

**ORGANIZATIONAL-ECONOMICS ASPECTS OF COMMERCIALIZATION NEW
SCIENTIFIC DEVELOPMENTS**

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Abstract: Abstract. This article is dedicated to explaining the theoretical and methodological foundations of the organizational and economic mechanisms of commercialization of new scientific developments in the national economy. In the article, one of the most important issues of improving innovative activity - improving the methods of commercialization of its results, achieving stimulation of innovative and investment activities of enterprises and organizations allows to reveal the content of this article.

Key words: Innovative activity, innovation, commercialization, product, new scientific developments, organizational-economic mechanism.

Intiduction. Currently, the main direction of the country's economic development is not only the use of production capacity to solve the problems of import substitution, but also to increase this process on the basis of new quality, effective use of innovative potential, and wide implementation of the results of scientific developments.

The Decree of the President of the Republic of Uzbekistan "On approval of the innovative development strategy of the Republic of Uzbekistan in 2022-2026" states that "the task is to increase the share of innovative active organizations by improving the institutional mechanisms of state support for innovative activities.

As a result, one of the most important issues of improvement of innovative activity - improvement of methods of commercialization of its results, stimulation of innovative and investment activity of enterprises and organizations is achieved.

Commercialization of the results of scientific research and new scientific developments is an important factor for the strategic development of any branch of the economy or organization, in which the creation of a new product, the expansion of its assortment and the improvement of the quality of products (services), their further production in the domestic and foreign markets, and their effective marketing helps to create new production technologies through implementation.

Methods. Systematic approach and analysis, marketing strategic analysis, marketing segmentation, goal tree, diagnostics.

Results. Today, the development of science and innovative activities, the effective use of scientific and technical potential, the wide introduction of the advanced achievements of our country's science and promising innovative technologies into production, and ultimately the further development of economic sectors and entrepreneurship are one of the important directions of the reforms implemented in Uzbekistan. .

As we all know, under the direct leadership and initiative of our Honorable President Shavkat Miromonovich Mirziyoyev, consistent measures are being taken to develop and support the field of science and innovative activities.

Our honorable President pays great attention to the issues of increasing the prestige of science and developing the field of science in our country.

"Customer-researcher-investor" portal was launched in order to sort scientific and innovative developments and attract investors for their commercialization, more than 470 developments and 102 problems were registered.

Table 1

Target indicators of the development of science and innovative activity in the Republic of Uzbekistan

№	Indicator	Unit of measure	Current status	Indicators by years		
				2023	2025	2030
1.	The number of new interactive educational programs introduced in educational institutions	piece	7	14	20	25
2.	The number of bachelor's and master's graduates in the direction of innovation management in higher educational institutions	a thousand	-	-	180	720
3.	The number of innovative active business entities in the total number of industrial production enterprises	piece	613	930	1500	4500
4.	Infrastructure objects of innovative activity (technological parks, technology transfer centers, innovation clusters, venture funds;	piece	25	45	65	85
5.	innovation centers. number of business incubators and accelerators).	%	2,1	3	5	10
6.	Share of exports of high-tech products in total exports to foreign markets	%	0,2	1	1,2	2
7.	Domestic spending on development and research in relation to the total volume of GDP	million soum	2803,7	3500	6000	15000
8.	The volume of private sector investments in development and research	piece	6000	9000	18000	45000
9.	Created as a result of innovative entrepreneurship	million soum	60 000	80 000	100 000	240 000
10.	number of new jobs	piece	150	250	300	400

Based on the systematic organization of the commercialization of scientific developments, 19 start-up companies were established with the participation of investors, commercial banks and research institutes, and the volume of scientific capacity products produced by them is 17 billion. exceeded soum.

Also, local entrepreneurs producing innovative products were attracted to the innovative technology park "Yashnobad" and received 27.2 mln. 172 new jobs were created within the framework of investment projects in the amount of US dollars, and the export volume reached 507 thousand US dollars.

Tenth, by the Fund for the Support of Innovative Development and Innovation Ideas of the Ministry, scientific laboratories of research and higher education institutions were equipped with 40 types of modern equipment and components worth 2094.7 thousand US dollars. A total of 575.7 million of 278 species were donated to the fund of the Institute of Oriental Studies named

after Abu Rayhan Beruni of the Academy of Sciences. unique manuscripts and historical sources were purchased.

One more issue should be given special attention. On the initiative of the Honorable President, specialized schools were attached to the Ministry of Innovative Development. In order to educate young people of a new generation who think innovatively, the activity of boarding schools specialized in mathematics, physics, astronomy and informatics named after Mirzo Ulug'bek and young biologists and chemists named after Abu Ali ibn Sino has been launched.

Analyses. In the implementation of innovations for commercial purposes, it is necessary to define a number of controversial issues:

- an economic field that implies a lack of material interest among the participants of the commercialization process;
- organizational field: structure and functional deficiency;
- legal field - refers to the imperfection of the legal framework of the process of commercialization of innovations;
- financial sector - issues of lack of investment or lack of it for the implementation of innovations for commercial purposes;
- the field of management covers problems related to the imperfection of the management system of the organization that creates innovations and needs their commercialization;
- problems that may arise in the commercialization of innovations related to personnel - related to employees of organizations that create them, lack of necessary personnel - related to innovation brokers;
- consists of controversial issues related to the field of behavior, the organizational culture of the innovative enterprise and its place in the market;
- information space for innovative organizations seeking to commercialize their ideas and developments, related to the process of creating an information base of innovations and the effectiveness of their use;
- marketing field - allows to determine the breadth of use of marketing tools for each specific enterprise that creates news and needs to commercialize it;
- infrastructure sector - includes resources and funds related to the activity of innovation entities, providing material-technical, financial, organizational-methodical, informational, consulting and other services for the process of commercialization of innovations;
- technical field - refers to the technical capabilities to ensure the development of infrastructure for the purpose of commercialization of innovations;
- the field of image - includes problems related to the artificial image of the elements of the commercialization infrastructure formed in the mind of the mass media.

The table outlines the various issues that cause controversy in some elements of the infrastructure for commercialization of innovations.

Studying the opinions of a number of scientists regarding "commercialization", it can be noted that commercialization of innovations is a process of allocation of funds for innovations and step-by-step verification of their use, including evaluation and transfer of finished/mastered innovations in production conditions. Taking all the above points into account, we can define commercialization as the process of bringing innovations (innovations) to the market, i.e. delivering innovative (newly invented) products to the consumer. All participants of this process can be divided into 2 categories: developers of innovations and their buyers (investors) (Fig. 1).

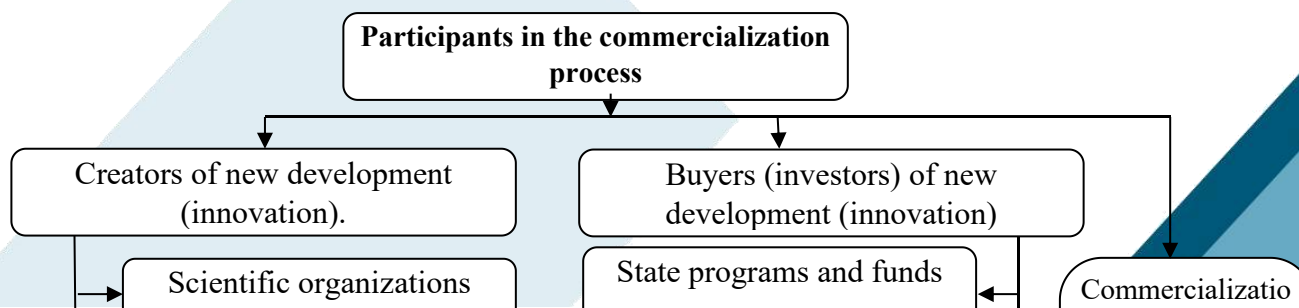


Figure 1. Classification of innovation commercialization process participants

As can be seen from Figure 1, we can also see another participant in the innovation commercialization process - innovation centers, innovation commercialization and transfer centers, consulting (advisory) companies, and business incubators, which act as intermediaries between producers and buyers of innovations. All of the mentioned organizations provide services of a different nature (brokerage, consulting or legal), including working with the intellectual property of producers: its protection and marketing..

Commercialization of innovations includes several successive stages

(Figure 2).

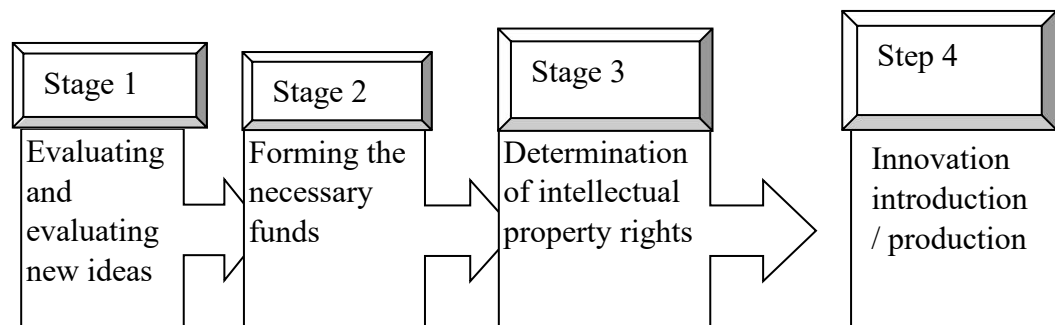


Figure 2. Stages of the innovation commercialization process

As can be seen from Figure 2, in the first stage, the most profitable ideas that need to be marketed are selected. This situation occurs when the company develops several innovative products or services at the same time. The assessment is carried out according to the following criteria:

- 1) the possibility of innovation, society's need for this innovative product,
- 2) customer demand for an innovative product or service (in a certain part of the market),
- 3) economic results obtained as a result of the sale of innovative products (payback period, net worth, internal rate of profitability (profit), etc.).

The second stage of commercialization is raising the necessary funds. Since only some enterprises have the opportunity to finance innovations (innovation) themselves, the main task of the enterprise in the 2nd stage of the commercialization process is to attract investors.

At the 3rd stage, the copyright to the created new (innovative) goods or services is strengthened by their subsequent distribution among all participants of the commercialization process.

The last, 4th stage of the process of commercialization of the results of innovative activity includes the organization of the production of the novelty (innovation) and, if necessary, the further development of the product.

Commercialization of innovative activities is based on the following principles:

- 1) the principle of monopoly of rights in relation to innovations, i.e. - the use of an innovative product at one's own discretion, allowing or prohibiting the use by other persons, using any method that does not contradict the law;
- 2) bringing the results of innovative developments to the level of their commercialization;
- 3) the principle of providing complete and reliable information about innovations for investors;
- 4) the principle of compliance with the legal requirements established in relation to the legal structure of the mechanisms of commercialization of the results of research activities of universities and research organizations;
- 5) the principle of pursuing the interests of the organization introducing innovations and the society that feels the impact of this type of activity;
- 6) the principle of initiative and reliable cooperation of the participants in the evaluation, selection and commercialization process of noteworthy ideas;
- 7) the principle of the condition of novelty of commercialization objects;
- 8) the principle of moral and material stimulation of innovators (innovators);
- 9) the principle of competitiveness of innovations: assessment of the volume of commercialization of objects of innovative activity (innovation - against the possibilities of its formation for those who use this innovation, it causes necessary costs);
- 10) the principle of reciprocity means obtaining benefits from the sale and purchase of intellectual property that can increase the work efficiency of other enterprises;
- 11) the principle of ensuring the transparency of the commercialization process, control and monitoring of their effectiveness.

For innovative enterprises, an important process in the process of introducing their developments to the market is the choice of the commercialization method. Each innovation is unique and designed to solve specific problems; therefore, businesses should take these issues seriously.

The individuality of the innovative products or services being produced requires organizations to formulate their own approach to this process. In this regard, in order to effectively sell innovations, enterprises should pay special attention to the choice of commercialization method. International experience defines 3 main methods of commercialization of innovations: independent use of innovations, transfer of part of rights and full transfer of rights to innovations.

Each of these methods creates favorable opportunities for innovation-oriented companies to sell innovations. The organization can independently market its innovations at all stages of the commercialization process. If this innovation is in the form of equipment, then after its production is launched, the enterprise can not only profit from its sale, but also rent the equipment. If the

innovation is related to changing production processes, the enterprise can provide various services (for example, engineering) to other organizations.

At the same time, an innovatively active enterprise can sell or rent a license for innovation (in the form of a franchise). The organization can send its employee for training or a business trip (for example, to a partner enterprise); the employee can learn the secrets of production there. The innovative enterprise has the right to enter into an agreement with the customer for the production of innovative products / services on the condition that it sells all rights to innovations and leaves this field of activity, or retains the rights, or fully transfers (appropriates) them.

In this case, the innovative enterprise should not be limited to only one type of commercialization. For example, an enterprise can launch the production of innovative products in its own country and, at the same time, carry out licenses abroad. The only drawback is that such a solution is not profitable for the enterprise. In this regard, before choosing a commercialization method, the organization should study each of them and choose the most appropriate type.

Table 1 shows some methods of news commercialization, their advantages and disadvantages.

Table 1

Advantages and disadvantages of innovation commercialization methods

Type of commercialization	Advantage	Shortages
Independent use	Successful "capture" of the market with full organization of production - high profitability (profit). Full ownership of intellectual work (property).	Self financing required. An innovator may face high risk.
Partial transfer of intellectual property (innovation) ownership to another enterprise	Distributed (less) risk. Distributed (less) consumption. Using the market potential of other enterprises. Create your own brand. Customer financing.	The creator of the innovation will reap the benefits. Risk of copyright infringement by the licensee (owner). There is a high risk of counterfeit products.
Transfer of ownership of intellectual property (innovation) to a completely foreign enterprise	Risk and cost for the innovator are minimal.	In the conditions where the innovation is not highly valued, the probability of not making a profit. As a result of the activities of competitors, the product may be squeezed out of the market.

Analyzing Table 1, we can come to the following conclusion: in the first method of commercialization, the organization must take into account that financial, labor and time resources are required for this process to be successful. A significant increase in market share and return on investment is possible only in the long or medium term. There is a risk that an innovative product or service will not meet the demand of consumers, even if the production process is organized efficiently.

When choosing the 2nd or 3rd method of commercialization of innovations, the enterprise can return the funds spent on the development of innovations in the shortest time. When selling a license, the organization transfers part of the market to the buyer of this license, resulting in a small, stable profit. Based on the assumption that income and profit are the main goal of any enterprise, when studying commercialization methods, an important task for the enterprise should be considered to be the determination of estimated income and costs for each of them (Table 2).

Table 2

Analysis of the benefits and costs of the enterprise in the commercialization of innovations

Type of commercialization	The type of profit the company makes	Enterprise expenses
Independent use	Profit from the sale of the product. Profit from equipment rental	Organization of production
Partial transfer of intellectual property (innovation) ownership to another enterprise	Profit from consulting/engineering services	Marketing research, advertising, customer attraction
Transfer of ownership of intellectual property (innovation) to a completely foreign enterprise	Lump sum payment (as a result of license sale)	Product improvement

Analyzing Table 2, we can say that when the right to own an innovative product is fully purchased, there is an opportunity to make a large profit, but in this case, the enterprise is forced to change its type of activity, because the enterprise loses the right to use its own developments.

The company can get the biggest profit by commercializing its innovation (for example, by organizing a new production or improving an existing product). But this method also requires sufficient expenditure, because problems such as organization of production processes, marketing research, advertising, and improvement of innovative products arise.

If part of the ownership of the product is sold, the company may receive a small amount of revenue, that is, the company receives only a fraction of the total revenue that the company that purchased the license received. At the same time, the costs may not be very high, but there are exceptions. The main costs are looking for and attracting a buyer, and in modern conditions, a buyer may not be found, so the company can spend a large amount of income on attracting foreign buyers.

Таблица 1.1. Under the condition of independent commercialization of innovations that do not include engineering services and leasing, the profit that can be obtained for a certain period is calculated using formula 1.1:

In the era of planned-directive economy, the problem of commercialization of innovations did not exist, but now, in the era of market economy, this issue is relevant. By effectively using the experience of Western countries, it is possible to improve the process of commercialization of innovations and build an innovative economy (Table 3)..

Table 3

Analysis of the world's best experience in solving the problems of commercialization of innovations

Problems of commercialization of innovations	Ways to solve the problem	Implementation instruments	Implementing States
Funding	State financial support for scientific research	State loans, state guarantees for obtaining bank loans, tax benefits, accelerated depreciation, customs quotas for the protection of national science products, etc.	USA, Italy, Belgium, Great Britain, Sweden, Canada
	Promotion of private investment	Development of patent and venture enterprises	USA, Sweden
	Support of innovation producers in the state	National brand support programs (creation, development); support of small and medium-sized innovative businesses	EU countries, USA
	Selecting the most profitable innovations for commercialization	Development of evaluation mechanism and innovation mediation among innovators and entrepreneurs	EU
Organizational issues	Attracting and motivating scientists	Development of the system of scientific clusters, technological parks	EU
	Implementation of innovation and industrial policy	Development of holding enterprises	Germany

	Support of public and private initiatives	State support for exchange of qualified personnel, development of public-private partnership	Australia, Germany
Regulatory documents	To encourage scientists in the development of intellectual property	Holding the position of a scientist in the state research structure for at least 6 years, owning shares of established enterprises	Italy, France, Germany
		The right of scientists of state research organizations to engage in entrepreneurship	France
		Tax exemption of royalty income	Ireland
	Attachment of rights for innovations	Ensuring legal ownership of innovation created by employees by the enterprise as an employer	Austria, Germany, USA
		Mixed ownership with the exclusive right of the scientist to innovate	Finland, Sweden, Italy, Greece
	Control over spending of state funds on research and development	The possibility of introducing budget funds to the creation of innovative organizations	USA, France, Belgium, Germany

Analyzing Table 3, we can say that commercialization of innovations, commercialization of innovations, has considerable difficulties, and their development is a multi-stage, risky and very expensive process, because the object of innovation is an intellectual product. In this, the financial, organizational, and regulatory aspects of the issue are affected.

The following controversial issues related to the development of the ability to commercialize the results of scientific research can be indicated:

- creation and management of the process of centralized financing of innovations with a high probability of commercialization;
- development and use of flexible forms of state support for innovative projects that specify all stages of the life cycle of innovations and the status of executors, including: public-private and private-partnership using state funds;
- to modernize (modernize) legislation in the field of innovations to enter the global innovation system;
- rational use of the world's advanced experience in the commercialization of equipment and technologies, including the diversification (diversification) of scientific and industrial associations, the formation of multidisciplinary teams and partnerships, the creation of economic clusters, the stimulation of the consumption of new products and services.

The above problematic issues require the formation of effective mechanisms for solving them, taking into account the specific characteristics of the republic, in the context of the integration of local science into world science. It is also important to adequately assess the current situation of the domestic economy in the face of real opportunities for the rapid development of the results of innovations, and the externalities that are not sensitive to innovations.

Discussion. In conclusion, the following legal components of an effective infrastructure for the commercialization of innovations can be distinguished:

- 1) improvement of the legislation in the field of innovation financing, simplified drawings of financing the work of temporary creative (innovation) teams and research institutes of the Academy of Sciences;
- 2) legal support for the reinvestment of profits from previously implemented (commercialized) projects into new innovative projects;
- 3) development of legislation in the field of promoting the formation and commercialization of local brands (including the so-called "umbrella use" type);
- 4) effective organizational and legal support for the formation and activity of cluster associations; participation of the state in ensuring legal protection of their works as the main platform for the implementation of rights to promising innovative technologies;
- 5) creation of legislative infrastructure for the development of public-private partnership in the field of innovation;
- 6) ensuring rights to prospective technologies sold abroad;
- 7) formation of a system of legal incentives for participants in the commercialization of innovative technologies with a dual purpose.

It is necessary to overcome the desire for universal coverage of all legal issues. It is very important to select and solve the priority problems of innovative activity, legislative and financial support, from the point of view of forming an effective national innovation system.

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