

## **INNOVATIONS OF ECONOMIC AND MARKET TYPE IN THE SPHERE OF HIGHER EDUCATION AND SCIENCE**

Innovations are formed and implemented by people (personnel). Therefore, the main actor in any innovation process is a person and the basic principle of higher education innovation can be formulated as follows: the effectiveness of the innovation process in the field of higher education is ensured by managers and participants in this process, their creative potential, energy, and talent. Since the innovation process in the field of higher education takes place at different levels, accordingly, managers and participants in this process should be persons who are endowed with appropriate official powers, as well as have the desire and internal strength to experiment, a vision of the problem and prospects, creativity, the courage to take responsibility for the development and implementation of changes, and other properties and character traits necessary for innovation. The ability to work in an ever-changing world is a necessary quality for both senior management personnel, as well as for specialists of all other management levels.

A very important reflection of the crucial importance of innovation in the field of higher education and science is the innovation policy, innovation relations, and innovation culture of the subjects of this field. This sphere is including all higher educational institutions, scientific institutes, organizations, and legal entities involved in the educational and scientific sphere. The problems of innovation policy, innovation relations, and innovation culture of the subjects of higher education institutions (HEIs) and science-universities, scientific (research) institutions (SIs), and other organizations related to these areas, which find themselves in the conditions of academic capitalism, require further research. Also, in our opinion, a very important issue for further research is the formation of a corporate innovation culture of employees at all levels of higher education and science in the conditions of academic capitalism. In future publications authors will consider the main provisions concerning innovation policy, innovation relations, and innovation culture of HEIs on the example of innovation-oriented entrepreneurial universities.

Innovations in higher education and science, as an open educational, scientific and cultural system, should be classified according to their complexity, significance, and functional purpose. For example, large-scale innovations are aimed at improving the efficiency of higher education as an industry that is part of the socio-economic and public-humanitarian complex of the entire country. Innovations implemented at the regional level are medium-sized. Individual innovations are carried out at the level of HEIs, SIs, and their individual divisions.

The problem of innovation management in the field of higher education is not to optimally implement individual innovative projects, but to build structural-transformational innovative techniques and qualitative structures of new mechanisms, methods, and forms of activity. At the same time, the primary principle of the process of organizing innovation activities in the higher education system is the purposefulness and specificity of innovations. The goal system should have a well-built hierarchical structure. Also, it is very important for the country's population to understand and support the goals and directions of innovation in the field of higher education and science.

Analysis of the direction and impact of innovation processes in the field of higher education and science on the objects and subjects of innovative transformations certifies the necessity and importance of intensifying the processes of search and formation of new knowledge and identification their scientific, technical, and applied significance for the further socio-economic development of society, science, and technology.

That is, the development of mechanisms for effective search and further accelerated use of new knowledge is the core of innovative transformations both in society as a whole and in its individual branch – the system of higher education and science. In the field of higher education, new socio-economic mechanisms of innovation activity should certainly include university or academic entrepreneurship, the latest methods of accelerated transfer of technologies, the formation of start-up and spin-off business structures, and so on.

The authors identified the general orientation of processes of innovative activity in the field of higher education and science on objects and subjects of innovative transformations.

Innovative activities in the field of higher education and science are aimed at:

1. Search, formation, accumulation, and analysis of new knowledge.
2. Use and commercialization of basic R&D results, applied research, design, development, and implementation of new equipment and technologies.
3. Transformation of scientific research and development, other scientific and technological achievements into new or improved products, technologies, services introduced to the market, into a new or improved technological process used in practice, or a new approach to social services.
4. Academic (university) entrepreneurship, technology transfer, formation of start-up and spin-off structures.

5. Formation of entrepreneurial mentality and corporate entrepreneurial culture in subjects of innovative activity in the system of higher education.

6. The use of new tools, methods, and technologies to accelerate the economic growth of society.

7. Formation of intellectual and formation of human capital.

8. The formation of an innovative climate in the system of higher education and science, the development of higher education innovatics as a scientific-applied and practical direction of transformation and improvement of the sphere higher education and science [1].

Also, the authors determined the influence of processes of innovative activity in the field of higher education and science on objects and subjects of innovative transformations. Thus, the “innovative activity in the field of higher education and science affects the objects and subjects of innovative activity for the formation of:

1. Innovative programs and projects.

2. New knowledge and intellectual products, educational and scientific services.

3. Innovative infrastructure in the field of higher education and science in the national system of the socio-economic and public development, security of human life, support of academic (university) and intellectual entrepreneurship.

4. New organizational and technical solutions of economic, administrative, commercial, or other (non-production) nature, which significantly improve the structure and quality of the national system of the socio-economic and public development as well as the security of human life (non-productive and social spheres).

5. New experimental samples and innovative solutions of engineering and technical nature, innovative technologies for the production of new products (services).

6. Academic (university) entrepreneurship, technology transfer, formation of start-up and spin-off structures.

7. Innovative mechanisms: a) formation of markets for educational and scientific services; b) training of labor resources of the necessary qualification; c) education of employees' entrepreneurial mentality and integrated corporate entrepreneurial culture.

Innovative changes in the field of higher education and science occur at the state, industry, regional, and domestic (at the level of subjects of the higher education and science system) levels. State administration of scientific, technical, and innovative activities in the sphere of higher education and science is an integral part of the country's socio-economic strategy. So, it should be carried out by means of: a) monitoring and analysis of the state of achievements of the world and national systems of higher education, science, and technology, technologies and innovations; b) development of an image of the future (expected) state of the higher education system, its

provision with the necessary scientific, technical, and human resources; c) justification of key areas of development of the higher education system in the short, medium, and long term; d) creation and support of innovation infrastructure, including its environmental component; e) legal support of state support for innovation activities; f) financial support for priority areas of innovative development of the sphere of higher education and science; g) targeted funding for education and basic research.

State measures should also ensure that: a) capital inflows to innovative development of higher education; b) a high level of innovation is required; c) training a sufficient number of engineers, scientists and management personnel; d) facilitating access of national higher education and science to foreign markets.

The role of the state in the management of innovation activities in the field of higher education and science is an important task of the state. For the state, it is necessary to solve the following most important tasks:

1. To determine the technological and economic main goals, and develop a plan for macroeconomic transformations that will mobilize society with a single focus on innovative development.

2. Creating the necessary conditions that best contribute to the innovation and investment process.

3. Combining the efforts of government agencies with business to support innovative initiatives of higher education and science subjects, stimulating innovation management in this area, and spreading innovations in this industry. Support and practical implementation of H.Etzkowitz's concept of innovative development of society by the “triple helix” model.

4. To use and improve the advanced world experience in the field of innovative development of the sphere of higher education and science.

Innovation management should turn into a consolidated interaction of government and business mechanisms. Creating conditions for achieving agreement between the interests of the state and the employee in the field of higher education and scientific and technical activities is the main task of the state level of management. This level becomes strategic, giving tactical and operational control to new innovative individual firms and specialized structures in the field of higher education and science.

At the same time, academic or university entrepreneurship was noted as one of the main motivators and engines of innovation in the sphere of higher education and science.

Summarizing the results of a comprehensive study Summarizing the results of a comprehensive study of the phenomenon of academic entrepreneurship authors noted that entrepreneurial institutions of higher education implement their activities in higher education in the current market laws of the economic system, interacting with internal forces of society (with response to its challenges and inquiries) under the influence of globalization pressure of the world community.

The authors argue that innovations in the field of higher education and science must link to lead to innovative changes. It is reasonable to consider HEI's innovative activity in the higher education system as an economic category related to the capitalization and commercialization of intellectual products – knowledge, technology, educational and scientific services, etc.

Innovations in higher education and science can lead to innovative change. These can be innovations of types of: economic and market; technological; organizational; structural and pedagogical; educational and pedagogical. Most of them are either directly or indirectly initiated by academic capitalism.

The authors determined that innovations of economic and market type united novations caused by the scientific, technical, industrial, and economic development of society and the spread of market economic relations in all areas of socio-economic activity of mankind, the commercialization of educational and scientific and technical activities of HEI and all higher education (*innovations of economic and industrial development, depending on market requirements*) [1].

Economic and market innovations include such innovations that allow to reduce the budget funding for higher education and science to obtain the necessary resources not only for survival but also for the prosperity of HEI. They are:

1. New forms and types of financing of education and crediting of educational services, educational institutions of various types, statutory (including – educational, R&D, technological and cultural) activity of educational institutions; diversification of funding sources; formation of various funds, grants, endowment institute.

2. Commercialization of educational results (contract forms of education, educational, consulting, expert, and other services), scientific and scientific-technical activities (R&D, transfer of technology) HEI, obtaining additional financial income from extracurricular activities (lease of property, organization of mass activities for local and regional communities, etc.).

3. Participation of HEI in innovative socio-economic local, regional and national development, opening of new directions of business activity, enterprises, and spheres of industry.

4. Close cooperation with industry and business: joint implementation of R&D, targeted training, opening and supporting joint ventures, joint participation in joint-stock companies.

5. Active participation of HEI in business development; education, training and preparation of entrepreneurs of different types and leaders for industry and social sphere; developing and lobbying the necessary regulations for the development and support of entrepreneurship; promoting the competitiveness of the country's industrial and economic potential.

6. Development of academic entrepreneurship –

commercialization of R&D results, receipt of financial income from licensing and patent activities, as well as shareholder dividends from the activities of startup (spin-off and spin-out) companies.

7. Active participation of HEI in competition with other HEIs, improvement of own image, quality of educational and scientific services, access to foreign educational markets, wide internationalization of educational and scientific activity, use of international educational standards, etc.

Note that *innovations in economic and industrial development, dependent on market requirements*, are the most painful, debatable, and unacceptable for a significant number of educators and scientists. The intrusion of market mechanisms into the academic sphere contradicts in many respects the notion of “pure science and education”, which are independent of financial interventions and financial pressure. However, it is also clear that in the context of total commercialization of all spheres of human life, global financial crises, and the constant reduction of funding for science and education (and especially higher education), the question of “to be or not to be” really faces a significant number of HEIs and research institutions, and also a large number of educators and scientists in all countries of the world. In those countries where education and science are supported, the necessary conditions have already been created for their civilized alternative financial support.

Higher education is associated with all spheres of human life because literate and trained people are needed for life. Thus, the innovation of higher education is one of the most interdisciplinary scientific and applied areas in the system of the diverse knowledge of mankind.

Innovative activity in the field of higher education and science leads to serious innovative transformations both in the entire field of higher education and science and in its subjects – universities, research institutes, and related organizations and institutions. Innovation activities, initiated and directed by academic capitalism in the field of higher education and science, are primarily aimed at commercializing the results and expanding the economic activity of universities and research institutes, and only with a focus on social and socio-humanitarian problems of society. The state initiatives in the field of innovative management of higher education and science in each country are designed to strengthen the social, non-profit component of innovation in this area.

## References

1. Romanovskyi, O. O., Romanovska, Yu. Yu., Romanovska, O. O., & Makhdi, M. E.(2021) Higher education innovatics: management of innovation in the sphere of higher education and science. *Journal of Social Transformation and Education*, No. 2, Is. 2, pp. 47-76. Availableat: <http://journals.theapra.org/index.php/jste/article/view/37> (Accessed 29 Aug 2022).