

ECONOMIC PERSPECTIVE OF SCIENCE IN AN INDUSTRIAL ENVIRONMENT

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Abstract: Within this article's framework, the economic perspective of science and knowledge in the industrial environment is considered. Scientific achievements in the industrial environment serve the development of the economies of the world's countries. In connection with the global pandemic, global lockdowns have caused significant damage to the global economy. As a result, investments in the scientific sphere have increased to maintain stability in the industrial environment. Given these facts of recent years, it can be argued that the topic of this study is relevant for modern economic science. Furthermore, the study analyzed different theories and practices of other countries in applied science in the industrial economy. Summing up, it is noted that the main focus of the innovative development of industrial enterprises is concentrated on the priority areas of high-tech production. Therefore, knowledge is becoming the primary resource for socio-economic and innovative development.

Keywords: Economy, Development of countries, High-tech production, science, Industrial environment, Investment.

1 Introduction

Despite the global change in material production under the influence of modern digital processes the increase in demand for resource-saving technologies, the industry as a life support base for society retains its fundamental position.

One of the fastest-growing segments of the global market is industrial science products. "The specifics of industrial enterprises include uniqueness (it is necessary to comment on product characteristics); technical complexity (production requires highly qualified scientific work). In addition, important features of industrial enterprises that influence the formation of market processes are the following: instability of demand; dynamics of competitiveness; sensitivity to scientific and technological progress; pricing specifics; dependence on the innovative potential of the consumer; the presence of different levels of vegetation" [6, p.21].

The positions are expected to differ in terms of the number and composition of factors that determine activity in the innovation market. When we approach the classification of these factors from their influence on the competitiveness of various levels of economic systems, the following provision seems appropriate to us. "Innovative activity is a complex characteristic of three levels of economic systems as an economical category: the macro level is the innovative activity of a country in comparison with other countries in the world market; meso-level – region, district level; as well as the micro-level – the level of organization" [10, p.157].

"Changes in the industry as one of the global economic systems (macro-level) affect all types of changes in specific industries (meso-level), external (exogenous) factors of technological, structural and non-technological changes are initiated. At the meso-level, the basic industries are distinguished that determine the specialization of the production of countries or regions" [15, p.244].

From the analysis of the post-Soviet experience, it is interesting to note that the initiators of the development of the innovation market are the first persons of the state, and market institutions are fragile not only in this market but also in the economy. "In general, the state is trying to fill the gap by taking over the proper management" [7, p.88].

The generalization mentioned above can be accepted only under certain conditions. At the same time, it should be noted that in the presence of such a trend, its continuous image will not positively impact the intrinsic motivation of innovative development. The primary purpose of this study is to improve the economic perspective of science in the market of industrial products.

2 Materials and Methods

An important factor that has a significant impact on the innovative activity of industrial enterprises is the conventional unity of science and education. In our opinion, in the post-industrial era, in the conditions of the information society, this factor is one of the most significant. The introduction of scientific achievements into production the transformation of scientific and technical developments into an innovative product with the possibility of entering the market is the most challenging stage in the economic and institutional integration of scientific achievements with its subjects. In the post-Soviet countries, including Azerbaijan, the level of scientific research, or rather the ratio of applied results to the number of general scientific topics, is lower than in developed countries. On the one hand, this situation reduces the effectiveness of using state budget funds allocated for research and development. On the other hand, it reduces the contribution of research centers to the innovative development of the real economy. This is not uncommon for basic science in the countries we are talking about.

From this point of view, we consider the following position, which realistically assesses the current situation in the countries mentioned. "A significant part of our research activity is not implemented in practice and does not bring income to the economy and the budget due to the lack of organizational and economic mechanisms that could lead to the commercialization of projects and developments with the potential to be used in practice. This fact undoubtedly undermines the effectiveness of budgetary expenditures on scientific research and significantly hinders the development of the innovative segment of the real economy of the region" [11, p.220].

Both foreign and domestic scientists note the vital role that scientific developments play in the innovative development of industrial enterprises. The place and role of the parties involved in applying research results intermediate and final results in the commercialization of scientific innovations largely depend on their characteristics, including their composition. The ingredients are, of course, complex. First, however, we will consider the following view on the composition of the commercialization of research results. "In general, two main groups are involved in the commercialization process. They represent the authors and investors of scientific and technical developments. The author's category is very diverse: domestic and foreign grants, direct investments, etc. funded universities and institutes; research teams financed by one-time small grants in the absence of potential investors; scientists and inventors who, for various reasons, separated from scientific institutions and worked independently" [3, p.147].

The scale of innovative development and, ultimately, efficiency depends on the direction and nature of state aid. A comparative analysis of public-private partnership shows that the systemic nature of state, financial, organizational, and legal assistance to innovative development is a key factor in creating, disseminating, and developing scientific innovations. Although there are different forms of state participation in innovation activities, there are specific approaches to assessing the degree of their sufficiency.

3 Results and Discussion

A promising direction is using public-private partnerships in the commercialization of scientific innovations. In this regard, an important role is played by the quantitative and qualitative parameters of the institutional support for the commercialization of scientific ideas and the results of scientific research. In the case of institutional support, the following links refer to the relevant sources. "Institutional support is understood as the process of securing social (political, social, economic, spiritual)

relations in legal and moral norms (rules, sanctions, etc.)" [2, p.297].

In the process of considering science and education as a factor in the innovative activity of a modern industrial enterprise, it is necessary to form the concept and meaning of knowledge as the basis of this factor. In the social sciences, we can find the so-called innovative approach to studying knowledge, information, information society. Representatives of this scientific direction develop the idea that information society's basis should be "the expansion of innovations".

The effectiveness of innovative development should, in particular, be brought to the question of the effectiveness of the implementation of innovative activities in the non-oil sector of the industry under targeted programs. The problem is that the government budget plays an essential role in financing innovation, as seen in the experience of most developing countries. Attempts to obtain indicators of economic, social, environmental, technological efficiency as indicators of efficiency achieved through implementing one or another innovative program for the development of the non-oil sector face serious methodological and informational difficulties.

In order to evaluate the effectiveness of innovative projects in the industry, first of all, it is necessary to calculate the cost of innovation and costs. The following indicators should be calculated as income: profitability index; profit from the introduction of innovations; net present value; expected (future) value; profitability or rate of return. To assess the effectiveness of innovative projects in the non-oil industry, indicators such as normal and modified rates of return, the payback period, and the payback period should also be calculated. "First of all, it is necessary to ensure a very high level of representation of science in the functioning of the enterprise. This can be expressed, for example, in the fundamental nature of ongoing applied technological research and innovations in production or following the level of technical requirements and conditions for the current level of development of science scientific potential. Also, the achievements of science can be presented in the organizational and managerial sphere of the enterprise: the flexibility of organizational and economic forms and relations, the optimal use of the resource and financial environment (logistics), and the use of pedagogical and educational technologies to increase innovative readiness" [13, p.76].

Some features that characterize the economics of innovation are still ambiguous. In other words, there is an undesirable approximation in the approach to the quantitative characteristics of the aspects in question. Let us assume that the economy of a country is considered innovative if the product produced here is at least half innovative (new, radically, or significantly improved product). Resources that contribute to innovative development should be classified according to the following criteria: according to the method of development: variable, evolving, adaptive; according to the method of exposure: direct, indirect; by types of economic resources: natural, labor, financial, business, knowledge; by the level of mobilization: high, medium, low; concerning the business environment: public, industrial, social, communication, information; according to the measurement method: ambiguous, approximate; by the method of formation: reproductive (renewable), non-renewable; according to the degree of controllability: controllable, difficult to control, uncontrollable.

The effectiveness of the system of regulation of the innovative manufacturing industry depends on improving the mechanism for stimulating innovative investment processes. Therefore, decisions on the choice of incentives and mechanisms should be made through a comparative analysis of options for their individual use and joint use.

At the enterprise level, it is necessary to consider the intensification of scientific and industrial relations as a goal and function in the implementation of measures to stimulate investment in innovative and industrial activities. About the objects of innovative activity, it is impossible to recognize

without a doubt the leading role of production and technological processes. Otherwise, the environmental and social requirements of the commercial aspects of the innovation can be challenging to address adequately. Therefore, in our case, in the economic and legal incentives for innovation, it is necessary to ensure the solution of social and environmental issues at a critical level. In this regard, one cannot but agree with the following statements in the sources on the review of advanced foreign experience. "It is intangible assets and human abilities, knowledge, skills, talents that are the main drivers of the modern global economy. Therefore, the "knowledge economy", which includes science, education, health care, social development, is significant. In developed countries that are leaders in the latest technologies, this approach is reflected in the structural innovation policy, covering the branches of the "knowledge economy" and basic industrial sectors. Close links between science and technology characterize the knowledge economy; high importance of investments for economic growth and competitiveness; the growing role of the education industry and lifelong learning; increasing investment in intangible assets" [8, p.79].

At present, the importance of unique types of knowledge is growing, providing economic and social benefits, growth, and competitiveness efficiency. In this regard, the knowledge economy increases the value of fundamental research as a source of fundamentally new knowledge and the basis of high-tech production [14, p.94]. The main content of such an economy is that knowledge is a crucial resource and a factor in its growth and development. Furthermore, the knowledge economy has a scientific and innovative focus. Therefore, knowledge as a factor of intellectual and economic development is transformed into one of the independent factors of production. "In the knowledge-based economy, a new type of activity appears (the activity of collecting, accumulating and processing information) – intellectual activity. It is distinguished by creativity, innovation, generation of ideas" [4, p.23].

Knowledge begins to act as a source of value. It replaces labor and contributes to the emergence of new types of industries and new technologies; as a result, competitiveness, well-being, and quality of life increase. Accelerating the production of new knowledge transforms the economy into a functioning system based on the exchange of knowledge and their mutual evaluation. When introducing the conditions of the innovation process, the most significant element is intellectual support or support for all stages of innovation reproduction. The completeness of knowledge, incentives, and motivation for their constant renewal, creativity, innovative thinking determines the potential for innovative development.

The innovative component of human capital can be measured by the level of business activity, entrepreneurial ability, initiative, and creative energy of the subject. The basis of innovation is knowledge. Knowledge breeds innovation. The intellectual component of human capital is becoming a determining factor in developing the knowledge-based economy. The formation of intellectual abilities in the new economy occurs as transforming the initial knowledge acquired by a specialist into new knowledge, information, skills required by an innovative modern economy. The rational use of intellectual capital, in this case, is based on the desire of the employee not only to receive a high income from the use of intellectual abilities but also to ensure their sustainable creative reproduction for a long time [9, p.67].

The maximization of profits received by enterprises at the expense of innovative factors is due to the most complete and effective use of the intellectual abilities of the personnel. Intellectual capital consists of a set of characteristics (theoretical and practical training of an employee, his organizational and entrepreneurial and creative skills) [1, p.223].

Tension arises in carrying out various activities to solve theoretical and practical problems. There are also motivational and emotional-volitional spheres in the structure of competencies, along with active (procedural) knowledge, skills, and abilities. An important component of competencies is an experience – integrating into a single whole of individual

assimilated actions, methods, and methods of solving problems. A specialist shows his competence only in actions, in a specific situation.

Such factors influence the formation of intellectual capital as the external and internal environment:

- The accumulation of human intellectual capital occurs due to education and education in the family by increasing investment in the child;
- The development of initial intellectual capital takes place with the participation of state and non-state educational institutions through state and charitable programs aimed at developing gifted youth;
- Public health policy (external factor) and the concern of the person himself about the state and preservation of health (internal factor);
- Socio-economic conditions that affect health and life expectancy belong to business entities (enterprises, firms), which often act as influential leaders in this industry. The company's expenses for training and retraining personnel are considered long-term investments. The need to increase the competitiveness and prosperity of the company;
- An environment in which the use of intellectual political, legal, natural, cultural, institutional, technological, and geographical features indirectly impacts the relationship of human capital formation.

The study of the content and intensity of economic development processes based on knowledge makes it necessary to monitor the dissemination and use of expertise that ensures the growth and competitiveness of the economy. Taking into account the fact that there are many strategies for getting the economy out of the crisis, each of them has its version, which will make it possible to justify the choice in accordance with one criterion; in other words, the volatility of these options and the possibility of their implementation in the current socio-economic conditions. But there is no such tool, and there is no possibility of execution. In general, the Russian economy has significant opportunities for adapting to new conditions: a high educational potential, excellent opportunities for the innovation process, but the low efficiency of state regulation of the economy, high administrative barriers, and underdevelopment of venture capital will hinder rapid adaptation to current conditions.

Creating a system of adequate financing of innovative development in industry, including in the non-oil sector, implies meeting investment needs and ensuring high investment efficiency. "One of the problems lies in the incorrect understanding of the essence of innovation. Innovation is any new phenomenon that creates value in various ways, not just economic ones. Unfortunately, however, innovation is often understood as something inextricably linked with technology. Consequently, policymakers seeking to intensify the creation of innovations only stimulate the development of new technologies. Of course, technological development is a key source of innovation to create new value, but it is far from the only one" [5, p.9].

The fact is that, to one degree or another, one or another degree of materialized expression of innovation should be considered as the result of investing in the market. From this point of view, we can agree with the following: the growing role of innovative (private, public, and co-financed) funds in improving the financial regulation of innovative activity, first of all, reduces the level of innovative activity in the industry from the state budget and the institutional support available in the country. In this regard, we should also note other benefits achieved by increasing the role of innovation funds and a significant reduction in the duration of innovation projects; Because of increased transparency, innovation must also include cost reduction, including transaction costs.

From the point of view of observing the process of development of the system of tax incentives for innovation, it is worth looking at the fact that Japan has a lot of experience in this area.

Therefore, he experimented with six approaches to spur innovation and tax breaks in this country.

The synergistic effect of scientific, educational, and industrial relations is observed in countries (Great Britain, Norway), where research centers and universities provide more tax incentives for joint research. Strengthening the commercial orientation of science will create more favorable conditions for developing small innovative enterprises. From this point of view, the following approach can be considered appropriate.

"One of the incentives for the transfer of science to a commercial footing is the provision of contributions to the payroll fund in small applied institutions created at universities and research centers, and the exemption from VAT for research and development work of such entities" [12, p.120].

4 Conclusion

Even in the face of the inherent uncertainties of innovation, current performance indicators for assessing the effectiveness of financing innovation in manufacturing do not achieve the desired development prospects, even if they meet the requirements of objectivity and comprehensiveness.

When analyzing the above materials, it is easy to see that tax credits for researchers, an approach that reduces their social contributions, can ultimately play an essential role in the chain of materialization and commercialization of scientific ideas.

The main direction of the innovative development of industrial enterprises is concentrated on the priority areas of high-tech production. Knowledge is becoming the primary resource for socio-economic and innovative development. And it is the knowledge that is the key factor that determines the increase in the level of competitiveness of an enterprise and a significant increase in its market value.

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