

INNOVATIONS AND ECONOMIC SECURITY

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Introduction. Competitiveness in the domestic and world markets increasingly depends on the products based on new knowledge. And if in the past the success and development of the organization largely depended on access to natural resources, today they need science, innovation and education of employees. The tasks of modernizing society and the country require an ever wider introduction of innovations in all spheres of its life.

Methodology. The term “innovation” itself entered science in the 19th century. as a necessary indicator of the development of society and its individual aspects. In accordance with the international standard for science and innovation - the Frascati Guide - innovation is defined as "... the end result of innovative activity, embodied in the form of a new or improved product introduced on the market, a new or improved technological process used in practice, or in a new approach to social services”. In modern conditions, innovation methods are the most important elements in improving the efficiency of various organizations. The introduction of scientific achievements and inventions in the organization ensures constant renewal and improvement of its products (services), applied technologies. One of the most important conditions for functioning of modern organizations is the continuous growth of change. Innovation acts as a means to solve problems that arise as a result of continuous change. Focusing on innovation is becoming an ultra-modern form of business.

Literature review Some experts tie innovation-based economy with internal security issues related to science and technology [Tyson et al., 2021, 1-3] and study innovative component of economic security of enterprises: in particular economies [Ianioglo et al., 2017, 1228-1242]. Others examine the impact of innovative activity on the economic security of the enterprise at micro level [Nikolenko et al., 2021], with a focus on technological protection and piracy [Ayres, 1986]. The relationship between innovations and economic security is worthy to view through modern technologies in the context of achieving high efficiency of public administration. In other words, macro level of study deserves more attention and research. Therefore, precise methods need to be worked out for designing different models for assessing the levels energy, financial and othe security [Sylkin et al., 2020, 391–398]. This, in turn, help to resolve the problems of shaping the business environment, particularly, in countries with economies

in transition: aspects of anticorruption [Kryshtanovych et al., 2021, 316–327] and helps to comprehend the essence of the process when and how the economic development leads to democracy [Inglehart & Welzel, 2009, 33–48], as well as to reveal the role of transparency in government communication [Fairbanks et al., 2007, 22–37], including the methods to improve economic security management system of municipalities with account of transportation system development [Sun, et al., 2017, 73]. Finally, aside from analyzing control, bargains, and cheating in public sector [Hood, 2002, 309–332], there is an obvious need to look at issues related to the prospects for the development of inclusive education using scientific and mentoring methods under the conditions of post-pandemic society. These issues are subject to further studies, while some are already under way [Kryshtanovych et al., 2020, 73-88].

Scientific novelty. The main results of our study lead to the disclosure of technological potential is facilitated by an innovative system of organizational structures, involving economic agents in the creation and use of innovations. The factors influencing the development of national innovation systems are knowledge, which acts as a key resource in the modern economy. The fact that knowledge is fundamentally different from other economic resources makes traditional economic analysis inapplicable to this subject of study and justifies the need for a new paradigm. The development of national innovation systems is also influenced by learning, which is predominantly an interactive and, accordingly, socially conditioned process that cannot be explored in isolation from the institutional and cultural contexts.

Analysis. Today, it is a well-known fact that innovation plays a decisive role in economic dynamics. So, in developed countries, from 75 to 100% of GNP growth occurs through the use of innovations. For countries with developing economies, the activation of innovation processes is the only opportunity in the foreseeable future to become competitive in the world market. Awareness of the importance of innovative processes in economic development was the impetus for their active scientific research. The national innovation system as a complex of institutions, the functioning of which creates, transforms technologies and promotes their diffusion.

The specifics of innovation processes are predetermined by the specifics of the country's scientific and educational system, regulation in the field of intellectual property, forms of interaction between participants in the innovation process, as well as the peculiarities of decision-making at the micro level. Based on this, the institutional matrices of each country determine the features of its national innovation system. The most common basic model of an innovation system is based on such a general structuring principle as the separation of the spheres of influence of the state and the private sector in innovation processes. At the same time, the state is charged with the obligation to provide fundamental research, identify and implement priority areas for technological

development, as well as promote the innovative activity of the private sector through the development of infrastructure and the creation of a system of incentives for innovation. The private sector, in turn, takes on the role of developing and commercializing the core array of technologies. However, such an approach in some cases contradicts the real state of affairs, since in practice the functional settings of the public and private sectors may differ significantly from those indicated. Thus, in developed countries, firstly, in recent decades, large corporations have shown a growing tendency to independently conduct fundamental research. Secondly, in the process of creating infrastructure, the state in developed countries plays mainly the structure-forming role of the “chief architect”. The mass process of reproduction of the infrastructure of innovation activity is initiated and financed there to a large extent by private capital. Conversely, in economies that are just beginning to form innovation systems, the public sector is actively involved in the development, testing and promotion of innovation replication.

Currently the processes of integration of the public and private sectors are actively going on in the process of creating the latest civilian equipment and technology that is competitive on world markets. Thus, the principle of separating the functions of the public and private sectors in supporting the innovation process is not sufficiently stable to be used as the basic principle for structuring the NIS. Another common approach to structuring an innovation system is to group its elements according to their function in the innovation process. In this vein, the structure of the innovation system is made up of blocks of production, commercialization and practical use of new knowledge. The block of production of new knowledge is represented mainly by research institutes and higher educational institutions. These structures are focused on conducting fundamental research and the results of their functioning serve as “raw materials” for the emergence of innovative ideas in the block of commercialization of new knowledge. The block of commercialization of new knowledge, in turn, is represented by public and private research structures, including small innovative firms and research and experimental divisions of large businesses. All these structures together are designed to ensure the development and initial implementation of new technologies, that is, to prepare them for perception by traditional subjects of the economic system. The latter extract the bulk of the profit from innovations and generate impulses about the prospective demand for certain areas of scientific research. These are the main parts of the innovation system. The effectiveness of each of them is a necessary but not sufficient condition for the effectiveness of the country's innovation system, since inter-component links play an equally significant role in the innovation process.

Another kind of “bottlenecks” is the insufficient bandwidth of communication channels between the components of the innovation system and the environment, which limits the flow of resource flows into the innovation process. The effect of this pheno-

menon is fixed in the problem of attracting resources to advance innovative projects. Today, a common place for publications on innovation topics, and most of the regulatory and policy documents in this area, is an indication of the imbalance between the demand for a resource on the part of the subjects of innovative activity and the low supply on the part of the owners of the resource. Simply put, the innovative activity of firms often comes to a standstill precisely because of the lack of financial, credit, information, personnel and other resources, which are sometimes available, but are inefficiently spent in low-profit industries operating on traditional technologies. One of the key issues in this sense is the establishment of a sequence of organizing innovative activity of a company.

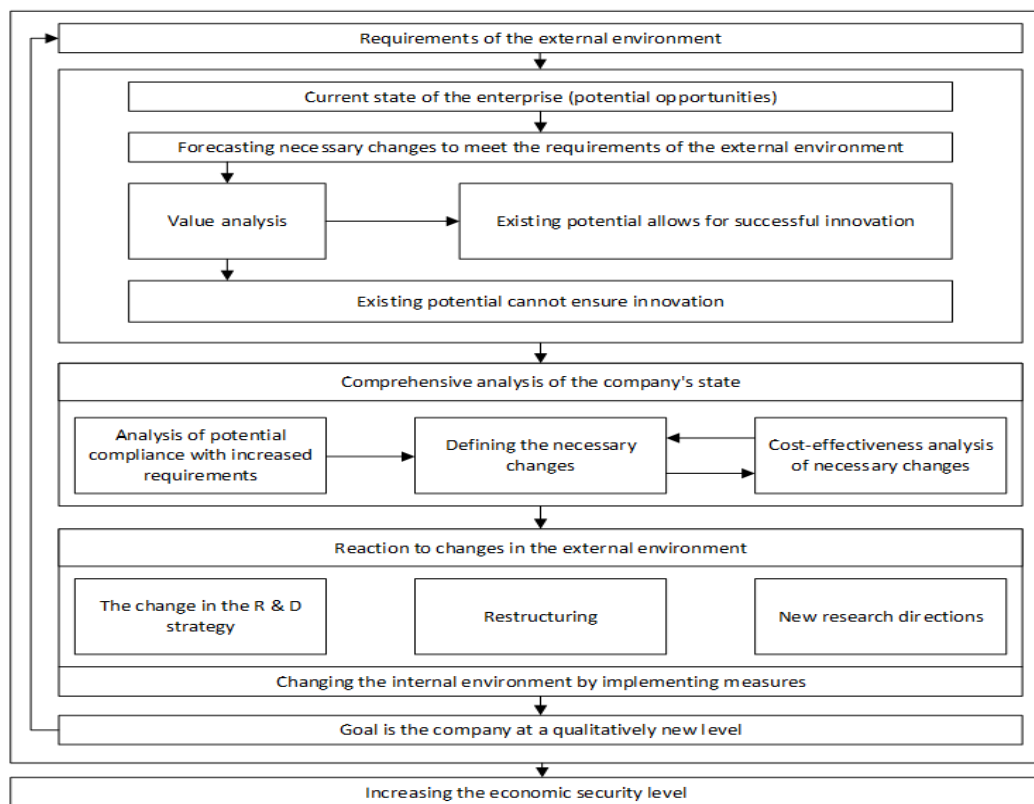


Figure 1. Sequence of organizing innovative activity of the organization¹.

Eliminating the “bottlenecks” of the innovation system takes place in the process of formation of appropriate intermediary institutions that help reduce the transaction costs of the interacting parties. For example, gaps between successive stages of the innovation process “sew” technopolises and technoparks, which reduce the level of knowledge transactions from its producers to commercializers and direct users. Moreover,

¹ <https://amazoniainvestiga.info/index.php/amazonia/article/download/1828/2199?inline=1>

world experience proves that the accumulation of a critical mass of such structures can generally remove the problem of rupture. Understanding of this moment is obvious on the example of China - there are about 20 thousand technoparks.

Another kind of bottlenecks in the innovation system - resource barriers - are overcome, for example, with the help of the institution of venture activity, which reduces the transactions of capital moving from low-risk traditional operations to high-risk investments in innovative projects. Thus, it is obvious that the roots of the low innovative activity of the economy lie in the underdevelopment of the innovation system: the participants in the innovation process and the established channels of communication between them. The laws of development of systems are such that in the course of the movement of an innovation system, such channels will sooner or later arise and will naturally be subjected to selection and consolidation. However, this process can be significantly accelerated by targeted state intervention in the following areas:

- firstly, the creation of significant incentives for subjects of science and economics to promote innovations individually and cooperatively;
- secondly, the initiation of the creation and support for the development of organizational structures that work as a kind of platform for the integration of participants in the innovation process. Examples of such structures are technopolises, technology parks, innovative business incubators, innovation centers, technology transfer agencies;
- thirdly, assistance in the development of intermediary institutions in the resource provision of innovative activity. These are, for example, institutions of venture capital, innovation management, scientific and technical expertise of projects, etc.;
- fourthly, the organization of the import of resources necessary for the development of the innovation system - technologies, equipment, personnel.

There are enough examples of successful state strategies for innovative development in the world experience. Here we can talk about the strategies of the USA, Japan, new industrial countries, Israel, India, China. The core of their strategies is the consistent upward construction of innovative systems - from the development of an economic bloc to the creation of a national fundamental science, as well as the creation of "points of growth" of the economy based on innovation. A necessary condition for the development of the economy is high investment activity. It is achieved through the growth of volumes of realized investment resources and their most effective use in the spheres of material production and the social sphere. Investments form the production potential on a new scientific and technical base and predetermine the competitive positions of countries in world markets. At the same time, the attraction of foreign capital in the form of direct capital investments, portfolio investments and other assets plays an important role for many states, especially those emerging from economic and social troubles. With the current constantly progressing level of integration of world economic activity, in-

vestment activity and, accordingly, economic growth in many countries, not only developing, but also developed, is supported and enhanced by the participation of foreign capital. For example, the very active role of foreign capital in economic recovery is clearly visible in the newly industrialized countries of Southeast Asia. With his direct participation (the total volume of foreign direct investment in these relatively small countries by the end of the 1980s exceeded \$20 billion), they rapidly went through the already classic stages of modern industrialization: the development of import-substituting industries (60s), the creation of an export potential (70s) and the development of knowledge-intensive industries (80s and early 90s). As a result, the new industrial countries in the production of certain types of products, including science-intensive ones, have reached the forefront in the world economy.

Foreign capital is especially needed today in those areas of the economy, the activation of which will help bring it out of the current crisis state and relieve the growing social tension in society. The desire to get out of poverty, to stimulate the development of advanced sectors of the economy, to give dynamism to the entire economy as a whole encourages developing countries to actively attract foreign capital. To this end, the investment climate is being improved, the necessary infrastructure is being created, special economic zones are being organized with especially favorable conditions for foreign entrepreneurial capital. According to the World Bank, the inflow of private capital into the economies of developing countries has increased markedly. Approximately half of this volume falls on direct investment. At the same time, the size of state foreign investments decreased. Private capital, entering developing countries, goes, as a rule, to countries with dynamic, rising and promising economies. 80 percent of private investment goes to just 20 percent of developing countries, mainly in East Asia and Latin America. Underdeveloped countries with backward economies, and especially those with politically unstable environments, hardly attract entrepreneurs from industrialized countries. The existing debt of developing countries is accumulated mainly through private capital investment. Among creditor countries, Japan occupies the first place, whose loans to developing countries, primarily Asian ones, amount to hundreds of billions of dollars. Having designated developing countries as a zone of their interests, creditors move their production there, which is economically and technologically profitable to organize there.

The study of strategic directions for the development of markets for products, goods and services in modern conditions and the identification of factors for ensuring sustainable competitiveness in the industrial and construction sectors of the national economy should be started with a study of relevant ways for effective economic growth. Today, innovation activity is becoming one of the priorities of the state economic policy of the world's leading countries. The rejection of industrial preferences and the transition

to an innovation-oriented policy in the economy are due to the increased role of new technologies both in the formation of consumer preferences and in the organization and efficiency of production processes.

At present, the main corporate interests of economic entities in the world are the independent implementation of R&D, the creation of their own scientific, technical and experimental base, the constant monitoring of fundamental and applied research, the generation and use of new scientific knowledge, the full integration of science and production. The impact of investments, development and implementation of new technologies on the growth of the efficiency of the economy, experts demonstrate on the example of comparing the pace of development in Latin America and Southeast Asia. The countries of Southeast Asia directed up to 3% of GDP to R&D, ahead of such countries as the USA and Germany in this indicator. As a result, Malaysia has become the world's leading manufacturer of microprocessor base, Singapore is now the leader in the software and biotechnology market, Taiwan - in the production of personal computers, Korea - in consumer electronics.

A distinctive feature of the modern development of innovative activity in the world economy as a whole is the fact that investments in science and the creation of new technologies are not an indispensable duty of the state. The role of the state in investing in scientific and technical progress is constantly decreasing in proportion, as this role is increasingly being played by private and corporate investors. According to experts, up to 70% of scientific expenditures in developed countries are made not by the state, but by the private and corporate sectors.

By developing new technologies, economic entities create not only objects of industrial property, but also other competitive advantages that are no less important for the economy of their enterprise. Namely, the introduction of intangible assets into economic circulation and their effective management allows not only to protect the business, but also to increase the value of the enterprise by increasing the size of assets, as well as to secure additional sources of cash receipts through the sale of licenses.

The scientific and technical sphere usually actively influences the overall strategy of the business, which moves it to the level of responsibility of corporate management. And if the former conditions of competition allowed only periodic investments in R&D, now the financing of research activities is built on an ongoing basis, in close cooperation with other services of the enterprise. The pervasive impact of new technologies on the economic performance of business entities is forcing firms to integrate R&D and technology strategies with the underlying corporate one. So, on average, General Motors allocates up to \$ 10 billion per year for R&D, Ford - \$ 7 billion, IBM - \$ 4 billion. As a result, the focus of the main competitive advantages has shifted today towards increasing and using intangible assets as the main source of competitiveness. The trend towards the

active participation of intellectual property in the redistribution of commodity markets has clearly manifested itself in the world. Even now transnational corporations (TNCs) and other powerful economic structures play a decisive role in world development. According to foreign researchers, the totality of 37 thousand TNCs with 200 thousand of their branches covered almost the entire planet. This is a kind of economically stable and dynamic economic system of the planetary type, which concentrates a third of all the production assets of the planet, produces about 40% of the total planetary product, carries out more than half of the foreign trade turnover, over 80% of the trade in the latest technologies and controls more than 90% of the export of capital. The improvement of relations between TNCs and developing countries began in the 1980s. This was largely facilitated by the revision by a number of developing countries of legislation on foreign direct investment. In the same years, there was a decrease in the number of cases of nationalization and an increase in the number of litigation of disputes between TNCs and the governments of developing countries. The rethinking of the role of TNCs by many developing countries is mainly in line with a change in ideas about what these corporations can provide for structural change and stimulation of internal factors of technological progress. TNCs make a significant contribution to the development of the countries of the "third world". This contribution is:

- in the transfer of advanced production technologies in certain industries (textile, clothing, electronics). TNCs play an important role both as investors and as providers of investment goods or technologies (licenses);

- in assisting the transformation of developing countries from exporters of raw materials into sellers of finished products. This direct contribution to structural change in developing countries is more important than just the movement of financial resources through direct investment;

- that TNCs contribute to the acceleration of innovation processes. Technological innovations are mainly concentrated in industrialized countries, but in recent decades they have increasingly moved to some other countries, primarily in the NIS. However, unintended adverse environmental impacts can also be associated with the transfer of technology. The activities of TNC affiliates have a negative impact on the nature of the host countries, and, therefore, on the well-being of people, up to the threat of their lives. Thus, there is a need to strengthen the regulatory functions of national authorities in developing countries to control both their own and foreign enterprises.

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Insufficient bandwidth or the absence of well-established communication channels between the components of the innovation system, as well as between the system and the environment, the so-called "bottlenecks of the system", results in high transactions of innovation activity and, accordingly, in low innovation activity of economic agents, which, in its turn, negatively affects the competitiveness of the economy as a whole. Following this logic, the identification and timely elimination of bottlenecks in the innovation system is an important condition for the effectiveness of innovation processes and one of the key goals of the institutional aspect of the state's innovation policy. In general, the "bottlenecks" of the innovation system can be divided into two types. These are, first of all, breaks in the innovation process, which imply a relatively low throughput of the system when transferring new knowledge from one stage of the innovation process to another. Breaks in the innovation process are fixed as a low level of assimilation of new knowledge or innovations by economic entities. For example, in the regulations and program documents of many post-Soviet countries, the problem of the chronic inability of the economy to involve in the economic circulation a huge backlog of scientific and technical knowledge and developments created by domestic science is raised. That is, in the innovation system, a gap is fixed between the block of discovering new knowledge and the block of using innovations. As a result, the economy bears the costs of missed opportunities for growth, and developments become hopelessly outdated, never revealing their potential.