

MODELS OF EFFECTIVE INTERACTION IN THE INNOVATIVE SPHERE BETWEEN GOVERNMENT, SCIENCE AND BUSINESS

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The organization of innovative activity in modern conditions is based on a paradigm of strategic innovative networks, and application of the network forms of management by innovations. These forms provide higher speed of a transfer and diffusion of innovations, and also effective forms of integration of resources at all stages of development and implementation of innovative projects. At the present, this paradigm took shape of the "Triple Helix" concept, which reflects the modern forms of interaction between Government, Business and Science.

The central thesis of the "Triple Helix" concept is that in a system of innovative development the institutions, responsible for the creation and diffusion of new knowledge, are beginning to occupy a dominant position, due to the logic of Science Development, complexity and interdisciplinary nature of modern fundamental and applied researches. These institutions promote the formation of promising scientific innovative clusters, which create the potential of innovative development (nanotechnology, information technology, etc.), well as some changes of quality in cooperation between the scientists, technologists, producers and users of innovations.

The globalization and imperatives of innovative economic development, the evolution of institutional and innovation environment have caused the appearance of the new organization forms in economic, scientific and innovation activity. Innovations are usually based on the simultaneous use of many different types of knowledge. In some countries, the institutions, which are included in the production process of new knowledge, are the Universities, in others - Academic Organization Systems. The role of State in the "triple helix" model is stimulation and funding the development of scientific centers that would bring together more Universities, Institutes and companies around itself to create scientific and educational networks [1]. That is, the State does not play a dominant role in the innovative development, as it does not directly create any new knowledge, although, it is responsible for the organization of their production and use, to the extent in which the knowledge is a public good. Nowadays the new model of the innovation system is forming, where the Entrepreneurial Universities are becoming the main engine of innovation and the most important link of knowledge-based economy. The "Triple Helix" Model supposes that, these Universities are the centers, where the new forms of technology and entrepreneurship are generated, as

well as the fundamental and applied researches are conducted. The establishment of such Universities is an important step towards the formation of real conditions for the integration of Science, Education and Industry, which allows you to create and develop the strategic alliances and innovation networks, and thus – the field of new knowledge generation and diffusion.

The Model of "Triple Helix" can substantially raise a level of the High school Science; it also extends the opportunities for the research activity and commercialization of the Universities intellectual potential through their interaction with economics and provides the coordination of co-operation with the efforts of the State Administration bodies.

Knowledge and creativity of employees are becoming the primary factor in the effectiveness of any economic system, without which the technical and economic progresses are practically an unachievable task, regardless the amount of funds invested in the operating equipment and technology. The scientific, economic, technological, organizational and management information, involved in the productive consumption, largely preceding the production process, becomes a driving force for innovation and a part of the companies' know-how. The studies of western scientists show sharp rise in the value of intellectual funds of the company compared to its material resources and financial capital. Their ratio is approximately 6:1. It is also estimated that a dollar expended on the research and development, brings to eight times more profit than a dollar invested in technique [2].

Consequently, the increasing of knowledge-capacity degree in the modern economy leads to the significant reduction of isolation, containment and territorial limitations of economic agents effects, the intellect and creative potential of each person become the most important values, thus the information and knowledge as a resource are distributed among all participants of the innovation process. That is why the "modern economy is a network, which consists of the networking structures, operating on the basis of network electronics, where the major emphasis is placed on the knowledge creation and dissemination for the purposes of innovation development" [3].

The English economist R. Rothwell researched the experience of international companies - leaders in the field of innovative development and identified five generations of innovation process models. The first generations of models (1G and 2G) assume that the innovation process has a linear and consecutive character and includes scientific discovery, research and development, production, marketing, and finally, the market appearance of a new product. In the model 1G, known as the model of "technology push", the market plays a passive role, as the supply breeds demand, and the 2G model of "market attraction"

proceeds from the fact that the innovations appear as a result of market needs identification, research and development, production and introduction of new products into the market, i.e. demand breeds supply. In addition to the linear models of the first and second generations R. Rothwell by analyzing the international experience, highlighted three more innovation process models (generations): combined model (3G), integrated model (4G) and the model of strategic networks (5G) [4].

The innovation process of the third generation according to Rothwell is still a consistent process, but it has a feedback, the presence of which indicates the possibility of projects to return to the previous steps for improvement, which essentially means learning from your mistakes and experience. In this case, the main sources of innovative ideas are the market needs and a scope of research and development.

The innovation process of the fourth generation (4G model) appeared in the practice of companies in the second half of the 80s and outlined the transition from the consideration of innovation as a consistent process mainly to the understanding of innovation process as a parallel process, which simultaneously includes the elements of research and development, marketing, prototyping development, production and etc. The most important features of the fourth model are the integration of R & D to production, a horizontal cooperation (creation of strategic alliances) and the creation of cross-functional working groups, joining together engineers, designers, marketers and others.

The fifth generation of the innovation process is a development of the 4G model and a more close strategic integration of interacting companies. The innovation process of the fifth model by R. Rothwell has a multi-institutional and network character. This is a non-linear model, which reflects the interaction of the major institutions, the results of which is the introduction of innovation into the market.

The appearance of the last sixth model of the innovation process is associated with the further strengthening of the knowledge role as a key factor of competitiveness of modern economies. The key characteristics of the sixth model are that the enterprises differ from each other by information they possess, the knowledge intensive, and the way they use and exaggerate such knowledge.

Until now in the Russian Federation, dominate the ideas about the possible practicability of realization of the deployed linear model for the innovation process in enterprises. It is necessary to run the models of the 4th or 5th generations for creation the appropriate conditions, the most important of them are: the availability of resources and the institutionalization of the new organization forms for the innovation activities, such as the strategic alliances and networks, which are

intended to resist the innovative "failure" of the economy and to ensure the competitiveness growth of the domestic producers and the elimination of critical scientific and technological backwardness of the domestic industry to the world level.

The strategic alliances and networking organizations have a number of advantages over the traditional forms of market interaction organization structures, among which we should note the following: reducing transaction costs, integration of resources and knowledge, need for constant training in growth conditions of variability and technological uncertainty of the environment. Taking into account that the time for the development of competitive scientific idea and turning it into an innovative product is a critically important parameter in the global competition; it also should be noted that the formation of alliances and networks allows to achieve a significant reduction in the time for the exploratory and fundamental scientific researches due to the high concentration of skills, information resources and laboratory and experimental base. That is why the networks actively develop and disseminate in the global economy, based on the competitive advantage and the informative force provided by the modern technological possibilities.

In Russia we already have a positive experience in creating network structures. Thus, the participants of the Russian national nanotechnology network are more than 200 organizations, including 121 industrial enterprises, 61 scientific organizations and more than 40 leading universities of the country. It is expected that in 2015 the growth rate of industrial production for the Russian electronic industry in the comparable prices will be over 115% [5].

Thus, the implementation of tasks on innovative economy development requires the institutionalization of new organizational forms of innovation activity which is understood as the process of their ordering, formalization, establishing the appropriate rules of interaction between participants. As a result of the growing dynamism and uncertainty of economic development has appeared the necessity of organizing more effective forms of interaction between the three subjects of innovative activity (Government, Business, Science), and a new framework creation for these connections building - communication networks. The network forms performance of organization consists in the achievement of synergistic effect due to the network scale increasing. Each node, a network element, whether a producer or a consumer of innovative product, gets an extra effect from a simple increase in the number of elements [6]. The availability of network also implies the need to transform the functions of the State, Universities, Scientific organizations and companies in the process of innovative development, searching new and more flexible and effective forms of integration and cooperation in order to jointly solve the strategic problems.

References

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