Research of innovative activity of business entities of the Russian Federation

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Abstract. The article presents the results of research of innovative activity of organizations that develop, realize and implement technological, marketing and organizational innovations in Federal districts of the Russian Federation. The special role of branch science is defined, which provides the process of organizing and coordinating scientific research and innovative development, creates conditions for strengthening the innovative potential of business. The functions of public-private partnership, which is a mechanism that increases the effectiveness of the relationship between the state and the business sector in the innovation process, are identified. Recommendations were made to Russian organizations to develop digital strategies that help them realize their innovative potential in the modern digital economy.

1. Introduction

The challenges of modern civilization changes determine the trajectory of development of the economy of the state and business entities based on technological transformations, the level of which depends, primarily, on the innovative activity of business entities and their adaptability to the conditions of the world transformation of the technological order.

Noting the importance of innovation activity and considering the conditions for its stimulation, Sitenko D. A., Yerzhanova S. L. note that 'in the modern economy, the innovation activity poses a great importance, since the competitiveness of the country and its regions directly depends on the ability of the economy to generate and effectively use innovations. The state, creating favorable conditions for scientific, technical and innovative activities of enterprises, encourages innovation activities and increases the efficiency of innovation systems, using various methods such as: active participation of the state in the innovation process (state lending at preferential rates, placement of state orders for research and development in priority sectors of the economy, participation in the financing of research and development); creating a system of tax incentives for innovative and active enterprises, among which the most actively used are deductions from taxable income of R & D expenses and tax credits [7].

The innovative activity of business is a manifestation of its innovative potential, which depends on the innovative climate of a state and a region. In turn, the innovation climate is determined by resource components: scientific, intellectual, managerial and informational, personnel, financial, technical and
technological components. In this regard, to increase the innovative activity of business, the authorities need to take actions aimed at improving the innovation climate, developing innovative entrepreneurial activity, cooperation between regions to implement joint innovation projects, developing public-private partnerships and focusing on the effective interaction of various business structures and the scientific community. Special attention should be paid to the transformation of the economy into a digital one, which has a direct impact on the innovative activity of businesses by accelerating the exchange of information and obtaining new knowledge [4, 6].

2. Methods
The fundamental concepts and provisions, as well as scientific approaches, set forth in the works of Russian and foreign scientists, on the problems of the functioning and innovative development of economic entities and ensuring the stability of their processes have become the theoretical and methodological basis of the study. In the process of developing the problem, General scientific methods (analysis, synthesis, abstraction), specific scientific methods (statistical and economic), monographic research procedures, and the method of comparative economic assessments were used. The information-empirical base of the study is presented by the official data of the Federal State Statistics Service of Russia, the Ministry of Economic Development; the corresponding federal and regional programs.

3. Results
Enterprises operate in certain micro- and macro-environments that influence their innovative behavior. Exploring the innovative activity of organizations engaged in the development, realization and implementation of technological, marketing and organizational innovations in the Russian Federation, it should be noted that for the period 2013-2017 their share does not exceed 10.4% in the total number of surveyed organizations (Figure 1).

![Figure 1](image-url)

**Figure 1.** Innovative activity of organizations that carried out technological, marketing and organizational innovations in the federal districts of the Russian Federation in 2017, % [2].

Central (9.9%), Privolzhsky (9.1%) and Northwestern (8.6%) Federal Districts are leaders in innovative activity of organizations in 2017. It should be noted that the same districts are leading in the implementation of technological innovations (Figure 2).

An important element of the analysis and assessment of the innovative activity of enterprises is the identification of factors, causes and prerequisites for innovative activity that determine its nature or certain features. When examining the factors influencing the innovation activity, it is necessary to pay attention to both stimulating and constraining elements. Among the factors constraining the innovative activity of organizations, one should single out such factors as the lack of adequate government support for the commercialization of innovations, and a weak susceptibility of enterprises to innovations. Enterprises are forced to finance the development of innovations on their own, but often they are not radical and the implementation period is extended [5].
Figure 2. Innovative activity of organizations that carried out technological innovations in federal districts of the Russian Federation in 2017, % [2].

So, in 2017 the cost of technological innovation in the Russian Federation amounted to 1,404,985.3 million rubles, which is 3.5 times more than in 2013, but at the same time, in the structure of the volume of shipped goods, work performed, services, these costs present only 2.4%, which is a low indicator and does not ensure high rates of implementation of technological innovations in Russian organizations.

The distribution of costs for technological innovation by federal districts in 2017 is shown in Figure 3. The largest share of costs for technological innovation falls on the Central (32.56%), Volga (23.98%) and Ural (13.26%) Federal Districts.

Figure 3. Distribution of costs for technological innovation by federal districts in 2017, % of the total investment [2].

It should be noted that the total amount of budgetary allocations for the implementation of the state program of the Russian Federation "Economic Development and Innovative Economy" (as amended on April 15, 2014 No. 316), aimed at stimulating innovation, from the federal budget is: for 2013- 125.5 trillion. rub.; for 2014- 132.6 trillion. rub.; for 2015- 128.9 trillion. rub.; for 2016- 106.1 trillion. rub.; for 2017- 97.0 trillion. rub.; for 2018-96.2 trillion. rub.; for 2019- 83.9 trillion. rub.; for 2020-100.8 trillion. rubles. During the analyzed period, there is a decrease in funding from 125 trillion rub. in 2013 down to 96 trillion. rub. in 2018 [1].

Investments in technological innovations do not always lead to an increase in the number of advanced production technologies that the Russian Federation needs in the face of economic sanctions. For example, along the period 2013-2017, the number of advanced manufacturing technologies developed in the Russian Federation tended to decrease from 1,429 units in 2013 to 1,402 units in 2017, only in 2016 there was a 7.35% increase compared to 2013 (figure 4). Moreover, the Central, Volga and Ural Federal districts received the most funding in 2017, they also showed a downward trend in the development of innovative technologies. At the same time the Southern Federal district, despite little financial support from the state, increased the number of technological innovation developments in 2013-2017 by 2.7 times.
In our opinion, the state program provides for more funding to stimulate the innovation process in Russia at the initial stages in order to create a mechanism for innovative activity of economic entities, which subsequently must independently implement organizational changes aimed at developing innovation and innovation.

In the regional aspect, the leaders in the number of advanced production technologies were highlighted in 2017. These are Central (34.24%), Volga (16.12%) and Ural (16.83%) Federal Districts (figure 5).

Thus, it should be concluded that there is a weak relationship between the cost of technological innovation and the number of advanced production technologies developed.

4. Discussion
To compensate for the need for technological innovations, economic entities borrow them and, as a rule, these are foreign developments, which indicates low innovation activity of Russian organizations.
It should be noted that the number of advanced production technologies used in the Russian Federation increased by 23.85% over the period 2013-2017, and this indicator also tends to grow in the Federal districts.

In order to promote innovative activities of economic entities in the Russian Federation continue its implementation of projects of the Ministry of economic development "stimulating the attraction of investments into innovative sector of economy of the Russian Federation", "Support of private high-tech companies-leaders", "innovation clusters – leaders of investment attractiveness of world level". The Innovation Assistance Fund implements the "UMNIK" program, which is aimed at stimulating mass participation of young people in scientific, technical and innovative activities, and the "Start" program in order to achieve the target value of the state program "Number of small innovative enterprises supported at the seed stage" [3].

Branch science can and should be an important element of the formation of the Russian innovation system, which provides the function of transferring knowledge to the practice. Branch science is an exclusively Russian, or rather, Soviet phenomenon. At the time of the Soviet Union, about three-quarters of specialists who performed research and development were concentrated in the branch sector of science. Industry science accounted for about 80% of all R & D, including almost a quarter of basic research, three quarters of applied research, and 90% of development. It is in this sector of the economy strong design and scientific schools have been established, and a rich experience of scientific support for the production sector has been accumulated.

The structure of branch science traditionally includes experimental production engaged in the creation (sometimes small-scale production) of innovative products, which gives reason to consider branch science as one of the main links of the national innovation system. In other words, industry science serves as a "link" between basic and applied research, on the one hand, and the manufacturing sector – on the other.

The main function of the academic sector of science is the expanded production of new world-class knowledge, which contributes to the technical and technological, social economic, spiritual and moral development of the Russian Federation; on this basis, the country's reputation as a world scientific power is preserved. During the years of market transformation processes, the Academies of Sciences have managed to retain highly professional staff; they are united in scientific schools that carry on the best traditions of national science; infrastructure that provides the process of organizing and coordinating scientific research and innovative development; a developed material and technical base; international scientific relations and partnerships. The academic sector of science is the most important mechanism for sustainable development and subsequent transfer from generation to generation of accumulated intellectual and cultural national potential [8].

Today, the academic sector of science actively concludes and implements agreements with the subjects of the Russian Federation aimed at using the scientific, technical and intellectual potential of Academies of Sciences to create favorable conditions for regional social economic development, preserve the research, production and entrepreneurial potential of regions, and strengthen their innovative potential.

In this situation, RAS institutions need to actively participate in the development and strengthening of partnerships within clusters, for example, through cluster initiatives that initiate links between higher education institutions and organizations of the RAS with technological and industrial parks, business incubators, generating joint business activities, and closing the production chains of the innovation cluster.

In modern economic conditions, the interaction of the private and public sectors of the economy is the most important condition for the effective distribution of resources, not excluding the innovation sphere. From the point of view of entrepreneurship, public authorities are called upon to create the most favorable conditions for the development of the business sector. From the position of the state, the latter ensures the implementation of the goals, tasks and interests of the population in the course of its activities, related to the growth of welfare, employment, economic and environmental security, etc. In general, the public-private partnership (PPP) should be considered as a partnership in which public
authorities and the private sector of the economy implement jointly significant projects, based on a mutual agreement on the distribution of designated tasks and possible risks. The term PPP describes a relationship in which the resources of the public and business sectors are used together to achieve mutually beneficial goals.

In practice, the concept of PPP is considered as an institutional and organizational alliance between the state and the business sector, created for a certain period of time for the implementation of specific joint projects and ceases to exist upon the completion of their implementation. In other words, it is a kind of mechanism that can increase the level of trust between partners and acts as an indicator of the effectiveness of relations between the state and the business sector. As you know, the effectiveness of an innovation process is determined by cooperation and coordination of actions between its participants. In order to increase the effectiveness of innovation processes, partnership relations are developing simultaneously, but with different involvement, between all interested parties – the state, investors, innovators, Universities, research organizations, etc. As a result, there is a concentration of resources of all types, as well as their sources within a certain form of interaction between the state and business in priority areas of joint innovation projects. Resources and their sources are selected based on maximizing the possible synergy effect that is achieved at all stages of the implementation of such projects.

When implementing the mechanism of public-private partnership in the innovation sphere, all its participants should have equal opportunities and rights in choosing the most effective tools for achieving the goals and objectives set. The creation of innovative infrastructure (clusters, incubators, technology transfer offices, etc.) is considered as one of the forms of PPP.

Analysis of the joint activities of the state and the business sector in the framework of innovative development of the country, allowed to determine the main directions of functioning of innovation development institutions (IDI): development of an innovative type of economy; stimulating infrastructure development; support for agribusiness and SMEs; support of the housing and utilities sector; promoting comprehensive modernization of the national economy.

As a priority measure to achieve the planned results, the experts of the Council under the Government of the Russian Federation suggested to divide the functions of the IDI into two categories: creating and developing an ecosystem and creating innovative companies.

For the first category, it is necessary to determine key performance indicators that will encourage more efficient use of infrastructure (involvement of entrepreneurial Universities in projects, development of regional innovation programs), development of intellectual capital, and more active involvement of private capital to create new infrastructure facilities.

For the second category, the experts are asked to identify the key performance indicators that are aimed at eliminating market failures and stimulate essential growth of volumes of investments and quantity of funded projects at the preliminary stage and the initial stage, as well as in high-tech industries (not related to industry but associated with the development of new production facilities). Key performance indicators should focus on the return on invested funds and the development of innovative production.

Modern organizations need human resources that can define a digital strategy that will allow them to transform in the modern economy. To solve these problems organizations can identify the following ways to solve them:

1. implementing the employee's organizational role as a catalyst for transformation or chief digital officer. This process should include two conditions: the role should be correctly positioned at the appropriate level in the organization with sufficient influence and budget to implement changes, and properly formed requirements for the competencies of a digital employee who can identify tools to overcome organizational inertia and stimulate digital transformation and innovation throughout the organization;

2. changing the organizational culture by creating a culture of data-based decision-making, which will give organizations more opportunities to predict future changes, which means that they will be successful;
3. shaping the digital commitment of employees by defining their role in the digital strategy of the organization and creating a system of motivation for this role.

For companies that anticipate massive digital changes in their industries, these three levels are the key to realizing the potential that lies ahead. Hiring the right people should make a difference. The culture of data-driven decision-making should be created. And fully commitment to the management system to focus on digital development should be raised.

5. Summary
As practice shows, today it is necessary to actively develop all-round productive interaction between academic and University Sciences and maximize the use of their current potential. Academic organizations, supporting regional Universities of the country and state research centers are the main subjects of the national innovation system. They are able to carry out a full range of fundamental and applied research on their own, including with the support of innovative projects by budgetary scientific funds, and in cooperation, creating the necessary scientific and technical reserves.

Despite systemic imbalances in the functioning of development institutions: "vertical", defined by insufficient balance of support at various stages of innovation; "horizontal", related to the thematic areas of R & D activities and features of prioritization of their activities; "institutional", defined by the regulatory framework of the conditions for providing support, the composition of the tools used by the IDI, public-private partnership in the field of innovative business in the regions of the Russian Federation is actively developing and contributes to strengthening the country's position on the world stage in the field of innovation and know-how.

6. References
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