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## **COMMERCIALIZATION OF INNOVATIVE PRODUCTS**

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**Abstract.** The assessment of the degree of commercialization of intellectual property in the Republic of Kazakhstan is given. The low degree of use of Kazakhstan's scientific developments in the practical plane is revealed. Standardization should be an important element in ensuring innovation. In Kazakhstan, little attention is paid to standardization of innovative products. The purpose of the study is to study the impact of standardization on the commercialization of innovative developments in higher education.

**Keywords.** Innovation, standardization, innovation activity, commercialization of innovative products, product quality.

### КОММЕРЦИАЛИЗАЦИЯ ИННОВАЦИОННЫХ ПРОДУКТОВ

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**Аннотация.** Дана оценка степени коммерциализации интеллектуальной собственности в Республике Казахстан. Выявлена низкая степень использования казахстанских научных разработок в практической плоскости. Стандартизация должна быть важным элементом обеспечения инноваций. В Казахстане мало внимания уделяется стандартизации инновационной продукции. Цель исследования - изучить влияние стандартизации на коммерциализацию инновационных разработок в сфере высшего образования.

**Ключевые слова:** Инновации, стандартизация, инновационная деятельность, коммерциализация инновационных продуктов, качество продукции.

Currently, in all economically developed countries of the world, the national economy plays a key role in the effective development of innovation. Recognizing the importance of innovation processes, the governments of developed countries have created all the necessary conditions for their support and regulation. Adoption of appropriate rules, creation of innovation infrastructure, and state incentives for innovation.

As world experience shows, one of the main sources of innovation without innovative technologies are enterprises engaged in innovative activities. Innovative enterprises along with research institutes ensure not only the development of the scientific and technical sphere of the country, but also are of great importance for socio-economic development. Innovative enterprises create a healthy competitive environment, promote employment, fill the state budget through taxes, create and support innovative activities in the country, and most importantly, ensure economic growth.

But in modern conditions, it is not enough for enterprises to develop innovative products and implement them in order to effectively develop and maintain their competitiveness.

It is worth noting that innovative enterprises are not the only participants in the

commercialization process, but in this article, commercialization is considered from the point of view of innovative enterprises. [1]

Innovation creators include:

- research institutes are one of the most successful and rapidly developing participants in the commercialization process at present, and have many promising developments. The process of commercialization is carried out not by the institution itself, but by the owner (developer) - the state, a large company and a private investor;
- a dynamically developing participant in the commercialization process, carrying out small and medium-sized businesses, as well as other (or through intermediaries) research institutions;
- the team of inventors and the sole inventor-mainly consists of young scientists who for some reason are "separated" from research institutes or enterprises. Most often, there are many developments, but they can not offer them for market use.

Innovative buyers (investors) include::

- public funds and programs are used in all developed countries of the world and are intended to provide developers of innovations with financial, information and other resources, as well as to promote the commercialization of developments;
- non-governmental funds, grants and programs-provide services on a par with public services;
- venture funds and "business angels" – significant financial assistance to the creators of innovations to return investment or share in the capital or grant the right to the created innovation;
- large and medium-sized firms-fully finance innovations to create and promote them for further release or implementation in their production.

We can identify another participant in the process of commercialization of innovative products that acts as an intermediary between developers and buyers of innovations - these are centers for distribution and commercialization of innovations, consulting companies, innovation centers and business incubators that provide brokerage, consulting or legal services, including protection and promotion. Creator of the intellectual property market.

Each method provides innovative enterprises with a wide range of opportunities to implement their developments. The company can go through all stages of the commercialization process and offer its innovative products to an independent market. If the innovative product is equipment, then after the start of production, the enterprise has the opportunity not only to profit from its sale, but also to rent it. If the innovation is related to the optimization of production processes, the company can provide engineering services to other enterprises.

On the other hand, an innovative enterprise can sell licenses for its innovation or lease innovations (franchising). If necessary, the company can transfer its employee, such as a partner to a partner, thus, the production secret. In addition, an innovative enterprise has the opportunity to fully exercise all rights to innovation and withdraw from this sphere of activity or conclude a contract with the customer for the production of innovative products (if applicable), preserve or fully transfer (alienate) the rights to it. [2]

As world experience shows, one of the main sources of innovation without innovative technologies are enterprises engaged in innovative activities. Innovative enterprises along with research institutes ensure not only the development of the scientific and technical sphere of the country, but also are of great importance for socio-economic development.[3] Innovative enterprises create a healthy competitive environment, promote employment, fill the state budget through taxes, create and support innovative activities in the country, and most importantly ensure economic growth.

The advantages and disadvantages of ways to commercialize innovations are shown in the figure.

Today, one of the problems of commercialization of University innovations is the lack of a regulatory framework for product documents. Despite the unprecedented measures in Kazakhstan to achieve a knowledge-based economy, we would like to highlight some of the systemic shortcomings in innovation management, which were identified by experts of the UN economic

Commission for Europe and made by the review of innovative development of Kazakhstan in 2018. In particular, management barriers were noted:

- \* maintaining vertical innovation management: initiative a state that has a weak horizontal link between the elements of innovation infrastructure " from above»;
- \* low commercial orientation of the state scientific segments;
- \* insufficient level of development of the scientific base and human resources;
- \* fragmentation, as well as repetition of scientific research [3,4].

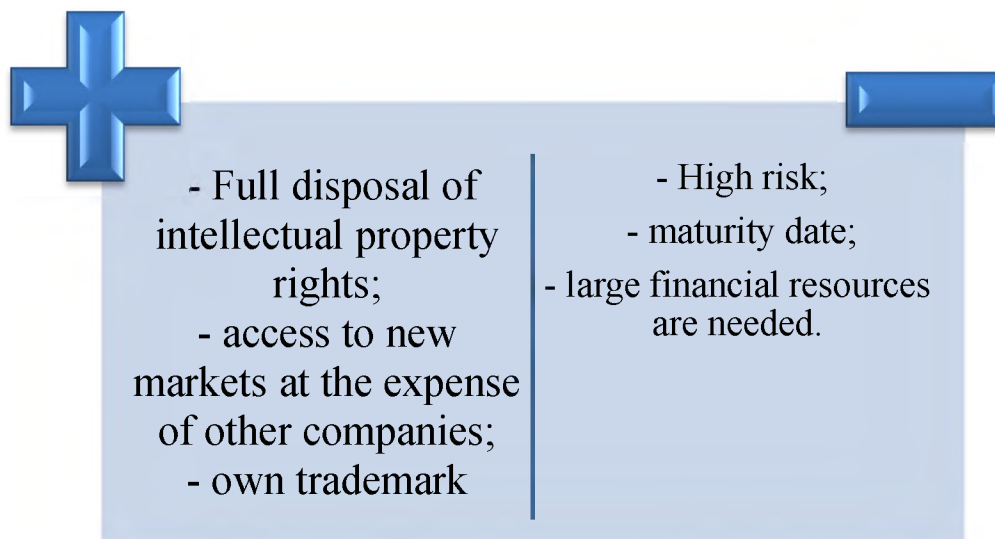


Figure Advantages and disadvantages of innovation commercialization approaches

New educational processes differ structurally and functionally, the process of their commercialization and introduction into production, i.e. there is no integration link between the stages of the innovation life cycle;

- \* business is not interested in innovation, as in the national economy
- \* industries with low intensity of science (raw materials sector) have relatively high efficiency;
- \* regional and industry compatibility of innovation management processes.

To successfully solve this problem, it is necessary to make proposals to standardize the regulatory and technical framework for the commercialization of innovative products of universities, thereby contributing to the release of innovative products on the market.

Standards will help you make a successful transition from ideas to new product implementation, manage efficiency, maintain quality, and protect the consumer. Standardization can act as an accelerator for promoting innovation, allowing for product compatibility and safety. [5]

As you know, the standards are based on the best results of science, technology and practical experience. When standardizing, it is important to ensure optimal benefits for both business and the consumer and the state as a whole.

What is needed to standardize innovation?

First, the development of technical standards and regulations, without which it is impossible to conduct the tests necessary for the introduction of new technologies,

Second, the assessment of compliance of products or services with the established requirements in order to enter the market, as well as the application of a new product.

Third, it is necessary to evaluate the product once, so there is a need for standardization, rules and methods of research and measurement, including sampling rules. In other words, standardization should be considered as a tool for commercialization.

Modern universities are evaluated not only by educational and scientific institutions, but also

by generators of new knowledge and technologies.

The development of technology commercialization is associated with the emergence of new functions in universities, such as scientific and technical entrepreneurship, business incubation, the creation of new companies and the implementation of innovative projects.

The University has developed more than 50 developments ready for commercialization. They mainly concern new nanomaterials, new biological materials, new installations and devices for upgrading vehicles, drying and processing materials, etc.

An office of technology commercialization has been established and operates at the university. [6] The main tasks of this structure are:

1. Search for and market competitive commercially promising scientific developments in accordance with the industry direction and regional location of the university;
2. Creation and management of innovative infrastructure for the commercialization of technologies of university scientists in the educational environment of the university and the economy of the region;
3. Rendering of services on protection of intellectual property, licensing, consulting;
4. Promotion of the idea of technology commercialization at the university and information services on the development of technology commercialization in the Republic of Kazakhstan;
5. Ensuring the development of new innovative companies in the food and light industry on the basis of the university.

Standardization assistance in the commercialization of innovative products:

- analysis of existing regulations in order to identify requirements that hinder the use of innovative products;
- terminology and classification;
- measurement and determination of dimensions;
- ensuring industrial cleanliness.

Joint research with scientists from the Faculty of Biology of ENU allowed to develop a draft organization standard for the water treatment plant. «Water treatment plant. Organization of operation and maintenance. Standards and requirements ».

When developing a draft standard for a new unit, we followed the following principles [7]:

- materials and equipment must be safe for human health and comply with sanitary and hygienic standards; It is not allowed to use materials that degrade the organoleptic properties of water, promote the development of microflora fluids, the concentration of substances in the body exceeding sanitary standards.

- cost-effectiveness of conformity assessment and assessment of economic benefits of production and sale of certified products.

- ease of installation for consumer use;
- the unit must be resistant to external factors, such as corrosion, scale;
- applied technological processes must preserve the natural properties of treated water after water treatment.

During the development of the draft standard, we came to certain conclusions:

1. A systematic approach should be followed in the development of innovative product standards. It is important to take into account not only the views of scientists, but also the views of manufacturers and end users. It is necessary to create a unified installation from the developed design, which will bring certain benefits to the country's economy and the environment. Therefore, at the design stage, much attention should be paid to marketing research. The need for a developed standard plays an important role.

2. Since this draft standard is designed for innovative products, it is necessary to take into account the technical and economic efficiency of the developed standard. How much does this unit exceed the known analogues of water treatment? The greatest economic efficiency depends on the consistency of the design phase.

3. It is important to intersect the relationship between the requirements for materials, components, technical means, in other words. Inefficient engineering solutions, low environmental friendliness of the project do not allow to obtain a product that meets modern requirements.

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