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## CHALLENGES OF INNOVATION COMMERCIALIZATION IN THE ACTIVITIES OF HIGHER EDUCATION INSTITUTES AND SCIENTIFIC ESTABLISHMENTS IN UKRAINE

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The problems faced by Ukrainian higher educational establishments (universities) and research institutions on the way of the creation of innovations and their subsequent commercialization were investigated. The provisions of the new Law of Ukraine „On Higher Education” in the context of fostering innovation activities in higher educational institutions were analyzed. Positive improvements in the legislation of Ukraine caused by modern social needs, in particular as to preparation of competitive human capital for high-tech and innovation development of the country were marked. Deficiencies in the legal regulation of protection of intellectual property rights to the results of innovation activities were identified. Some suggestions for capabilities of solving the investigated challenges in the field of innovation activities were given.

**Keywords:** innovation activities, scientific and technical activities, research universities, innovation structures, innovative products, innovative development, intellectual property, intellectual property rights protection, fostering innovation activities, results of innovation activities, commercialization, higher education, public sector.

**Formulation of the problem.** Nowadays, it is difficult to overestimate the importance of commercialization of innovation because the successful commercialization is one of the main sources of financial support of innovation activities. In turn, active innovation activities are the key to economic development of the country. Unfortunately, in the way of innovations in Ukraine the scientists face certain problems, which overcoming should be a priority for the government in order to stimulate innovation activities. In this respect, the adoption of the new Law of Ukraine "On Higher Education" on 01.07.2014 having led to amendments in other normative legal acts is important.

**Analysis of recent research and publications.** The scientific literature has recently paid enough attention to the matters of innovation activities in higher educational establishments and research institutions, in particular, the principles of innovative development of higher educational establishments, the background and mechanisms of development of innovation activities in universities, innovation infrastructure of higher education establishments, sources of financing the research and innovation activities of research universities etc. are investigated. These and other issues are highlighted in the scientific works by M. Butko, I. Vysochyna, I. Hanechko, S. Hubarkova, O. Grishnova, I. Dezhyna, M. Zgurovskiy, G. Klimova, O. Kuklin, O. Popelo A. Mazaraki, S. Reznikov, S. Tulchinska, V. Fedorenko, L. Fedulova, N. Chukhrai and colleagues. At the same time, the matter of identifying factors that hinder innovation activities in the public sector in Ukraine that exist after the recent changes made to the legislation is of current interest.

**Selection of the unsolved aspects of the general problem.** The article analyzes the number of problems that hinder the development of innovative development of a state. In particular, the emphasis on a great importance of defence and protection of intellectual property rights to the results of innovation activities is made. Understanding the basic problems faced by scientists and scientific institutions in Ukraine will provide an opportunity to

identify areas to overcome them in order to stimulate development of innovations.

**Article objective.** The main objective of this work is investigation and analysis of the main factors that are barriers to the way of commercialization of innovations by higher educational establishments and scientific institutions in Ukraine.

**Presenting main material.** The aim of commercialization is profit earning through own use established intellectual property or granting permission for its use to other persons or transfer of exclusive intellectual property rights (alienation).

Traditionally, the main methods of commercialization include:

- use of intellectual property in own activities;
- granting permission for use of intellectual property by other persons;
- making of intellectual property as contribution to the authorized capital of the legal entity;
- transfer of exclusive intellectual property rights (alienation).

All over the world, much attention is paid to the issue of innovation commercialization of higher education institutes and scientific establishments, because it is one of the main sources of the financial support of innovation activities. Thanks to the successful commercialization of previous innovation, the higher education institute receives the necessary funding for further researches and creation of new innovations.

Until recently, Ukrainian legislation contained a number of provisions and gaps that strongly hindered development of the innovation activities of the higher education institutes rather than their stimulating.

The situation has changed dramatically due to the adoption of new Law of Ukraine „On higher education” N 1556-VII (hereinafter referred to as „Law”) on 01.07.2014. At least for the legislative strengthening of the fundamentals and incentives for the possible innovative development of the higher education institute.

The law established the basic legal, organizational and financial principles of the higher education system functioning, the conditions for in-

creased cooperation of the public authorities and businesses with higher education institutes on the principles of autonomy of higher education institutes and combining education with science and production are created. The adoption of the mentioned law was caused by the current social needs, in particular those referred to preparation of the competitive human capital for high-tech and innovation development of the country.

The law introduced a series of innovations that are designed to improve the financial and economic autonomy of higher education institutes that will promote development of the initiatives in researches and will enable to commercialize the innovation activity.

The main innovations of the new Law in the sphere of regulating the relations concerning the intellectual property and innovation activity are:

- expanding the autonomy of higher education institutes (autonomy, independence and responsibility of the higher education institute in decision-making) and academic freedom of the participants of educational process (autonomy and independence of the participants of the educational process in the implementation of educational, scientific-educational, scientific and / or innovation activities) (Article 3 of the Law);

- stimulating the formation of research and national universities (Article 30 of the Law);

- state support for the educational, scientific, scientific-technical and innovation activities of the universities, academies, institutes, colleges, including through the provision of benefits from payment of taxes, duties and other compulsory payments to the higher education institutes, which implement such activity (Article 3 of the Law) and economic promotion of enterprises of different ownership to cooperate with higher education institutes for implementation of the research and innovation projects (Article 67 of the Law);

- allocation of intellectual property rights on the objects of intellectual property rights, created at the expense of the public funds or funds of higher education institutes for the scientific establishment – executor of appropriate forms (types) of scientific-technical activities (Article 70 of the Law);

- involvement of scientific societies of students (cadets, attendees), graduate students, doctoral students and young scientists in protection of the rights and interests of persons who are studying or working in higher education institutes, particularly concerning the research activities, support of high-tech ideas, innovations and knowledge sharing (Article 41 of the Law).

The autonomy of higher education institutes in the field of innovation activity is provided by granting the following rights:

- ownership of the objects of intellectual property rights created at the expense of their own funds or funds of state or local budgets (except cases stipulated by law) (Article 70 of the Law);

- right to create own or contracted use of other material and technical resources for carrying out educational, research, innovation or economic activity (Article 70 of the Law);

- right to participate in forming the authorized capital of innovative structures and small-scale en-

tities established with contributions from higher education institutes, which develop and introduce innovative products, through the contribution of intangible assets (property rights on the objects of intellectual property) (Article 70 of the Law);

- right to establish enterprises for conducting innovation and / or production activities (Article 70 of the Law);

- right to participate in the formation of authorized capital of innovative structures of various types (scientific, technological parks, business incubators, etc.) by contributing the intangible assets (property rights on the objects of intellectual property) (Article 70 of the Law);

- right to be a founder (co-founder) of other legal entities that carry out their activities in accordance with the directions of educational-scientific-production, innovation activities of the higher education institute and / or enforce its statutory objectives (Article 27 of the Law);

- right to dispose of the property rights on the objects of intellectual property rights. The objects of the intellectual property shall be assessed. According to the result of evaluation, their cost shall be reflected in the accounting of the higher education institute in the manner prescribed by law (Article 69 of the Law), and so on.

The ability to commercialize the results of researches is identified as one of the criteria to receive the status of the research university. Research universities will have more autonomy, more public funding and guarantees of public order. In particular, the higher education institute with the status of research one has a preferential right to receive the public order for training specialists of Ph.D. – up to 20 percent of the number of holders of a master's degree, who studied at the expense of the state budget in such higher education institute (Article 72 of the Law).

Thus, the universities will be interested in commercializing the results to get the status of research universities.

The Law became the starting point for fundamental changes in the system of higher education and research activities. Thus, on November 25, 2015 Verkhovna Rada adopted the Law of Ukraine „On scientific and scientific-technical activity” which due to fundamental and innovative changes created a platform for the development of scientific and scientific-technical activities in Ukraine. This law recognized the need for motivation (incentives and encouragement) of young scientists, incentives for the work of the researchers; established economic, social and legal guarantees of scientific and scientific-technical activities, freedom of scientific creativity; recognized the need of state's establishment of the modern scientific infrastructure and system of information support of the scientific and scientific-technical activities, integration of education, science and production. The Law of Ukraine "On scientific and scientific-technical activity" is newly adopted, and therefore we can't fully determine the effectiveness of implemented mechanisms for encouragement of scientific, scientific-technical and innovation activities in terms of practical implementation of the law. But today, due to borrowing the positive international experience, at least Ukraine has the necessary legislative

foundation to encourage commercialization of the results of innovation activities by the higher education institutes.

Unfortunately, despite the positive changes in legislation, in reality the higher education institutes are facing the same problems of creation of innovations and their commercialization as before. This is explained as follows:

- too short time has passed from the moment of adoption of the new law „On higher education” (even not all the provisions of the Law came into force according to the Final and transitional provisions);

- need for amendments to other regulations in order to bring them into conformity with the Law of Ukraine „On Higher Education” and the Law of Ukraine „On scientific and scientific-technical activity” as well as ensuring the implementation of these laws;

- need to specify certain provisions of the Laws (including Part 4 of Art. 67 of the Law of Ukraine "On Higher Education", which refers to the state's economic promotion of enterprises of different ownership to cooperate with higher education institutes for implementation of the research and innovation projects, training and retraining of the specialists with higher education, practical training of the students);

- lack of budget funds in the amount necessary for funding the creation (updating) of the material and technical resources of higher education institutes for implementation of the scientific, scientific-technical and innovation activities and the creation of decent wages for employees engaged in scientific, scientific-technical and innovation activity at the European level.

**The main challenges of creating innovations and their further commercialization** are highlighted in Article 7 of the Law of Ukraine "On fundamentals of the National Security of Ukraine" dated 19.06.2003 N 964-IV (as amended) as a threat to national interests and national security of Ukraine, namely: ineffective state innovation policy, mechanisms to encourage innovation activity; decrease in the domestic demand for training of scientific and technical personnel for scientific, engineering, technological institutions and high-tech enterprises, poor payment level of scientific and technical work, drop of its prestige, inadequate mechanisms for the protection of intellectual property rights; critical state of fixed assets in leading industries, agriculture, life-support systems.

Much of the challenges of commercialization relates to the intellectual property right on the results of innovation activity. In a complex set of the objects of intellectual property rights the crucial role in the field of innovation activity is given to the objects of patent rights (inventions, utility models, industrial designs), plant varieties, animal breeds, software, trade secrets (know-how). These are the objects with which the main problems of commercialization are associated.

The availability of protection document for the object of intellectual property plays equally important role for the commercialization of the results of innovation activity. For example, the presence of patent creates a safe environment for disclosure of the results of innovative researches, pro-

notes investments, technology transfer, obtaining commercial advantage, serves towards advertising purposes, etc. Depending on the object of intellectual property rights, there are two main types of protection documents: patent and certificate, each of which has certain period of validity. According to the laws of Ukraine, the longest period of legal protection provided to the objects of copyright is seventy years starting from January 01 of the year following the year of death of the author or the last of the authors, and the shortest term set for topographies of integrated microcircuit and utility models is 10 years from the date of filing the relevant application.

As for the other objects of patent law, the legislation established the following terms of validity of exclusive intellectual property rights, namely

- Invention – twenty years counted from the date of filing an application for an invention in the manner prescribed by law. This period may be extended in the manner prescribed by law in respect of the invention, the use of which requires special testing and official authorization;

- Industrial design – fifteen years as from the date of filing the application for the industrial design in the manner prescribed by law.

**Process of getting certain types of protection documents is rather long-term (inventions) and requires financing.** According to the data given in Recommendations of hearings of the Committee of the Verkhovna Rada of Ukraine on science and education matters «*Intellectual Property in Ukraine. State and conceptual foundations of development*» (Minutes № 13 dated June 17, 2015) in the 2013, the national applicants filed nearly 13 000 applications for inventions and utility models. However, due to non-payment of fees for maintenance of validity of the patents for inventions and utility models, 9,8 thous. patents of the national owners (75%) were invalidated!. Herewith the average term of consideration of applications before issuing the patent is about 2 years.

The availability of the protective document for the object of intellectual property right is a favourable condition for its commercialization. First, the protective document certifies whom exactly the exclusive intellectual property rights to this object belong. Secondly, as to the objects of intellectual property rights passing qualification examination (eg an invention), the protective document certifies the compliance of such object with the terms of providing legal protection. One should not forget herewith that the successful registration of intellectual property right to the results of the innovative research is not a guarantee of its successful commercialization. The commercial success of innovative research depends largely on further actions on the part of businesses representatives. Unfortunately, a significant number of patents is "covered with dust" on the shelves without the implementation of research results described therein (remaining at the level of scientific developments). But even in this case, the patent is good for the state, because the patent system contributes to the process of invention, sharing of knowledge and information through publication of description of the patent and enabling any person to get acquainted with the application materials. Moreover, accord-

ing to Art. 467 of the Civil Code of Ukraine in case of termination of exclusive intellectual property rights to an invention, utility model, industrial design these objects can be freely used by any person, that is, they pass into the public domain.

Nowadays in Ukraine, despite the legislative consolidation, **in reality there are no incentives (motivation) for scientific and technical staff on the creation of intellectual property rights in the public sector.** This is due to a poor level of remuneration of researchers and symbolic compensation in the case of creation of intellectual property object, and therefore non-attractiveness of such work. It relates the problem is leakage of native applications for promising inventions from Ukraine. Some of the potentially significant inventions, namely the results of innovation activities, are applied directly to the patent offices of foreign countries without previous submitting the applications to the Patent Office of Ukraine and obtaining an appropriate permission. That is, uncontrolled transfer abroad of scientific developments goes on.

Moreover, there is **the problem of intellectual property rights belonging.** Certainly, the researcher (creator, inventor, author) will possess all personal intellectual property rights to the object created by him/her, namely, the right to his/her recognition as the creator; the right to prevent any interference with intellectual property that can be prejudicial to the honour or reputation of the creator of intellectual property right object. Thus, in accordance with the laws of Ukraine the researcher has little chance to acquire the intellectual property right to the object. For example, the Article 17 of the Law of Ukraine „On Scientific Parks” dated 25.06.2009 N. 1563-VI (as amended and altered), for example, does not directly stipulates that property rights to technologies and intellectual property right objects created during implementation of scientific park projects, are owned by the national park and / or its partners.

In cases where intellectual property objects are created by employees of the higher educational establishments not within the framework of scientific parks, the provisions of the Part. 2, Art. 429 of the Civil Code of Ukraine are applied, namely: „intellectual property rights to the object created in connection with the fulfilment of the employment contract shall belong to the employee, who has created this object, and a legal entity or natural person where or for whom he/she works jointly, unless otherwise provided by contract”. In practice, the contracts between the higher education establishment and its employees contain a provision according to which intellectual property rights to created objects belong to the employer. According to Art. 69 of the Law of Ukraine „On Higher Education” higher educational establishments have the right to dispose of intellectual property rights to the objects of intellectual property rights. The Law herewith does not contain a provision that defines the possibility of acquiring the intellectual property rights to the created object by its creator.

If the object of intellectual property is created by order of the involved person (one that is not employed by a higher education establishment), the provisions of Part 2, Art. 430 of the Civil Code

of Ukraine are applied, namely: „intellectual property rights to the object created by order shall belong to the creator of this object jointly with the customer, unless otherwise provided by contract”. Again, as a rule, this kind of contracts contains a clause about belonging of such rights to the customer.

This objectively reduces the interest of researchers in the results of their own work and cannot fully turn intellectual property into commercial circulation. However, the creators of intellectual property are capable to take care effectively of the results of their work based on private property.

The experience of Sweden is quite appropriate for use in this regard. Unlike Ukraine, in the case of creation of an intellectual property object the property rights to it belong to its creator, not the higher educational establishment on which the object was created. A similar provision applies to objects created with public funds. Thus, all parties (creator, higher education establishment and state) are interested in the commercialization of this object.

The following matter is related to **the lack of effective mechanisms to protect intellectual property rights.** Violation of intellectual property rights is different, namely it is the abduction of scientific developments and the unauthorized use of intellectual property rights, and the failure to fulfil the terms of agreements on disposal of intellectual property rights and so on.

Prevalence of violations of intellectual property rights is primarily associated with the specific of the intellectual property rights. Due to immateriality of such object, intellectual property rights to it may be simultaneously violated in different ways by an unlimited number of persons who are in different parts of the globe.

The main difficulty in protecting intellectual property rights are related to the problem of determining (establishing) the offender, evidencing, determining the volume of damages, preservation of evidences, seizure and destruction of infringing goods, materials and tools, etc. Similar problems arise in the case of an appeal to the law enforcement agencies.

The matter of intellectual property rights protection is essential, as it contributes to encouraging the investment to innovation developments and, accordingly, commercialization of the research results.

Another problem related to intellectual property rights in the field of innovation activities is **the lack of the modern market of intellectual property rights.** To ensure transfer of technologies the constant exchange of information between participants in the innovation process is necessary. Internet-exchange of industrial property created by the Ukrainian Centre of Innovations and Patent Information Services helps to solve this matter. However, effective exchanges of government support in this matter.

Thus, improving the efficiency of legal regulation of relations in the field of creation and use of intellectual property objects to the research results is essential to the development of innovative processes in the country. World experience shows that

the productive system of protection and defence of intellectual property rights can be an effective tool to stimulate innovation development in the country.

**Conclusions and suggestions.** Summarizing all above-mentioned information, it should be noted that the main problems of commercialization of innovation are associated with defence and protection of intellectual property rights to the results of innovative activities, as well as lack of necessary motivation for employees of the higher educational establishments and research institutions. Possible steps towards solving these problems can be balanced and systematic improvement of legislation on the protection of intellectual property rights; creation a single platform for higher educational establishments and research institutions

of Ukraine with government support in order to inform about the results of their innovation activities and looking for investors; reviewing the size of salaries and remuneration paid to the employee in the case of creation of intellectual property object.

The adoption of the Law of Ukraine „On Higher Education” is very essential to the development of innovation activities of the higher educational establishments, because favourable foundation was laid to that effect. This is a big step for domestic science. Finally, Ukraine adopted the positive experience of European countries as to stimulation of innovation activities of the universities. However, it takes some time until the legal principles laid down by the Law are implemented and problems of innovation development can be resolved.

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## **ПРОБЛЕМИ КОМЕРЦІАЛІЗАЦІЇ ІННОВАЦІЙ В ДІЯЛЬНОСТІ ВИЩИХ НАВЧАЛЬНИХ ЗАКЛАДІВ ТА НАУКОВИХ УСТАНОВ В УКРАЇНІ**

### **Анотація**

Досліджено проблеми з якими стикаються українські вищі навчальні заклади та наукові установи на шляху створення інновацій та їх подальшої комерціалізації. Проаналізовано положення нового Закону України «Про вищу освіту» з точки зору стимулювання інноваційної діяльності у вищих навчальних закладах. Відмічені позитивні зміни у законодавстві України обумовлені сучасними суспільними запитами, зокрема, щодо підготовки конкурентоспроможного людського капіталу для високотехнологічного та інноваційного розвитку країни. Виявлені недоліки у правовому регулюванні захисту прав інтелектуальної власності на результати інноваційної діяльності. Надані окремі пропозиції щодо можливостей вирішення досліджених проблем у сфері інноваційної діяльності.

**Ключові слова:** інноваційна діяльність, науково-технічна діяльність, дослідницькі університети, інноваційні структури, інноваційна продукція, інноваційний розвиток, інтелектуальна власність, захист прав інтелектуальної власності, стимулювання інноваційної діяльності, результати інноваційної діяльності, комерціалізація, вища освіта, державний сектор.

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## **ПРОБЛЕМЫ КОММЕРЦИАЛИЗАЦИИ ИННОВАЦИЙ В ДЕЯТЕЛЬНОСТИ ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЙ И НАУЧНЫХ УЧРЕЖДЕНИЙ В УКРАИНЕ**

### **Аннотация**

Исследованы проблемы, с которыми сталкиваются украинские высшие учебные заведения и научные учреждения на пути создания инноваций и их дальнейшей коммерциализации. Проанализированы положения нового Закона Украины «О высшем образовании» с точки зрения стимулирования инновационной деятельности в высших учебных заведениях. Отмечены положительные изменения в законодательстве Украины, обусловленные современными общественными запросами, в частности, по подготовке конкурентоспособного человеческого капитала для високотехнологичного и инновационного развития страны. Вывявлены недостатки в правовом регулировании защиты прав интеллектуальной собственности на результаты инновационной деятельности. Предоставлены отдельные предложения относительно возможностей решения исследованных проблем в сфере инновационной деятельности.

**Ключевые слова:** инновационная деятельность, научно-техническая деятельность, исследовательские университеты, инновационные структуры, инновационная продукция, инновационное развитие, интеллектуальная собственность, защита прав интеллектуальной собственности, стимулирование инновационной деятельности, результаты инновационной деятельности, коммерциализация, высшее образование, государственный сектор.