belong to stakeholders. If a SME is autonomous, it means that SME is not a partner or linked to another enterprise. (European Commission, 2003)

Henceforth, the company can be partner or linked organization too. But the definitions of those types are differentiating from the country to country. For an autonomous company in Italy while having several independent partners with 25% shares each, it can be seen in Turkey as a partnered organization.

So, if the enterprise is a holding equal to or greater than 25% of the capital or voting rights in another enterprise and/or another enterprise has a holding equal to or greater than 25% in that SME, that enterprise is definitely a partner enterprise. As an addition to this, if the enterprise is not linked to another enterprise which means the voting rights of it do not pass 50% in the other company, then this enterprise is also a partner organization.

However, if it is linked, then, the company has to form a group with an economical aspect with a control of the voting rights. This control can be either through the majority of the shares or also a direct domination via an influence. Of course, it has to be mentioned that this case is quite rare.

So, if two or more companies are somehow linked, this means at least one of them are owning the other one via the majority of shares or via an administrative decision power with a superior representative in the administrative level. Beside those cases, there are also other cases such as a contract done between the companies or an arrangement made about the power of shares can be the existence basis of this type of enterprises. (European Commission, 2003)

3.3 Cooperation of SMEs with Other Enterprises

Most of the research projects done so far on “SMEs and Innovation” field are related with innovation networks and inter-firm cooperation. Small sized companies are in general cooperating with external bodies in the innovation process since their internal resources are quite limited and particularly focused to one specific area. (Blackburn, 2003)

3.4 Research and Development in SMEs

Although the size of SMEs seems quite small, comparing with multinational companies. That's why in many projects, SMEs are avoided due to this belief. However, the significance of small firms in the economy means that investigations of intellectual property and innovation must take a SME perspective. (Blackburn, 2003) Unfortunately, the innovation researches done until now are quite limited on the SME field. After this project, the wish is to increase the awareness on this important field.

The technological development have in general occurred as a result of short-term viewed decisions, by concerning the balance of basic advantages and costs from the point of controlling position management view. (Burns and Stalker, 1994) Thus, it is clearly visible the mentality behind the innovation understanding at many of the small and medium sized companies.

Most of the Research and Development work done in SMEs are somehow collaborated with big companies, however due to the limited resources, they are not R&D work, but purely innovation oriented works in order to get the direct benefit with the market implementation. Actually, the contributions of small firms to innovation vary immensely due to coming from different environments and from diversified sizes. That's why small firms are not a homogenous category and their economic role in progress is changing. (Blackburn, 2003)

4 METHODOLOGY – SURVEY

We already mentioned in the previous chapters that it is quite hard to measure of the innovation level in the companies, especially the performance and the efficiency of the effort done for these works.

It was seen that there are many surveys and research done about the innovation in SMEs which were published to all stakeholders of the innovation. It was seen that there is a lack of Small and Medium Enterprises presences in the field of collaborations and innovation networks. More than this, many Western European SMEs are losing their strategic positions against Eastern European and Far East competitors. That's why the only solution for the survival of the fittest is being one step in front of the competitors. However, this step is not an easy decision, especially China and India's increasing production rates with quite low costs of manufacturing. However, giving up from manufacturing on our old Continent and leaving all to Far East is not the only solution. Because China and India already started to make investments on R&D field. China's R&D expenses will be 2% of their GDP in 2010.

According to a survey published by the United Nations Conference on Trade and Development, China, India and Singapore are now the most frequently cited destinations for R&D expansion beside United States of America.

So the question becomes; "which R&D will be done on Europe and which part will be done on Far East?" (Nicoletti, 2007) As an addition to this question, one more question is popping up: "What will happen to SMEs on this process?" The surveys done until now are mostly how SMEs are measuring performance of innovative investments (Hudges and Wood, 1999) or if they are doing innovation or not (CIS-2, 1997) or regional spreading of the innovative actions (Evangelista et al., 2002). The examples can be diversified with other surveys too.

However, there is no strict research to check if the European SMEs understood the meaning of innovation or not. More than this, even if there are many opportunities on the European Level such as Framework Program 7 of the European

Union (Cordis, 2007) or on the National Level in each European country or even on the Regional Level, to support the R&D, and even innovation activities, very few enterprises are joining to these projects. For example, in the first 6 months of 2007, from KOSGEB, the directory of the management of the development and the support for the small and medium sized industry of the Ministry of Commerce and Industry of Turkish Republic, only 1130 SMEs got almost 3.8 million Euros in total as support. (Kosgeb, 2007)

So, this project is looking to the answer of the questions:

- How much do SMEs know about innovation?
- Why are companies not interested with these possibilities?
- What are their relations with their environment and their main contractors on the innovation level?

The best way to understand the trends in the SMEs is asking directly what they are thinking. For this, we decided to create a survey in order to define the specific aspects of the situation. There are standards defined by OECD for the innovation surveys. Together with Eurostat, the first version of these standards were defined and published in 1992 with the well-known name of “Oslo Manual” and starting from Community Innovation Survey (CIS) of the European Commission, it was used as a main guideline for other surveys.

Actually, a new term covered the whole word in the last year, explaining the major trend in the developed economies, basically the global economy’s guider countries. This is “the knowledge-based economy”. It is an expression presenting the big addiction knowledge, information and high skill levels, coming with the need of reaching all those levels. A major OECD study has placed great stress on the importance of these trends for policy:

“Today, knowledge in all its forms plays a crucial role in economic processes. Nations which develop and manage effectively their knowledge assets perform better. Firms with more knowledge systematically outperform those with less. Individuals with more knowledge get better paid jobs. This strategic role of knowledge underlies increasing investments in research and development, education and training, and other intangible investments, which have grown more rapidly than physical investment in most countries and for most of the last decades. The policy

framework should thus put central emphasis on the innovative and knowledge-creating and using capacity of OECD economies. Technological change results from innovative activities, including immaterial investments such as R&D, and creates opportunities for further investment in productive capacity. This is why, in the long term, it creates jobs and more income. A main task for governments is to create conditions that induce firms to engage in the investments and innovative activities required for enhancing technical change.” (OECD, 1996)

Normally, innovation surveys’ targets are the technological aspects of the enterprises and their strategies (Guellec and Muzart, 1998). Although, there is the reality of the non-technological part of the innovation mentioned in the previous chapter, the number of examples on that kind of innovation based surveys is quite small because of the reason that there were no international standard rules to respect in order to make the survey and also it didn’t aim to measure the performance of the enterprise. (OECD, 2005)

Nevertheless, the aim of the research in this project is to have an idea on how Small and Medium Enterprises are seeing the innovation and how is the general will to cooperate for them with other enterprises and institutions. Parallel to this research, there is also a second survey which aims to understand the level of understanding of innovation and the will of sharing in the Main Contractor companies with their supplier enterprises.

As a conclusion, due to the research done and also related to the some face-to-face meetings results, several questions should be stated:

Q1: Are main contractor companies in favor of cooperating with their suppliers for the product and process innovation?

Q2: Are Small and Medium Enterprises in favor of cooperating with their main contractors for the product and process innovation?

Q3: Are Small and Medium Enterprises well informed by the existence of innovation collaborations?

Q4: Can Small and Medium Enterprises benefit with innovation focused strategies while working together with other business partners?

4.1 Survey

While creating the survey, it is obvious that there can be similar questions asked to both main contractor and to their suppliers. However, as the targets and the expected outcomes are different from both sides are different, then the surveys are also diversified and then specialized to both target groups.

The survey has to diversify into the specific sections in order to simply the reader of the survey. As the target group for the survey fillers is managers and executives, it will be logical to assume that they do not have time to spend on understanding each question and also they need to keep the focus on the survey questions. That's why; the survey will be divided to several parts:

- Introduction
- General Information about the Company
 - i. Size of the Firm:
 - ii. Structure:
 - iii. Business:
- Research and Development Interest
- Innovation Interest & Innovation Policies
 - i. Innovation Understanding:
 - ii. Reaching to the Innovation
 - iii. Innovation Management:
- Relations with Suppliers

From those sections, “General Information about the Company” is specific for the survey to suppliers. And the section of “Relations with Suppliers” is just a special part for the survey to main contractors. For other sections, there are different questions inside of the parts but the aim and the name of sections stay same. You can find the full parts of the questionnaires in the appendix A and B.

Related to the aim of the project, the name of the survey is “Survey on Innovation Policies and Innovation Management”

4.1.1 Introduction of the Survey

Starting to the survey, the filler has to be reminded about the aim or the survey and the details of the survey. So, an introductory explanation exists in both surveys which give the creation reason of the survey and the steps of the project. The exact text is below:

“This survey was created in order to supply the project of “investigation of the relations between main contractors and their Small and Medium Enterprise (SME) suppliers on the innovation management and innovation policies”. This project is a joint Master Thesis project between the University of Florence, Italy and Istanbul Technical University, Turkey. Two Stages were decided for the project. The first stage is the main investigation in Italy and then, investigation in Turkey for comparing the results between one developed country and one developing country. The first step was designed as two surveys: one for the Main Contractor and the other one for its suppliers.”

Then another explanation comes specifically related with the current survey and the place of the survey in the project phases:

“The survey that you are reading now belongs to the first stage. We would like to thank you for your great contribution to this important industrial project.”

As following this part, the questions of the introduction part comes. Those questions were advised to be asked directly by the Oslo Manual in each innovation survey: “The name of the Company, the sector of the company business, the address of the Company” with the name of the survey filler and his or her position in the company structure. The address is not asked actually directly to the main contractors as it is obvious where they are places the business and for most of them, it was contacted with face to face meetings. However, as an addition to supplier survey, the contact info is also asked as an optional section in order to get in touch for the future needs with them if they feel comfortable with the idea of contacting.

For the sake of the classification and also the follow up of the survey distribution, the name of the main contractor is also asked in the survey to the suppliers with the question of “Please choose the company whom you are working the most among the following companies” For the answer of the questions, several main contractors were mentioned there, and it is not mentioned the name of the

contractor, it was asked to get in touch with the survey administrator via e-mail. In the first published version of the survey, the names of the main contractors are Ansaldo Breda, Ansaldo Signal, Electrolux, General Electric and Pirelli.

4.1.2 General Information about the Company

This is a specific section for the survey to suppliers only. The aim taken in this survey is also define how many of the suppliers are SMEs and how many of them are not. Then, there is made a matching on innovation understanding questions and the policy in the management of the innovation and R&D with the size and the structure of the company in order to put the relations of business understanding and the place of the innovation in the business strategies of SMEs.

Before starting to the questions, it is needed to mention an explanation about the questions. Some of the questions in this section contain the expression of “EU Area”. That can conflict the fillers of the survey, so it is decided to put the explanation below:

“In this questionnaire, you will find some questions mentioning EU Area. For this research, EU Area consists, 27 European Union Members, EFTA Countries (Iceland, Liechtenstein, Norway and Switzerland) and the Official candidate countries of EU (Croatia, the Former Yugoslavian Republic of Macedonia and Turkey).”

The reason to put this explanation, some suppliers can think only EU countries as supplier origin with the notion of “EU Area”. Thus, they can neglect the reality and the existence of the trade and the manufacturing dimension in non-EU member countries which are directly inside of the economical policies of the union. Those countries are EFTA members and officially EU membership candidate countries. EFTA is the European Free Trade Association and its members are the Iceland, Liechtenstein, Norway and Switzerland. The EFTA Convention established a free trade area among its Member States in 1960. In addition, EFTA is also in the Agreement on the European Economic Area (EEA) since 1992, which entered into force in 1994. EEA is consisting by EFTA and EU member countries. (EFTA, 2007) As an addition to this, Croatia, Macedonia and Turkey have to be mentioned as significant actors of the EU Economic Area because of being the candidate states to EU.

The first part of this section is consisted the “Size of the Firm”. So, as it was mentioned before, European Commission decided a specific classification for SMEs. For this survey, due to the privacy reasons, only the number of staff asked to companies to classify them as Micro, Small or Medium Enterprises. However, some companies who have more than 250 working staff can also act like a SME, so in this classifications, enterprises with more than 250 staffs but less than 500 will be considered also as a “Bigger Sized SME”. Then as the project is focused directly to the technological innovation, then non-technological one, it was also asked to check the number of their staff who is classified as an engineer. Thus, there can be checked if there is a parallel relation between these numbers and the understanding of the technological innovation or not. Beside this issue, there is also the reality of love number graduated engineers working for SMEs (Rolfo and Calabrese, 2003).

In order to relate the needs of a modern structural design of a company with the innovative reactions, the structural order and the quality certificates of the enterprise were asked also in the survey. The idea behind these questions is to show the relation of the innovative reactions of the companies with their structural diversification and also their obligations coming together with the quality certificates. Several certificates were mentioned in the project such as ISO 9001:2000, ISO 14001, ISO/TS 16949 and QS 9000. If there are other key certificates for the enterprise due to their specific business sector, there is also a place in the survey where they can fill.

The second part of this chapter is “Structure”. In order to understand the background of the innovation policy understanding of the company, it is a must to know the structure details of the company’s business. There are several questions asked on this section. One of the major questions is the core business of the turnovers. The answer for that question will help on analyzing the survey for the classification of the SMEs. The manufacturing, the engineering, the services after sales and the consultancy are the first remembered sectors for the suppliers of the main contractors. However, there can always be a different, specific sector than those ones, so there is also a given place for those sectors in the survey.

Today, the structure of the small companies are quite diversified from family business to one owner ones, from shared by all workers to open to stock market ones, there are several kinds of companies. That can be seen also an obstacle or an helper

for the understanding of the innovation. That's why, a question is asked about the ownership of the company to SMEs with the classification of "Family Business or Incorporate Enterprise with Several Partners", "All or the majority of employees are also stakeholders of the company" and "Open to Stock Market". In the survey, there is also mentioned the possibility of other special cases, so another section as "Others" is mentioned also.

Another classification on the SMEs was being autonomous, partner or linked company as it was mentioned in the previous chapters. So, a supplier can have their own companies as suppliers or other non-supplying business belonging to their groups and managed by their own headquarters.

Beside this issue, they can have long term partnerships where their enterprises can belong to some business groups or they can have some special business agreements with other enterprises on having same strategies/business policies. Those issues are raised in the survey below questions:

- Does your company have any ownership of other companies?
- How many long term partnerships do you have?

The last of that section of the survey is called "Business" which tries to investigate the outsourcing activities in sales, production, customer services and engineering branches of the business. The idea behind this is to understand if the supplier company is outsourcing any of those activities and if yes, to which directions they want to outsource such as regional or national outsourcing, an outsourcing to EU Area or even further. Another question asked in the survey is also if the company made any business with a company from abroad in the last 3 years or not.

4.1.3 Research and Development Interest

That chapter is a common section for both surveys. There is only one question difference between them. The section starts with an explanation of the difference between Research & Development and Innovation. It is a common mistake done in the industrial business sector to mix both notions. That's why; it was seen a main need to make this explanation in the survey. Actually, Oslo Manual also

defines the need of this explanation because it was clearly mentioned that the questions of R&D and Innovation should not mixed up. (OECD, 2005) So, in both surveys, that text is mentioned:

“ The Research and Development (shortly, R&D) term means creative activities, based on a methodic achievement in order to increase the reserve of knowledge, including human and business knowledge, in order to formulate new functions. The main difference between innovation and R&D is that every outcomes coming from the R&D should not be implemented in the products or processes. They should not have any commercial impacts. The Innovation has a special economic value also apart from its ordinary scientific and technological development part. R&D investments are also in general reflection of governmental or institutional encouragement initiative to support current operations in order to improve the future performance or returns.”

After this important and significant explanation, the fallowing questions are mentioned:

- Do you have a R&D Department?
- How do you obtain new R&D in your sector for your enterprise?
- What is the percentage of the R&D expenses related to your revenues?
- What is the number of the patents taken by your enterprise in the last 3 years?
- What is the number of the possible patents which could be taken by your enterprise in the last 3 years?

With those questions, survey aimed to understand the level of R&D penetration inside of the company work. So, if the enterprise is having a R&D Department or not and how these enterprises are reaching to the relevant Research and Development for their business. For reaching it, they can use their main contractors or other companies in their groups, other SMEs or their suppliers directly. They can also get in touch with universities and research centers or directly they can be stakeholders of technological platforms. There is also the possibility to develop that development inside of the company by the relevant department. So the

answers to the survey will identify also that issue. The classification of those categories is also mentioned in the Oslo Manual for an advice to the survey creators. (OECD, 2005) Moreover, Oslo Manual says “it is recommended that the innovation survey should at least ask if the firm has acquired technology from the domestic or foreign market (if possible sub-divided by region) or sold technology to the domestic or foreign market (similarly sub-divided)” (OECD, ,2005). However for this survey, that kind of resourcing of the diversification was not seen a need. As an addition to these questions, it is also asked the percentage of the R&D expenses related to their revenues in order to see the financial importance given to these issues by the company.

Moreover, it was asked the number of patents taken in the last years with the advice of the Manual: “It is suggested that firms should be asked to evaluate the effectiveness of various methods for maintaining and increasing competitiveness of innovations introduced during the last three years. The methods could be:· patents;...” (OECD, 2005). In general, focus was done on the number of patents in order to measure innovation. Undertaking patents’ importance takes European Countries out of the innovation race on the world (Blackburn, 2003). However, despite the classical approach to the innovation surveys, the questionnaire did not stay on that point but also asked the number of possible patents which can be taken in the last 3 years (1 for the Main Contractors) because some companies can skip to take the patents in order to keep the details of their new technology or their new product.

One more question is added to the supplier version of the survey. It’s about specifically to understand if the SMEs are following the new researches published about their business sectors or not. And if they are following, which are the ways they are using such as business magazines, Internet, Universities and Research Centers, other SMEs or the Main contractor.

4.1.4 Innovation Interest & Innovation Policies

On this part, even if there are similar questions in both surveys, due to being strictly related to the main aim of the survey, there is a diversification in the questions. Both sections are starting with the same explanation on the innovation definition basically a detailed version of the OECD’s definition:

“In the Oslo Manual, published by OECD in 2005, innovation is presented as: “Technological product and process innovations comprise implemented technologically new products and processes and significant technological improvements in products and processes.” (Oslo Manual, 2005) The implementation must be with the introduction on the market or used within the operations of business activities such as manufacturing, services, etc... Technological product and process innovations is an union of scientific, technological, organisational, financial and commercial progress. Each newness is not counted an “innovation” unless it has no commercial gain.”

This section in the survey to suppliers is starting with a question which is not asked as a classical innovation survey question:

- Did you know the difference between innovation and R&D before this survey?

The answer to the question is based to the honesty of the filler, aiming to show that innovation is not also a topic well known exactly in the industrial business sector. Following this question, two classical questions which can be found in each innovation survey are taking place:

- Are you making regularly innovation in your products?
- Are you making regularly innovation in your process?

Regular innovation has to be done via some basic rules and standards inside of the company. So the answers to those questions will show us if they have any innovation tradition inside of the enterprise or not.

As an addition to the survey to Main Contractors, there is one more question asked which a non-classical innovation survey question is also. It is about how they are motivating their employees for the innovation. The answers are, either:

- There is no motivation for innovation in their company;
- or
- Giving an Extra Salary, offering Wider Career opportunities or self motivating

The next section of this chapter is “Reaching to the Innovation”. The idea behind that section is to understand if they are working with any partners on the

innovation and if they are aware about the possibilities of innovation platforms. That's why those questions are asked:

- In the last 3 years, have you ever contacted with any company/institution in order to develop a product? If Yes, which kind of institution was this?
- In the last 3 years, have you ever contacted with any company/institution in order to develop a process? If Yes, which kind of institution was this?

The answers for those questions were chosen from the experiences of different people of the industry:

- a. No, we did not contact anybody.
- b. Yes, we contacted our main contractor
- c. Yes, we contacted other SMEs
- d. Yes, we contacted some Universities and Research Centers
- e. Yes, we had some contacts, like.....

The aim behind those questions is to see if they are cooperating with any of those possible innovative idea resources or not and then as a following question of the survey to check if they are participating to any Innovation Platform or not. In the survey, innovation platforms are also described as:

“Innovation Platforms are the formalized collaborations between universities, companies and research institutions; generally granted by the local governments and European Commission; formed in order to share common projects on R&D and innovation)”

Another question raised on that part is to learn the reasons for the companies who are not collaborating with Innovation platforms.

Then, more questions are mentioned in order to see if they are cooperating with their main contractors or if their main contractors are trying to cooperate with them.

As a significant part for the survey to the suppliers is also a specifically dedicated part to the “Innovation Management”. With this part, there are several questions asked in order to improve the awareness of possible SMEs on the measurement the returns from the innovative investments and other general management of the innovation topics. As it is scientifically proven that there is a

scarcity of the measuring tools of the innovation investments (Rolfo, 2003), via those questions, SMEs can start to think on the possible tools for their business too. Oslo Manual is also mentioning this issue via : “It is recommended that information should be requested on R&D expenditure and R&D personnel.” (Oslo Manual, 2005)

In order to investigate the relation of the size of the company with the number of the staff for the management of innovation, there are two questions asked in this section.

4.1.5 Relations with Suppliers

As the big multinational companies started to focus on a specific basis to the innovation matters, the question raised in the minds is that if they are sharing their innovation work with their suppliers or not. It is largely accepted in the industrial areas that companies have to be in a dynamic innovation process if they are fighting inside of the global competition. However, how it is possible to be innovative in your products and services if your suppliers can not follow the same innovation speed as the main contractors are having. Or maybe they are faster than main contractors so it can even create a problem for the main contractors’ investments. In order to investigate this issue, that specific chapter is created inside of the survey.

First of all, it is asked if they have any special department or dedicated role in their enterprise for the relations with Suppliers. Some big sized companies created some outsourcing departments and leave all their supplier relations with those departments. (Nicoletti, 2007)

Then, there are other raised points in order to investigate the cooperation between suppliers and main contractors; if main contractors are giving special trainings to them or not, or if they are inviting them for special projects or not. Moreover, it is also asked to main contractors on the competitiveness policies for their suppliers too.

4.2 Survey Analysis Methods

After having enough samples from the filled surveys, there has to be a 95% confidence interval control since the purpose of the surveys is to take a random sample of data from SMEs in order to approximate the mean of the sampling set. The value of the results will answer our questions. As the main contractors are from

different sectors who are working on the multinational levels, that confidence test will not be applied to them. The confidence interval has to be applied to the survey of SMEs. For this interval, 95% confidence level is chosen because of the possibility of numerous occasions and the estimation of intervals which can cause wrong results.

In order to cluster the algorithms between the results, there can be SPSS software usage in order to specify the “hierarchical analysis”. (Dal Pont, 2007)

4.3 Survey Distribution

There are two ways of Survey Distribution. The first one is to contact with the main contractor companies such as General Electric, Ansaldo and Pirelli. Then, there was the distribution of a .pdf version of the file to them in order to distribute to their supplier companies. However, this way is not enough, so there is also a second way decided for this which is publishing the survey on the internet. That’s why, a software called LimeSurvey is used. So the front pages of the surveys are like the following images:



Figure 4.1 :Front Page of the Survey to Suppliers



Figure 4.2 :Front Page of the Survey to Main Contractors

The launched survey to suppliers is :

<http://150.217.14.250/survey/index.php?sid=48652&lang=en>

The launched survey to main contractors is :

<http://150.217.14.250/survey/index.php?sid=76435&lang=en>

Beside the internet and the first connections with main contractors, sometimes, we had to contact with suppliers directly. With the visits and the direct phone calls, there was a high amount of SMEs reached for this survey.

By the date of 08.06.2008, although several others told that they would be happy to join to the project, 10 main contractors filled the survey and contact with their suppliers:

- | | |
|------------------------------------|-----------------|
| - Eli Lilly Italia S.p.A. | - Pirelli Tyre |
| - Arkas Shipping and Transport S.A | - Ford Otosan |
| - YKM | - Renault |
| - Ansaldo Segnalamento Ferroviario | - Ansaldo Breda |
| - Yorum İnşaat | - Yapı Merkezi |

We would like to thank these main contractors for their participation, help and interest to our project.

5 RESULTS OF THE SURVEY

The survey was launched in 2 countries directly and through PIM Project, in several other countries too. The reached number on main contractors was 15 and the survey was delivered over 25 SMEs. However, that number has to be more due to the agreements done by main contractors.

Unfortunately, by the date 08.06.2008, we had 10 main contractors who filled surveys and only 5 SME who gave the answer back. That is a very anti-motivating result of 4 hard worked months from the launch of the survey.

Because of the reason that the pool of the companies from SMEs has a quite low quantity, a test on 95% confidence interval is not done for the sampling set. On that point, it is advised to the next researchers to make this checking when they used the survey.

The main contractors are from different countries and have different sizes. However, as they are from Turkey and Italy, the environments are similar and from the answers we got, there is homogeneity on them since organizational cultures from both countries are similar.

Both countries have quite developed historical background. Italy is one of the world's strongest economies with 1500 billion Euros of GNP. The most developed industrial sectors are automotive, construction and textile. Agriculture is also one of the key sectors together with high added valued tourism sector. This industrial structure is quite overlapping with Turkey's industrial structure. Together with established infrastructure and developed commerce network, Italy is a good example for Turkey's industrial development. As a developing country, Turkey can learn from the previous mistakes and good steps of Italy and implement the good examples for its sustainable development. Italy has the fourth position for Turkey's both export and import. The export done from Turkey to Italy on the year 2006 was 4.51 billion Euros and during the same interval, the import was 5.72 billion Euros. Even those

numbers are giving an idea about the interaction between both countries on the level of industry. (CCII, 2008)

The results taken from the survey of main contractors are given as tables. The analysis of the survey summary is done in the next chapter. While reading the answers, it has to be remembered that some questions are multiple options. For the section of Research and Development Interest which is seen on Table 5.1, multiple optioned question is the second question only.

Table 5.1 Field Summary for Research and Development Interest Section

i. Do you have an R&D Department?	
Answer	Percentage
Yes (Y)	66,67%
No (N)	33,33%
ii. How do you obtain new R&D in your sector for your enterprise?	
Answer	Percentage
Via other companies of our Group (a)	33,33%
Via Suppliers (b)	44,44%
Via Technological Platforms (c)	55,56%
Via Relations with Universities and Research Centers (d)	55,56%
Via the R&D Department (e)	66,67%
iii. What is the percentage of the R&D expenses related to your revenues?	
Answer	Percentage
< 1% (a)	44,44%
1 - 2 % (b)	11,11%
2 – 5 % (c)	33,33%
5 – 10% (d)	0,00%
>10% (e)	11,11%
iv. What is the number of the patents taken by your enterprise in the last 3 years?	
Answer	Percentage
0 (a)	33,33%
1 – 5 (b)	33,33%
6- 15 (c)	11,11%
16- 25 (d)	0,00%
more than 25 (e)	22,22%
v. What is the number of the possible patents which could be taken by your enterprise in the last 3 years?	
Answer	Percentage
0 (a)	66,67%
1 – 5 (b)	11,11%
6- 15 (c)	11,11%
16- 25 (d)	0,00%
more than 25 (e)	11,11%

Table 5.2 Field Summary for Understanding the Innovation Section

i. Are you making regularly innovation in your products?	
Answer	Percentage
Yes (Y)	88,89%
No (N)	11,11%
ii. Are you making regularly innovation in your process?	
Answer	Percentage
Yes (Y)	88,89%
No (N)	11,11%
iii. How are you motivating your employees for innovation?	
Answer	Percentage
There is no motivation for innovation in our company. (a)	22,22%
Giving an Extra Salary (b)	33,33%
Offering Wider Career opportunities (c)	44,44%
They are self motivating (d)	44,44%
Other ways (e)	22,22%

Although, there are 2 sections in the main part of the survey called “Innovation Interest & Innovation Policies”, as it is seen on the Table 5.2 and Table 5.3, the answers are divided into two tables which can create easiness for the evaluation of the answers. On the Table 5.2, multiple optioned questions are the third question only. However, on the Table 5.4, the questions IV, V and X are multiple optioned questions.

On the section “Relations with Suppliers”, there are no multiple optioned questions. The questions were clear and also there are two questions not mentioned on because those questions are the explanations for the previous questions’ answers. Those answers are evaluated in the next chapter “6. Analysis of the Survey Results.”

Table 5.3 Field Summary for Reaching the Innovation Section

iv. In the last year, have you ever contact any company/institution in order to develop a product? If Yes, which kind of institution was this?	
Answer	Percentage
No, we did not contact anybody (a)	11,11%
Yes, we contacted our suppliers (b)	44,44%
Yes, we contacted other companies of our Group (c)	66,67%
Yes, we contacted some Universities and Research Centers (d)	66,67%
Yes, we had some contacts, like (e)	22,22%
v. In the last year, have you ever contact any company/institution in order to develop a process? If Yes, which kind of institution was this?	
Answer	Percentage
No, we did not contact anybody (a)	0,00%
Yes, we contacted our suppliers (b)	22,22%
Yes, we contacted other companies of our Group (c)	44,44%
Yes, we contacted some Universities and Research Centers (d)	55,56%
Yes, we had some contacts, like (e)	22,22%
vi. Are you currently participating to any Innovation Platform?	
Answer	Percentage
Yes (Y)	55,56%
No (N)	44,44%
vii. Have you ever participated in any Innovation Platform in the last years?	
Answer	Percentage
Yes (Y)	55,56%
No (N)	44,44%
ix. If not, what was the main reason for not collaborating with Innovation Platforms?	
Answer	Percentage
We did not know the existence of those platforms (a)	33,33%
We did not trust possible partners. (b)	0,00%
We did not have time to participate them (c)	0,00%
We did not have enough human and/or financial resources (d)	0,00%
Other (e)	66,67%
x. How do you measure your returns from the innovative investments?	
Answer	Percentage
We never measure our return from those investments (a)	11,11%
Measuring only the costs (b)	22,22%
Return on Investment – Cost/Return Balance (c)	77,78%
Market Share Positioning & Market Value Changes (d)	22,22%

Table 5.4 Field Summary for Relations with Suppliers Section

i. Do you have any special department or dedicated role in your enterprise for the relations with Suppliers?	
Answer	Percentage
Yes (Y)	90,00%
No (N)	10,00%
ii. Have you ever been asked for support from your suppliers for any kind of improvement in their production processes and products?	
Answer	Percentage
Yes (Y)	70,00%
No (N)	30,00%
iii. If yes, what is your reaction to those requests? Are you supporting them?	
Answer	Percentage
Yes (Y)	60,00%
No (N)	0,00%
iv. Do you have a special training service for your suppliers?	
Answer	Percentage
Yes (Y)	40,00%
No (N)	60,00%
v. Are you encouraging your suppliers for joint projects with your other suppliers?	
Answer	Percentage
Yes (Y)	60,00%
No (N)	40,00%
vi. If Yes, what are their reactions? Are they collaborating with each other?	
Answer	Percentage
No answer	33,33%
Yes (Y)	66,67%
No (N)	0,00%
vii. If Yes, how are the average outcomes from those collaborations?	
Answer	Percentage
No answer	30,00%
We did not measure outcomes. (a)	10,00%
It can be better (b)	20,00%
It is OK (c)	40,00%
It is better than we expected (d)	0,00%
viii. Are you creating a competitive environment for your suppliers to compete between them?	
Answer	Percentage
Yes (Y)	88,89%
No (N)	11,11%
x. Are you helping your suppliers to be stronger in a competitive environment?	
Answer	Percentage
Yes (Y)	55,56%
No (N)	44,44%

Nevertheless, there were few results from SMEs. They are shown in the next tables.

Table 5.5 Summary for SMEs Characteristics

i. What is the number of Employees?	
Answer	Percentage
10 – 50 (b)	60,00%
51-250 (c)	40,00%
ii . What is the percentage of Engineers employed in your company?	
Answer	Percentage
No answer	20,00%
5% – 15% (b)	40,00%
15%-25% (c)	40,00%
iv. Which quality certificates do you have?	
Answer	Percentage
We do not have any certificate	40,00%
ISO 9001:2000 (a)	80,00%
ISO 14001 (b)	40,00%
ISO/TS 16949 (c)	20,00%
v. What is the core business of your turnovers?	
Answer	Percentage
Manufacturing (a.)	80,00%
Services (c)	20,00%
vi. How is the ownership of the company?	
Family Business or Incorporate Enterprise with Several Partners	100,00%
vii. Does your company have any ownership of other companies?	
Yes (Y)	60,00%
No (N)	40,00%
viii. How many long term partnerships do you have?	
1-5 (b)	80,00%
6-10 (c)	20,00%
ix. How is the “Sales” Structure in your company?	
We do not have a Sales Department (a)	40,00%
We have a central “Sales” Department (b)	40,00%
We have international representative sales offices in different countries (e)	20,00%

Those numbers are quite general and they do not give us even a general overview of the SMEs. As it is seen, all the SMEs participated to the survey are family business. However, with other specifications, it is seen that there is no homogeneity in the results coming from SMEs.

Table 5.6 Summary of Outsourcing Activities of Suppliers

x. Are you outsourcing your “Production”?	
No, it is totally insourced (a)	40,00%
Yes, partly (b)	40,00%
Yes, completely (c)	20,00%
xi. If yes, to where are you outsourcing it?	
Inside of your region (a)	33,33%
Inside of your country (b)	66,67%
xii. Are you outsourcing your “Customer Services”?	
No, it is totally insourced (a)	60,00%
Yes, partly (b)	40,00%
xiii. If yes, to where are you outsourcing it?	
Inside of your region (a)	50,00%
Inside of EU Area (c)	50,00%
Outside of EU Area (d)	50,00%
xiv. Are you outsourcing your “Engineering” needs?	
No, it is totally insourced (a)	60,00%
Yes, partly (b)	40,00%
xv. If yes, to where are you outsourcing it?	
Inside of your region (a)	50,00%
Inside of your country (b)	50,00%
xvi. In the last 3 years, did you make any business with a company from abroad?	
Yes (Y)	100,00%

Table 5.7 Summary of Research & Development Activities of SMEs

i. Do you have a R&D Department?	
Answer	Percentage
Yes (Y)	60,00%
No (N)	40,00%
ii. Are you following new researches in your business? How?	
We don't follow new researches in our sector (a)	20,00%
Via Business Magazines (b)	40,00%
Via Internet (c)	40,00%
Via Relations with Universities and Research Centers (d)	20,00%
Via other SMEs (e)	40,00%
Others: (g)	20,00%
iii. How do you obtain new R&D in your sector for your enterprise?	
Via other partner SMEs (b)	50,00%
Via Relations with Universities and Research Centers (d)	25,00%
Via our R&D Department (e)	50,00%
iv. What is the percentage of the R&D expenses related to your revenues?	
< 1% (a)	40,00%
1 - 2 % (b)	20,00%
2 – 5 % (c)	20,00%
5 – 10% (d)	20,00%
v. What is the number of the patents taken by your enterprise in the last 3 years?	
0 (a)	80,00%
6- 15 (c)	20,00%

Table 5.8 Summary of Cooperation Activities of SMEs with their Environment

i. Did you know the difference between innovation and R&D before this survey?	
Yes (Y)	80,00%
No (N)	20,00%
ii. Are you making regularly innovation in your products?	
Yes (Y)	60,00%
No (N)	40,00%
iii. Are you making regularly innovation in your process?	
Yes (Y)	60,00%
No (N)	40,00%
vi. Are you currently participating to any Innovation Platform?	
Yes (Y)	60,00%
No (N)	40,00%
vii. Have you ever participated to any Innovation Platform before in the last years?	
Yes (Y)	40,00%
No (N)	60,00%
x. Have you ever asked the support of the main contractor for any kind of improvement in your business process and products?	
Yes (Y)	60,00%
No (N)	40,00%
xii. Have your main contractor asked you to be involved into any innovation projects of themselves?	
Yes (Y)	60,00%
No (N)	40,00%
xiv. How are you measuring your returns from the innovative investments?	
We never measure our return from those investments (a)	40,00%
Measuring only the costs (b)	40,00%
Return on Investment – Cost/Return Balance (c)	20,00%
xv. Are you aware any grants from EU and/or from your regional and/or national governments for your innovation based investments?	
Yes (Y)	40,00%
No (N)	60,00%
xvi. What is the percentage of the responsible employees in your company for managing the innovation?	
1% – 5% (b)	100,00%
xvii. What is the percentage of the skilled employees to manage an innovation process?	
Less than 5% (a)	80,00%
5% – 15% (b)	20,00%

6 ANALYSIS OF THE SURVEY RESULTS

We do not know the reasons and the motivation behind the company representatives who already confirmed their participations, but who also did not fill the surveys despite many calls and e-mails. However, one of the reasons can be the will to keep the innovation related activities. Another reason can be also not giving the related importance to the topic although it was told by several industrials as a critical topic for SMEs. Unfortunately, thus, we can say that innovation in SMEs is still far from its deserved place. During the meetings with companies, every company representative was talking about international competitiveness and the reality of innovation.

If we analyze the few results we got from survey, 1/3 of the main contractors who participated to the survey don't have any Research and Development Departments. (Figure 6.1) However, this doesn't mean that those companies are not making innovation. From the survey, it is clear that almost all main contractors are making regularly innovation on their products and on their processes. (Figure 6.2) Thus, we understand innovation is independent from R&D facilities, but it can also be done without any research investments.

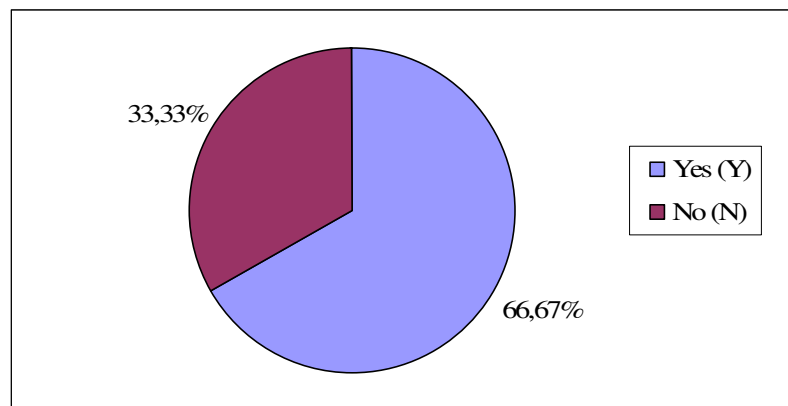


Figure 6.1 :R&D Departments in Main Contractors

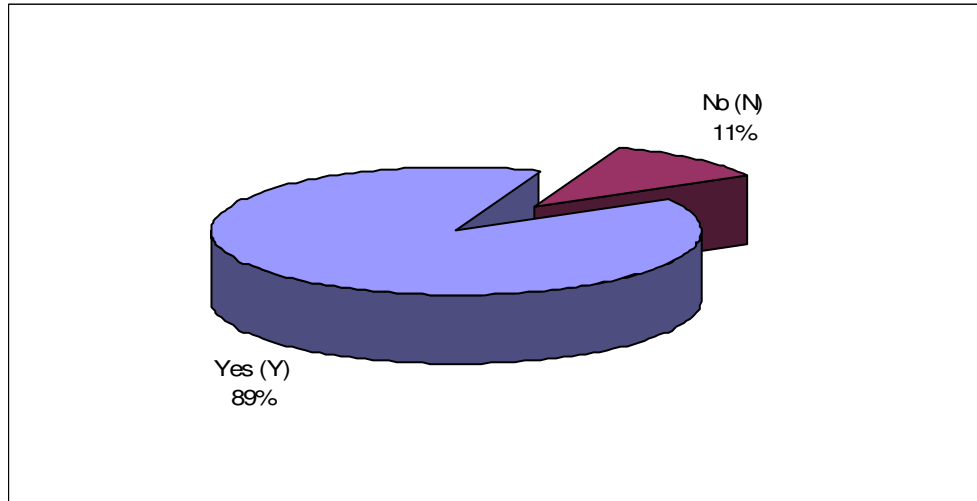


Figure 6.2 :Regular Product and Process Innovation Rate in Main Contractors

From the second question of Table 5.1, the most popular ways of obtaining new R&D in the sector are Technological Platforms, Universities and Research Centers or creating its own newness through their R&D Departments. By comparing this answer with the first question of the section, we can understand that all companies which are investing R&D departments are using their departments for the creation of new methods and products. However, from this question, we see that main contractors are not learning too much from their suppliers. (Figure 6.3)

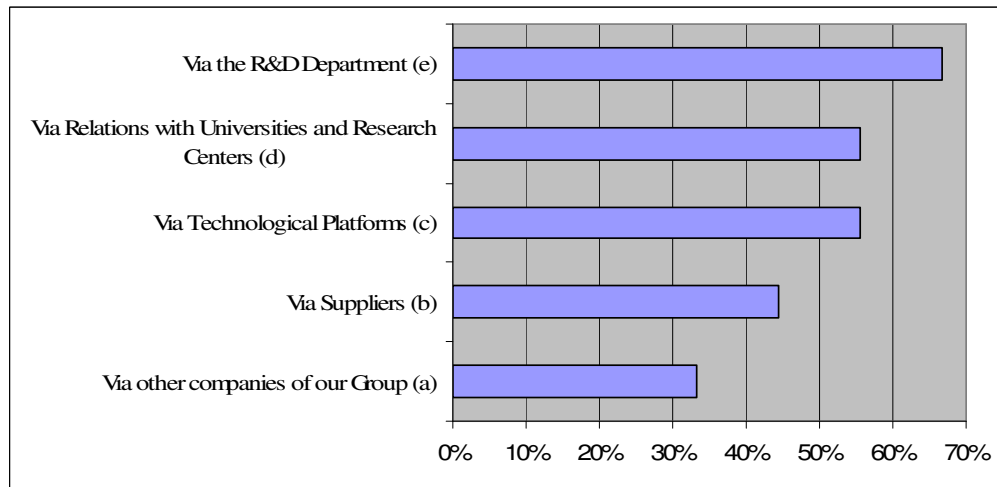


Figure 6.3 :Regular Product and Process Innovation Rate in Main Contractors

The next three questions of the section show us that R&D expenses related to the revenues are not dependant with the number of patents. But then, the result from the last question of this section (Table 5.1 , Question v) shows us that there are companies which are hiding the new products and processes from the market and

from the world. The answer we got for these cases is that they would like to keep them for them in order to develop more and to improve them to a level which has more market value. (Figure 6.4)

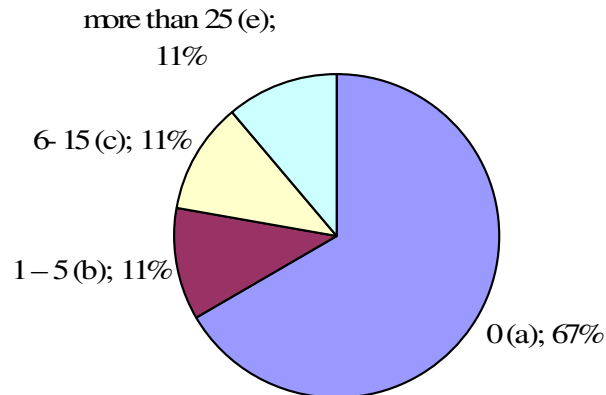


Figure 6.4 :Number of Possible Patents which were not taken during the last year

However, the way they motivate their employees for innovation is quite diversified. The most popular way of motivation is offering wider career opportunities and also giving them the culture of innovation in order to have self motivation. (Figure 6.5)

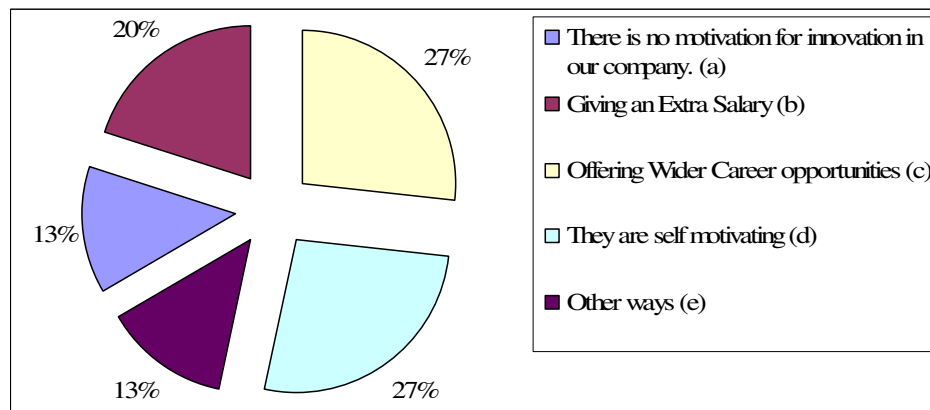


Figure 6.5 :Motivation for Innovation in Main Contractors

On this point, there are really good examples on our world for the motivation of employees to the innovation. One of the Turkish banks, TEB, owned by BNP Paribas opened a contest among its employees for new ideas. Through a virtual portal, TEB started to collect new ideas from the bank's employees. An innovation team of the bank, formed by 95 people, started to investigate the ideas on this portal and they found an idea from a security guard of the bank. That idea became the new credit

project of the bank and improved 100% credit requests. The security guard became regular employee of the bank which means a new wider career for him. (Radikal, 2008)

On the Table 5.3, the results are much more interesting. In the last year, almost all the companies contacted with some institutions or companies in order to develop a product or process. For product development, companies prefer to work together with other companies for their Group or Universities and Research Centers. Only half of them worked together with their suppliers. However, an interesting result was having customers are product developer contacts. With the input taken from the customers, they are improving their products. That's why we can think that improvement of products can be done with good customer relations in order to take new ideas which will be useful for the market.

However, for process innovation, although main contractors are still working with universities and research centers, they are less interested of working together with suppliers and other companies of the group. However, on this point, there is another actor coming for development of process: Consulting Companies.

Unfortunately, Innovation Consulting Companies are not well developed on Europe. United States of America, China and India are now the worldwide leader countries for those companies. The reason on the minimal interest to these companies is the universal limiting believes. Unfortunately, companies are thinking that having new strategy framework or creating an innovation management system is always leading companies to the Innovation. However, this may become more reachable with the support of an experienced consulting company. (Erehwon, 2008)

From the survey results, it is also seen that companies which do not have any R&D departments are also not participating to any innovation platform and all the companies who joined before to those platforms are already participated to any networks, last year too. The companies who did not participate to those networks declared that they do not have any knowledge about the existence of them.

The majority of the companies which are doing innovation and investing financial resources for those innovations are measuring their returns by using return on investment methods. Beside ROI methods, there are also cost measuring methods for some cases or continuous market share follow up. (Figure 6.6)

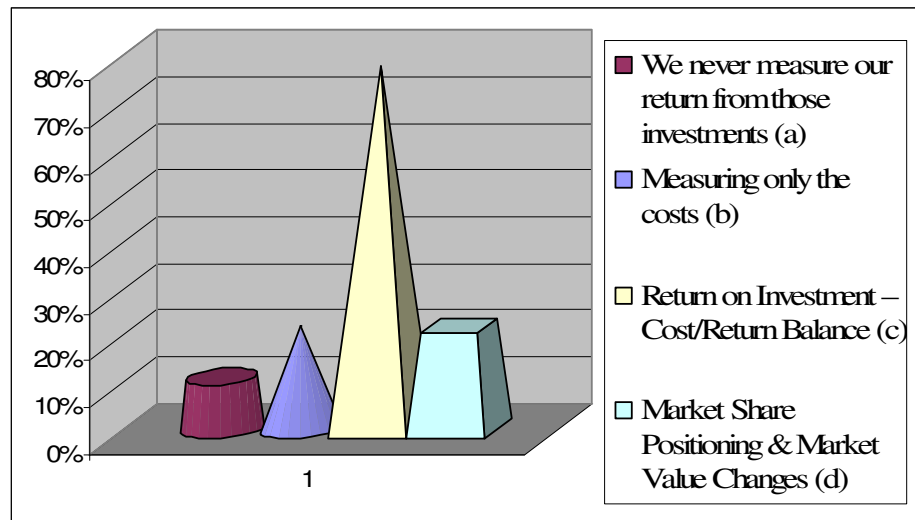


Figure 6.6 :Means used for the Measurement of Innovation in Main Contractors

The majority of the companies are using a department or special role in their enterprises in order to regulate the relations with their suppliers and those companies have been asked already their support from their suppliers in order to make the improvements on suppliers' products and processes. All the companies which got these requests supported their suppliers.

Half of the companies participated to our survey have a special training service for their suppliers. Some of them are going to their suppliers and investigate them if they can fulfill the requirements of the company. In order to improve the skills of the suppliers, they even give trainings to them and also certificate them. The reasons for those trainings are to be able to get supported on time from suppliers during the production processes in order to reach the aimed production rate which can change during the year due to the requests of the market.

Those companies are also encouraging their suppliers to make some projects together with their suppliers. On those cases, the reaction of the suppliers is quite positive and they are collaborating. However, we do not have any results on why those collaborations are happening. This has to be answered with the analysis of the supplier survey.

Some cases, companies are not analyzing the outcomes of theses collaborations. However, the majority is satisfied from these collaborations.

They are mostly creating a competitive environment for their suppliers. However this competitive environment diversifies between motivated competitive environment and forcing competitive environment. That becomes another problem to be investigated.

For the creation of these environments, companies are using constant evaluations for their suppliers and create promotions for them. Not only promotions but also special competitions between them such as prices of “BEST Supplier of the sector” etc... are other ways of competitive environment for the suppliers.

However, it is also seen that some of the main contractors are not helping their suppliers in order to let them to be stronger in this competitive environment. However, when they helped them, they used special agreements with non-exclusivity rights on products developed together or they are making long term agreements. There are also special projects created for those suppliers. Nevertheless, special internet portals are used also to support the suppliers. However in most cases, those portals are not pure networks which can create an interaction of the supplier – supplier.

7 CONCLUSION AND DISCUSSION

After a long research done inside of the articles and books, it is seen that the relation on the innovation level between buyer and suppliers is not so clear. Some companies started to build this relation however it is not well defined yet. They are still moving slowly. We do not have any results from SME side. We do not know also what SMEs are gaining by working together with their main contractors on the innovation field. Although it was seen with good outcomes by main contractors, we do not find any outcomes from the suppliers benefit from the collaborations and their interest to the innovation.

Another untouched expected outcome from the survey was the investigation of the product performance improvements and process innovation from the collaboration of the main contractors and their suppliers. However, unfortunately, due to the huge lack of interest to the survey from SMEs, this proposal stays as an unanswered question until the time when SMEs will fill the survey.

Nevertheless, it is seen that main contractors, although, they are working together with suppliers on the innovation field, they are holding the control of the propriety of their products with patents. Unfortunately, patenting is not well understood and related only with Research and Development works. However, we can not say anything directly for the interest of the SMEs on those collaborations.

In order to take a final conclusion from the very limited results and the lack of interest of SMEs, innovation can be seen still as a myth and we can clearly say that still an unknown as a reality for the Small and Medium Enterprises. Main Contractor companies have to investigate more on their suppliers in order to teach them on innovation in order to prepare them for the needs of the new worldwide market realities. Even the national market demands are changing each day, so main contractors have to know if their suppliers are ready for the waving of the demand or not.

With those results, the answers to our questions are:

Q1: Are main contractor companies in favor of cooperating with their suppliers for the product and process innovation?

Despite the lack of the data, there is no sign from the main contractor side about the lack of interest on the cooperation with suppliers for the product and process innovation. On the contrary, there are good examples from their side in order to involve their supplier enterprises for these activities.

Q2: Are Small and Medium Enterprises in favor of cooperating with their main contractors for the product and process innovation?

Unfortunately, there is no data so far in order to answer this question.

Q3: Are Small and Medium Enterprises well informed by the existence of innovation collaborations?

Unfortunately, there is no data so far in order to answer this question.

Q4: Can Small and Medium Enterprises benefit with innovation focused strategies while working together with other business partners?

Unfortunately, there is no data so far in order to answer this question. However, from the interviews with main contractors and also from the answers given by them to the survey questions, main contractors are seen these partnerships as a good investment and looking forward to create so called “innovation ecosystems” for their business.

The final word for the thesis can be as it has been told during one of the main contractors meeting:

“We always put some targets for our suppliers like increase the efficiency as 3% or decrease the costs. However, the important thing for big, multinational enterprises is to take care of their suppliers as their customers. Then, a collaborative success can come together and as a result, big enterprises can lead the market much more easily than its competitors”

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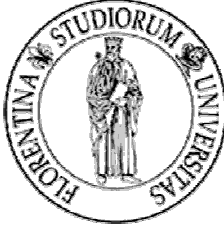
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APPENDIX A – SURVEY FOR SUPPLIERS



Survey on Innovation Policies and Innovation Management



This survey was created in order to supply the project of “investigation of the relations between main contractors and their Small and Medium Enterprise (SME) suppliers on the innovation management and innovation policies”. This project is a joint Master Thesis project between the University of Florence, Italy and Istanbul Technical University, Turkey. Two Stages were decided for the project. The first stage is the main investigation in Italy and then, investigation in Turkey for comparing the results between one developed country and one developing country. The first step was designed as two surveys: one for the Main Contractor and the other one for its suppliers.

The survey that you are reading now belongs to the first stage. We would like to thank you for your great contribution to this important industrial project.

Name of the Company:

Sector:

Address of the Company:

Your Name:

Your Position in the Company:

Contact Info (optional):

Please choose the company whom you are working the most among the following companies:

- | | | | | |
|---|-------------------------------|---|----------------------------------|--------------------------------|
| ☐ Ansaldo Signal | ☐ Ford | ☐ General Electric | ☐ Pirelli | ☐ Lilly |
| ☐ Arkas | ☐ YKM | ☐ Renault | ☐ Diğer | |

If none of those enterprises is one of your main customers, please click "other" and contact with the administrator: survey@siti.de.unifi.it

A. General Information about the Company:

In this questionnaire, you will find some questions mentioning EU Area. For this research, EU Area consists, 27 European Union Members, EFTA Countries (Iceland, Liechtenstein, Norway and Switzerland) and the Official candidate countries of EU (Croatia, the Former Yugoslavian Republic of Macedonia and Turkey).

a. Size of the Firm:

i. What is the number of Employees?

- a. Less than 10 b. 10 – 50 c. 51-250 d. 251-500 e. More than 500

ii. What is the percentage of Engineers employed in your company?

- a. Less than 5% b. 5% – 15% c. 15%-25% d. 25-50% e. More than 50%

iii. What is the number of sub-departments that you have and what are their names?(*e.g. Marketing, Engineering, Design Departments, etc*)

Number: Name of the Departments:
.....

iv. Which quality certificates do you have?

- a. We do not have any certificates
b. ISO 9001:2000
c. ISO 14001
d. ISO/TS 16949
e. QS 9000
f. Others:

.....
.....
.....

b. Structure:

i. What is the core business of your turnovers?

- a. Manufacturing
b. Engineering
c. Services
d. Consultancy
e. Others

ii. How is the ownership of the company?

- a. Family Business or Incorporate Enterprise with Several Partners
b. All or the majority of employees are also stakeholders of the company
c. Open to Stock Market
d. Others:

iii. Does your company have any ownership of other companies?

(Your company can have some suppliers or other non-supplying business belonging to your group and managed by your own headquarters)

- a. Yes b. No

- iv. How many long term partnerships do you have? (*Your company can belong to some business groups or you can have some special business agreements with other enterprises on having same strategies/business policies*)
- a. 0 b. 1-5 c. 6-10 d. 11-25 e. Over 26

c. Business:

- i. How is the “Sales” Structure in your company? (*you can sign for more than one answer*)

- a. We do not have a Sales Department b. We have a central “Sales” Department
c. We have regional sales offices d. We have national sales offices
e. We have international representative sales offices in different countries.

- ii. Are you outsourcing your “Production”?

- a. No, it is totally insourced
b. Yes, partly
c. Yes, completely

- iii. If yes, to where are you outsourcing it? (*you can sign for more than one answer*)

- a. Inside of your region.
b. Inside of your country.
c. Inside of EU Area
d. Outside of EU Area

- iv. Are you outsourcing your “Customer Services”? (*e.g. establishment of machinery, technical assistance after sales, etc...*)

- a. No, it is totally insourced
b. Yes, partly
c. Yes, completely

- v. If yes, to where are you outsourcing it? (*you can sign for more than one answer*)

- a. Inside of your region.
a. Inside of your country.
b. Inside of EU Area
c. Outside of EU Area

- vi. Are you outsourcing your “Engineering” needs?

- a. No, it is totally insourced
b. Yes, partly
c. Yes, completely

- vii. If yes, to where are you outsourcing it? (*you can sign for more than one answer*)

- a. Inside of your region.
- b. Inside of your country.
- c. Inside of EU Area
- d. Outside of EU Area

viii. In the last 3 years, did you make any business with a company from abroad?

- a. Yes
- b. No

B. Research and Development Interest:

The Research and Development (shortly, R&D) term means creative activities, based on a methodic achievement in order to increase the reserve of knowledge, including human and business knowledge, in order to formulate new functions. The main difference between innovation and R&D is that every outcomes coming from the R&D should not be implemented in the products or processes. They should not have any commercial impacts. The Innovation has a special economic value also apart from its ordinary scientific and technological development part. R&D investments are also in general reflection of governmental or institutional encouragement initiative to support current operations in order to improve the future performance or returns.

- i. Do you have a R&D Department?
 - a. Yes
 - b. No

- ii. Are you following new researches in your business? How? (*you can sign for more than one answer*)
 - a. We don't follow new researches in our sector
 - b. Via Business Magazines
 - c. Via Internet
 - d. Via Relations with Universities and Research Centers
 - e. Via other SMEs
 - f. Via Main contractor
 - g. Others: (*please specify*):.....

- iii. How do you obtain new R&D in your sector for your enterprise? (*you can sign for more than one answer*)
 - a. Via Main contractor
 - b. Via other partner SMEs
 - c. Via Technological Platforms
 - d. Via Relations with Universities and Research Centers
 - e. Via our R&D Department

- iv. What is the percentage of the R&D expenses related to your revenues?
 - a. < 1%
 - b. 1 - 2 %
 - c. 2 - 5 %
 - d. 5 - 10%
 - e. >10%

- v. What is the number of the patents taken by your enterprise in the last 3 years?
 - a. 0
 - b. 1 - 5
 - c. 6- 15
 - d. 16- 25
 - e. more than 25

- vi. What is the number of the possible patents which could be taken by your enterprise in the last 3 years?
 - a. 0
 - b. 1 - 5
 - c. 6- 15
 - d. 16- 25
 - e. more than 25

C. Innovation Interest & Innovation Policies:

In the Oslo Manual, published by OECD in 2005, innovation is presented like: “Technological product and process innovations comprise implemented technologically new products and processes and significant technological improvements in products and processes.” (Oslo Manual, 2005) The implementation must be with the introduction on the market or used within the operations of business activities such as manufacturing, services, etc... Technological product and process innovations is an union of scientific, technological, organisational, financial and commercial progress. Each newness is not counted an “innovation” unless it has no commercial gain.

a. Innovation Understanding:

- i. Did you know the difference between innovation and R&D before this survey?
a. Yes b. No
- ii. Are you making regularly innovation in your products?
a. Yes b. No
- iii. Are you making regularly innovation in your process?
a. Yes b. No

b. Reaching to the Innovation

- i. In the last 3 years, have you ever contacted with any company/institution in order to develop a product? If Yes, which kind of institution was this? (you can sign for more than one answer)
 - f. No, we did not contact anybody.
 - g. Yes, we contacted our main contractor
 - h. Yes, we contacted other SMEs
 - i. Yes, we contacted some Universities and Research Centers
 - j. Yes, we had some contacts, like.....
- ii. In the last 3 years, have you ever contacted with any company/institution in order to develop a process? If Yes, which kind of institution was this? (you can sign for more than one answer)
 - a. No, we didn't contact anybody.
 - b. Yes, we contacted our main contractor
 - c. Yes, we contacted other SMEs
 - d. Yes, we contacted some Universities and Research Centers
 - e. Yes, we had some contacts, like.....
- iii. Are you currently participating to any Innovation Platform? (*Innovation Platforms are the formalized collaborations between universities, companies and research institutions; generally granted by the local governments and European Commission; formed in order to share common projects on R&D and innovation*)
a. Yes b. No
- iv. Have you ever participated to any Innovation Platform before in the last years?
a. Yes b. No

- v. If not, what was the main reason for not collaborating with Innovation Platforms?
- We did not know the existence of those platforms
 - We did not trust possible partners.
 - We did not have time to participate them
 - We did not have enough human and/or financial resources
 - Other: *(Please specify)*.....
- vi. Have you ever asked the support of the main contractor for any kind of improvement in your business process and products?
- Yes
 - No
- vii. If yes, what was the reaction of the main contractor? Did they help you?
- Yes
 - No
- Any Comments:.....
.....
.....
- viii. Have your main contractor asked you to be involved into any innovation projects of themselves?
- Yes
 - No
- ix. If yes, what was your reaction? Did you work with them?
- Yes
 - No
- Any Comments:.....
.....

c. Innovation Management:

- i. How are you measuring your returns from the innovative investments?
- We never measure our return from those investments
 - Measuring only the costs
 - Return on Investment – Cost/Return Balance
 - Market Share Positioning & Market Value Changes
 - Other Methods:.....
- ii. Are you aware any grants from EU and/or from your regional and/or national governments for your innovation based investments?
- Yes
 - No
- iii. What is the percentage of the responsible employees in your company for managing the innovation?
- 0
 - 1% – 5%
 - 5%-10%
 - 10-25%
 - More than 25%
- iv. What is the percentage of the skilled employees to manage an innovation process?
- Less than 5%
 - 5% – 15%
 - 15%-25%
 - 25-50%
 - More than 50%

Contact for this Survey:

When you finish the questionnaire, please return it to the University of Florence; via e-mail: survey@siti.de.unifi.it or via fax: +39 (0) 554224137

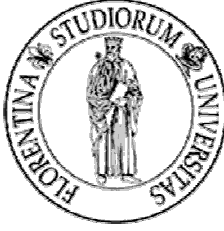
You can always fill the questionnaire online via internet:

<http://150.217.14.250/survey/index.php?sid=48652&lang=en>

If you have any questions or suggestions, please feel free to contact us:

survey@siti.de.unifi.it

APPENDIX B – SURVEY FOR MAIN CONTRACTORS



Survey on Innovation Policies and Innovation Management



This survey was created in order to supply the project of “investigation of the relations between main contractors and their Small and Medium Enterprise (SME) suppliers on the innovation management and innovation policies”. This project is a joint Master Thesis project between the University of Florence, Italy and Istanbul Technical University, Turkey. Two Stages were decided for the project. The first stage is the main investigation in Italy and then, investigation in Turkey for comparing the results between one developed country and one developing country. The first step was designed as two surveys: one for the main contractor and the other one for its suppliers.

The survey that you are reading now belongs to the first stage. We would like to thank you for your great contribution to this important industrial project.

Name of the Company:

Sector:

Your Name:

Your Position in the Company:

A. Research and Development Interest:

The Research and Development (shortly, R&D) term means creative activities, based on a methodic achievement in order to increase the reserve of knowledge, including human and business knowledge, in order to formulate new functions. The main difference between innovation and R&D is that every outcomes coming from the R&D should not be implemented in the products or processes. They should not have any commercial impacts. The Innovation has a special economic value also apart from its ordinary scientific and technological development part. R&D investments are also in general reflection of governmental or institutional encouragement initiative to support current operations in order to improve the future performance or returns.

- i. Do you have an R&D Department?
 - a. Yes
 - b. No

- ii. How do you obtain new R&D in your sector for your enterprise?
(you can sign for more than one answer)
 - f. Via other companies of our Group
 - g. Via Suppliers
 - h. Via Technological Platforms
 - i. Via Relations with Universities and Research Centers
 - j. Via the R&D Department

- iii. What is the percentage of the R&D expenses related to your revenues?
 - a. < 1%
 - b. 1 - 2 %
 - c. 2 – 5 %
 - d. 5 – 10%
 - e. >10%

- iv. What is the number of the patents taken by your enterprise in the last 3 years?
 - a. 0
 - b. 1 – 5
 - c. 6- 15
 - d. 16- 25
 - e. more than 25

- v. What is the number of the possible patents which could be taken by your enterprise in the last 3 years?
 - a. 0
 - b. 1 – 5
 - c. 6- 15
 - d. 16- 25
 - e. more than 25

B. Innovation Interest & Innovation Policies:

In the Oslo Manual, published by OECD in 2005, innovation is presented as: “Technological product and process innovations comprise implemented technologically new products and processes and significant technological improvements in products and processes.” (Oslo Manual, 2005) The implementation must be with the introduction on the market or used within the operations of business activities such as manufacturing, services, etc... Technological product and process innovations is an union of scientific, technological, organisational, financial and commercial progress. Each newness is not counted an “innovation” unless it has no commercial gain.

a. Innovation Understanding:

- i. Are you making regularly innovation in your products?
a. Yes b. No

- ii. Are you making regularly innovation in your process?
a. Yes b. No

- iii. How are you motivating your employees for innovation?
a. There is no motivation for innovation in our company.
b. Giving an Extra Salary
c. Offering Wider Career opportunities
d. They are self motivating
e. Other ways:

b. Reaching to the Innovation

- iv. In the last year, have you ever contacted any company/institution in order to develop a product? If Yes, which kind of institution was this? (you can sign for more than one answer)
 - a. No, we did not contact anybody.
 - b. Yes, we contacted our suppliers
 - c. Yes, we contacted other companies of our Group
 - d. Yes, we contacted some Universities and Research Centers
 - e. Yes, we had some contacts, like.....

- v. In the last year, have you ever contacted any company/institution in order to develop a process? If Yes, which kind of institution was this? (you can sign for more than one answer)
 - a. No, we didn't contact anybody.
 - b. Yes, we contacted our suppliers
 - c. Yes, we contacted other companies of our Group

- d. Yes, we contacted some Universities and Research Centers
- e. Yes, we had some contacts, like.....

- vi. Are you currently participating to any Innovation Platform?
(Innovation Platforms are the formalized collaborations between universities, companies and research institutions; generally granted by the local governments and European Commission; formed in order to share common projects on R&D and innovation)
 - a. Yes b. No

- vii. Have you ever participated in any Innovation Platform in the last years?
 - a. Yes b. No

- viii. If not, what was the main reason for not collaborating with Innovation Platforms?
 - f. We did not know the existence of those platforms
 - g. We did not trust possible partners.
 - h. We did not have time to participate them
 - i. We did not have enough human and/or financial resources
 - j. Other: *(Please specify)*.....

- ix. How do you measure your returns from the innovative investments?
 - f. We never measure our return from those investments
 - g. Measuring only the costs
 - h. Return on Investment – Cost/Return Balance
 - i. Market Share Positioning & Market Value Changes
 - j. Other Methods:.....

C. Relations with Suppliers:

- i. Do you have any special department or dedicated role in your enterprise for the relations with Suppliers?
 - a. Yes
 - b. No

- ii. Have you ever been asked for support from your suppliers for any kind of improvement in their production processes and products?
 - a. Yes
 - b. No

- iii. If yes, what is your reaction to those requests? Are you supporting them?
 - a. Yes
 - b. No

Any Comments:.....
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- iv. Do you have a special training service for your suppliers?
 - a. Yes
 - b. No

- v. Are you encouraging your suppliers for joint projects with your other suppliers?
 - a. Yes
 - b. No

- vi. If Yes, what are their reactions? Are they collaborating with each other?
 - a. Yes
 - b. No

- vii. If Yes, how are the average outcomes from those collaborations?
 - a. We did not measure outcomes.
 - b. It can be better
 - c. It is OK
 - d. It is better than we expected

- viii. Are you creating a competitive environment for your suppliers to compete between them?
 - a. Yes
 - b. No

- ix. If Yes, can you describe us how you are creating this?

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- x. Are you helping your suppliers to be stronger in a competitive environment?
a. Yes b. No

- xi. If Yes, can you describe us how you are helping them?

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Contact for this Survey:

When you finish the questionnaire, please return it to the University of Florence; via e-mail: survey@siti.de.unifi.it or via fax: +39 (0) 554224137

You can always fill the questionnaire online via internet:

<http://150.217.14.250/survey/index.php?sid=76435&lang=en>

If you have any questions or suggestions, please feel free to contact us:

survey@siti.de.unifi.it

CURRICULUM VITAE

Ömer HANTAL was born in Istanbul on December 1981. After graduating from Saint-Benoit French High-School, he got his diploma from Istanbul Technical University's Mechanical Engineering Department on 2005. Starting from this year, he became a student of Istanbul Technical University's Engineering Management Master Program. He speaks Turkish, French, English and Italian. He is currently the president of the XX International Board BEST, Board of European Students of Technology and also he is a member of the Executive Committee of IFEES, International Federation of Engineering Education Societies.

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