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INTEGRATION OF EDUCATION, SCIENCE AND INDUSTRY AS A BASIS FOR INNOVATIVE DEVELOPMENT

***Abstract**. The article discusses the structural improvement of national innovation systems (NIS). The positions of education (universities) in the subsystems of the NIS are characterized. The presence of education in various functional blocks, as well as in the main processes, is displayed.*

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ИНТЕГРАЦИЯ ОБРАЗОВАНИЯ, НАУКИ И ПРОМЫШЛЕННОСТИ КАК ОСНОВА ИННОВАЦИОННОГО РАЗВИТИЯ

***Аннотация.** В статье рассматривается структурное совершенствование национальных инновационных систем (НИС). Охарактеризованы позиции образования (университетов) в подсистемах НИС. Отображается наличие образования в различных функциональных блоках, а также в основных процессах.*

At present, the intensification of innovation processes is acquiring decisive importance, which has reached the national level and was expressed in the creation of national innovation systems (NIS). The growth, development and competitiveness of national economies and, ultimately, the well-being of nations in the modern era are critically dependent on the scale, pace and impact of innovation. Now one of the most important components of the NIS is education. Understanding the role of education for NIS allows the sector to develop and be managed in the context of improving the efficiency of the entire system and other elements. The role of education is defined not only in terms of training specialists, but also in terms of the structure of the NIS and the specific functions of the education sector. Attention is drawn to the general economic importance of the education sector, as well as to several groups of functions in the following areas: training of specialists; generating

new knowledge; organization of the innovation process; support for innovation; commercialization of innovations; ensuring communication with the environment.

The NIS structure brings together science, education and innovation, which implies harmonious interaction, development and balance. The integration of science, education and innovation requires a qualitatively new innovative infrastructure, new forms of organizing scientific, educational and innovative activities. In general, education plays an important role in the intensification of innovation processes, plays an important role in the formation of the NIS, its structural improvement and increased efficiency.

Among the models that emphasize the importance and role of education, for example, "Triple helix" model combines the innovative efforts of universities, business and government with the central role of the entrepreneurial university. The formation of this type of university requires a focus on three main areas.

First, the modernization of the process of training students in universities with an emphasis on the formation of systematic business competence, entrepreneurial vision and actions is reqiured. It is necessary to train professionals with knowledge, skills and competencies that allow them to professionally analyze and correctly assess practical situations and successfully solve real problems of modern business of enterprises and organizations.

Secondly, the formation and development of the innovative infrastructure of universities with an emphasis on creating a favorable environment for the exchange of ideas, the development of adequate projects and business plans. Create a team of students, scientists, teachers, university staff and university partners.

Thirdly, the formation and development of university small innovative firms (start-ups) not only as key subjects of R&D commercialization (research and development work), but also as objects of monitoring and research of innovation processes and platforms for innovative practices for students, undergraduates, doctoral students and university professors are necessary.

Among the complex solutions to problems in the field of innovative education - the preparation of a concept for the integration of science and education; targeted training and certification programs for highly qualified scientific personnel for a long period and other educational programs. Thus, the developers try to take into account the innovative aspect of the problem. For example, it is necessary to determine what targeted government support is needed to involve universities in the training of such specialists, the development of international cooperation and the organization of trainings for companies engaged in innovative activities. This statement assumes the

actual construction of a multi-level system of training and retraining of personnel for scientific and innovative entrepreneurship and solving issues of attracting young people to science in the field of innovation. The innovation process will help ensure new integration of mechanisms such as the creation of educational, scientific and industrial consortia. The basis of their activity is the introduction of an enterprise of scientific and technical developments, the creation of laboratories of research institutes by departments of the university with simultaneous targeted training of both production specialists and students.

A successful transition to the country's innovative development requires a highly developed scientific and technological potential - first of all, teachers and a wide network of research and educational institutions, multilingual scientific and technical knowledge. However, as international experience shows, knowledge alone does not transform the economy, and the cost of production does not always bring high profits. The successful construction of an innovative economy requires the creation of mechanisms that ensure the relevance of scientific and technical knowledge in the economy and a high return on their implementation.

Higher education institutions should be an important part of the national innovation system, which makes it important. It is necessary to significantly transform its traditional functions in the field of education and training, as well as in the field of scientific research.

The strategy of the state, the policy in the field of science, technology and innovation is to create an innovation infrastructure, including the creation of specialized subjects of innovation activity on state, intersectoral, sectoral and regional issues. Today it is obvious that full-fledged innovation cannot develop without fundamentally new economic and territorial entities.

As our society becomes more and more knowledge-based, the leading role of universities in social interaction, especially in a regional context, is becoming a common understanding. Most of the concepts of innovative research, such as the innovation system, the triple helix model and open innovation, which have arisen in the context of the development of a knowledge-based society, emphasize new types of relations between universities and economic development [1].

As we enter the era of an innovation ecosystem with hallmarks such as sustainable social transformation, co-innovation and transnational knowledge sharing, there are also new social demands on higher education.

For example, a European University Association (EUA) report identifies four roles for universities in regional innovation systems: education, research, knowledge sharing for innovation systems, strategic transformation [2].

Universities are becoming a catalyst for sustainable development, development in innovative ecosystems. Knowledge sharing is critical to compliance; social entrepreneurship is essential for sustainable social change. The ideal result would be a real integration of education, science and industry, which would become one of the main factors in the development of the state.

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ПРИЛОЖЕНИЕ ДЛЯ ПРОВЕДЕНИЯ ПРОФИЛАКТИКИ И ДИАГНОСТИКИ ТИННИТУСА

Аннотация. *В статье обсуждается реализация программного решения, предназначенного для проведения диагностики тиннитуса у максимально широкой аудитории пользователей. Основной частью кроссплатформенного приложения является логика генерации звука. В основе экспериментов – проведение тональной аудиометрии и калибровка наушников вне зависимости от модели и качества.*

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APPLICATION FOR THE PREVENTION AND DIAGNOSIS OF TINNITUS

Summary. *The article discusses the implementation of a software solution designed to diagnose tinnitus for the widest possible audience of users. The main part of a cross-platform application is the sound generation logic. Experiments are based on tonal audiometry and headphone calibration, regardless of model and quality.*