

## **THE EFFECTS OF TECHNOPARKS ON ABSORPTIVE CAPACITY AND THE ROLE OF GATEKEEPERS IN THIS PROCESS**

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**ABSTRACT:** *The existence of the companies and organizations depending on information technologies and advanced technologies in the technoparks are in increase. Technoparks allows the cooperation between the University and the Industries and helps to improve the information transfer among the companies and other scientific institutions. The purpose of this study is to investigate and reveal the effects of technoparks on the absorptive capacity and the role of gatekeepers in this process. In accordance with the purpose, a survey has been conducted to reach the firms that are located at Cukurova Tecnopark, and Mersin Technoscope. After an evaluation of the surveys and face to face interviews with the gatekeepers from selected firms, the findings show that the technoparks has positive effects on assimilative capacity. More over the managers of R&D departments or the founder partners of the companies as the gatekeepers plays a crucial role on information transfer process.*

**Key Words:** *Technopark, Absorptive capacity, Gatekeeper*

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### ***Teknoparkların Özümseme Kapasitesine Etkisine Bu Süreçte Gatekeeperların ( Kapı görevlilerinin) Rolü***

**ÖZET:** *Bilgi teknolojilerine ve ileri teknolojilere dayalı firma ve kuruluşların Teknopark bünyesindeki varlığı artış göstermektedir. Teknoparklar Üniversite ve sanayi işbirliğini sağlar ve firmalar ile diğer bilim kuruluşları arasında bilgi transferinin gelişmesine yardımcı olur. Bu çalışmanın amacı; teknoparkların özümseme kapasitesine etkisini ve kapı görevlilerinin bu süreçteki rolünü incelemek ve ortaya koymaktır. Bu amaç doğrultusunda Çukurova Teknopark ve Mersin Technoscope' ta yer alan firmalara anket uygulaması yapılmıştır. Yapılan anket değerlendirmeleri ve belirlenen firmalarda yer alan kapı görevlileri ile gerçekleştirilen mülakat görüşmeleri sonucunda bulgular, teknoparkların firmaların özümseme kapasitesi üzerinde olumlu yönde etkiye sahip olduğunu göstermiştir. Ayrıca Ar-ge yöneticilerinin ve firma kurucularının bilgi transferi sürecinde kapı görevlileri gibi önemli rol üstlendikleri tespit edilmiştir.*

**Anahtar Kelimeler:** *Teknopark, Özümseme Kapasitesi, Kapı Görevlisi*

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## **1. INTRODUCTION**

Although there is not a commonly accepted definition of technoparks, a few similar definitions are widely used (Monck et al., 1988) and these are expressed in various ways in different countries. For example; the names of Science Park in England, Research Park in the USA, Tecnopôle in France, Teknopolis in Japan, Grunderzentrum in Germany (Ivarsson and Gorschek, 2009), and Teknopark and Teknokent have been used in Turkey. On the contrary to this, technoparks are generally mentioned as the centres that create opportunities for sustainable innovation (Lundquist, 2003) and encourage the cooperation between the companies which enable the collaboration among universities and industries. According to the definition by Cambridge University, science parks are characterised as organizations that are spread tenuously in the parcel which is rather attractive next to a big and strong university, a site which is comprised of high-technology- origin companies or research and development organizations in extraordinary architecture buildings. Also the science parks are defined as institutions which are in deep relationship with the nearby universities and contributing to the scientific and technological improvement by gathering the most suitable companies and R&D institutions together.(Löfsten and Lindelöf, 2002). As a result of the science parks gathering the actors together, the information transfer between the organizations and the absorptive capacity of the firms which is based on the communication networks between organizations increased by specialised gifted people (Norman and Verganti, 2014).

Innovation is a concept which originated from the word “innovatus” in Latin and which means the usage of new methods in social, cultural and managerial fields (Armbruster et al., 2008). Innovation is described as a process in which a creative idea is converted into a product which can provide added value and which is marketable (Vrande et al., 2009). In other words, innovation is expressed as a creation of “a new job opportunity” beyond an invention. From this point of view, it can be said that innovation is crucially important for all businesses. The concept of open innovation was first propounded in 2003 by Chesbrough. Chesbrough also drew attention to the improvement in the mobility of knowledge and experience in line with the mobility of manpower and the accessibility of risk capital for commercializing of this knowledge (Chesbrough, 2006). Chesbrough named the conventional concept of innovation as “close innovation” and sorted the transition methods from close innovation to open innovation (Chesbrough, 2004). These methods were sorted as making alterations in the intercorporate processes which must be followed for the implementation of open

innovation, sharing the strategical information, effective usage of information systems, making the organization culture compatible, creating open sources and providing participation (Chesbrough and Garman, 2009). Gatekeepers are the ones who follow the innovation movements in the organization and function as a bridge between the organizations by means of technoparks. In this respect, it can be expressed that gatekeepers take on important tasks in the implementations of innovation.

The level to which science and technology reached today provides humanity with great convenience, speed, quality, comfort and welfare while it has become a subject for competition which reaches to various levels between the countries in terms of macro perspective and between the businesses in terms of micro perspective (Murphy and Pauleen, 2007). Businesses and countries exhibited all of their sources to survive and even be on the high position in this development process which gets over continuously with all their units, institutions and organizations (Zhang, 2005). Through technoparks, universities in which there are various opportunities that industry needs and industry in which there are opportunities that are needed by universities come together on a common ground, they work together and they succeed in making a platform in which mutual interaction and synergy become possible (Ashekele and Matengu, 2008). In other words, science and technology's becoming a production factor achieved to carry the close cooperation between university and industry onto a common implementation and research platform (Ivarsson and Gorschek, 2009). In this way, the mutual needs of universities and industry and the cooperation which is built in consequence of these needs resulted in the generation of technoparks (Bellevista and Sanz, 2009).

Technoparks are the environments that provide opportunities for the produced information to commercialize within and/or under the guidance of a university or a research centre and so as to obtain products that have highly added value for the region. They host some companies based on innovation and they are managed by an executive or an operator company have some support mechanisms envisaged in their legislation (Shane, 2004). For this reason, technoparks play important roles in the process of producing and sharing information. The activity of producing information generally show up in the professional works that are performed by the employers of the institutions, research centres, new technology-based companies and innovator companies located in technoparks (Bellevista and Sanz, 2009). Sharing the information comes into prominence in joint projects of the companies in technoparks (Autant-Bernard et al., 2010). The flow and spread of information are actualized through seminars, conferences,

trainings, publications, staff exchange and networks in technoparks between the companies, universities and research centres (Van Burg et al., 2008). Gatekeepers are key men who provide the information transfer between the companies which are at the heart of information network, individuals and exterior environment actors (Ramirez and Dickenson, 2010).

Information technologies are used by entrepreneurs in order to search and reach information, to communicate and make use of supports such as automation and integration during the production (Ashekele and Matengu, 2008) Gatekeepers have roles such as searching and reaching information and integrating them to the companies' employers for both entrepreneurs and the companies which they work for (Ramirez and Dickenson, 2010).

While permanent rules of today's world are formed in the direction of investment on humans and information, the countries which cannot produce such transformation technology and/or cannot transfer it properly or assimilate it take place in the poverty dilemma more significantly day by day (Simon, 2004). In this process, the most rational way to get rid of technological poverty goes through catching the transformation which is in the direction of investment on humans and information and acquiring technology which aims at technological learning. Gatekeepers play active roles in this process and they provide investment on information by integrating information and technology transfer to the company as they are skilled and qualified about monitoring, evaluating and using the exterior environment (Ramirez and Dickenson, 2010).

Growing competition provisions of the globalizing world resulted in the appearance of information as the most important production factor in businesses. The tendency to information-based economy today provides the quick and effective information flow through the cooperation between university and industry-entrepreneur and caused drawing attention on technoparks that make the commercial use of this information flow possible.

The aim of this study is to reveal and investigate the effect of technoparks on the absorptive capacity of technoparks and the role of gatekeepers in this process. In line with this purpose, a questionnaire was conducted to the companies in Çukurova Technopark and Mersin Technoscope. During the implementation, profound interviews were made with gatekeepers who play important roles in transferring the information coming from outside to the company and it was aimed to define their profiles.

## **2. THE METHODOLOGY OF THE RESEARCH**

This research was designed to find out how effective the existence of companies which were active in Çukurova Technopark and Mersin Tecnoscope in technoparks on their absorptive capacity and to determine the roles and profiles of gatekeepers who carry important roles in information transfer. A Questionnaire form and a semi structured interview form were used as data collection tools in this research. During the preparation of the Questionnaire form the scales prepared by Flatten et al. (2011) and Andrewina et al., (2008) were used. The questionnaire which was used for the determination of absorptive capacity and the gatekeepers was prepared by using a likert scale of 22 items. 7 multiple choice items were prepared for information about the company and demographic information. The internal consistencies of the expressions used in the study were measured and Cronbach Alpha Value was found as 0,897. Totally 7 questions were prepared for the interview and they were carried out with gatekeepers.

The population of the research consisted of the companies that were active in technopark. Çukurova Technopark and Mersin Tecnoscope constituted the sample of the research. There were 139 companies in two technoparks which were the sample of this research. Totally 84 participants, 36 of which were in Çukurova Technopark and 48 of which were in Mersin Tecnoscope, were reached and included in the scope of this research. SPSS 20.0 package program was used in the statistical analysis of the data.

## **3. DATA ANALYSIS AND RESEARCH FINDINGS**

### **3.1. The Findings about the Assimilative Capacity of Gatekeepers who Participated in the Study**

The findings about the demographic characteristics of the participants were summarized in Table 3.1. It was found out that 34,5 % of them were engineers, 61,9 % of them had bachelor's degree, 52,4 % of them were aged between 26 and 35,73,8 of them were males. The results reflect that the majority of the gatekeepers are well educated and young males in technoparks. Almost 51% of them had degrees in information technologies and information software, 26,2 % of them had 3-4 year of experience, 26,2 % of them had experiences of 5 years or more. Even though they are mostly young people more than 50% of the gatekeepers had more than 3-4 years of experience in the company. 57,1 % of the gatekeepers were located in Mersin. And 84,5 % of the gate keepers stated that they did not have a specialised unit in the company which assimilates and transfers the information flow coming from outside the company (Table 1).

**Table 1. The Findings About the Demographic Characteristics of the Participants**

Variables		n	%
Educational Status	Associate Degree	15	17,9
	Bachelor's Degree	52	61,9
	Master's Degree	7	8,3
	PhD	4	4,8
	Other	6	7,1
The Position in the Company	Engineer	29	34,5
	Technician	8	9,5
	Director	9	10,7
	Administrator	13	15,5
	Accounting	7	8,3
	Marketing	11	13,1
	Research & Development	7	8,3
Age	between 19 – 25	16	19,0
	between 26 – 35	44	52,4
	between 36 – 45	20	23,8
	between 46 – 55	2	2,4
	56 or over	2	2,4
Gender	Male	62	73,8
	Female	22	26,2
Field of Activity	Information Technology, Information Software	43	51,2
	Telecommunication	12	14,3
	Other	29	34,5
The year when the company was first established in technopark	Less than 1 year	20	23,8
	2 years	20	23,8
	3 – 4 years	22	26,2
	5 years or more	22	26,2
The number of employees in the company	1-9 people	39	46,4
	10-49 people	33	39,3
	50-149 people	9	10,7
	150 or more	3	3,6
Region	Mersin	48	57,1
	Çukurova	36	42,9
The existence of a unit which assimilates and transfers the information flow coming from outside the company	Yes	71	84,5
	No	13	15,5
<b>Total</b>		<b>84</b>	<b>100,0</b>

As shown in Table 2 below, there was not a statistically significant difference between the demographic variables and the judicial expressions about absorptive capacity within the company.

In line with these findings, it can be said that the demographic characteristics of the gatekeepers who participated in the study were not effective among the factors that affect the judicial expressions about absorptive capacity.

**Table 2. The Findings About the Comparisons of the Demographic Characteristics of the Participants and Their Assimilative Capacity**

Variables		N	Mean	SD	P
<b>The position in the company</b>	Engineer	29	85,1	9,8	0,438
	Technician	8	79,0	14,7	
	Director	9	78,8	14,1	
	Administrator	13	85,1	11,1	
	Accounting	7	82,1	12,1	
	Marketing	11	88,7	5,2	
	Research & Development	7	83,0	15,7	
<b>Gender</b>	Male	62	82,8	12,2	0,149
	Female	22	86,9	8,0	
<b>Educational Status</b>	Associate Degree	15	84,6	12,8	0,891
	Bachelor's Degree	52	83,7	11,2	
	Master's Degree	7	85,1	8,2	
	PhD	4	87,5	7,7	
	Other	6	80,3	15,7	
<b>Age</b>	between 19 – 25	16	85,4	11,8	0,610
	between 26 – 35	44	84,0	11,6	
	between 36 – 45	20	81,3	11,0	
	between 46 – 55	2	93,5	6,3	
	56 or over	2	85,0	11,3	
<b>Field of Activity</b>	Information Technology, Information Software	43	81,2	12,9	0,081
	Telecommunication	12	86,6	11,1	
	Other	29	86,8	7,8	
<b>The year when the company was first established in technopark</b>	Less than 1 year	20	79,7	15,1	0,113
	2 years	20	83,4	12,0	
	3 – 4 years	22	88,2	7,6	
	5 years or more	22	83,9	8,8	
<b>The number of employees in the company</b>	1-9 people	39	82,0	13,0	0,282
	10-49 people	33	84,8	9,9	
	50-149 people	9	89,7	6,7	
	150 or more	3	81,3	11,0	
<b>Region</b>	Mersin	48	82,4	9,4	0,176
	Çukurova	36	85,8	13,4	
<b>The existence of a unit which assimilates and transfers the information flow coming from outside the company</b>	Yes	71	84,7	10,4	0,144
	No	13	79,6	15,4	
<b>Total</b>		<b>84</b>	<b>83,9</b>	<b>11,3</b>	

\*p < 0,05

### **3.2. The Findings Obtained From the Interview the Results**

The results of the interviews revealed that the gatekeepers who were working for the companies in Çukurova Technopark and Mersin Tecnoscope, they were generally aged between 35 and 40, they had at least associate or higher degrees and their speciality fields were generally project administrators. When the companies they were working for were considered, it was observed that a great majority of them were technology, consultancy and software companies.

It was determined that the gatekeepers who were in the scope of this study were trying to catch up with the innovations and improve the information flow by imitating the functioning of rival companies in the market. Besides, it was observed that they were collecting general data by reaching the information on the internet and putting effort to integrate that information to their companies systematically.

It was emphasized that gatekeepers are innovators, have analytical thinking skills and characteristics to transfer what they learn into the organization systematically. Furthermore, the participants expressed that they were trying to reflect the data that they obtained at the idea stage into the organization by comparing with the other companies at the same sector which were active abroad.

## **4. CONCLUSION**

As a result of today's competitive conditions and technological developments, the companies had to head for open innovation in order to survive at the unpredictable market conditions. Open innovation is the supply of valuable information's in and out, to increase the internal innovation (Chesbrough, 2004). In open innovation the companies provides external information flow by sharing strategic and non-strategic applications with their stakeholders.

Absorptive capacity expresses the capability of the receiver, on the subject of noticing the importance and value of the external information. The individual absorbs and applies this information. In this frame the absorptive capacity, is the function of the whole information of the receiver which has existed to a large extend and which is formed before the transfer of the information. The absorptive capacity has a positive relationship with the transfer of the information.

Technoparks are one of the most important areas which open innovation and absorptive capacity are used effectively. Technoparks are the centers which encourage university industry cooperation and also create opportunities for sustainable innovation processes to take place. The



information transfer which has been formed as a result of the interaction among the companies increases the level of absorption capacity.

The gatekeepers who are accepted as the most important actors for information transfer process are the key personnel who integrate the flow of information to the inner side of the company by determining the flow of information and absorbing it. The gatekeepers are located at the center of the external information acquisition process which is formed as a result of open innovation.

The results of this study investigating the effect of technoparks on absorptive capacity and the role of gatekeepers in this process showed that demographic characteristics of gatekeepers do not have a significant effect on the levels of benefiting from the opportunities located in technoparks. According to this, it can be said that the gatekeepers can successfully transfer the roles they undertake to their companies. Therefore, it was considered to expect a result which shows the companies' levels of benefiting from the services presented in technoparks and environmental properties of technoparks did not differ according to the years when the companies was first established in technoparks. The results of the interviews showed that the gatekeepers are considered as experts in their companies and they have important roles in the functioning of the company. In line with the results obtained in both two stages implemented in this study, it can be stated that gatekeepers serve as a bridge between companies and technoparks about the absorptive capacity.

As a result of the survey study, 71 out of 84 people attending the survey has stated that there is a unit which assimilates and transfers the information flow coming from outside the company in their company. On the other hand 13 people have said there is not a specialized unit or department in their company that assimilates and transfers the information flow coming from outside. Although there are no formal position or job description for gatekeepers in the participating companies, there are individuals who are responsible for transferring external information. As a result of the interviews made, profile of the gatekeepers could be defined as, innovative, analytical thinker, powerful communicators and having important roles in companies' crucial processes. In accordance with the results, beyond the advantages of being in taechnoparks like having economic incentives, the firms lovated in technoparks also manage to increase their absorptive capacity. Although don't have clear job definitions for gatekeepers in the companies, according to the size of the firm, in big firms the R&D managers and in small entrepreneur firms the owner of the firms undertake the roles of gatekeepers. In this process the gatekeepers become like a bridge between

the firms and technoparks. For the studies which will be done later especially at the technology based firms, the effects of having the gatekeepers on firm performance could be researched. Also the different applications of innovation and external knowledge acquisition processes should be investigated in different geographies to contribute to the literature.

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