The Effects of Technological & Non-Technological Innovation on the Performance of Carpet Manufacturing Firms in Gaziantep

M.Sc.

in

Industrial Engineering

University of Gaziantep

Supervisor

Prof. Dr. Türkay DERELİ

by

Derya ÖZEN

June 2014

©2014 [Derya ÖZEN].

UNIVERSITY OF GAZİANTEP
GRADUATE SCHOOL OF NATURAL & APPLIED SCIENCES
NAME OF THE DEPARTMENT

Name of thesis: The effects of technological and non-technological innovation on the performance of carpet manufacturing firms in Gaziantep

Name of the student: Derya ÖZEN

Exam date: 20/06/2014

Approval of the Graduate School of Natural and Applied Sciences

Assoc.Prof.Dr. Metin BEDİR

Director

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

Prof.Dr. Türkay DERELİ

Head of Department

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

Prof. Dr. Türkay DERELİ

Examining Committee Members — Signature

Prof. Dr. Türkay DERELİ

Prof. Dr. Cemalettin KUBAT

Assist. Prof. Dr. Alptekin DURMUŞOĞLU

Assist. Prof. Dr. Deniz VURUŞKAN

Assist. Prof. Dr. Hasan AKSOY

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

Derya ÖZEN

ABSTRACT

THE EFFECTS OF TECHNOLOGICAL & NON-TECHNOLOGICAL INNOVATION ON THE PERFORMANCE OF CARPET MANUFACTURING FIRMS IN GAZIANTEP

ÖZEN, DERYA

M.Sc. in Industrial Eng.

Supervisor: Prof. Dr. Türkay Dereli

June 2014
80 pages

Nowadays, the life of global business exists by accelerated development of technology and increased competition. In such an environment, in order to maintain the profitability of firms, it is inevitable that managing the work processes with differentiation on the elements such as product, service, process, organization and marketing. For innovations to these basic elements, resources that are allocated for Research and Development (R&D) should be intensified. For highlighting the importance of this issue, a concise research is represented about the development of innovation, scope of innovation, evaluation on innovation and types of innovation in this thesis. In addition, a survey was conducted as an application on the technological and non-technological innovations of these basic elements that affect the performance of the carpet producing firms in Gaziantep province. The survey results were evaluated using statistical software Statistical Package for Social Sciences (SPSSv20). In the study, Analysis of variance (ANOVA) was performed for the factors that make up innovations and multivariate analysis was performed for the effect on the performance of the company's innovations. According to results of the analysis, it was observed that the factors such as increment of the number of product variety, improvement the product quality, reduction of the product cost, which are thought they compose the innovation, have a positive effect on the performance of the firms.

Key Words: Innovation types, firm performance, multivariate analysis

ÖZ

TEKNOLOJİK VE TEKNOLOJİK OLMAYAN İNOVASYONUN GAZİANTEP'TEKİ HALI FİRMALARININ PERFORMANSI ÜZERİNE ETKİLERİ

ÖZEN, DERYA

Yüksek Lisans

Endüstri Müh. Bölümü

Tez Yöneticisi: Prof. Dr. Türkay DERELİ

Haziran 2014
80 sayfa

Günümüzde, teknolojinin ivmeli gelişimiyle küreselleşen ve rekabetin arttığı bir iş hayatı mevcuttur. Böyle bir ortamda, firmaların karlılıklarını sürdürebilmeleri için ürün, hizmet, süreç, organizasyon ve pazarlama gibi unsurlar üzerinde farklılaşıp iş süreçlerini yönetmesi kaçınılmazdır. Bu temel unsurlarda yapılması gereken inovasyonlar için Araştırma ve Geliştirme (Ar-Ge)'ye ayrılan kaynaklar yoğunlaştırılmalıdır. Bu konunun önemini vurgulamak için çalışmada, inovasyonun gelişimi, alanı, değerlendirmesi ve inovasyon türleri hakkında araştırma verilmiştir. Ayrıca uygulama olarak, Gaziantep ilindeki halı üreten firmaların performanslarını etkileyen bu temel elementlerin teknolojik ve teknolojik olmayan inovasyonları üzerine bir anket çalışması yapılmıştır. Anket sonuçları SPSSv20 (Sosyal Bilimler için İstatistik Paketi) istatistik programı yardımıyla değerlendirilmiştir. Çalışmada, inovasyonları oluşturan faktörler için tek yönlü varyans analizi (ANOVA) ve bu inovasyonların firmanın performansı üzerindeki etkisi için multivaryans analizi yapılmıştır. Analiz sonucuna göre inovasyonu etkilediği düşünülen ürün çeşidinin arttırılması, ürün kalitesinin arttırılması, ürün maliyetinin düşürülmesi gibi faktörlerin firmaların performans değerlerini pozitif yönde etkilediği görülmüştür.

Anahtar Kelimeler: İnovasyon çeşitleri, firma performansı, multivaryans

ACKNOWLEDGEMENT

I am heartily thankful yo my supervisor Prof. Dr. Türkay DERELI who gave me the opportunity to work on this research and for his valuable guidance and support throughout the thesis. I am also thankful to Prof. Dr. Cemalettin KUBAT, Assist. Prof. Dr. Alptekin DURMUŞOĞLU, Assist. Prof. Dr. Deniz VURUŞKAN, and Assist. Prof. Dr. Hasan AKSOY for their valuable guidance, support, suggestions, and insightful comments as a member of my thesis committee.

I would also like to thank all people in the Department of Industrial Engineering for their support and help during my study. Special thanks go to Research Assist. Yunus EROĞLU for his valuable suggestions and comments.

I would also like to thank my husband, Hakan ÖZEN, for supporting and encouraging me to pursue this degree. Without his encouragement, I would not have finished the degree.

TABLE OF CONTENTS

LIST OF TABLE

Pages

LIST OF FIGURES

Pages

LIST OF SYMBOLS/ABBREVIATIONS

ANOVA	Analysis of Variance
GSO	Gaziantep Chamber of Industry
TUBITAK	Scientific and Technological Research Council of Turkey
TUSIAD	Turkish Industrialists' and Businessmen's Association
OECD	Organization for Economic Co-operation and Development
USD	United States Dollars
GDP	Gross Domestic Product
R&D	Research and Development
US	United States
EU	European Union
UK	United Kingdom
SME	Small and Medium Enterprises
TURKSTAT	Turkish Statistical Institute
CD	Compact Disc
DVD	Digital Versatile (Video) Disc
EIS	European Innovation Scoreboard
EUROSTAT	European Community Statistical Office
SPSS	Statistical Package for Social Sciences

CHAPTER 1

INTRODUCTION

The increasingly globalized world economy and fast improvements on technological field open the doors of opportunity for the countries and firms. On the other hand, it causes the worsening of the competition conditions. As a result of globalization of the production, trade and capital flows, the firms which have become both rivals and dependent in the national economies, have begun production in global market as well as in national markets. Sustaining the economic activities of firms in this new competitive environment is depended on the adjusting of the firms to changing conditions and markets, on the other hands, it is depended on being innovative and ability of create products and services depends on the difference.

The way of increasing competitiveness of firms is due to innovation, since low cost is not the only determinant of competitive advantage today. Moreover, processing the innovation with considering whether the technology is a significant input or not, "technological innovation" and "non-technological innovation" classification is carried out.

In this study, a questionnaire (Appendix A) is prepared to determine the effects of technological and non- technological innovation on performance of the firms. There are three parts in the questionnaire. The first part is prepared to get general information about firms such as establishment year, number of workers, the area, legal structure of the firm, and etc. In the second part of the questionnaire, effects of technological innovation of the company is surveyed by asking new product, new process, and new service or improvements according to years. On the other hand, effects of non-technological innovation such as marketing and organizational investments and improvements searched in the third part.

Carpet manufacturers comprise the important percent of Gaziantep Industry. Thus, Gaziantep Carpet Industry was selected to implement prepared questionnaire. Then, the subject of this thesis is focused on "analysis of the effects of technological and

non-technological innovation on the performance of carpet manufacturing firms in Gaziantep ".

In the second part of this study, a literature review was carried out about innovation and a distinction was made from the resources utilized as technological and non-technological innovation. This distinction was described in the form of literature review. The innovation performances of the firms were evaluated in the third part of this study by using statistical analysis software, SPSS, according to the survey results that were carried out from the most important carpet producing firms in Gaziantep province. Finally, results were discussed as a conclusion in the last chapter.

CHAPTER 2

LITERATURE REVIEW ON INNOVATION

Natural resources and inexpensive labor are the main basis of the global competition and nowadays they have been replaced with technological development and innovation. In order to carry on against today's rapidly changing competition atmosphere, the firms should change, differentiate, and renew their product, service, and the method of production continuously. This altering, differentiating, and renewing procedure is called 'innovation'; this term has had many definitions throughout history.

Innovation, with its comprehensive meaning, is defined as transformation of knowledge to economic and social value. Thus, innovation is the sum of technical, economic and social progression. The firms utilize innovation as a powerful competition tool for increasing productivity and profit, attempting to spread to new markets and growing existing ones (Elçi, 2006).

Innovation is a complex process which is related to changes in production functions and processes (Therrien et. al., 2011). According to Rubera and Kirca (2012), receptivity and propensity of firms to adopt new ideas that lead to development and launch of new products can be considered as the innovation at firm level.

Innovation, according to EU and OECD literature, is "converting an idea to a marketable product or service, a new or developed production or distribution method or new social service method as a progression". This word also means marketable, new or developed product, method or service that is emerged after a transformation process (TÜSİAD, 2003).

TÜBİTAK (2007), on its own web site, describes innovation concept generally as the ability of transforming science and technology to economic value (marketable new product, new system, new production methods and social services) rapidly. Innovation is a specific function of entrepreneurship. Entrepreneurism forms new sources to provide easy circumstance or to provide easy circumstance by increasing

the potential use of existing sources. This called ‘innovation’. OECD’s definition is: “Innovation is to carry out a new organizational method for new or seriously changed product (good or service), or progress, method of marketing or work applications, organization of place of employment or external relations” (OECD, 2005). The same year World Bank (2007) added a new phrase to definition of OECD: “It is observed that innovation is formed from the result of interaction of people who have different adequacy”. Beginning from this point, existence of a commercial condition and financial value is clearly shown. There are many Research and Development processes around the world; in the United States alone there were 265 billion USD spent during 2005. The Research and Development expenses are more than 3.2% of the whole GDP in Japan (Plunkett, 2006). We can increase the number of the examples on that field. Actually, we do not know the exact financial outcomes of those researches. Therefore 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.

Innovation is economic and social concept more than a technical expression. Innovation is presentation of a new product, progress of service to market. Renewal on its own expresses more than a new knowledge. Renewal for management means that “a potential of a new action and a new source of wealth” (Durna, 2002).

Kırım (2006) describes innovation in this way: “Innovation, as definition, is a foreign origin word that is put into practice new ideas that are never thought before, therefore improving competition power”. It means to discover something that is undiscovered, to do something never done and due to these innovations to obtain endorsement and profit increase. However, innovation is an economic progress. As a result, a product or service can be obtained or even an improved management model. There is no possibility of change for innovation; before all else, a necessary information accumulation should be formed. Research and development (R&D) and innovation should not be mixed. Each research, even if it gives a positive result, doesn’t lead to the innovation. Merely, we cannot expect development of innovation without increasing of R&D level. Creating knowledge, which is essential for technical

innovation and necessary support of industry, is important to develop innovation investigating. From now on, we will be using a new term: research and innovation beside the research and development. You may not do renewal at the end of innovation maybe just an alteration; because of that ‘renewal’ is a word not exactly equal to ‘innovation’.

Arıkan (2004) states that the definition of innovation: According to the EU definition of innovation, it is marketable, new or improved product, process or service that is set out at the end of the conversion process. OECD, however, describes it like this; “converting an idea to a marketable product or service, a new or improved manufacturing or distribution method, or a new social service”.

After defining the concept of innovation which is one of the most popular concepts in today's world based on a variety of points of view, we can say that for all the definitions of innovation, there is a common concept: “innovation”. Defining innovation, in any way, the important result is the commercial innovation.

2.1.1 Development and Importance of Innovation

Today, sustaining competitive advantage is possible with generating new markets with having more revenue than provided to plants by efficiency and cost, providing more added value for customers and again making more innovation on a global scale. When we look at developments in the world economy and make a general assessment, it is seen that many countries take notice of technology and innovation which is beyond technology. Countries, in order to overcome non-innovation in their social and economic agenda and the result because of that, should adopt new approaches. The EU emphasizes the need for a paradigm shift necessarily. Evaluating separately, The EU's strongest economies, Germany, France and UK have developed a national innovation strategies should not be overlooked. In the Far East, Japan, Southeast Asia, Taiwan, Singapore and South Korea endeavor to have a say in international markets with giving direction for waves of new technologies in a systematic way. Except for the size of the population, even if China has a share of lower than 10 % in world economy, in international area how the China takes a grip on international trade arena, the new competitive tactics developed by many countries against China and or acting jointly is one of the main topics of the world economic agenda. India has managed to create a capacity of software development,

in areas such as manufacturing, and advanced technology outsourcing has succeeded to have an effective platform.

Development of new products and services after a successful progress of the innovation gives activity to new markets and creates growth opportunities for enterprise. Investigating what kind of gains are obtained by innovation, however, a higher level of productivity, lower level of costs and increased profits and employment capacity levels are achieved by innovation applications.

Adopting and making widespread the innovation increases the accumulation of knowledge of a society, so it supports the development of market and provides increasing in the long-term prosperity and higher standards of living.

In the world, in order to be magnet for investment of research–developing and innovation, competition between countries has been growing. As well as USA and Japan, which are the premiers of this field, also China, India, and Brazil have emerged as rivals.

Moreover, policies such as the introduction of suitable legal regulations for the development of new technologies, configuration of state aid, public procurement and tax systems for research and innovation, the effective protection of intellectual property rights, and provide a favorable environment for the researchers are brought up. Measures such as strengthening university-industry cooperation, the creation of innovative industrial clusters, especially business support services to SMEs for research and innovation are foreseen to activate the role of private sector.

2.1.2 Scope of Innovation

Innovation requires a holistic approach since it covers all activities of a firm and cannot be separated from the other activities of the company. For instance, innovation is not just a research and development (R&D). If it is considered so, the resultant product may be insufficient to respond to the needs of user and we may not gain acceptance by customers. In this case, commercial success could be compromised since knowledge and experiences of people who have different points of view will be blocked to contribute to the. Alternatively, if innovation is considered as only respond to customer demands, at this time the production of ideas for the future may interfere, as a result of this, the opportunity to enjoy a competitive

advantage may be missed. If it is considered as consisting of only the technological advances, innovation may cause the production of outcome that is not demanded by market or lead to the design of processes that do not respond adequately to the needs of customers. The innovation is only concerned with work in-house. The companies can avoid bringing good and new ideas from the outside. Considering opposite and implementation of innovation activities in the form of outsourcing, in-house learning cannot take place and innovation capabilities do not develop" (Elçi, 2006).

Recent studies on innovation override the traditional definition of this concept which is limited with R&D and foresee the evaluation of successful innovation's potential user needs, the market opportunities and non-technological innovations of companies all together. And this means innovation in companies is not an activity that is isolated from other activities, on the contrary, it shows that it encompasses all the activities of the firm and requires a holistic approach.

2.1.3 Evaluating the Performance of Innovation

Innovation is associated positively with the firms' future performance (Bowen et. al., 2010). The main reason for firms to be interested in innovation activities is to improve firm performance and success (Varis and Littunen, 2010). In the innovation literature, to find out relationship between innovation types and firm performance is one of the main research areas (Hassan et. al., 2013). Evaluating the performance of innovation is an important progress because of various reasons. The firms can carry out the technological and non-technological innovation activities on their own or buy knowledge, technology, machine, equipment or outer knowledge as an external research and development. However, an evaluation should be carried out in order to prove which option is more useful or beneficial. While evaluating, quantitative and qualitative data about the innovation actions should be collected.

2.1.3.1 Qualitative measurement

Qualitative data comprise the questions that whether the firms join an innovation activities. Additional information about every different type of innovation activities can be collected. As an example; a question about if research and development activity is continuous or discontinuous, what kind of knowledge is obtained by enterprise or expenses on software can be given (OECD, 2005).

Market preparations are also accepted as qualitative measurement by comprising the activities that intend to present the new or importantly improved good or service to the market (Barutçugil, 1981; Belyalova, 2010).

Data which are related to planning and achieving the organization and marketing methods in order to achieve and develop product and progress innovations such as design, planning and test that are related to new products that are not included in R&D, production progress, and delivery method imply quantitative data.

There are also other qualitative indicators of innovation activity. Also, information about staff features such as level of education and number of technical staff can be collected in screening the innovation (OECD, 2005).

2.1.3.2 Quantitative Measurements

The quantitative data includes the data on expenditure on innovation activities. These are among the most important data also among the most difficult and time-consuming questions. Therefore, the collection of quantitative data distribution by type of activity is recommended to use. For instance, scanning may ask for collecting quantitative data about all innovation activities or scanning may prefer to collect data about subset of them. Moreover, innovation expenses are examined discomposedly according to type of expenditure and source of fund. However, managers have difficulty to satisfy certain forecast of capital expenditure that is expended for innovation activities. The solution of this is to gather the data of the total capital expenses (included the capital expenses that is not related to innovation activities). Therefore, this will help to control the data of innovation expense (Belyalova, 2010).

Some of the innovations include more than one type of innovation. An example for that, realization of a marketing innovation associated with a product innovation. In order to avoid double count, innovation scanning, it must ensure that innovation expenditure is not included in more than one type of innovation activity (Kılınç, 2008).

2.1.4 Innovation Progress

Innovation is a progression which includes research, development and production levels that continues from investigation of an idea to application. Innovation is

evaluated as commercializing of any creative idea or increasing the efficiency with its benefit (Savaşçı and Kazançoğlu, 2009).

Innovation steps are composed of; research-development, transformation, production, and presentation to market. The progress which starts with stage of R&D that includes provision of technology and efforts to create laboratory contains production model, leading capabilities in production and the activities related to adaptation for production which is a stage of transformation. The next step is; composing the production capacity that is a step of production and arranging the layout about its structure. The last step includes; preparation of the necessary infrastructure to organize and market a new product or process. In this way, the process ends with phase of supply to the market (Barışık, 2001).

However, it has become complex, costly and risky due to changes in customer preferences, intense competitive pressure and speed of radical technological change, internalization of innovation becomes difficult increasingly. Depending on the size of uncertainty, innovation increases cost of production, and slows down the production. In this situation, as well as their technological learning that is organized within, firms carry out this through cooperation networks established information manufacturer theories with each other or their environment. This co-operation both reduces manufacturing costs and innovation can be made successfully in an effective and efficient way by providing seizure of the information and capabilities (Elçi, 2006).

Oslo Manual states that the main activity of the process of innovation is generation and acquisition of new knowledge (OECD, 2005). This information was obtained from three ways:

The company itself, or ahead of the competition with another firms or as a partner with university, it can produce or make someone to produce the information new for itself and needed by doing research and experimental development(or for example, a university, or by building a public research center). Innovation progress, that starts as knowledge-based, provides information and technology that are used as a factor of production and innovation is internalized since it is produced in the economic system. Therefore, the firm that carries out the first production is named after producer of innovation and the firms are encouraged for innovation by the efficient protection of patent system. Monopoly profits that are returned by innovation

progress due to market leadership end with the discovery of innovation by the competitors (Savaşçı and Kazançoğlu, 2009).

Innovation progress is not linear, one-sided process; it is replaced with interactive processes which are market demand-driven. In this process, between the customers as the external organizations, suppliers and co-operative depending on the relations established affect product and process development, manufacturing and marketing functions. In addition, at the different stages of this interactive process and at the reasons of technological change, sides that carry out the innovation activities are not interdependent and hierarchical structure, in the case of shortage of technological production abilities of firm, it benefits from the science and technology sources except its sources. For the activities of researching with academic field, university-industry in collaboration, industrial sector is wanted as a sponsor and the trade sector is applying the results of research to develop new products. Interdependence between the two sectors will be created based on the co-operation. The network co-operation that is composed of outsourcing suppliers that work for innovation with the company is very important in terms of sustainability for the creation of innovation capacity. Networks are divided into; the collection and dissemination of innovation, the creation of an innovation in the network, to work together for the main purpose, the use of new types of innovations to meet the needs of the new markets. If there is no sustainability in co-operation, continuous capacity development is not possible. In practice, the new content, experiences and experiments develop innovation resources and it has become a mechanism for increasing the capacity of innovation. Innovation acts as an important tool in the growth and development of firms. Moreover innovation that is applied for a field warns technological evolution and creates technologic multiplier effect. Therefore, innovation that is a carried out by a business will make a stimulating effect in the field of industry at the beginning, then at the whole economy and will take part in developing new product and process progresses. When we examine the developed countries in the economic field, it is obvious that these countries produce technology and provide required economic benefit from the technology that they produce. These countries, in order to support the development of technology, with creating various industry fields such as "Free Trade Zones" or "Technopark" and encouraging of investments in these areas ,they have prompted their economic development (Savaşçı and Kazançoğlu, 2009).

2.2 Types of Innovation

As the innovation can be applied in every field, in many fields and kinds applying the innovation can be possible and beneficial. Therefore, while classifying innovation making a definite classifying is not true. Differentiation made by Joseph Schumpeter (1961) is come into prominence. Schumpeter (1961) asserts that innovation has five types.

• Producing a new product or developing the available product on its qualitative property (Product Innovation),

• Creating a new progress for an industry (Process Innovation),

• Opening a new market and entering this new market opened (Marketing Innovation),

• Finding and developing new sources that provide product raw material or service input (Service Innovation),

• Changing the organization of the firm (Organizational Innovation).

According to Yılmaz (2008), innovation may be carried out on products, services, production and distribution methods, way of working method, design, and marketing of a firm. These are named after in the order; 'product innovation', 'service innovation', 'process innovation', 'organizational innovation' and 'marketing innovation'. Moreover, there is a classifying as 'technologic innovation and 'non-technologic innovation' with considering whether the technology is an important input while applying innovation.

Technologic innovation includes product, service and process innovation, non-technologic innovation includes organizational and marketing innovation.

In the study of TURKSTAT 51,4 % of the enterprises took place on innovation activity: in the three years term between the years 2008-2010, 35,2 % of the enterprises took place on technological innovation activity. In the scope of technological innovation activity, 33,2% of the enterprises made product and progress innovation while in the same term the percent of the resuming technological innovation of enterprises is 14,6% and the percent of enterprises which its activity is without outcome is 5,6% and 42,5% of the enterprises took place on non-

technological innovation activities. In the scope of non-technological innovation activity 24,7% of the enterprises are organization innovation 35,5% is the marketing innovation.

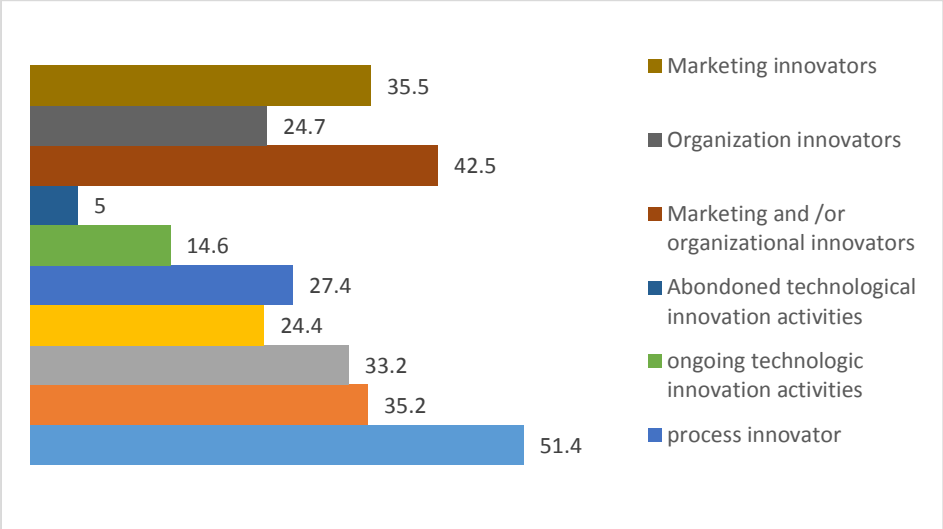

Figure 2.1.Innovation activities in enterprises (Ref: TURKSTAT, 2008-2010)

2.2.1 Technological Innovation

Technologic innovation concept tells relative and chaotic phenomenon that is suitable to change due to time and place. According to Stoneman and Kwon (1986) technological innovation is the progress of becoming widespread of the new products, progress or methods of management in an economy or between different economies. The technological innovation is a component that provides to obtain more output with a specific input for the firms or economies. In other words, technological innovation enables to obtain same quantity of output with a less help of input (Stoneman and Kwon, 1986). The element that determines the technological innovations is; to produce high rate of value added as much as possible during the production and to accumulate investment. Technological innovation changes the structure of the production with physical quality, quantity, efficiency and the production inputs; it also directs the direction of production in for the purpose of economic development and social change. Today, technological innovation takes an important place in the progress of investment decision and therefore the progress of maximizing the profit (Romer, 1990).

The technological innovations and the study, which will be done for this reason, have great importance on people, establishments, and industries and generally on countries separately. The technological innovation is described as the progress that puts in order the production progress and the new and developed products of industry. (Mcadams and Armstrong, 2000).

The technological innovation comprises the innovation of technological product, service and process. Developing the new product, service or process is evaluated in this context technologically as well as the development of the existing products, services and processes with significant technological changes may also be considered in this context.

2.2.1.1 Product innovation

It can be described as the important developments on product by changing its content or use objective or marketing a new product. These developments may be in technical properties, components, software or other functional properties of the product. Product innovation provides using new knowledge and technologies or may be based on the utilization of new combinations of existing knowledge or technology (Kiwari, 2008).

Product innovation is described as; developing a different and new product; or changing, differentiating, renewing and marketing the existing product (Elçi, 2007). Sony is a firm which is identified with innovation. Sony was established as a radio repairing company in 1946. After four years it started to produce and sell its own original products. In the following years, Sony was the innovator of transistor radio, television, and color video recorder. In 1979, it made its most important innovation, developing Walkman. CD Walkman, Minidisc, DVD players are some of the innovations that were created by Sony (Elçi, 2007).

Product innovation may give excellent respond, if it is applied well and attracted by the customers. Product innovation is directly related to the firm's performance (Tung, 2012). New products and improved production times can be considered as a new approach to innovations (Sok and O'Cass, 2011), thus providing improvement in the performance of their firms.

However, the firms which want to develop new products have to take into account some risks. Recently, also plenty of products and type is present. As a simple example, on the market shelves, there are so many products that can be exchanged with each other. In this case, attraction of a new product by customers may be pretty difficult. Although the product has attractive properties separate from similar products, it may be interested less than similar products. Moreover, if the product has extra property different from the similar products, it is doubtful that this extra property is worth buying according to the consumers (Kırım, 2006). Bringing product innovations of companies brings efficiency in the works (Polder et. al., 2010).

2.2.1.2 Service innovation

Innovation on service sector is different from the innovation in production sector. New or importantly changed service approach, renewing or differentiating the presentation and distribution system of service, using new technologies on presentation of service leads to service innovation. This kind of innovations demonstrate the technological and organizational capabilities of the firms operating in the service sector, as well as improve their skills of human resources qualifications and require to restructure in accordance to conditions (Elçi, 2007; Yılmaz, 2008).

When we examine the rates of innovations on production and service sectors in our country, it is observed that the number of establishment which does not make innovation is more than the establishment which makes innovation.

Service is described as the benefits that are provided by a company to market for customers. Entities may present both product and service as well as they may present only product or only service. For instance, hospital and hotels usually presents just service. However restaurants present both service and product (food is their product). A computer producer presents computers, computer is its product. However if it delivers the computer to our houses or after selling, it repairs and cares the computer, this will be a service. Development of a service which is new and different developed by the entity and presentation this service to the customers is called as service innovation. It is not a provision to present a service that is not presented before in service innovation as it is same in product innovation. Changing and differentiating the services that have already been presented in a way of attract more customers for

services also described as service innovation. Instead of giving results of the analysis by hand to patients in the hospital, giving the results on internet is the service innovation. In this manner, it facilitates the patient's business; the patients do not need to go the hospital to take the analysis reports. Since the hospital presents this service, the patients who live in far places or busy patients prefers to go to this hospital instead of the hospital that does not present this service (www.dataci.net, 2008).

2.2.1.3 Process innovation

It is the application of new or mostly developed production method or distribution method. In this production or distribution technique, it may include changes in technical equipment or software. Process innovation aims to reduce the unit production costs or distribution costs (Kiwari, 2008).

The process innovation is defined as, development of the different and new production and distribution method or fully development of the existing methods by improving (Elçi, 2007). The company can improve new process either its own or with the help of another company (Polder et. al., 2010).

The most classical example of technological progress is 'just in time' system which is developed by Toyota in 1950's. By means of this system, the necessary products and components are produced according to their quantity and when they are demanded. System increases productivity while it keeps the stock amount in minimum and enables to respond changes in a quick manner. Jidoka which is another process innovation of Toyota automobiles allows the production of high quality. By means of this system, if a breakdown or an abnormal condition occurs while the process is going on, breakdown fixing system stops the production or related equipment by automatically or manually. By reaching the stopped equipment or the worker who stops the system the breakdown is removed. Jidoka system further of above, allows workers stop the production line in case undesirable situation risen up. This is a demonstration of trusting the workers and so empowering them. This therefore increases the job affiliation of workers and strengthens their responsibility (Elçi, 2007).

2.2.1.4 Importance of technological innovation

The technological innovations are the most important router of competitive dependent success in many industries. The growing importance of new ideas are depends on partly the globalization of markets. The foreign competition has created pressure on companies to provide the continuous generation of new ideas for differentiated products and services. Presenting the new products to market helps to protect companies' own borders, while reducing the costs of investing in innovation of progress. Advances in information technologies have played a role in increasing the rate of innovation. Computer-aided design and computer-aided manufacturing have made it easier and speedy for companies to design and produce new products, while flexible manufacturing technologies have made it more economical, the short production work and has decreased the importance of economies of scale (Womack et. al., 1990).

These technologies are in close proximity to companies that meet the needs of narrowly defined group of customers to develop and produce more product variant is helpful, therefore, allows to differentiate from competitors. One example to this is Sony's more than 75 different Walkman model portfolios in terms of size, color, music format (for example, MP3, minidisk, CD, cassette, radio signal) and other features. Sony's Walkman model portfolio enables it to enter the every market possible (Womack et. al., 1990). While the production of multiple product variations expensive and time consuming, Sony uses, flexible manufacturing technologies that change from producing a product model to other one seamlessly and showing the production schedules adjusting with the real-time information. The company may further reduce production costs by using components that are common to most models.

When companies as Sony appropriate these new technologies and increase innovation speed, making competition more difficult for competitors. In addition to this, these companies stimulate new product introductions being faster and more inclining industry to shorten development curves. The ultimate results are bigger segmentation of the market and rapidly passing of the product fashion (Qualls and Michales, 1981). Product life curves (the time is a product's introduction and being pulled or between exchange with following generation products) are shortened for

software up to 4-12 moths, for computer hardware and consumer electronics up to 12-24 months and for big home equipment up to 18-36 (Schilling and Vasco, 2000). This, as a strategic indispensability increasingly stimulates companies focusing on new ideas. While fashion of product becoming old, a company doesn't produce rapidly new ideas which experiences marketing boundary diminished.

2.2.2 Non-Technological Innovations

Innovation studies that are carried out in many activity areas comprise just not technological innovation also comprise organizational innovation and marketing innovation. These innovation types are in the class of "non-technological innovation" and they are as important as technological innovation.

Schmidt and Rammer (2007), in the unique existing study to our knowledge on the interrelation between different innovation strategies, showed that the combination of technological and non-technological innovation had a positive impact on innovation performance. However, this effect could only be related to the combination of organizational and product innovations. No other combinations of technological and non-technological innovation lead to higher returns on sales.

For instance, a company by using its R&D results doing a technologic innovation in case of not doing marketing innovation cannot reach enough economic success. According to Elçi (2007), reputation and image has a big importance in terms of competition power that shows them with marketing innovation power. Non-technologic innovation provides companies with entering new markets and increasing their marketing share due to necessitate applying new and more effective work methods (organizational innovation) and, designing and marketing products or service as attract more customer (marketing innovation). This is both for countries and companies, increasing competitiveness and growth.

2.2.2.1 Organizational innovation

Entity's company practices, workplace organization or external relations is to carry out a new organizational method. Organizational innovation aims to improve the performance of firm by reducing administrative costs or operation costs, job satisfaction and therefore increase labor productivity or reduce the cost of supply (Kiwari, 2008).

The development of new methods of working in or adapted to the requirements of existing methods is the use of company (Elçi, 2007). The firms do not just products and services, to develop and differentiating innovation. Capturing and maintaining the competitive advantage, development, differentiation and renewing must be done for methods of doing business and working. This activity of developing, differentiating and renewing is called as organizational innovation.

In this topic, Kaizen which was developed in the 1990s by the Japanese is a continuous improvement method and it is an organization innovation. In this method, all the staff that is white-collar and blue-collar, follow the processes related to their job and present the ideas about developing. Improvement ideas are evaluated and the suitable ones are implemented to application. At the same time, this system influences the employee's family life positively. Japanese companies primarily working with Kaizen method, have the advantage with doing production at low cost and high quality. The result, of course, they have become firms that are growing, peak in its sector, and employment creating companies.

2.2.2.2 Marketing innovation

Marketing innovation uses the new marketing methods which includes great changes on product design, packaging, distribution or pricing. Marketing innovation intends to attract customer needs to a market which recently commences or a new position in order to increase sales that surely aimed by firm (Kiwari, 2008).

The marketing innovation is, different and new designs (in the product or its packaging) implementation, development and implementation of different marketing methods or improving existing ones is to make them more advanced (Elçi, 2007; Belyolava, 2010).

Marketing innovation should be monitored for the three stages. These are the discovery, development and distribution. In the exploring stage, that must be done is determination of problems of target crowd and what to offer them. In the development stage: development of solutions and equipment for the problems that are well known in order to make the condition better. In the distribution stage: providing the distribution process continuously, since it is not an instantaneous job (Henriksen and Skou, 2005).

Products and services are developed and produced in order to be presented to the market. In order to sell more quantity of product and services, they should attract more number of customers. In order to attract more customers, developing and utilizing the different, unusual and new design, coverings and marketing methods for product and services is called as marketing innovation. Marketing innovation can be defined as develop of new markets, packaging and make changes in design, product promotion and pricing strategy (Hassan et. al., 2013).

As a good example for marketing innovation, it will be appropriate to explain a new method used by amazon.com. Kırım (2006) describes the innovation of the famous web site with these sentences: "Let me tell you the message that was sent from Amazon.com Company recently". The post says: "Rita McGrath's new book 'Market Busters' is published. As a loyal customer of the amazon.com; the possibility of buying this book by you is 5732 times more than other readers. If you desire click there and see how we did this calculation. How you do not wonder? How does not draw this new book your attention?"

Another example for marketing innovation is; taking the food order over the Internet and delivery of orders to customers. The entity that provides this service may provide ordering of food that will be delivered from related restaurant in this city for people living in different cities of Turkey over the Internet. In this way, for example, if a person lives in Gaziantep is going to give food order to his/her home; he/she can order this by the website of entity. So he/she can provide selecting and delivering the food that he ordered from the restaurant that are registered on this site and located in his own city to his home. Restaurants that sell food in this way makes marketing innovation and take the advantage of competition compared to restaurants that are not included in the Internet. This innovation in restaurants where the service would have made the company operates the internet site. Providing a service not offered by anyone before (online food ordering service) and job increases incomes.

2.2.2.3 The importance of non-technological innovation

A firm that makes technological innovation using the results of the research and development studies, in the case of making no marketing innovation, it is not possible to catch adequate commercial success of the product is developed .The image and reputation which has a great importance in terms of competitiveness also

manifests itself by means of the power of marketing innovation. Non-technological innovation provides firms to enter new markets and increase their market share, since it requires the implementation of new and more effective methods of doing business (organizational innovation), and design and marketing (marketing innovation) the developed product or service so as to attract more customer. This is the increasing competitiveness and growth for countries as well as companies.

In addition, the European Union's gross domestic product per capita is less than about 30% from the United States. According to the EU to make up the difference is possible by increasing productivity, and also increasing the productivity is possible with innovation. However, EU that saves vast resources for R&D is insufficient to transform R&D results to innovation. Several studies are carried out in Europe and innovation is encouraged to eliminate this problem, which is also called as "European Paradox". Developments in this direction are monitored through various mechanisms, mainly by European Innovation Indicators (European Innovation Scoreboard-EIS). The EIS which evaluates the innovation performance of the EU Member States and candidate countries on an annual basis, the results of the year 2004 marks two important reality (Elçi, 2007).

According to the productivity increase of the U.S. compared to EU, non-technological innovation plays an important role. Non-technological innovation can prevent the Europe to benefit from new technological opportunities completely. The countries that are being developed and do not have high technology such as Turkey can provide significant advantages, if they do successful innovations with their available facilities.

CHAPTER 3

EXPERIMENTAL STUDY

In today's competitive environment, the concept of innovation becomes a frequently mentioned matter. In this world which the competitors are increasing day by day, and products resemble each other, innovation can bring benefits to companies. But companies can make the different innovations. Therefore innovation is divided into different types. The types of innovations that we adopt in this study are product, process, and service, organizational and marketing innovation. In this study, the innovation types are categorized in two groups to assess their effects on firm performance: Technological innovation and non-technological innovation. However, a detailed statement was present in the first chapter.

3.1 Objectives and Limitations of the Work

As it stated before that the aim of this study was to investigate the effects of technological and non-technological innovation on the performance of companies producing carpet in Gaziantep. Here, the main reason that the research is carried out in the province of Gaziantep; this city meets the 70% of the need of carpet export, and 90 % of the need of carpet machine export (http://www.gaziantep.com/tr/hali-sektoru, 2014). Therefore, this study took place in Gaziantep.

In this thesis, the survey was applied to the carpet manufacturing firms which are all in the Organized Industrial Zone of Gaziantep. Thus, it is supposed that all firms have the same conditions to be surveyed and to analysis of variance. In the Organized Industrial Zone of Gaziantep, there are 190 carpet manufacturers. After deciding the confident number of being surveyed firms, they were called by phone in a random order to make an appointment to make a survey about technological and non-technological innovation and their effects on the performance of firms. The survey was made by face to face with the firms which accepted the appointment. Short description of surveyed firms can be found in the Appendix B.

In the proposed study it is dialed with the innovations as technological and non-technological. Therefore hypothesis are constituted to according to importance of technological and non-technological innovation effects.

3.2 Methodology

The effectiveness and continuity of results of the research is closely related to the methodology which is applied in the research process. In this study experimental research methodology which includes field work is utilized in order to collect the information required. Detailed explanation of methodologies for evaluation of the data obtained is very important. Data collection, research, determination to the mass of the sample, reliability analysis, creation of hypotheses, and statistic about analysis of the data information are given to achieve the objectives of the study. For innovation determinants and innovativeness measures, the respondents were asked to indicate to what extent related applications and practices were important and implemented in their organizations respectively relying on Likert scale and yes-no questions.

After the data collection stage, statistical analyses were conducted in order to validate the hypothesis. It is determined if the technological and non-technological innovations has a greater impact on performance than each dimension considered separately.

3.2.1 Model of Methodology

Methodology is tried to show by using a conceptual map. First of all, innovation types are explicitly explained with which category of innovation they belongs to, and then all interaction between actors of the thesis showed.

Figure 3.1 shows a general perspective of the proposed consideration. Interaction between actors of proposed study is for taking in action the consideration of how to measure technological and non-technological effects of innovations on firm performance.

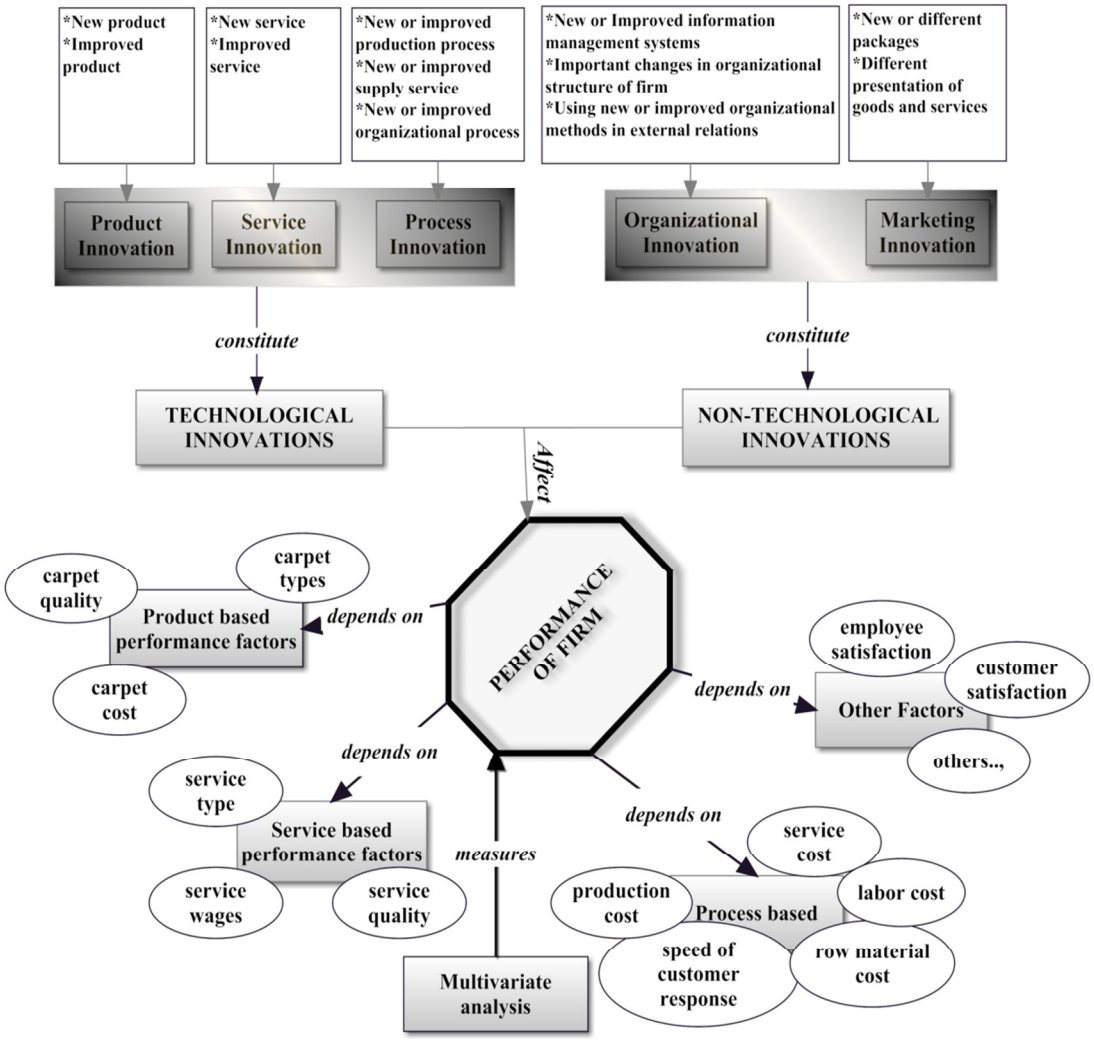

Figure 3.1. Conceptual map of methodology

3.2.2 Analytical Techniques

In order to extract the probable effects and the amount of contribution of innovation determinants to innovativeness level, multivariate data analysis was conducted by means of the statistical software packages SPSS v20.

3.2.3 Identify the Sample Size

In thesis we identified our sample size according to number of carpet manufacturer members to Gaziantep Chamber of Industry (GSO). Therefore we made a web search and with the information for the end of 2009, there are 190 members of GSO as a carpet manufacturer. After that we use this information to calculate useful number of sample size.

3.2.4 Sample Size Criteria

Three criteria usually will need to be specified to determine the appropriate sample size: the level of precision, the level of confidence or risk, and the degree of variability in the attributes being measured. In this thesis the level of precision is ±10%, confidence level is 95%, and degree of variability =.5.

3.2.5 The Confidence Level

The confidence or risk level is based on ideas encompassed under the Central Limit Theorem. The key idea encompassed in the Central Limit Theorem is that when a population is repeatedly sampled, the average value of the attribute obtained by those samples is equal to the true population value.

Furthermore, the values obtained by these samples are distributed normally about the true value, with some samples having a higher value and some obtaining a lower score than the true population value. In a normal distribution, approximately 95% of the sample values are within two standard deviations of the true population value (e.g., mean, standard deviation).

In other words, this means that, if a 95% confidence level is selected, 95 out of 100 samples will have the true population value within the range of precision specified earlier. There is always a chance that the sample you obtain does not represent the true population value. This risk is reduced for 99% confidence levels and increased for 90% (or lower) confidence levels.

With regard to scales, two criteria are used for analyzing scales goodness, that is, their usefulness as instrument measure. These criteria are reliability and validity. It is studied reliability of scales by contrasting the degree of internal consistency, Cronbach's test for reliability analysis offered in section 3.2.10. The values obtained for each multi-item construct are shown in Table 3.1 Measure Scale. All the scales showed acceptable values ranging from 37,3 % to 95,4 %.

Table 3.1: Scales measure, sources and Cronbach's value

Factors	Scales Measure, Sources and Cronbach's Value
General Information About Firm	Dichotomous Scale (Yes/No) OECD-EUROSTAT Manual (1997) (0,373)
Having integrated facilities	
Having a strategic planning department	
Export	
Having logistic problem	
Having R&D department	
Believing the benefits of R&D	
Technological Innovation Facilities	Dichotomous Scale (Yes/No) OECD-EUROSTAT Manual (1997) (0,731)
Making new product	
Making improved product	
Making new service	
Making improved service	
Making new or improved production process	
Making new or improved supply process	
Making new or improved organizational process	
Non-Technological Innovation Facilities	Dichotomous Scale (Yes/No) OECD-EUROSTAT Manual (1997) (0,709)
Making new or improved information management system	
Making important changes in organizational structure of firm	
Using new or improved organizational method in external relations	
Making new or different designed packages	
Making new presentation of good or service to customer	
Importance of Innovations on Performance	Likert Scale (Degree of Importance on Performance Firm) OECD-EUROSTAT Manual (1997) (0,950)
Product Based	
Increasing number of carpet types	
Increasing quality of carpet	
Reducing product costs	
Service Based	
Increasing service types	
Increasing service quality	
Reducing service costs	
Reducing service wages	
Process Based	
Increasing the speed of customer respond	
Reducing labor cost	
Reducing production costs	
Reducing raw material costs	

3.2.6 Degree of Variability

The third criterion, the degree of variability in the attributes being measured refers to the distribution of attributes in the population. The more heterogeneous a population, the larger the sample size required to obtain a given level of precision. The less variable (more homogeneous) a population, the smaller the sample size.

Note that a proportion of 50% indicates a greater level of variability than either 20% or 80%. This is because 20% and 80% indicate that a large majority do not or do, respectively, have the attribute of interest. Because a proportion of .5 indicates the maximum variability in a population, it is often used in determining a more conservative sample size, that is, the sample size may be larger than if the true variability of the population attribute were used.

3.2.7 Strategies for Determining Sample Size

There are several approaches to determining the sample size. These include using a census for small populations, imitating a sample size of similar studies, using published tables, and applying formulas to calculate a sample size. Each strategy is discussed below.

3.2.8 Using Formulas to Calculate a Sample Size

Although tables can provide a useful guide for determining the sample size, you may need to calculate the necessary sample size for a different combination of levels of precision, confidence, and variability. The fourth approach to determining sample size is the application of one of several formulas (Equation 3.1 was used to calculate the sample sizes in below).

$$\boldsymbol{n = \frac{N}{1+N(e)^2}} \tag{3.1}$$

3.2.9 Using Published Tables

A third way to determine sample size is to rely on published tables which provide the sample size for a given set of criteria. Present sample sizes that would be necessary for given combinations of the precision, confidence levels, and variability. Please note two things. Firstly, these sample sizes reflect the number of obtained responses, and not necessarily the number of surveys mailed or interviews planned (this number is often increased to compensate for non-response).

Table 3.2: Determine the sample size

Sample size for ±5%, ±7% and ±10% Precision Levels Where Confidence Level is 95% and P=.5.

Size of Sample Size (n) for Precision (e)			
Population	±5%	±7%	±10%
100	81	67	51
125	96	78	56
150	110	86	61
175	122	94	62
190	128	97	**64**
200	134	101	67
225	144	107	70
250	154	112	72
275	163	117	74
300	172	121	76
325	180	125	77
350	187	129	78
375	194	132	80
400	201	135	81

Secondly, the sample sizes in normal distribution table presume that the attributes being measured are distributed normally or nearly so. If this assumption cannot be met, then the entire population may need to be surveyed. Here 64* shows that at least number of sample required when population size is 190 which is also number of carpet manufacturers in Gaziantep city.

3.2.10 Reliability Analysis

Firstly, the survey should be investigated in manner of validity and reliability to infer meaningful outcomes from survey forms. Reliability tests should lastly be performed to approve factor structure, to observe interior consistent, in other words to look mutual relation of variables together which constitute factors. Cronbach α value is used to use (Cronbach and Shavelson, 2004). Cronbach alpha coefficient is most comment method for testing reliability (Ravichandran and Rai, 1999). To detect the reliable questions in this applied survey Cronbach alpha coefficient is performed by using SPSSv20. Cronbach alpha coefficient values are between 37,3% and 96,8% is observed in consequences of analyses which performed for the expressions under each variables in the survey. Hypothesizes are formed in respect of reliable information. The formed hypothesizes are tested via SPSSv20 program. Finally, analysis results are evaluated.

- Technological innovations reliability analyses are given below.

Table 3.3: Case processing summary for the technological innovations

		N	%
Cases	Valid	64	100,
	Excluded[a]	0	0,
	Total	64	100,0
a. List wise deletion based on all variables in the procedure.			

Table 3.4: Reliability statistics for the technological innovations

Cronbach's Alpha	N of Items
0,731	3

Cronbach's alpha coefficient calculated and reliability coefficient obtained for technological innovations as 0,731. Obtained value is much more reliable than the normal level.

- Non technological innovations reliability analyses are given below.

Table 3.5: Case processing summary for the non-technological innovations

		N	%
Cases	Valid	64	100,
	Excluded[a]	0	0,
	Total	64	100,0

Table 3.6: Reliability Statistics for the non-technological innovations

Cronbach's Alpha	N of Items
0,709	2

Cronbach's Alpha reliability coefficient calculated and reliability coefficient obtained for non-technological innovations as 0,709. Obtained value is reliable when compared to the normal level.

3.2.11 Identify Sample Population

Owing to accurate knowledge and taking effective decision are mainly necessary in scientific researches. Therefore it necessitates that accessing accurate knowledge and then using it for generalization (Arıkan, 1994). In some cases it is possible that accessing complete population regarding to research. These are a number of them bounded, small sized populations. However investigating all members of population with their details both costly and timely is impossible. In a different word, analysis the obtained a great deal of data after investigating all related details causes to both money and time waste. When limited numbers of data are sufficient, it makes no sense dealing with a huge amount of data (Gökçe, 1988). In this type situation generally a sample size study is conducted and a generalization is done on it.

Sample size study is also done for this thesis. According to information obtained from GSO, totally there are 190 numbers of carpet producing firms. Help of this information sample size is calculated. In sample size calculation confidence interval and precision level are respectively accepted as ±5% and ±10%.

Table of the sample size regarding to population size when precision level is ±5% and confidence level is ±10%.

Table 3.7: Sample size

Survey population	Required sample size
100	51
125	56
150	61
175	62
190	64*

It is understood that when the value of population size is 190, the sample size is showed as 64. Therefore the proposed study is applied to a number of 64 carpet firms in city of Gaziantep.

3.2.12 Data Collecting Tool

Meredith et. al., (1989) claims that survey research procedure is one of the best methodologies. Survey procedures are particularly vital for both analyzing gathered data with statistical methods and generalizing results by using quantitative methods. Sometimes it is not possible to access data via systematic observation in this case

data can be gathered by interviewing (questioning and answering) process. Therefore, in this thesis, survey procedure used for gathering data. Questions are situated in survey form would be more beneficial dividing them parts in a logical sequence (Churchill, 1995). Therefore, the proposed study is divided to logical parts. General and easy questions should be used in the beginning of the survey form (Kinnear and Taylor, 1991). In this thesis, questions of the survey were prepared by an innovation expert interview.

Hence, general and easy to answer information about firm are asked in the first part. Comprehensive questions about technologic innovation in the second part and non-technologic innovation in the third part are situated on survey. The questions are arranged to be answered by the responder easily. The proposed survey consists of open ended questions, multiple choices, and Likert measure. Applying this forms accurately is as important as preparing survey questions.

When realizing surveys via post, telephone or e-mail some misunderstanding questions emerges, instead of this, despite taking more time doing the survey face to face with firms responsible is giving more accurate results (Meredith et. al., 1989). Therefore, the proposed study carried on going to each firm for face to face negotiation to obtain more accurate results.

3.3 Survey Results

In the proposed survey, 64 of carpet firms take part in. The results of survey are analyzed at bellow which summarized demographic information of related firms and shows some important statistics about innovation factors. Before looking out whether innovation affects a whole performance of carpet manufacturing firms in Gaziantep from production to marketing, it will be vital that imagine their current situation.

Table 3.8: Number of employee

Range for number of employees	Total Firms
1-10	4
11-50	37
51-150	15
151-250	2
250+	6
Total	64

According to table 3.8, there are 6 firms that number of employee more than 250.

Table 3.9: Number of engineers

Range for number of engineers	Total Firms
0	29
1-5	30
6-10	2
11-20	3
Total	64

According to table 3.9, there are 3 firms that number of engineer is between 11 and 20.

Table 3.10: Having integrated facilities

Classes of integration	Total Firms
Yes	45
No	6
Invalid	13
Total	64

In the table 3.10, 45 firms of 64 have integrated facilities in carpet industry; other 6 firms do not integrated.

Table 3.11: Structure of the firms

Type of structures	Total Firms
Single handed	1
incorporated	9
limited	53
others	1
Total	64

In the table 3.11, 53 firms from 64 are limited firms, rest of all incorporated, single handed and the others.

Table 3.12: Strategic planning department

Having strategic planning department	Total Firms
Yes	14
No	46
Invalid	4
Total	64

In the table 3.12, 46 firms don't have a strategic planning department in their company. Just 14 firms have.

Table 3.13: Export

Export	Total Firms
Yes	60
No	4
Total	64

In the table 3.13, 60 firms from 64 make export in Gaziantep.

Table 3.14: Production capacity per month

Classes of production capacity per month	Total Firms
0-25000 m^2	4
25001-50000 m^2	4
50001-100000 m^2	14
100001-200000 m^2	24
200001-500000 m^2	14
500001 m^2+	4
Total	64

According to table 3.14, the production capacity of 24 firms is between 100001-200000 m^2per months. There are just 4 firms that the capacity is higher than 500001 m^2+.

Table 3.15: Logistic problem

Having logistic problem	Total Firms
Yes	14
No	49
Invalid	1
Total	64

In the table 3.15, 49 firms from 64 don't have a logistic problem, but 14 firms.

Table 3.16: Feedback of R&D

Having feedback of R&D	Total Firms
Yes	53
No	10
Invalid	1
Total	64

According to table 3.16, 53 firms from 64 have a feedback of RD department. The other 10 firms don't have one.

Table 3.17: Technological innovations statistics

	Does your company have any technological innovation activity? Number of firms		
Technological innovations	Yes	No	Total
New product	9	55	64
Improved product	22	42	
New service	4	60	
Improved service	23	41	
New or improved production process	26	38	
New or improved supply process	8	56	
New or improved organizational process	21	43	

Table 3.18: Non-technological innovations statistics

	Does your company have any non-technological innovation activity? Number of firms		
Non-technological innovations	Yes	No	Total
New or improved information management system	Invalid	Invalid	64
Important changes in organizational structure of firm	18	46	
Using new or improved organizational method in external relations	11	53	
New or different designed packages	Invalid	Invalid	
New presentation of good or service to customer	15	49	

Table 3.19: The average of importance of innovations on firm performance

	Average Points-out of 5 (Likert scale-degree of importance on performance of firm)	
Performance criteria	Technological innovations	Non-technological innovations
Increasing number of carpet types	3,7500	3,7813
Increasing quality of carpet	3,5938	3,3438
Reducing product cost	2,3125	2,0938
Increasing service types	3,7344	3,5469
Increasing service quality	3,7656	3,1562
Reducing service cost	2,3906	2,3437
Reducing service wages.	2,1563	2,1875
Increasing speed of customer response	3,9844	3,8594
Reducing raw material costs	2,2344	2,0469
Reducing labor cost	2,1562	2,0469
Reducing production costs.	2,3438	2,2344
Increasing employee satisfaction	3,6875	3,6094
Increasing customer satisfaction	3,7656	3,6094

3.4 Hypothesis of the Proposed Study

3.4.1 Technological innovations effect on firm performance

3.4.1.1 Product innovations

***H_a*:** Product innovations are positively and linearly associated with firm performance.

***H_0*:** Product innovations are negatively associated with firm performance.

Table 3.20: Tests of between-subjects effects for new and improved product

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
New product and improved product	Increase types of carpets	0.652	1	0.651	0.896	0.347
	Improve quality of carpets	0.017	1	0.017	0.023	0.877
	Reduce product costs	0.867	1	0.867	0.893	0.348
	Increase types of services	5.81	1	5.810	8.003	0.006
	Increase quality of service	0.37	1	0.370	0.394	0.532
	Reduce service costs	0.011	1	0.011	0.011	0.915
	Reduce service wages	3.57	1	3.569	3.510	0.065
	Increase customer response speed	3.76	1	3.765	6.078	0.016
	Reduce raw materials costs	0.472	1	0.472	0.421	0.518
	Reduce labor costs	7.244	1	7.244	8.954	0.004
	Reduce production costs	5.93	1	5.934	5.826	0.018
	Increase employee satisfaction	1.31	1	1.31	1.393	0.242
	Increase customer satisfaction	0.013	1	0.013	0.022	0.880

In the significant column, dependent variables; increase type of services, increase customer response speed, reduce lab costs, reduce product costs have p=0.006, p=0.016, p=0.004, p=0.018 values and all of them p<=0.05, so as a result of that product innovations are positively associated with increase type of services, increase customer response speed, reduce lab costs, reduce product costs on firm performance.

3.4.1.2 Service innovations

H_a: Service innovations are positively and linearly associated with firm performance.

H_0: Service innovations are negatively associated with firm performance.

Table 3.21: Tests of between-subjects effects for new and improved service

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
New service and improved service	Increase types of carpets	11.99	2	5.99	7.62	**0.001**
	Improve quality of carpets	9.381	2	4.69	7.14	0.001
	Reduce product costs	10.65	2	5.32	5.149	0.008
	Increase types of services	8.543	2	4.27	5.671	0.005
	Increase quality of service	11.45	2	5.72	6.463	0.002
	Reduce service costs	11.98	2	5.99	6.387	0.003
	Reduce service wages	13.65	2	6.82	6.634	0.002
	Increase customer response speed	3.90	2	1.95	2.763	0.070
	Reduce raw materials costs	17.33	2	8.66	6.596	0.002
	Reduce labor costs	18.74	2	9.37	9.264	3.066
	Reduce production costs	12.68	2	6.34	5.106	0.008
	Increase employee satisfaction	14.62	2	7.31	9.078	3.537
	Increase customer satisfaction	1.00	2	0.50	0.793	0.456

In the significant column, dependent variables; increase type of carpets, improve quality of carpets, reduce product costs, increase type of services, increase quality of service, reduce service costs, reduce service wages, reduce raw materials costs, reduce product costs have p=0.001, p=0.001, p=0.008, p=0.005, p=0.002, p=0.003, p=0.002, p=0.002, p=0.008 values and all of them p<=0,05, so as a result of that; service innovations are positively associated with increase type of carpets, improve quality of carpets, reduce product costs, increase type of services, increase quality of service, reduce service costs, reduce service wages, reduce raw materials costs, reduce product costs on firm performance.

3.4.1.3 Process innovations

$H_{a:}$ Process innovations are positively and linearly associated with firm performance.

$H_{0:}$ Process innovations are negatively associated with firm performance

Table 3.22: Tests of between-subjects effects for new or improved production process and new or improved supply process and new or improved organizational process

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
New or improved production process and new or improved supply process and new or improved organizational process	Increase types of carpets	12.22	3	4.07	5.11	**0.00**
	Improve quality of carpets	3.96	3	1.32	1.743	0.16
	Reduce product costs	11.50	3	3.83	3.69	0.01
	Increase types of services	7.19	3	2.39	3.044	0.03
	Increase quality of service	10.59	3	3.53	3.86	0.01
	Reduce service costs	14.62	3	4.87	5.35	0.00
	Reduce service wages	13.86	3	4.62	4.43	0.00
	Increase customer response speed	9.052	3	3.01	4.77	0.00
	Reduce raw materials costs	32.39	3	10.79	9.95	0,00
	Reduce labor costs	22.95	3	7.65	7.98	0,00
	Reduce production costs	26.08	3	8.69	8.36	0,00
	Increase employee satisfaction	6.134	3	2.04	2.12	0.10
	Increase customer satisfaction	4.958	3	1.65	2.87	0.04

In the significant column, dependent variables; increase type of carpets. Reduce product costs, increase service types, increase quality of service, reduce service costs, reduce service wages, increase customer response speed, reduce raw material costs, reduce lab costs, reduce product costs and increase customer satisfaction have p=0.00, p=0.01, p=0.03, p=0.01, p=0.00, p=0.00, p=0.00, p=0.00, p=0.00, p=0.00, p=0.04 values and all of them p<=0,05, so as a result of that, process innovations are positively associated with increase type of carpets, reduce product costs, increase service types, increase quality of service, reduce service costs, reduce service wages, increase customer response speed, reduce raw material costs, reduce lab costs, reduce product costs and increase customer satisfaction on firm performance.

3.4.1.4 Effects on products

H_a: Effects on products are positively and linearly associated with technological innovations.

H_0: Effects on products innovations are negatively associated with technological innovation

Table 3.23: ANOVA test for product and technological innovation

		Sum of Squares	df	Mean Square	F	Sig.
Increase types of carpets	Between Groups	10,121	1	10,121	12,581	,001
	Within Groups	49,879	62	,804		
	Total	60,000	63			
Improve quality of carpets	Between Groups	2,004	1	2,004	2,620	,111
	Within Groups	47,433	62	,765		
	Total	49,438	63			
Reduce product costs	Between Groups	5,102	1	5,102	4,608	,036
	Within Groups	68,648	62	1,107		
	Total	73,750	63			

In the significant column, dependent variables; increase type of carpets, improve quality of carpets, reduce product costs have p=0.001, p=0.111, p=0.036, values and increase types of carpets and reduce product costs p<=0.05, so as a result of that; effects on product are positively associated with increase type of services and reduce product costs on technological innovations.

3.4.1.5 Effects on service

H_a: Effects on service are positively and linearly associated with technological innovations

H_0: Effects on service are negatively associated with technological innovations

Table 3.24: ANOVA test for service and technological innovation

		Sum of Squares	df	Mean Square	F	Sig.
Increase types of services	Between Groups	,002	1	,002	,003	,960
	Within Groups	54,482	62	,879		
	Total	54,484	63			
Increase quality of service	Between Groups	1,181	1	1,181	1,139	,290
	Within Groups	64,304	62	1,037		
	Total	65,484	63			
Reduce service costs	Between Groups	8,859	1	8,859	9,098	,004
	Within Groups	60,375	62	,974		
	Total	69,234	63			
Reduce service wages	Between Groups	8,580	1	8,580	7,840	,007
	Within Groups	67,857	62	1,094		
	Total	76,438	63			

In the significant column, dependent variables; increase type of services, increase quality of service, reduce service costs and reduce service wages have p=0.960, p=0.290, p=0.004, p=0,007 values and reduce service cost and reduce service wages p<=0.05, so as a result of that; effects on service are positively and linearly associated with reduce service costs and reduce service wages on technological innovations.

3.4.1.6 Effects on process

H_a: Effects on process are positively and linearly associated with technological innovations

H_0: Effects on process are negatively associated with technological innovations

Table 3.25: ANOVA test for process and technological innovation

		Sum of Squares	df	Mean Square	F	Sig.
Increase customer response speed	Between Groups	2,838	1	2,838	3,986	,050
	Within Groups	44,146	62	,712		
	Total	46,984	63			
Reduce raw materials costs	Between Groups	12,122	1	12,122	8,805	,004
	Within Groups	85,362	62	1,377		
	Total	97,484	63			
Reduce labor costs	Between Groups	5,388	1	5,388	4,451	,039
	Within Groups	75,050	62	1,210		
	Total	80,438	63			
Reduce production costs	Between Groups	8,238	1	8,238	6,369	,014
	Within Groups	80,199	62	1,294		
	Total	88,437	63			

In the significant column, dependent variables; increase customer response speed, reduce raw materials, reduce labor costs and reduce production costs have p=0.050, p=0.004, p=0.039, p=0,014 values and increase customer response speed, reduce raw materials, reduce labor costs and reduce production costs p<=0.05, so as a result of that; effects on process are positively associated with increase customer response speed, reduce raw materials, reduce labor cost and reduce production costs on technological innovations.

3.4.2 Non-technological innovations effect on firm performance

3.4.2.1 Organizational innovations

$H_{a:}$ Organizational innovations are positively and linearly associated with firm performance

$H_{0:}$ Organizational innovations are negatively associated with firm performance.

Table 3.26: Tests of between-subjects effects for organizational innovations

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
New or improved management information systems and important changes in firm structure and use of new organizational methods in external relations	Increase types of carpets	12.6	2	6.31	7.09	**0.00**
	Improve quality of carpets	12.33	2	6.16	8.93	**3.94**
	Reduce product costs	24.55	2	12.27	11.91	**4.29**
	Increase types of services	6.69	2	3.34	4.15	**0.02**
	Increase quality of service	13.00	2	6.50	11.19	**7.22**
	Reduce service costs	12.33	2	6.16	6.059	**0.00**
	Reduce service wages	17.15	2	8.57	8.36	**6.17**
	Increase customer response speed	16.32	2	8.16	14.9	**5.37**
	Reduce raw materials costs	19.24	2	9.62	10.18	**1.52**
	Reduce labor costs	14.87	2	7.43	9.079	**3.53**
	Reduce production costs	15.10	2	7.55	7.38	**0.00**
	Increase employee satisfaction	7.51	2	3.75	4.803	**0.01**
	Increase customer satisfaction	16.752	2	8.37	15.73	**3.09**

In the significant column , dependent variables; increase type of carpets, increase types of service, reduce service costs, reduce product costs and increase employee satisfaction have p=0.00, p=0.02, p=0.00, p=0.00, p=0.01 values and all of them p<=0,05. So as a result of that, organizational innovations are positively and linearly associated with increase type of carpets, increase types of service, reduce service costs, reduce product costs and increase employee satisfaction on firm performance.

3.4.2.2 Marketing innovations

H_a: Marketing innovations are positively and linearly associated with firm performance.

H_0: Marketing innovations are negatively associated with firm performance

Table 3.27: Tests of between-subjects effects for marketing innovations

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
New or improved management information systems and important changes in firm structure and use of new organizational methods in external relations	Increase types of carpets	11.08	1	11.08	12.305	**0.01**
	Improve quality of carpets	14.36	1	14.36	22.22	**0.00**
	Reduce product costs	18.54	1	18.54	16.68	**0.00**
	Increase types of services	4.022	1	4.02	4.81	**0.032**
	Increase quality of service	9.88	1	9.88	15.90	**0.00**
	Reduce service costs	12.21	1	12.21	12.17	**0.01**
	Reduce service wages	15.14	1	15.148	14.53	**0.00**
	Increase customer response speed	8.89	1	8.89	13.51	**0.00**
	Reduce raw materials costs	17.79	1	17.79	18.68	**0.00**
	Reduce labor costs	9.23	1	9.23	10.28	**0.002**
	Reduce production costs	13.57	1	13.57	13.16	**0.001**
	Increase employee satisfaction	4.096	1	4.09	4.965	**0.029**
	Increase customer satisfaction	12.24	1	12.24	20.52	**0.00**

In the significant column (sig.), dependent variables; increase type of carpets, increase quality of service, reduce product costs, increase service types, increase quality of service, reduce service costs, reduce service wages, increase customer response speed, reduce raw material costs, reduce lab costs, reduce product costs, increase employee satisfaction and increase customer satisfaction have p=0.01,

p=0.00, p=0.00, p=0.03, p=0.00, p=0.01, p=0.00, p=0.00, p=0.00, p=0.00, p=0.00, p=0.02, p=0.00 values and all of them p<=0,05, so as a result of that; marketing innovations are positively and linearly associated with increase type of carpets, increase quality of service, reduce product costs, increase service types, increase quality of service, reduce service costs, reduce service wages, increase customer response speed, reduce raw material costs, reduce lab costs, reduce product costs, increase employee satisfaction and increase customer satisfaction on the firm performance

3.4.2.3 Effects on products

H_a: Effects on products are positively and linearly associated with non-technological innovations

H_0: Effects on products innovations are negatively associated with non-technological innovations.

Table 3.28: ANOVA test for products and non-technological innovation

		Sum of Squares	df	Mean Square	F	Sig.
Increase types of carpets	Between Groups	13,974	1	13,974	16,358	,000
	Within Groups	52,964	62	,854		
	Total	66,937	63			
Improve quality of carpets	Between Groups	2,381	1	2,381	2,836	,097
	Within Groups	52,057	62	,840		
	Total	54,438	63			
Reduce product costs	Between Groups	10,223	1	10,223	8,209	,006
	Within Groups	77,215	62	1,245		
	Total	87,438	63			

In the significant column, dependent variables; increase type of carpets, improve quality of carpets, reduce product costs have p=0.000, p=0.097, p=0.006, values and increase types of carpets and reduce product costs p<=0.05, so as a result of that; effects on products are positively and linearly associated with increase type of services and reduce product costs on non-technological innovations.

3.4.2.4 Effects on Service

H_a: Effects on service are positively and linearly associated with non-technological innovations

H_0: Effects on service are negatively associated with non-technological innovations

Table 3.29: ANOVA test for service and non-technological innovation

		Sum of Squares	df	Mean Square	F	Sig.
Increase types of services	Between Groups	,984	1	,984	1,112	,296
	Within Groups	54,875	62	,885		
	Total	55,859	63			
Increase quality of service	Between Groups	8,580	1	8,580	13,347	,001
	Within Groups	39,857	62	,643		
	Total	48,438	63			
Reduce service costs	Between Groups	9,723	1	9,723	9,315	,003
	Within Groups	64,714	62	1,044		
	Total	74,437	63			
Reduce service wages	Between Groups	15,750	1	15,750	15,258	,000
	Within Groups	64,000	62	1,032		
	Total	79,750	63			

In the significant column, dependent variables; increase type of services, increase quality of service, reduce service costs and reduce service wages have p=0.296, p=0.001, p=0.003, p=0,000 values and increase quality of service, reduce service costs and reduce service wages p<=0.05, so as a result of that; effects on service are positively and linearly associated with increase quality of service, reduce service costs and reduce service wages on non-technological innovations.

3.4.2.5 Effects on processes

H_a: Effects of process are positively and linearly associated with non-technological innovations.

H_0: Effects of process are negatively associated with non-technological innovations.

Table 3.30: ANOVA test for process and non-technological innovation

		Sum of Squares	df	Mean Square	F	Sig.
Increase customer response speed	Between Groups	2,512	1	2,512	3,298	,074
	Within Groups	47,223	62	,762		
	Total	49,734	63			
Reduce raw materials costs	Between Groups	7,110	1	7,110	6,320	,015
	Within Groups	69,750	62	1,125		
	Total	76,859	63			
Reduce labor costs	Between Groups	10,233	1	10,233	11,614	,001
	Within Groups	54,627	62	,881		
	Total	64,859	63			
Reduce production costs	Between Groups	10,339	1	10,339	9,547	,003
	Within Groups	67,145	62	1,083		
	Total	77,484	63			

In the significant column, dependent variables; increase customer response speed, reduce raw materials, reduce labor costs and reduce production costs have respectively p:0,0074, p=0,015, p=0.001, p=0.003 values and all $p \leq 0.05$. Hence, effects of process are positively and linearly associated with non-technological innovations and the null hypothesis accepted for these factors. Consequently it can be inferred that these factors of process defined are actually has a strong relationships with non-technological innovation with 95% confidence level.

CHAPTER 4

DISCUSSION AND CONCLUSION

Carpet manufacturing is one of main revenue source in Gaziantep industry province. Beyond this industry has a long history begin from manufacturing carpets in caves to computer aided manufacturing with latest technology. Maybe, the first initiatives sparked with a great idea and environmental conditions and opportunities provide gigantism to development of this industry in the world. On the contrary, today, initiatives should be conscious and more innovative because of globalization, rapidly changing customer tastes, low profit margins and other competencies. The future performance of firms in the city is particularly depend on today's innovations, in other word, the firms manage to survive and continue being profitable in case recognizing the pros and cons of innovations which affect their performance. In the sight of all above; the thesis gains a useful edge and wrathful to explore innovation concept and firm performance concept together in the industry province.

The proposed study reveals firms' demographic profile, which types of innovations performed in the Gaziantep industry province, which factors constitute these innovations, and how the effects of them on firm performance had gone. The demographic profile of surveyed sixty-four carpet manufacturing firms in Gaziantep Organized Industrial Zone can be summarized as follows;

- There is no engineer in 29 firms
- Number of workers is between 11 and 50 in 37 firms
- 45 firms have integrated facilities
- 53 firms are limited companies
- Nearly all firms (60 - firm) are exporting their products
- 53 firms think that R&D has a positive feedback.

The relationship between firm performance and innovation types are drawled according to carpet industry. Then, profiles of carpet firms are summarized and ultimately multivariate statistical analysis used to determine how the dependent

variables differ for the independent variable and it is required to look at the Tests of Between-Subjects Effects. Cronbach's alpha is used to measure of internal consistency (reliability) and to determine if the scale is reliable in the constructed Multiple Liker questions in the questionnaire.

Most of the factors about effects of innovation types on firm performance statistically handled and these outcomes reached out.

- Technological and non-technological innovations have significant effects on performance of carpet manufacturing firms in Gaziantep.
- Reliability and validity are used to analyze scales of goodness, that is, their usefulness as instrument measure. Reliability of scales is studied by contrasting the degree of internal consistency. All the scales showed acceptable values ranging from 37,3 % to 95,4 %.
- The most striking result to emerge from this study was that, among the five types of innovation, all types of innovations are positive impact on firm performance in the Gaziantep carpet industry.
- Product innovations are positively and linearly associated with firm performance (increase type of services where p=0.006, increase customer response speed where p=0.016, reduce lab costs where p=0.004, reduce product costs where p=0.018),
- Process innovations are positively and linearly associated with firm performance (increase type of carpets where p=0.00. reduce product costs where p=0.01, increase service types where p=0.03, increase quality of service where p=0.01, reduce service costs where p=0.00, reduce service wages where p=0.00, increase customer response speed where p=0.00, reduce raw material costs where p=0.00, reduce lab costs where p=0.00, reduce product costs where p=0.00, and increase customer satisfaction where p=0.04),
- Service innovations are positively and linearly associated with firm performance (increase type of carpets where p=0.001, improve quality of carpets where p=0.001, reduce product costs where p=0.008, increase type of services where p=0.005, increase quality of service where

p=0.002, reduce service costs where p=0.003, reduce service wages where p=0.002, reduce raw materials costs where p=0.002, reduce product costs where p=0.008),

- Marketing innovations are positively and linearly associated with firm performance (increase type of carpets where p=0.01, increase quality of service where p=0.00, reduce product costs where p=0.00, increase service types where p=0.03, increase quality of service where p=0.00, reduce service costs where p=0.01, reduce service wages where p=0.00, increase customer response speed where p=0.00, reduce raw material costs where p=0.00, reduce lab costs where p=0.00, reduce product costs where p=0.00, increase employee satisfaction where p=0.02, and increase customer satisfaction where p=0.00),
- Organizational innovation are positively and linearly associated with firm performance were accepted (increase type of carpets where p=0.00, increase types of service where p=0.02, reduce service costs where p=0.00, reduce product costs where p=0.00, and increase employee satisfaction where p=0.01).

Our findings support the fact that technologic and non-technologic innovation are major important subjects on performance of firms and should be developed and executed as an integral part of the business strategy. Managers should recognize and manage the innovations in order to boost their operational performance.

These findings are consistent with the literature on innovation and firm performance (Hassan et. al., 2013; Therrien et. al., 2011; Gunday et. al., 2011; Artz et. al., 2010; Bowen et. al., 2010; Varis and Littenen, 2010; Cho and Pucik, 2005; Calantone et. al., 2002).

Future researches on technologic and non-technologic innovations of firms can be handled for other sectors in Turkey. Because the carpet manufacturing is labor and product intensive sector, effects of technologic and non-technologic innovations on firm performance have to be considered in service sectors.

REFERENCES

Arıkan, R. 2004. Araştırma teknikleri ve rapor hazırlama. Ankara: Asil Press.

Artz, K.W., Norman, P.M., Hatfield, D.E. and Cardinal, L.B. (2010). A longitudinal study of the impact of R&D, patents, and product innovation on firm performance, *Journal of Product Innovation Management*. 27(5), pp.725-740.

Barışık, S. (2001). Yenilik oluşumunda devletin rolü, *Journal of Productivity*. **4**, 1388.

Barutçugil, İsmet S. 1981. Teknolojik yenilik ve araştırma geliştirme yönetimi. Bursa: Bursa University Publisher.

Belyalova, G. (2010). Kazakistan'da 1991-2008 Yıllarında İnovasyon ve Teknolojik Gelişme. İstanbul Üniversitesi Sosyal Bilimler Enstitüsü Teknoloji ve Sanayi İktisadı Bilim Dalı Yüksek Lisans Tezi, İstanbul.

Bowen, F. E., Rostami, M., & Steel, P. (2010). Timing is everything: A meta-analysis of the relationships between organizational performance and innovation. *Journal of Business Research,* 63 (11), 1179-1185.

Calantone, R.J., Cavusgil, S.T. and Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance, Industrial Marketing Management, 31(6), pp.515-524.

Cho, H. and Pucik, V. (2005). Relationship between innovativeness, quality, growth, profitability, and market value. *Strategic Management Journal*. 26(6), pp.555-570.

Churchill Gilbert A. Jr. 1995. Marketing Research Methodological Foundations. 6th edition. Fort Worth: The Dryden Press.

Cronbach, L.J. Shavelson, R.J. (2004). My current thoughts on coefficient alpha and successor procedures. *Educational and psychological measurement review*, **24**, 522-537.

Durna, Ufuk, 2002. Yenilik Yönetimi. Ankara: Nobel Publications.

Elçi, Ş. 2006. Inovasyon Kalkınmanın ve Rekabetin Anahtarı. 7nd edition. İstanbul: Acar Press, Inc. 1-2.

Elçi, Ş. 2007, İnovasyon Kalkınmanın ve Rekabetin Anahtarı. Ankara: Technopolis Group.

Gökçe, B. 1988. Toplumsal bilimlerde araştırma. Ankara: Savaş Press.

Günday, G., Ulusoy, G., Kılıç, K., Alpkan, L. (2011). Effect of Innovation Types on Firm Performance. *International Journal of Production Economics*, 133(2), pp.662-676.

Hassan M., Shaukat S., Nawaz M., Naz S. (2013). Effects of Innovation Types on Firm Performance: an Empirical Study on Pakistan's Manufacturing Sector.

Pakistan: *Pakistan Journal of Commerce and Social Sciences 2013*, Vol. 7 (2), 243-262.

Kılınç, N., (2008). "Yeni Ekonomi: Piyasa, Rekabet ve AR-GE", Http://Paribus.Tr.Googlepages.Com/Kilinc.Doc.

Kırım, Arman, 2006. İş Modeli İnnovasyonu, Ankara: Sistem Publications.

Kıwarı, R. (2008). "Research Project Global Innovation" Hamburg University of Technology (TUHH). Available at: http://www. Global innovation. Net/İnnovation/Innovation_Definitions.Pdf. Accessed 02.05.2011.

Kinnear Thomas C., Taylor James R. 1991. Marketing Research: An Applied Approach. 4th edition.Singapore: Mc Graw-Hill Inc.

Mcadams, R., Armstrong, G. (2001). A Symbiosis of Quality and Innovation in Smes. A Multiple Case Study Analysis, *Managerial Auditing Journal*.

Meredith, J.R., Raturi, A., Amoako-Gyampah, K., Kaplan, B. (1989). Alternative Research Paradigms in Operations. *Journal of Operations Management*, **4**, 297 -326.

OECD. The Organisation for Economic Co-operation and Development. (2005). Proposed Guidelines for Collecting and Interpreting Technological Innovation Data: Oslo Manual.

Polder, M., Leeuwen, G.V., Mohnen, P., & Raymond, W. (2010). Product, process and organizational innovation: drivers, complementarity and productivity effects: UNUMERIT, Maastricht Economic and Social Research and Training Centre on Innovation and Technology.

Plunkett J.W. (2006). Plunkett's Engineering & Research Industry Almanac 2006, Plunkett Research, Ltd.

Qualls, W., Olshavsky, R., Michaels, R. (1981). Shortening of the PLC-An Empirical Test*, Journal of Marketing*, **45**.

Ravichandran T., Arun Rai. (1999-2000). Total Quality Management in Information.

Romer, Paul M. (1990). Endogenous Technological Change, *The Journal of Political Economy*, **98**, No. 5, Part 2: The Problem of Development: A Conference of the Institute for the Study of Free Enterprise Systems.)

Rubera, G. and Kirca, A. (2012), Firm innovativeness and its performance outcomes: A meta-analytic review and theoretical integration, *Journal of Marketing*, 76(3), pp.130-147.

Savaşçı, İ, Kazançoğlu, Y. (2009). Firmaların Yemlik Yaratma Sürecinde Serbest Bölgelerin Rolü. 517-526.

Schilling, M.A., Vasco, C.E. 2000. Product and process technological change and the adoption of modular organizational forms. In Bresser, R., Hitt, M., Nixon, R. & Heuskel, D., Winning strategies in a deconstructing world. Sussex, England: John Wiley & Sons, pg. 25-50.

Schmidt, T., Rammer C. (2007). Non-technological and Technological Innovation: Strange Bedfellows? Working Paper 07-052, ZEW.

Schumpeter, Joseph A. 1961. The Theory of Economic Development, Harvard University Press, 7nd edition. Cambridge; Massachusetts.

Sok, P. and O'Cass, A. (2011). Achieving superior innovation-based performance outcomes in SME's through innovation resource-capability complementarity, Industrial Marketing Management, Vol. 40, No. 8, pp. 1285-1293.

Stoneman, P. ve Kwon, M. J. (1986). Technology Adoption and Firm profitability, *the economic journal the quarterly journal of the royal economic society*, **106**, 952-62.

Therrien, P., Doloreux, D. and Chamberlin, T., (2011), Innovation novelty and (commercial) performance in the service sector: A Canadian firm level analysis, Technovation, (31), pp. 655-665.

Tung, J. (2012). A study of product innovation on firm performance, *The International Journal of Organizational Innovation*, **4**, No. 3, pp.84-97.

TÜSİAD. Turkish Industrialists' and Businessmen's Association. (2003). Ulusal İnovasyon Sistemi, Kavramsal Çerçeve, Türkiye İncelemesi ve Ülke Örnekleri, TÜSİAD İssues, 23.p. İstanbul.

Varis, M. and Littunen, H. (2010). Types of innovation, sources of information and performance in entreprenurial SMEs, *European Journal of Innovation Management*, 13(2), pp.128-154.

Yılmaz, E. (2008), Kahramanmaraş'ta Faaliyet Gösteren Kobi'lerde İnovasyon Etkinlikleri, Kahramanmaraş Sütçü İmam Üniversitesi Sosyal Bilimler Enstitüsü, İşletme Anabilimdalı, Yüksek Lisans Tezi, Kahramanmaraş.

Womack, J. P., Jones, D.T., and Roos, D. (1990). The Machine that Changed the World. New York: Rawson Associates.

World Bank, (2007), Building Knowledge Economies: Advanced Strategies for Development, World Bank Publications.

http://www.advancity.net, 2008

http://www.gaziantep.com/tr/hali-sektoru, 2014

http://İibf.Ogu.Edu.Tr/Kongre/Bildiriler/L 2-03.Pdf.

http://www.turkstat.gov.tr, 2010

APPENDIX A

Questionnaire (Turkish)

Sayın İlgili / Yetkili

Aşağıda sunulan anket formu, Gaziantep Üniversitesi, Fen Bilimleri Enstitüsü, Endüstri Mühendisliği Anabilim dalında, tarafımızca yürütülmekte olan bilimsel çalışmanın araştırma kısmına yönelik olarak düzenlenmiştir.

Bu araştırmanın amacı teknolojik olan ve teknolojik olmayan yeniliklerin Gaziantep'teki halı üreticisi firmalarda performans olarak ne gibi sonuçlar doğurduğunu göz önüne çıkarmaktır.

Bütün cevaplar ve elde edilen veriler kesinlikle gizli tutulacaktır. Ankete katılarak çalışmamıza verdiğiniz destekten dolayı teşekkür ederiz.

Derya Özen

Gaziantep Üniversitesi, Endüstri Mühendisliği Bölümü,

Şehitkâmil, 27310, GAZİANTEP

deryadlbs@hotmail.com

1.BÖLÜM: GENEL BİLGİ

1	İŞLETMENİN ADI:	
2	FİRMANIZDAKİ TOPLAM ÇALIŞAN SAYISI :	○ 1-10 ○ 11-50 ○ 51-150 ○ 151-250 ○ DİĞER
3	FİRMANIZIN KURULUŞ YILINI BELİRTİNİZ :	○ 1970 ÖNCESİ ○ 1971-1980 ○ 1981- 1990 ○ 1991- 2000 ○ 2001-2013
4	FİRMANIN YERLEŞİK OLDUĞU BÖLGEYİ BELİRTİNİZ.	○ Küçük Sanayi Sitesi ○ Organize Sanayi Bölgesi ○ [illegible] ○ Serbest Bölge ○ Diğer
5	FİRMANIZIN HUKUKİ YAPISINI BELİRTİNİZ.	○ Tek kişi işletmesi ○ Anonim ○ Limited ○ Kooperatif ○ Diğer
6	ENTEGRE BİR TESİS MİSİNİZ (DÖKÜM-KALIP ÜRETİMİ V.B GİBİ)?	○ EVET ○ HAYIR
7	EĞER CEVABINIZ "HAYIR" İSE, İLERİDE ENTEGRE BİR TESİS OLMAYI DÜŞÜNÜYOR MUSUNUZ?	○ EVET ○ HAYIR
8	İŞLETMENİZDE STRATEJİK PLANLAMA VE İŞ GELİŞTİRME BÖLÜMÜ VAR MI?	○ EVET ○ HAYIR
9	İŞLETMENİZDE İSTİHDAM EDİLEN MÜHENDİS SAYISI :	
10	İŞLETMENİZDEKİ LİSANS VE LİSANSÜSTÜ PERSONEL SAYISI :	
11	FİRMANIZDA ÜRETİLEN ÜRÜNLER YURTDIŞINA İHRACAT EDİLİYOR MU?	○ EVET ○ HAYIR
12	[illegible] "EVET" İSE [illegible]	
13	FİRMA ÜRÜNLERİNİN PAZAR PAYI DAĞILIMI NASILDIR?	İÇ PAZAR%= DIŞ PAZAR%=

14	AYLIK ÜRETİM KAPASİTENİZ NE KADARDIR [m^3-ton]?	
15	TELEF ORANINIZ YÜZDE KAÇ?	
16	TELEFLERİNİZİ NASIL DEĞERLENDİRİYORSUNUZ?	
17	LOJİSTİK İLE İLGİLİ SORUNLARINIZ VAR MI?	○ EVET ○ HAYIR
18	ENTEGRE BİR TESİS MİSİNİZ (ÇELİK-HALI İMALATI VB. GİBİ)?	○ EVET ○ HAYIR
19	EĞER CEVABINIZ "HAYIR" İSE, İLERİDE ENTEGRE BİR TESİS OLMAYI DÜŞÜNÜYOR MUSUNUZ?	○ EVET ○ HAYIR
20	İŞLETMENİZİN GELECEĞE YÖNELİK PLANLAMA VE İŞ GELİŞTİRME BÖLÜMÜ VAR MI?	○ EVET ○ HAYIR
21	İŞLETMENİZDE AR-GE DEPARTMANI VAR MI?	○ EVET ○ HAYIR
22	AR-GE'YE HARCANILAN PARANIN SİZE KAZANÇ OLARAK DÖNECEĞİNE İNANIYOR MUSUNUZ?	○ EVET ○ HAYIR
23	YUKARIDAKİ SORUNUN CEVABI "HAYIR" İSE YAPILMAMASINDA HANGİSİNİN ETKİSİ DAHA FAZLADIR?	○ Yetkili ve uygun personel bulunmamak ○ Yeterince kaynak ayıramamak ○ Üniversite ve araştırma kurumlarının yetersiz desteği ○ Diğer
24	CEVAPLAYAN KİŞİNİN POZİSYONU:	

2.BÖLÜM: TEKNOLOJİK İNOVASYON

2.1.ÜRÜN İNOVASYONU

Farklı ve yeni bir ürünün geliştirilmesi veya mevcut bir üründe değişiklik/ farklılık / yenilik yapılması ve bu ürünün piyasaya sunulmasıdır.

2.1.1.KURULUŞUNUZ 2007–2010 YILLARI ARASINDA AŞAĞIDAKİLERİ GERÇEKLEŞTİRDİMİ?

	EVET	HAYIR
Yeni ürün (Kısaca açıklayınız.)		
İyileştirilmiş ürün (Kısaca açıklayınız.)		
Diğer (Kısaca açıklayınız.)		

2.2.HİZMET İNOVASYONU

Bir firmanın yeni, farklı ve değişik bir hizmet geliştirip bunu müşterilerine sunması hizmet inovasyonudur.

2.2.1.KURULUŞUNUZ 2007-2010 YILLARI ARASINDA AŞAĞIDAKİLERİ GERÇEKLEŞTİRDİMİ?

	EVET	HAYIR
Yeni hizmet (Kısaca açıklayınız.)		
İyileştirilmiş Hizmet (Kısaca açıklayınız.)		
Diğer (Kısaca açıklayınız.)		

2.3.SÜREÇ İNOVASYONU

Farklı yeni bir üretim veya dağıtım yönteminin geliştirilmesi veya varolan yöntemlerin iyileştirilip daha gelişkin hale getirilmesidir.

2.3.1.KURULUŞUNUZ 2007–2010 YILLARI ARASINDA AŞAĞIDAKİLERİ GERÇEKLEŞTİRDİMİ?

	EVET	HAYIR
Yeni ya da İyileştirilmiş Üretim süreci (Kısaca açıklayınız.)		
Yeni ya da İyileştirilmiş Tedarik / Dağıtım süreci (Kısaca açıklayınız.)		
Yeni ya da İyileştirilmiş Organizasyonel / Çalışma süreci (Kısaca açıklayınız.)		
Diğer (Kısaca açıklayınız.)		

2.4. 2007 -2010 YILLARI ARASINDA TEKNOLOJİK OLAN İNOVASYONUN ETKİLERİ.

Ürün, hizmet ve süreç inovasyonlarının etkileri ne derecede önemli olmuştur?

TEKNOLOJİK İNOVASYONLAR		ETKİNLİK DERCESİ			
		YÜKSEK [4]	ORTA [3]	DÜŞÜK [2]	İLGİLİ DEĞİL [1]
[illegible]	[illegible]				
	[illegible]				
	[illegible]				
[illegible]	[illegible]				
	[illegible]				
	[illegible]				
	[illegible]				
[illegible]	[illegible]				
	[illegible]				
	[illegible]				
	[illegible]				
[illegible]	[illegible]				
	[illegible]				
	DİĞERLERİ (Lütfen açıklayınız)				

3.BÖLÜM :TEKNOLOJİK OLMAYAN İNOVASYON

3.1.ORGANİZASYONEL İNOVASYON

Organizasyonel inovasyon, yönetimsel maliyetleri veya işlem maliyetlerini düşürerek firmanın performansını arttırmayı,iş tatminini ve böylece emek verimliliğini arttırmayı veya arz etmenin maliyetini azaltmayı hedefler.

	EVET	HAYIR
Yeni ya da İyileştirilmiş Bilgi Yönetim Sistemleri (Kısaca açıklayınız.)		
Firmanın Organizasyonel yapısında önemli değişiklikler (Kısaca açıklayınız.)		
İş İlişkilerde yeni ya da iyileştirilmiş bir organizasyonel yöntemin kullanılması (Kısaca açıklayınız.)		
DİĞER (Kısaca açıklayınız.)		

3.2.PAZARLAMA İNOVASYONU

Geliştirilen ürün veya hizmetin daha fazla müşteri çekecek şekilde tasarlanması ve pazarlanmasıdır.

	EVET	HAYIR
Değişik ve yeni tasarımlı ambalajlar (Kısaca açıklayınız.)		
Ürün ve hizmetin farklı sunumu (Kısaca açıklayınız.)		
DİĞER (Kısaca açıklayınız.)		

3.3. 2007-2010 YILLARI ARASINDA TEKNOLOJİK OLMAYAN İNOVASYONUN ETKİLERİ

Organizasyonel ve pazarlama inovasyonlarının etkileri ne derecede önemli olmuştur?

[redacted]		[redacted]			
		YÜKSEK (1)	ORTA (2)	DÜŞÜK (3)	İLGİLİ DEĞİL (4)
ÜRÜN BAZINDA ETKİLER	[redacted]				
	[redacted]				
	[redacted]				
HİZMET BAZINDA ETKİLER	[redacted]				
	[redacted]				
	[redacted]				
	[redacted]				
SÜREÇ BAZINDA ETKİLER	[redacted]				
	[redacted]				
	[redacted]				
	[redacted]				
DİĞER ETKİLER	[redacted]				
	MÜŞTERİ MEMNUNİYETİNİN ARTMASI				
	DİĞER (Kısaca Açıklayınız)				

… ANKET BİTMİŞTİR … TEŞEKKÜR EDERİZ …

APPENDIX B

No	Name of Firms
1	Angel Halı Tekstil Sanayi ve Ticaret
2	Angora Halı Sanayi ve Ticaret Anonim Şirketi
3	ART Carpet Sanayi ve Ticaret Anonim Şirketi
4	Aşina Tekstil
5	Avşar Halıcılık İmalat ve Sanayi
6	Balat Mensucat Sanayi ve Ticaret Anonim Şirketi
7	Başaran Halı Tekstil ve Sanayi Limited Şirketi
8	Beğendi Halı Tekstil Sanayi ve Ticaret Limited Şirketi
9	Bertini Halı
10	Bulut Halı
11	Bünyan Halı
12	Dilek Halı Tekstil Sanayi ve Ticaret
13	Dönmez Halı ve Tekstil Sanayi ve Ticaret Limited Şirketi
14	Durkar Halı Tekstil Sanayi ve Ticaret Limited Şirketi
15	Ergülen Tekstil Sanayi İthalat İhracat
16	Grand Halı Tekstil Sanayi ve Ticaret Limited Şirketi
17	Güldal Halı Tekstil Sanayi ve Ticaret Limited Şirketi
18	Gümüşoğlu Tekstil Sanayi ve Ticaret Limited Şirketi
19	Gümüşser Halı Tekstil Sanayi ve Ticaret Limited Şirketi
20	Gürbüz Mensucat Sanayi ve Ticaret Limited Şirketi
21	Halısan Tekstil Apre Sanayi Ticaret Limited Şirketi
22	Has Kaplan Tekstil ve Gıda Sanayi ve Ticaret Limited Şirketi
23	Hayat Halı Sanayi ve Ticaret
24	Hikmet Halı Sanayi ve Ticaret Limited Şirketi
25	Himsan Tekstil Gıda Sanayi ve Ticaret Limited Şirketi
26	İpek Memik Halı tekstil Sanayi
27	Kardelen Halı ve Tekstil Sanayi
28	Kartal Tekstil Sanayi ve Ticaret Limited Şirketi
29	Karteksi Tekstil Sanayi Ticaret ve Pazarlama
30	Kaysı Tekstil Sanayi ve Ticaret Limited Şirketi
31	KRC Carpet
32	Maraton Halı Tekstil Sanayi
33	Merinos Halı Sanayi ve Ticaret Anonim Şirketi
34	Merkür Halı ve Tekstil Sanayi Ticaret Limited Şirketi
35	Moda Dokuma Halı Tekstil Sanayi Ticaret Limited Şirketi
36	Motif Dokuma Halı Tekstil Sanayi Ticaret Anonim Şirketi
37	Mutaş Halı İmalatı Sanayi ve Ticaret
38	Mutlu Halı Sanayi ve Ticaret Limited Şirketi
39	Önder Carpet

40	Öznur Tekstil Halı Sanayi
41	Öztürkler Tekstil Gıda Sanayi
42	Özulutaş Halı İmalatı Sanayi ve Ticaret Limited Şirketi
43	Petek Halı Tekstil Gıda Sanayi
44	Polat Tekstil Halı Sanayi ve Ticaret Limited Şirketi
45	Rakam Halı
46	Reyhan Halı Tekstil Sanayi
47	Royal Halı İplik Tekstil Mobilya Sanayi ve Ticaret Anonim Şirketi
48	Roza Halı Sanayi ve Ticaret Limited Şirketi
49	Safa Halıcılık Sanayi ve Ticaret Limited Şirketi
50	Safyün Halı Tekstil Sanayi ve Ticaret Anonim Şirketi
51	Samet Halı
52	Saryün Halı Sanayi ve Ticaret
53	Sırma Halı Tekstil Sanayi ve Ticaret Limited Şirketi
54	Sistem Dekorasyon Tekstil İnşaat ve İnşaat Malzemeleri Sanayi Ticaret Anonim Şirketi
55	Talip Gıda Sanayi ve Ticaret
56	Uğur Demir Halı Sanayi ve Ticaret
57	Ulutaş halı İmalatı Sanayi ve Ticaret
58	Üstün Tekstil Sanayi ve Ticaret Limited Şirketi
59	Vezir Halı Sanayi ve Ticaret Anonim Şirketi
60	Yaren Halı Tekstil Sanayi ve Ticaret
61	Yasin Kaplan Halı Sanayi ve Ticaret Anonim Şirketi
62	Yeni Yaşam Tekstil Sanayi ve Ticaret Limited Şirketi
63	Yılmazkaya Tekstil Sanayi ve Ticaret Limited Şirketi
64	Yüksel Halı

1) Angel Halı Tekstil Sanayi ve Ticaret

ANGEL HALI

Started out first by manufacturing in 1990 as Angel textile; the company used to operate with mechanical system machinery. Later it began to renew itself by adapting to fast developing technology; in year 2000 company started to manufacture with electronic Wan De Wiele brand looms, which are the latest technology.

2) Angora Halı Sanayi ve Ticaret Anonim Şirketi

angora® HALI

Angora Carpet has 35,000 m^2 indoor space, 400 employees, and an annual production capacity of 3.500.000 m^2.

3) ART Carpet Sanayi ve Ticaret Anonim Şirketi

ART CARPET

Art Carpet is one of the major manufacturers and exporters of machine made carpets. We serve six continents and export to more than 50 countries all over the world. Our main markets are North America, Central America, South America, Europe, Asia and Middle East. The manufacturing facilities cover an area of more than 32,000 m^2 production space.

4) Aşina Tekstil

The firm made carpet production. The manufacturing facilities are located in organized industrial zone.

5) Avşar Halıcılık İmalat ve Sanayi

The firm made carpet production. The manufacturing facilities are located in Gaziantep 2. Organized Industrial Zone.

6) Balat Mensucat Sanayi ve Ticaret Anonim Şirketi

Balat Carpets has registered in Turkey and nowadays all worlds since 1961 year. The firms have quality certificate of Turkey Industry and Trade Ministry. Guarantee Certificate has saved its validity in all Turkey.

7) Başaran Halı Tekstil ve Sanayi Limited Şirketi

The firm made carpet production. The manufacturing facilities are located in Gaziantep 4. Organized Industrial Zone.

8) Beğendi Halı Tekstil Sanayi ve Ticaret Limited Şirketi

The firm made carpet production. The manufacturing facilities are located in organized industrial zone.

9) Bertini Halı

Bertini Carpet took step in the carpet sector in 2005 in organized industrial zone.

10) Bulut Halı

Presently it manufactures acrylic thread between Ne 12 Ne 40 with 30 tons/day production capacity of 37.600 spindles. Bulut Textile. That has the quality

production principle with its 300 employees and experienced administrative staff, goes on its activities in way always to do the best one.

11) Bünyan Halı

Bünyan Carpet took step in the carpet sector in 1983. It renewed its machinery in spite of changes and market conditions in carpet industry in 2000s and started production of more contemporary and high-quality, different carpets. Bünyan Carpet carries on producing unique and permanent products in this sector.

12) Dilek Halı Tekstil Sanayi ve Ticaret

Dilek Carpet Textile Industry & Trade Inc.Co has been established in 1980 Gaziantep which is city growing up successfully in Turkey.

Dilek Carpet products are not only widely distributed and sold in domestic market, but; are also produced for export reaching European countries and Middle East countries.

In this long way, the first and important aim for us is to have a good, long and everlasting, brave, fruitful business relations with our customers. You have different style wishes according to demands, so we hope to give you best service by our rich design collection in this web page. Here are some of them.

13) Dönmez Halı ve Tekstil Sanayi ve Ticaret Limited Şirketi

Dönmez Carpet starting operations in Gaziantep 3. Organized Industry Region.

14) Durkar Halı ve Tekstil Sanayi ve Ticaret Limited Şirketi

Durkar Carpet starting operations in 1998 renders service in Gaziantep 3. Organized Industry Region. Durkar Carpet operating in total 25.000 m2 closed, 32.000 m2 open area carries on production with Belgian make Van de Wiele carpet loom with 14 state of the art technology.

Durkar Carpet operating in yarn production in its facilities has 600 tons/month PP Heatset yarn production.

15) Ergülen Tekstil Sanayi İthalat İhracat

NOVA Carpet is manufacturer & exporter of machine carpets by Ergülen Textile since 20 years in Gaziantep/Turkey.

16) Grand Halı Tekstil Sanayi ve Ticaret Limited Şirketi

Grand Carpet starting operations in 2000 renders service in Gaziantep Organized Industry Region.

17) Güldal Halı Tekstil Sanayi ve Ticaret Limited Şirketi

Güldal Carpet starting operations in Gaziantep 2. Organized Industry Region.

18) Gümüşoğlu Tekstil Sanayi ve Ticaret Limited Şirketi

Silver Carpet was founded by the Gumusoglu family in 1983. Committed from the beginning to high quality standards, it has managed to establish a strong name among the carpet manufacturers in the Turkish central carpet manufacturing city of Gaziantep.

Silver Carpet exports its carpet production to more than 20 countries in Africa, Asia, The Balkan Countries, Arab countries, and Europe. The list includes Ukraine, Iraq, Greece, Senegal, Kazakhstan, Alegeria, Yemen, Australia, Israel, Italy, South America, Uzbekistan, Kyrgstan, Turkminstan, Azerbaijan, Britain, Poland, Libya, Morocco, Qatar, Saudi Arabia, Oman, and United Arab Emirates.

Customer satisfaction is on top of our goals. With our multi phases quality control system established in our production plants, we guarantee that every single carpet produced by our factories corresponds with highest international quality norms.

19) Gümüşser Halı Tekstil Sanayi ve Ticaret Limited Şirketi

Gümüşser Carpet was founded in Gaziantep 3. Organized Industrial Zone.

20) Gürbüz Mensucat Sanayi ve Ticaret Limited Şirketi

Romans Carpet was founded by the Mehmet Yaşar Gürbüz in 1947 in Gaziantep 2. Organized Industrial Zone.

21) Halısan Tekstil Apre Sanayi Ticaret Limited Şirketi

Efor Carpet was founded by the Halısan Textile in 1985 in Gaziantep 3. Organized Industrial Zone.

22) Has Kaplan Tekstil ve Gıda Sanayi ve Ticaret Limited Şirketi

Has Kaplan Carpet is well known one of the main manufacturer of PP & PES machine made carpet. Has Kaplan Carpet has founded and developed consistently throughout more than 20 years. It has been manufacturing and exporting since 1988. The carpet production capacity is 1.500.000 m^2 and the endorsement of the company is about 15.000.000 USD annually.

23) Hayat Halı Sanayi ve Ticaret

Hayat carpet established in Gaziantep 3. Organized Industrial Region.The carpet production capacity is 3.000.000 m2 /annually.

24) Hikmet Halı Sanayi ve Ticaret Limited Şirketi

Hikmet Carpet established in Gaziantep 3. Organized Industrial Region.

25) Himsan Tekstil Gıda Sanayi ve Ticaret Limited Şirketi

Himsan Textile was founded in Gaziantep 3. Organized Industrial Region.

26) İpek Memik Halı Tekstil Sanayi

İpek Mekik Carpet established in 1972 in Gaziantep 3. Organized Industrial Region.

27) Kardelen Halı ve Tekstil Sanayi

Kardelen Carpet was founded in Gaziantep 3. Organized Industrial Zone.

28) Kartal Tekstil Sanayi ve Ticaret Limited Şirketi

Kartal carpets manufacturing and international trading has a first been established in 1985. Since then the firm had completely grow all the physical environment and tecnical machineary. The firm totaly 50.000sqm of covered space. The most biggest industry firm has the mainly productions is polypropylene bcf, heat set, frieze, shagy, acrylic.Our firm is for area rugs and wall to wall carpets annual 10.000.000 sqm, also yarn capacity is annual 13000 tonnes. This mean continuty of colour, continuty of quality and distinguished designs.

29) Karteksi Tekstil Sanayi Ticaret ve Pazarlama

Karteks Group of Companıes which is one of Turkey's 500 largest industrial corporations continues textile investments.

30) Kaysı Tekstil Sanayi ve Ticaret Limited Şirketi

Elegant Carpet established in 1960 in Gaziantep by Kaysı Textile.

31) KRC Carpet

KRC Carpet, which has succeeded to take place in many region and many houses since 1993, founded its own production facility and became one of the well known companies in the carpet sector with its professional employee.

The company, which makes a hundred percent exportation, made up principles of customer satisfaction, innovations and quality; and proved this with R&D and innovation studies. The only goal of our company, which has guaranteed its quality with ISO 9001 certificate, is to be at the top in the sector.

32) Maraton Halı Tekstil Sanayi

Maraton Carpet was founded in Gaziantep 3. Organized Industrial Region.

33) Merinos Halı Sanayi ve Ticaret Anonim Şirketi

Foundations of Merinos were laid when Bilge Mehmet Erdemoğlu from Besni immigrated to Gaziantep and bought two carpet benches. Erdemoğlu family, which started to produce carpet in 1983, increased its machine number in a couple of years.

Meantime, Mehmet Erdemoğlu transferred the management to his children. He was a guiding sprit even if he stopped to be at work actively. Erdemoğlu Halı San ve Tic. A.Ş. was established in 1990. With the establishment of Company, Erdemoğlu family took the first step in institutionalization by gathering effort that they made up to that day under a single roof. Erdemoğlu family, which started to produce its yarn in 1992, increased its growth rate considerably. This company became one of the large producers of the carpet sector at short notice. Merinos, which obtained TURQUALITY that was carried out with vision of "creating 10 world brands in 10 years" in 2010 and is state-funded international branding program, is the first and only brand that obtained this certificate in the carpet sector.

Today, Merinos exporting to 78 countries in 5 continents is a world leader in area rug. It is a world brand which has a structure that gives priority to social-dimensional organizational activities which can be beneficial to the society, has international quality standard and image and which also makes contributions for economy of the country.

34) Merkür Halı ve Tekstil Sanayi Ticaret Limited Şirketi

Merkur Rug was established in 2004 in Gaziantep being an industry city. The firm carry out finished machine carpet made of polypropylene, BCF, Heat-set, acrylic and polyester yarn by use of state-of-art weaving machines.
Weaving and confection machines are of Belgium origin, Merkur Rug with its quality and innovations in wide range of products from acrylic carpets to curled polyester carpet, polypropylene Heat set to BFC carpet is at an important point. It covered a significant distance in integrated carpet with the aesthetic with experts and dynamic team adopting the principle that the carpet will take the place it deserves in global market with new colors and designs of rich and rooted weaving heritage of Anatolia not a simple industry product. It has been proving this claim with market share expanding from America to Far East increasingly.It is intended to

expand equipment pools with new investments in 2009 and to increase production to 2.500.000 m2 with 2.000.000 m2 carpet production per year and 50.000 m^2 plant area in 2009. Modern and oriental patterns are prepared for different countries and this point is very important with the awareness that pattern and color perception of every country is different and we effort to follow each innovation closely.

35) Moda Dokuma Halı Tekstil Sanayi Ticaret Limited Şirketi

Moda Carpet was founded in Gaziantep 3. Organized Industrial Region.

36) Motif Dokuma Halı Tekstil Sanayi Ticaret Anonim Şirketi

Motif Carpet established in 2003 in Gaziantep 2. Organized Industrial Region.

37) Mutaş Halı İmalatı Sanayi ve Ticaret

Mutas Carpet has over 20 years of experience in carpet design and production. At Mutas Carpet you will find a vast selection of machine made carpets and area rugs produced from various weaving materials and techniques. The firm create customer oriented designs and patterns at our own design studio. Its expert staff will guide you through every step of design production process.

Mutas Carpet invests heavily in new technologies and machinery to set and keep outstanding quality benchmarks. Production capacity of Mutas Carpet is about 3.000.000 m²/year. Quality Management System of is certified to comply with ISO 9001:2000.

At Mutas Carpet we know that a carpet is the key decorative and functional element in any household. Keeping this knowledge in mind, we always strive to exceed our customers' expectations.

38) Mutlu Halı Sanayi ve Ticaret Limited Şirketi

Mutlu Carpet was founded in 1989 in Gaziantep 2. Organized Industrial Region.

39) Önder Carpet

Önder Carpet was founded in Gaziantep 3. Organized Industrial Region.

40) Öznur Tekstil Halı Sanayi

Öznur Carpet has been established in 1990 April in Gaziantep where is the center of machine made carpet in the world.The company mainly producing PP BCF, become one of the top companies come to mind in domestic and international markets.

41) Öztürkler Tekstil Gıda Sanayi

Öztürk Textile was established in 1959. The large machine park includes 31 circular knitting machines, and 36 plain collars. The monthly production capacity is 350 tonnes knitting fabrics and 25 tonnes of collars fabric.

42) Özulutaş Halı İmalatı Sanayi ve Ticaret Limited Şirketi

Prens Carpet started production as Öz Ulutas brand in 1980. Since that year our company has been improving in technology and management fields. The production area is 10.000 m^2.

Prens Carpet produce 100% polypropylene Heat set (between 240.000 and 1.5 mln.points), Heat set chenille, Viscose/Viscose chenille (between 500.000 and 1.5 mln.points), Shaggy/Shaggy chenille (2500-3800 gr.), Shaggy Cut & Loop (also Wall to Wall carpets/rugs) with wide and excellent selection of designs. Firms annual capacity rate is 2.000.000 m^2.

43) Petek Halı Tekstil Gıda Sanayi

Petek Carpet was founded in Gaziantep 2. Organized Industrial Zone.

44) Polat Tekstil Halı Sanayi ve Ticaret Limited Şirketi

Entering into industry in 1992 with juth string production, Polat Textile has begun carpet production in 1998. Accepting customer orienteeed production and continuously following developments and renovations for high quality production as a principle for itself; The company reached its targets in short time and stepped to integrated production on 2007 with PP string production.

Working at 20.000 m2 closed area and with 250 employees,this company currently produces; 3.500.000 m2 carpets per year and 3.500 tonnes of PP string per year.

45) Rakam Halı

Rakam Carpet started the production and international trade on 1940. Between 1940-1955 Rakam Carpet used Turkish origin pull looms, where the products were handmade; between 1955-1975 Turkish origin one engine non-electronic jacquard looms, where the production was made electronically; between 1975-1990 Turkish origin multi-engine electronically jacquard looms, where the production was made electronically; after 1990's cutting edge technology Belgium origin electronically looms, that seizes the computer based production; Rakam Halı has successfully adopted innovative changes so far. From this point on, our company has strictly followed the technology both in physical and technical hardware; continued its systematic production by adopting the innovations in the quickest way. Being active on a facility with 25.000 m2 indoor area, our company is one of the prominent manufacturers of the sector. Our production line consists of area rugs and wall-to-wall carpets that are made of such raw materials like P.P. BCF, Heat-Set, Frize, Shaggy, acrylic and polyester. Our yearly area rug production capacity is 12.000.000 m2. Also our yearly P.P. thread production is 12.000 ton.

46) Reyhan Halı Tekstil Sanayi

Reyhan Carpet established in Gaziantep in 1989 and is performing with its technical hardware and Professional staffs that formed by the last technological opportunities. Reyhan Carpet ; aims to be one of the powerful and Leader Company in its sector with its production capacity, product varieties, export and technological advantages as a result of successful and important attacks. Reyhan Carpet makes export

businesses in several regions by renewing its development principle and carrying on its development in its sector. Its facility was built on 27.000 m^2 modern area and it is consist of 2 storages, 1 production area, 1 confection area and 1 administrative department. Reyhan Carpet has annual 2.000.000 ^{m2} production capacity in different qualities and sizes and now it serves with different qualities and wide product range.

47) Royal Halı İplik Tekstil Mobilya Sanayi ve Ticaret Anonim Şirketi

ROYAL Carpet which started operations in 2005 within the organization of one of Turkey's leading industrial organizations, the NAKSAN Holding of the Nakıboğlu Family, one of well-known families in Gaziantep, is operation with its technical facilities and expert team equipped with state of the art technology. ROYAL Carpet which developed its 2006 quality groups with its own produced yarns and which answers any taste with its creative design comprising many weaving techniques such as wool, acrylic, cut and loop pile carpets has adopted as it's a principle to create maximum customer satisfaction with its carpets of differing sizes. With the efforts of developing a hygienic carpet, Royal Carpet created the first certified antibacterial carpet of Turkey that simultaneously destroys the rapidly-multiplying bacteria, mites, fungi and microbes all of which are harmful to human health – normally found on carpets. ROYAL Carpet aims to answer original requirements of the consumer. It is the creative mission is to increase pleasurable sharing by adding intimate details to living spaces, to become the directing force of trends and not merely a follower by looking at live from a different perspective and with the projections it offers with a modern and refined interpretation.

48) Roza Halı Sanyi ve Ticaret Limited Şirketi

Roza Carpet was founded in Gaziantep 3. Organized Industrial Zone.

49) Safa Halıcılık Sanayi ve Ticaret Limited Şirketi

Safa Carpet was founded in Gaziantep 4. Organized Industrial Zone.

50) Safyün Halı Tekstil Sanayi ve Ticaret Anonim Şirketi

Safyün Carpet was founded in Gaziantep 3. Organized Industrial Zone.

51) Samet Halı

Samet Carpet has commenced production and international trade of carpets in 2004. Samet Carpet has become an outstanding company in the machine carpet industry in a rightful manner through utilization of modern technical equipments within the flow of production thereof and thanks to employing traditional and modern appliances incident to available weaving system in production of all kinds of highest quality rugs and wall to wall carpets in the best possible way.

52) Saryün Halı Sanayi ve Ticaret

Safa Carpet was founded in Gaziantep 3. Organized Industrial Zone.

53) Sırma Halı Tekstil Sanayi ve Ticaret Limited Şirketi

Sırma Carpet dating back to 1970's was established in Gaziantep in 2009 and reached to today's position by means of consortium with "Durkar Halı San. Ve Tic. Ltd. Sti" and "Şireci Tekstil".

Since then "Sırma Carpet" has become one of the leading companies of the sector in acrylic and PP heat-set fabrication owing to innovations and high technology developed.

Sırma Carpet exports machine carpet to 30 countries at integrated plant and 300 tones daily PP fabrication. The countries that our company exports to with PP heat-set and acrylic machine carpet fabrication include the USA, Canada, Australia, Germany and many European countries and also Saudi Arabia, Iran, Yemen, Qatar, Syria in the Middle East.

54) Sistem Dekorayon Tekstil İnşaat ve İnşaat Malzemeleri Sanayi Ticaret Anonim Şirketi

55) Talip Gıda Sanayi ve Ticaret

Talip Textile was founded in Gaziantep 3. Organized Industrial Zone.

56) Uğur Demir Halı Sanayi ve Ticaret

Öztürk Textile was established in 1993 in Gaziantep 2. Organized Industrial Zone.

57) Ulutaş halı İmalatı Sanayi ve Ticaret

Ulutaş Carpet was founded in Gaziantep 3. Organized Industrial Zone.

58) Üstün Tekstil Sanayi ve Ticaret Limited Şirketi

Üstün Textile was established in Gaziantep in 1976.

59) Vezir Halı Sanayi ve Ticaret Anonim Şirketi

Vezir Carpet has been established by H. Hayri Özkaya in 1953. The firm has annual 3.000.000 m2 production capacity.

60) Yaren Halı Tekstil Sanayi ve Ticaret

Yaren Carpet welcome you the fabulous world of machine made carpet. The firms introduce themselves as the most prominent manufacturer and exporter of versatile range of machine made carpet. They have been emerged in the year 2001 and established ourselves in Baspınar, Gaziantep-Turkey. With immense experience of over a decade we have set a strong foothold in the most competitive industry and engaged in manufacturing machine made carpet which includes Rugs, Shaggy, PP Heatseat, Frize, Polyster, cut&loop, Kids, Chenille wall the wall and many more. They are exporting to UK, Germany, Poland, Holland, Greece, Pakistan, Gulf Countries, South Africa and America, Australia Saudi Arabia, Jordan. They offer a wide range carpets and rugs that will surely enhance the beauty of your home decor. An extensive range of Floor Covering Items have been widely appreciated by the worlwide customers so that have gained remarkable business dealings with our most valued customers. These are extensively acclaimed due to its soft texture, superlative quality, profound variety of enticing colors and unique design patterns. The company has been provided its wide variety carpet to various countries such as European and many more. In such a short span of time, we have carved a niche for ourselves by growing steadily in the most competitive textile industry. They have secured a distinct position in the global industry due to our vast variety of products. The company quickly service offers experienced. Their collections add new design every year and a few add new quality regularly.

61) Yasin Kaplan Halı Sanayi ve Ticaret Anonim Şirketi

Since 1983, Yasin Kaplan Carpet is trying to be a leading company in carpet sector by encouraging and supporting all the best for development and improvement of the sector. It is not only to about customer satisfaction and take place in the market. It is about offering education and continuous improvement for our employees. It is about taking the responsibility against the customers, suppliers, employees and this earth planet. It is about creating a better place and a better quality of life for all of us, now and for the future generations. Yasin Kaplan Carpet has developed consistently throughout the past 30 years to become one of the leading manufacturers in Turkey of high quality machine made carpets.

62) Yeni Yaşam Tekstil Sanayi ve Ticaret Limited Şirketi

Yeni Yaşam Carpet was founded in Gaziantep 3. Organized Industrial Zone.

63) Yılmazkaya Tekstil Sanayi ve Ticaret Limited Şirketi

Yılmazkaya Textile was established in Gaziantep organized industry zone.

64) Yüksel Halı

Yüksel Carpet was established in Gaziantep organized industry zone in 2005 as a result of our partner's uniting 25 year experiences in weaving field. Our company works as export-oriented completely and addresses to domestic and foreign markets with new carpet weaving machines incorporated in 2013. Yüksel Carpet continues production with different qualities with type of HEAT-SET, BCF, FRIEZE and SHAGGY last technology machines in 5.500 ^{m2} closed area.