Research and Development, Innovation and Enterprunership in Technoparks

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ABSTRACT

The first examples of technoparks, which are clustering centers, first emerged in 1951 in the silicon valley in the USA, and then spread rapidly throughout the world. When the international structure is examined, the positive contributions of technoparks to the economies of developed countries and their contribution to sustainable growth as cluster centers have made them spread rapidly throughout the world. It is very important to determine the expectations of the companies in the technoparks from the technoparks and to ensure the contribution of these cluster centers to the sustainable economy in developing countries. Promoting and marketing of innovative products produced in technoparks, which are clustering centers, to world markets constitute an important milestone for sustainable economic growth. Technoparks contribute to regional development by attraction high technology companies (Chang et al, 2014: 1073) Science parks have become the focus of innovation all over the world with the ecosystem they create. After this article was produced from the doctoral thesis in 2014, the number of science parks in Turkey has reached approximately 100 as of 2013 and continues to develop rapidly.

Keywords: Research and development, Inovation, small and medium-sized enterprises, Enterprunership, Marketing, Business.

Teknoparklarda AR-GE, İnovasyon ve Girişimcilik

ÖZ

Kümelenme merkezleri olan teknoparkların ilk örnekleri Amerika Birleşik Devletleri'nde silikon vadisinde 1950 sonrasındaki yıllarda literaratüre girmeye başlamıştır. Dünyadaki kümelenme örnekleri değerlendirildiğinde yapının bulunduğu ülkelerde ekonomi ve gelişme yönlerinde büyük katkılar sağlayan yapılar olduğu görülmektedir. Teknoparkların ülkelerin genel olarak gelişmesinde ve sürdürülebilir gelişme konusunda büyük farklar yarattığı bilinmektedir. Teknoparkların kurulduğu ülkelerde yarttığı fark ve gelişmeye olan katkıları ile beraberinde oluşturduğu teknolojik dönüşüm tüm dünya ölçeğinde hızla yayıyılmasına ve kurulması hedef yapılar haline gelmesine neden olmuştur. Teknokentlerde faaliyetlerini sürdürmekte olan yenilikçi örgütsel yapıların içinde bulundukları yapıdan sağlamayı hedefledikleri desteklerin doğru şekilde anlaşılması ve verilecek himetlerin bu yönde modellenmesi gelecekte beklenen gelişmelerin sağlanmasınında yol haritasını oluşturacaktır. Teknokentlerde yürtülen çalışmalar sonucunda oluşturulan inovatif süreçleirn ve mamüllerin global pazarlarda kümelenme odağı olan teknoparklardan bilinirliğinin ve elde edilen çıktıların pazarlanmasının sürdürülebilir ekonomik gelişme yönünden son derece önemli bir mihenk taşı oluşturmaktadır (Chang et al, 2014: 1073). Bilimparkları oluşturdukları ekosistem ile birlikte tüm dünyada yenilikçiliğin odağı haline gelmiştir. Bu makale 2014 yılında doktora tezinden üretildikten sonra Türkiye'de 2013 yılı itibarı ile bilim parkı sayısı yaklaşık 100 sayısına ulaşmıştır ve hızla gelişmeye devam etmektedir.

Anahtar kelimeler: Ar-Ge, İnovasyon, KOBİ'ler, Girişimcilik, Pazarlama, İşletme.

Introduction

This research aims to examine the concept of technopark where innovative SME's producing innovative products are located, marketing of the innovative products produced by SME's (small and medium-sized enterprises) from technoparks to world markets, the expectations of SME's located in technoparks, like universities, where technology and knowledge are produced, and to emphasize their importance for developing countries such as Turkey. The importance of the sales of the products produced to the world markets and the things to be done in order to ensure the sustainable growth of the companies are emphasized for the SME's located in the technoparks.

Cooperation between research & development (R&D) activities and the university is important to the development of SME's and regional development. The success of technoparks and the companies located in it is also effected by the policy regarding innovation of the country where technoparks are

located (Albahari, 2013: 599). The primary aim of technoparks is to supply incentives for the knowledge-based economic clustering in one region. The emerging economic clusters play an important part in increasing the contribution of science and technology to economic development (Sudiana & Hendayani, 2020: 52). Science park and innovation play an important role in increasing employment in developing countries (Chege & Wang, 2020: 256). In our time universities and technoparks are regarded as the leading actor orienting technological change and as the center of R&D activities (Genç et al, 2020: 2). Since the silicon valley experience established in the USA in 1951 which can be accepted as the first technoparks, also known as technoparks, technoparks have risen from the entire economic, social and cultural series by showing dynamism and adaptability that go beyond the transient and geographical borders. Moreover, they have eliminated the institutional and organizational boundaries and enabled the stakeholders to work in coordination by facilitating better integration of multiple factors in technoparks and facilitating information flow and technology transfer among participants. Among other benefits, technoparks play an active role in the prevention of brain drain, attracting new talent, creating opportunities for specialized people by being one of the main values in developing innovation with research and development (R&D) climate and creativity. With the combination of various public and private organizations (including innovative organizations, new technology-based businesses, technology centers, research institutions, and universities) with technoparks, they have become a prominent tool for business innovation and development. The dynamic relationship between governments, universities, and companies, with the increasing participation of representatives, is very helpful in developing innovative systems. The resulting innovative climate provides a unique environment for all stakeholders and plays an important role in the development of R&D activities. Thanks to the merger of many representatives operating at micro/mini and macro levels of innovation systems based on network structures along with the climate formed with technoparks, they have taken its leading position as a tool to improve this process. Creativity and innovation are a driving force in the development and impact of technoparks, as well as being the main content. Technoparks have created a leap to develop the economy of the surrounding areas in their regions. The synergies created have an indisputable contribution to the areas in which they are located. Thus, success has returned to the institutions and organizations that have freed creativity in the first place within the technoparks. Creative institutions and organizations within a technopark, affect creative professionals and individuals at all levels and thus create the necessary conditions for growth. Moreover, the existing relationship between the staff of different companies, centers and universities, and the formal relationships between institutions and companies (e.g. contracts and agreements) provide greater potential value for creativity and innovation (Basalp, 2014; Basalp, 2022).

While the US is an important success story with more than 150 science parks, and it is followed by Japan and China with its science parks over 100. Although many of these science parks have their own unique structures, they have similar aims with technoparks since they are innovation clusters (Patthirasinsiri & Wiboonrat, 2017). Although the impacts of technoparks on creativity are multi-faceted and broad, the synergy they create between the stakeholders and the coordination among the institutions highlights the importance of regions they are located in as a center for the production of innovative products and processes. Technoparks, which are cluster centers, are important centers because they help the processes that will enable the creation and promotion of innovative and high-tech companies. Academic and entrepreneurial centers are those with a high technology focus, providing services with qualified manpower to manage professional processes (Ruiz et al, 2017; Özdemir & Yazıcı, 2022). In today's technology-driven world, it is widely accepted that conducting research and development-oriented projects is important. It is much more efficient and easier to produce projects in this direction in technoparks, which are clustering areas (Keles & Tunca, 2015).

The human factor around ideas has a significant impact on the quality of that idea and its spread. An idea is also influenced by environmental networks after the process during which it is created by its mastermind. Together with the network clustering centers created by ideas, they contribute to the emergence of a more effective structure with the involvement of decision makers to the process who are empowered by various bonding effects. Administrations should ensure that systematic structures are established in order for those involved in the processes to transfer their knowledge and ideas where it is necessary to collect knowledge within the scope of the projects carried out. The processes to be applied

in the transfer of ideas and knowledge through various networks vary from the delivery process to the evaluation process. These structures will also contribute to the creation of innovative projects (Kijkuit & Van Den, 2007: 877-878). Technoparks, where network structures and clusters are concentrated, are built with network structures that enable efficient and rapid movement, thus playing an important role in the faster implementation of ideas and projects. This gives the companies superiority in competition in the rapidly developing world in the global sense. Technoparks, due to having a cluster and network structure, learns quickly, facilitates the presence of the necessary human resources and suppliers together, therefore, they provide a great competitive advantage (Hobikoglu & Deniz, 2011: 236-337). Technoparks incorporate processes. Technoparks play an important role as a regulating mechanism in coordinating the use of various values, whether they are financial or not (Başalp, 2022).

Technoparks also play an important role in meeting the needs of the companies they incorporate and providing the necessary support thanks to the network structures they create (Belvista & Sanz, 2009: 500). One of the important roles undertaken by the technoparks apart from the tasks as university-industry cooperation centers, is to create an interdisciplinary work environment. They act as important centers while engineers working in technical fields and business administrators working in the social fields make decisions for producing innovative products and investment and while working together in joint marketing activities. In today's changing world, the economy is not only concerned with capital resources and the amount of labor, but it also gives knowledge and technology a central role. This is also called knowledge-based economy (Kusharsanto & Pradito, 2016).

The entrepreneurs in a science park in England are in an activity of clustering with the purpose of cooperation with universities. Teknoparks manage the technology transfer and cooperation between the business world and nearby university (Storey&Teher, 1998: 1037). An in the Italian study by Bigliardi at all in 2006 revealed that the success of a technopark is related to the success in its cooperation with universities (Bigliardi et al, 2006, p: 5005). That the firms are aware of their deficiencies but they do not need the aid of universities as they think that they themselves can solve their problems (Massa &Testa, 2008: 405). A study done in Poland in 2020 has found out that technoparks are an important center in the cooperation in line with the strategic goals of small and medium enterprises (SME) locate in technoparks (Skowron & Grabowska, 2020: 65). It is a necessity to be connected with a university that a mentioned of technopark structured be made (Saublens et al, 2007: 65)

The utilization of knowledge and development of innovation are extremely important for expansion of companies and development of their economies (Jia et al, 2020: 1)

Metadology

For this study, SMEs in Erciyes Technopark were selected. Questions on various subjects were asked to the companies. The survey was applied to companies in the form of face-to-face surveys in late 2012 and early 2013. In this manner, the expectations of the companies located in the technopark from the technopark have been revealed. Information was collected through a survey conducted on 75 companies in Erciyes Technopark. During the study we carried out in late 2012 and early 2013, a survey was conducted with the participation of 75 out of 80 companies reporting to the Ministry of Science, Industry and Technology operating in Erciyes Technopark. The companies included in the sample are SMEs. Ethics committee approval is not required since the article is consumed from a doctoral thesis.

The data collected and coded in the survey were analyzed using SPSS 17.0 statistical program. Statistical data were used to explain and interpret the data. Frequency distribution was used, and it shed light on the explanations. In this way, expression was strengthened through the use of graphs. In the survey, yes-no question technique, some multiple-choice questions, open-ended questions, mixed-style questions rated with Likert-scale were prepared and asked to the companies using face-to-face survey method and the answers were obtained.

Table 1. What Are The Expectations of Companies From Technopark Activities (Başalp, 2014)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Benefiting from incentives and supports	11	14,1	14,7	14,7
	Collaboration with the university	29	37,2	38,7	53,3
	Ability to get technological support from universities	15	19,2	20,0	73,3
	Environment open to constant change / ability to follow technological developments	16	20,5	21,3	94,7
	Other	4	5,1	5,3	100,0
	Total	75	96,2	100,0	
Missing	System	3	3,8		
Total		78	100,0		

As can be seen in the table, the biggest expectation of the enterprises from the technopark activities and their presence there is their desire to cooperate with the university. This is followed by the desire to receive technological support from the university and to keep up with constantly advancing technological developments.

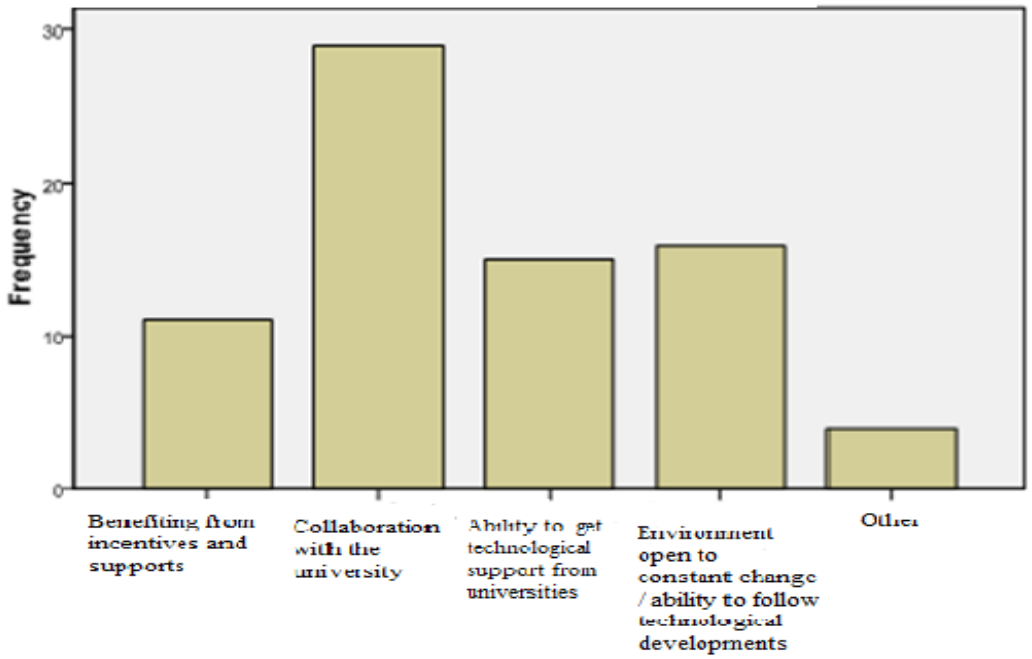

Figure 1. What Are The Expectations Of Companies From Technopark Activities (Başalp, 2014)

It is very clearly seen in Figure 1 that the basic expectation that brings SMEs to the technopark is not the benefit from the basic expectations of government incentives and exemptions, which is a frequently resorted method in developing countries like Turkey, and expectations in this regard ranks fourth. The widespread idea adopted by the society that companies choose to be within technoparks due to incentives and exemptions does not reflect the real situation. Basalp, 2014, argues that the reasons for SMEs to come and operate in technoparks for R&D activities should be well examined and Turkey's policies on tax and incentives should be guided by considering these facts in the next period. Companies participating in the study think that universities are the center of innovative studies, and their desire to

receive the necessary technical and information support from the university is apparent in the study. It is clear that universities should facilitate bureaucratic processes as much as possible in order to provide the necessary support to the companies in technoparks. The fact that the companies in the technoparks can use the infrastructure of the universities will also make a significant contribution to the innovative projects of the companies. This will, therefore, pave the way for the innovative products and processes to be produced by the technopark company with the help of the academic structure and infrastructure facilities of the university (Başalp, 2022).

It was revealed in a study conducted in Thailand on the most influential factors that affect the success of the newly-established technoparks that the intellectual capital was the most important factor. The study conducted in Thailand revealed that the most important building block of the structure, which is divided into categories such as patents, innovation services, entrepreneurship services, infrastructure services and partnership processes supports, is the intellectual capital which we call as trained manpower (Patthirasinsiri & Wiboonrat, 2017).

Conclusion and Recommendations

When modeling technoparks and clustering centers in developing countries, the primary objective should be to encourage the joint working conditions of the universities with the companies in technoparks within the framework of university-industry cooperation rather than prioritizing state incentives. Joint works, especially interdisciplinary ones, and cooperative activities should be increased in SMEs located in technoparks, and a suitable environment should be created for the technical and social science employees to work together. Through these interdisciplinary efforts, resources should be allocated to the studies in areas that can create markets and sales potential rather than the areas that cannot be marketed to the world and are not needed, and scarce resources should be used efficiently. Priority should be given not only to tax incentives but also to the work of stakeholders in a cooperative and coordinative manner while establishing policies. Identifying the needs of the companies in the technoparks correctly and providing a suitable working environment will be the key to the long-term sustainable growth and healthy economic structures of the companies. In addition to the use of academic knowledge and infrastructure facilities of the university in the process ranging from the R&D studies to the sale of innovative products that can be sold especially in the world markets, the synergy and the working environment to be created will ensure the efficient use of the resources, which will achieve the desired results. All stakeholders should benefit from the climate and joint workspace provided by technoparks and work together to ensure sustainable growth through the production of innovative products. R&D and innovation can only be achieved through proper modeling and collaboration. The countries that realize this fact and work in this direction have achieved an obvious economic success. The fact that developing countries understand the importance of technoparks by making use of these experiences will make them one of the developed countries.

Kaynakça

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