Technopark and its role in improving the competitiveness of the country's economy: current issues in Russia and Iran

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Abstract. This article presents the recent problems of infrastructure support for innovative enterprises that topical for scientists, public authorities and business representatives. The authors consider modern innovation policy as a regulator of innovation processes, consider the experience of organizing technoparks in foreign countries and the features of Russian technoparks, give the dynamics of their creation in Russia, and analyze the structure of domestic technoparks depending on their specialization and affiliation. The structure of technoparks is analyzed depending on its specialization, as well as depending on the owners. Actual problems of the organization and activity of technoparks in Russia, including on the basis of higher education institutions, are highlighted and generalized. Noting the important role of new-generation technoparks in improving the competitiveness of the country's economy, practical recommendations for their development in modern conditions are given. The recommendations are universal and can be applied in the practical activities of authority, representatives of technoparks, universities and subjects of innovative business in Russia, Iran and other states, aimed at developing their own developments and their introduction into production. It can contribute to increase the competitiveness of the country's economy.

1. Introduction
The problems of technoparks organization and improving the efficiency of its existing are more widely used. In accordance with the operational strategies in the field of innovation, this implies that Russian Federation, in fact, like the other countries, is aimed at repeating successful international experience.

However, the research results have shown that successful technology parks in economically developed countries were created, as a rule, at large research centers or corporations, gradually turning into mega technoparks and agglomerations of innovative cities.

Due to various features such as: historical, socio-economic, regional, legal and others, domestic technology parks are characterized by low efficiency.

Recently, in the context of the economic crisis and the increasing role of innovative business in ensuring the socio-economic development of the country, attention of scientists, government bodies and
business representatives is being increasingly focused on the study of infrastructure support for innovative enterprises problems.

The study the certain matters of the development of the national innovation system, including technoparks in different periods until the exacerbation of the global economic crisis, the works of Romanovich L, Romanovich M [7,9,10,21] and other authors focus on the problems of University innovative companies and University technoparks, the work by Sizova Yu[8] studies the matters of technoparks in the regional aspect, Lytaev N [12], conducted the approach analysis to defining success of a tech park and the main factors influencing it.

Meanwhile, the authors' analysis of the technoparks development problems in Russia under modern conditions of the global economic crisis and their solutions will help to fill the existing gap in terms of scientific-practical issues of strategic development of the Russian economy. Based on the above, the relevance of this research is being formed

At the present time, a technopark represents an element of the national innovation system in developed countries and is a kind of “barometer” of innovative activity in regions and countries.

In these countries, various systems of innovative development have been formed and significant capital is invested in innovative business. The top priority is to realize a profit on the introduction of advance developments and technologies. According to research by Khaikina E, Akmaeva R, Marenkov N [1-3] the government has an urgent need to choose such development systems where small innovative enterprises that bring significant revenues to the budget of countries act as guides.

It is arguable that in these countries that have chosen an innovative path of development there are effective partnerships between the three leading institutional sectors: science – business – government.

Technoparks served as infrastructure elements and promoted the transition to a knowledge economy as the most effective form of integrating science and business and stimulating the country's economic development.

Considering the foreign experience of organizing technoparks and the special aspects of Russian technoparks, it is worth distinguishing stages of their organization and development.

2. Materials and methods

2.1. Materials

The first technoparks were organized in the late 1950s at the universities of Stanford, Cambridge, and other cities in the United States and Great Britain. This period is characterized by the formation of university-based platforms that involve inventors and researchers in solving practical problems. Many international companies in the field of high technologies were set up on the basis of the first technoparks. Then the first concepts of founding Science Cities and Technopolises were born.

Around the first technoparks there was the forming agglomeration of innovative cities such as Silicon Valley. As for our country, the USSR successfully implemented the concept of developing Science Cities.

As an example, Novosibirsk Akademichn town, founded in 1959, has focused on its base the scientific-research and design institutes of various industry areas. Iran’s first technopark was founded in 2001.

In our opinion, we can distinguish the following differences and common features of scientific centers of the Soviet period and western technoparks:
- The differences are that domestic research centers were not focused on market demand, as Western technology parks;
- A common feature - performance result of the first technoparks is innovative products;
- It is also common that technoparks are aimed at introducing accumulated scientific knowledge into production (business), the owners of which were scientists, researchers, universities or various innovative companies. At the present time, these parks remain the predominant form of industrial parks.
Technoparks of the 70s and 80s (the second stage) are characterized by a focus on commercialization of scientific and research developments by providing space for rent and providing services to innovative enterprises.

At that time, the concept of creation mega technoparks in countries with expanding economy (for example, Asia) also began to be implemented. The special aspect of this period is the large scale of the technoparks construction and the intensive growth in the number of specialized technoparks.

Since the early 1990s (the third stage), technoparks are gradually transformed into platforms for communication. Various professional associations of researchers, industry experts, and venture financiers have been actively developing. During this period, technoparks expand their communication and virtual opportunities and increasingly become organizational structures. One of the main performance indicators of technoparks is the number of events held on its basis and with its participation.

Figure 1 shows that the number of operating technoparks in Russia and Iran increased over the period from 2001 to 2019. Russia has seen a significant increase in technoparks since 2010, while in Iran the growth in the number of technology parks is not so fast. In Russia, the maximum number of operating technoparks fell on 2016. During the period from 2016 to 2019 the number of technoparks in Russia decreased to 157, while in Iran it increased from 32 to 42.

It should be emphasized that the number of 157 Russian technoparks includes 22 technoparks organized in 16 regions of the country with the volume of state support of 4.4 billion rubles (according to The Ministry of Economic Development and Trade data).

The results of the study show that in our opinion, this does not solve the current needs of the national economy, which is developing along the innovation-based development and setting ambitious goals.

In addition can be summarized as the present day the planned funding of 30 billion rubles until 2024 in Russia within the context of the national project to support small and medium-sized enterprises for the technoparks development is insufficient to ensure a technological breakthrough in the conditions of the global crisis, technological shifts and competition. The number of technoparks created in Russia is at the level of 2011, however in Iran there is a steady trend in the growth of technoparks.

2.2. Methods
Our analysis of the economic literature [1-4, 6, 9-10, 16-20], shows that is established that only 2% of technoparks that were created more than 10 years ago are currently operating effectively and successfully in Russia. Thus, remaining 98% continue to be "at an early stage of activity", and it should be noted that only a small number of them have the necessary infrastructure, laboratories, high-tech equipment, and qualified personnel. We consider it important to note the fact that only 10% of resident companies from among the functioning technoparks received a set of necessary services in the field of business acceleration, assistance in attracting investment, mentoring support, etc.

Figure 1. The number of technoparks in Russia and Islamic Republic of Iran from 2001 to 2019.
If we consider the structure of Russian technoparks depending on their specialization (figure 2), it is obvious that the majority of them are multi-industry technoparks (31%) and technoparks in the sphere of information technologies (29%).

Minimal activity of technoparks was found in the field of research and development (8%) and agriculture (1%) in the general structure of technoparks. In our opinion, the referred structure of technoparks, depending on their specialization, cannot be called rational and adequate to the public needs.

Figure 2. Specialization of Russian technoparks.

Thus, the US accounts for more than 20% of the innovation market, while Russian manufacturers account for less than 1%. The measures carried out on the basis of domestic technoparks are extremely insufficient to achieve a synergistic effect in strengthening the relationship between the Russian academic community and company officials.

The founders mainly determine the potential opportunities and funding level for all the project stages of technoparks implementation. If we consider the ownership structure of technoparks (figure 3), it may be concluded that the regional administrations dominate as founders, which account for 39% of technoparks. The administrations of universities that have organized and maintain infrastructure facilities, usually on their own basis, account for 26% of technoparks. Individuals and companies 22% of technoparks. And the minimum amount (13%) falls on municipal administrations.
In our opinion, the existing structure of technoparks depending on the owners is not exactly rational, since in a market economy based on knowledge, private individuals or companies and University administrations should prevail in the structure of owners.

As a result, in our prospects in this sense, if the present practice does not go beyond its current narrow framework of "servicing the founders needs", then they seem quite modest.

The results of our study show that modern conditions there are changing trends of technopark movement development: rapid development of innovative technologies against global competition, the cost escalation of construction and maintenance of parks, decrease in intangible assets and financial opportunities of small innovative enterprises in global environment.

3. Results

From the results of the analysis, it follows:

1. The domestic technoparks development is a necessary and major element in the formation and development of the national innovation system in order to ensure an innovative breakthrough under conditions of economic crisis and globalization.

2. Currently, a certain base of support for domestic science and education has been created. However, a systematically developed integrated state scientific and technical policy covering them, as well as the development and transfer of technologies, scientific-technological production modernization within the Russian national scale has not yet been finalized.

3. In our opinion, the system of state support should be aimed at stimulating scientific research, developing domestic high-tech and knowledge-intensive technologies, spreading technology transfer, strengthening scientific and technical human resources, increasing the prestige value of science, forming scientific elites, ensuring priority growth of science financing by attracting various sources, creating and developing new organizational forms and mechanisms of interaction with production (technopoli, tech cities, academic and technological valleys, technology and innovation zones, industrial-and-scientific park, etc.).

4. The problem of technoparks resides in experience reproduction of traditional technoparks organized in the past in other economic and social conditions and market opportunities. The value and success of modern technoparks of the new generation directly depends on the diversity of scientific potential. Technopark becomes a place for free communication and interaction of the "creative community" of technology developers and consumers working in the markets of technology free exchange.
4. Discussion
The information was gathered from literature, newspapers, Internet and by interviewing scientists and researchers [1-4, 6, 11, 16-20] we have established that various studies conducted in this area by Russian and foreign scientists in recent years have shown that infrastructure facilities created on the basis of higher education institutions are considered as the most important elements of stimulating the growth of the regional economy.

In our opinion after analysis shows that currently about 2% of technoparks that are more than 10 years old effectively operate in Russia while the remaining 98% continue to be "at an early stage of activity", and only a few of them have the necessary infrastructure, laboratory, high-tech equipment, and qualified staff. Only 10% of resident companies from the number of functioning technoparks received a set of necessary services for business acceleration, assistance in attracting investments and mentoring support. If we consider the structure of Russian technoparks depending on their specialization (figure 2), it is obvious that the majority of them are multi-industry technoparks (31%) and technoparks in the sphere of information technologies (29%). Minimal activity of technoparks was found in the field of research and development (8%) and agriculture (1%) in the general structure of technoparks. In our opinion, the referred structure of technoparks, depending on their specialization, cannot be called rational and adequate to the public needs.

5. Summary
The research revealed that the number of technoparks in Russia is extremely small (below the level of 2011). There is an increase in the number of technoparks in Iran, but the growth rate is not high (since 2010, the increase has amounted to 14 technoparks).

In our opinion, in the modern conditions of Russia and Iran, the current number of technoparks does not meet the needs of the economies.

The structure of Russian technoparks, depending on their specialization and affiliation, is not rational because of the problems in the technoparks work.

In this context, the current issues of the organization and technoparks activities are highlighted and summarized, which hold back the growth of innovative companies. Based on the identified problems, the authors proposed recommendations that will contribute to the development of technoparks.

The authors focus on the fact that the modern technopark of a new generation is becoming a place for free communication and interaction of the "creative community" of developers and consumers. The process of developing new-generation technology parks is significant for Russia and Iran under conditions of global economic crisis. One of the ways out of the current crisis is to rely on domestic science and high-tech production. In this regard, new-generation technology parks, including those based on universities can play one of the most important roles in this process.

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