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THE ROLE OF THE NATIONAL PATENT OFFICE IN THE R&D ACTIVITY OF THE HIGHER EDUCATIONAL INSTITUTIONS

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Summary

The article deals with the main problems, challenges and constrains that HEIs face in the context of their R&D activity and in the light of becoming main subjects of the national innovation system and potential sources of new technologies and innovations. In particular it describes scope and solutions to certain issues: IPR usage and legal provisions; strengthening links between Science, Industry, Government and the National patent office; distribution of IPR (research results made at the Universities); increasing IP awareness; sustainable financing and commercial activity with special regard to the IP awareness and the National patent office.

Key words: R&D activity of the HEIs, intellectual property rights, innovation, National patent office, IP awareness.

Аннотация

В статье описаны основные проблемы, вызовы и сдерживающие факторы, которые возникают в процессе научно-исследовательской деятельности вузов в свете становления их в качестве субъектов национальной инновационной системы и потенциальных источников новых технологий, инноваций. В частности, речь идет о состоянии вопроса на сегодняшний день и путях решения следующих положений: использование имущественных прав интеллектуальной собственности и соответствующие правовые нормы; усиление связей между наукой, промышленностью, правительством и национальным патентным ведомством; распределение имущественных прав на результаты научных исследований, повышение сознания и культуры общества в сфере интеллектуальной собственности; устойчивое финансирование и коммерческая деятельность.

Ключевые слова: научно-исследовательская деятельность вузов, имущественные права на объекты интеллектуальной собственности, инновации, Национальное патентное ведомство, культура в сфере интеллектуальной собственности.

Background of the article.

Globalization and technological progress are reshaping the world economy. Innovation is increasingly becoming the sole response to the challenges of globalization. It is an imperative need for innovation that has turned Intellectual Property (hereinafter – IP) into a central issue. There is a tendency of strengthening links between Education, Science, Government and Industry.

Intellectual Property is one of the very oldest fields of international collaboration and, in the last twenty years in particular, has become of the most universal. There is every sign that the importance of IP will continue to expand dramatically. The reason for this is that IP is central to the commercialization, transfer and use of knowledge and information [1].

As the President of the USA, B. Obama, in one of his speeches concerning Strategy for American Innovation mentioned: «The key of our success – as

it has always been – will be to compete by developing new products, by generating new industries, by maintaining our role as the world's engine of scientific discovery and technological innovation. It's absolutely essential to our future» [2].

No one will deny that fact, that Higher Educational Institutions (hereinafter – HEIs) become active subjects of the R&D activity. It has been recognized that academic research plays an important role in promoting technological progress and economic growth. HEIs worldwide play a leading role in advancing the frontiers of science and technology. Research results led to increasing interest finding the most adequate frameworks to promote university-industry partnership for the transfer of technology. Intellectual property rights (hereinafter – IPR) have been identified in many countries as a mechanism that provides the necessary incentives for the commercialization of university research results.



Throughout history, the face of innovation: the «who», the «how» and «what for» has changed. Understanding these changes is important to ensure a favourable policy environment. In our research the «who» – Universities and the National patent office (hereinafter – the NPO) (+IP system); the «how» – system + particular mechanism, so called system of «check and balances»; «what for» – legal regulation of the country economic growth aspects and optimizing HEI's innovation management. There is a need of a mechanism for such interaction as a system.

Purpose, object and scope of the article. The purpose is to identify and evaluate the R&D activity of HEIs with special regard to the IP awareness level and the role of the NPO in such mechanism. There are analyzed the existing services and measures that NPO takes to increase the IP awareness, R&D activity of the HEIs, functioning of the Science park. A further aim is to define practical recommendations for a stronger presence of the NPO concerning R&D activity of the Universities in a form of coordinating and providing innovation support services as there is a significant need among HEIs for more knowledge on IP rights, how to apply and protect them.

The object of the article: legal aspects of social relations arising in connection with R&D activity of HEIs, IPR management.

R&D activity of the Universities as a process from research to industry is a very complex in which involves a lot of different players. We should mention that the NPO's support of the HEI's R&D activity today means the beginning of new ideas and faster development tomorrow.

We can enumerate some trends in society that determine the relevance HEIs: common features and trends:

1. Intellectual property rights (hereinafter – IPR) raised in connection to research activities which are carried out at Universities, Universities' R&D activity becomes an important source of innovation.

2. Increasing of public funding for higher education.

3. Granting more autonomy to institutions for managing IPR, financial resources.

4. Establishing direct links between Universities, Business and Government.

5. Encouraging the diversification of funding sources as well as creation of partnerships with research institutions, business and regional authorities.

6. University's reform: abolishment of the «professor's privilege».

7. Often don't take full advantage of opportunities to exploit IPR.

8. Don't fully exploit the existing possibilities for protecting IP.

9. People often not aware of how best to use their patent rights to protect and exploit their inventions (lack of quality assistance).

10. Significant need among HEIs for more knowledge on IPR and how to apply them.

So there is no doubt that Universities are active subjects of innovative activity and potential sources of new technologies and innovations. Participation in R&D activity takes universities to a new level and gives them a special status of the entity as:

- producer of commercialized knowledge;
- serious partner and competitor in the market of high technology products;
- developer and provider of intellectual property;
- research organization, where is concentrated most of the research and development work.

On the other hand Universities and all HEIs play two key roles: they contribute to economic growth through training of skilled personnel, receiving, storage and transfer of knowledge to society in the form of training, publications and scientific discussions (traditional task); and they produce, store and disseminate research results which form the basis for follow-on R&D by firms. Thus, the modern university – it is not only high school plus research, but also multi-functional structure.

We can't eliminate the role of the NPO as it is only one body which is entitled to conduct the substantive examination concerning objects of industrial property. Today the role of the NPO has increased:

1. Intellectual property system is an effective tool for technology transfer from Universities to industry. The NPO plays a key role in such system.

2. NPO is a central subject which manages an effective system for the protection of IPRs.

3. NPO has all prerequisites to influence and stimulate patent activity,

innovation and enhance the international competitiveness of national strategy.

4. NPO possesses on information, statistics and facts from practice and it's practical implementation.

5. IPR has been identified as a mechanism that provides the necessary incentives for the commercialization of university's research results.

There is a need for closer cooperation between the NPO and Universities. It should be a system with strong and defined links between all its' elements and of course mechanism of the main functions implementation.

In order to bridge the gap between the NPO and Universities, it is expedient for NPO to form a specific department in the structure of the NPO to expand the range of services on IP awareness and appropriate legal regulation of its' functioning. It can be called department of strengthening links with the research community and organized in such way:

- information support (how to apply IPR, brochures);
- HEIs expect their first contact for questions about patent information to be NPO;

– HEIs see NPO as the place to express their views and needs (NPO will have important knowledge about user's wishes);

– NPO provides an easy access to information and services;

– to foster innovation support service provision.

Actions regarding strengthening links between the NPO and HEIs that are already taken in Ukraine:

1. Seminars for students and faculty members (e. g. «IPR: emerging, use, disposal and protection»).

2. International scientific conference «Innovation development strategies of the national economy in the global economic system».

3. National Conference for young scientists and students «Harmonization of IPR legislation to EU level».

4. Regional scientific workshops on the legal protection of IPR.

5. Quarterly regional scientific workshops for students and teachers.

6. Inventor of the year.

Support services for HEIs are proved to be an effective mechanism.

Specific goals of the department of links with the research community:



1. To reduce barriers in HEIs with respect to the use of patents.

2. To optimise HEIs innovation management.

3. To increase the number of qualified patent applications by HEIs.

4. To make HEIs aware of the economic aspects and the exploitability of an invention.

5. To improve the conditions in HEIs for the commercialization of R&D results.

On creating such department the following questions must be identified:

1. Is there specific legislation in the field related to IPRs in general and specifically to patents in university research?

2. Who owns the patentable research results?

3. What are the consequences for the relationship between the parties, if there are several participants in the research project – several inventors, transferees, companies or organisations?

4. What kind of measures and services can NPO provide to encourage IP awareness?

5. Are there any reductions while patenting by Universities?

6. What is the dynamic of HEI's patenting activity?

7. Does the present legislation allow Universities to hold shares in companies and establish university-based companies?

Special department will focus on:

1. Organizing seminars, workshops.

2. Thematic TV programs.

3. B2B (business to business) and B2C (business to customer) services: web-based search.

4. Guidebooks.

5. Electronic complaint system.

6. Application of best practice recommendation in the field of IP.

7. Training courses.

8. Different meetings with representatives from Industry, Government, Science.

There are some risks, challenges and main constrains while creating and functioning of the department:

– a wide institutional complexity;

– a risky nature of IP;

– different national systems may require different solutions;

– financing;

– legal enforcement constrains, norms that narrow university autonomy and activity as independent entity.

The desired outcome is, in broad terms, to create an environment in which Intellectual Property enables innovators and creators to lever economic value from their work and enhance the economic success of the country to the benefit of its businesses, researchers, creators, and society as a whole and to strengthen economic competitiveness [3].

Speaking about higher education in Ukraine, it is either state funded or private. There are 489 HEIs of the 1st and 2nd level of accreditation with 345,2 thousand students and 334 HEIs of the 3rd and 4th level of accreditation where involved 1824,9 thousand students among them: 160 – universities, 60 – academies, 112 – institutes, 2 – conservatories. Concerning research institutions, there are 163: 122 administered by the National Academy of Sciences, 17 – by the National Academy of Medical Sciences, 24 – by the National Academy of Agrarian Sciences. There are 71 HEIs in Kiev [4]. The issue of IPR is a very burning and at the same time sensitive.

On analyzing foreign experience (Finland, China, Japan) we came to conclusion that in order to bridge the gap between invention and commercialization; universities have established «technology transfer offices» (TTOs), on campus or off-campus intermediaries that carry out a wide range of functions, from licensing patents to companies to managing research contracts. Results from an OECD report on patenting and licensing at public research organizations show that there is a large diversity in the structure and organization of TTOs within and cross countries (e.g. on or off-campus, arm's length intermediaries, industry sector-based TTOs, and regional TTOs), but the majority appear to be dedicated on-site institutions and integrated into the university or research institution. Many of the TTOs are in their infancy; most are less than 10 years old and have less than five full-time staff. Still, the number of new TTOs is growing, to the order of 1 per year per institution [5].

According to the Order of the Education and Science Ministry of Ukraine «About creation of subdivisions on questions intellectual property» 01.11.2005, № 631: «... in the structure of the higher educational establishments of III – IV levels of accreditation with the aim of the effective use of intellectual

potential, providing modern methods of management activity in the field of intellectual property and assistance to development of the civilized system of IPR commercialization» [6].

The Law of Ukraine «About government control of activity in the field of the technology transfer» 04.09.2006, № 143-V. This Law determines legal, economic, organizational and financial principles of governmental control of the activity in the field of the technology transfer and provides effective use of scientific and technical, and intellectual potential of Ukraine, technologicalness of goods production, protection of property rights, and expansion of international scientific and technical cooperation.

According to the Article 11 of the abovementioned Law IPR created in the process of R&D activity, that is financed from state budget, belong to establishments, organizations and enterprises – to the performers of these works in accordance with the Civil code of Ukraine, except cases attributed to the state secret. Person, who acquires IPR, does necessary actions to get ownership to IPR; pays a reward to the authors of technology after it's transfer and signing an agreement [6].

In spite of great importance of the Act, there is no obligation on a legislative level to measure the knowledge transfer and dissemination through the Universities.

And what do we have in practice? What kind of constrains is faced Ukrainian HEIs during the R&D project realization:

1. not all HEIs have really functioning IP departments (just nominally existing);

2. lack of standardized indicators and available statistical information (no unified classification for R&D activity indicators);

3. no effective measuring of technology transfer results or knowledge dissemination;

4. a gap between R&D results of the HEIs and industry.

As for example, it was decided to concentrate only on one Ukrainian University – the National Technical University of Ukraine «Kyiv Polytechnic Institute» (hereinafter – KPI) and illustrate it's R&D activity experience. The innovation structure of KPI is represented by such institutions:

– Department of science and innovation;



- IP division;
- Science Park «Kyivska Polytechnika».

Some words about the Science Park «Kyivska Polytechnika»: it is a form of scientific and research process organization which promotes effective commercialization of high-tech developments.

Legislative Base of the «KPI» is represented by:

- The Law of Ukraine «On Science Park «Kyivska Polytechnika» №. 523-V of 22.12. 2006.

- The Law of Ukraine «On science parks» No. 1563-VI of 25.07. 2009.
- The Order of the Cabinet of Ministers of Ukraine «On approval of action plan on execution of the Law of Ukraine «On Science Park «Kyivska Polytechnika» No. 546-p of 18.07. 2007.

- The Order of the Cabinet of Ministers of Ukraine «On approval of innovation program of Science Park «Kyivska Polytechnika» for 2007-2011» No. 760-p of 19. 09. 2011.

The main mission of the science park is creation of competitive advantages for participants and partners of Science Park «Kyivska Polytechnika» by means of education, science and business integration.

The main aim – commercialization of scientific research results and their implementation on domestic and foreign markets and appropriate legal regulation.

Concerning tasks:

- designing and realization of innovative projects;
- search of investors and partners;
- management of innovative developments;
- establishment and development of innovative companies;
- promotion and marketing of science-intensive products on domestic and foreign markets;
- networking with domestic and foreign scientific and industrial organizations.

The main directions of R&D activity of the Science Park:

- innovative elements of the Information Society;
- sustainable Development Energetics;
- biotechnical Systems and Technologies;
- special and Twofold Purpose Systems.

Let's pay attention to the key indicators of the functioning [7]:

	Number of filed applications				
	2007	2008	2009	2010	2011
NTUU «KPI»	239	250	265	189	238

Speaking about innovative projects in which science park is involved – worth mentioning is project UkraineMade: UkraineMade – a communication and search platform of Ukrainian manufacturers, their products and technologies. Total sum of investment – UAH 2, 95 mil. Break-even point – 14 months. Pay-off period in aforementioned cost of investment return – 3 years. Now project is ready for promotion on the market.

Conclusion. Propositions to improve R&D activity of the Universities:

- collaboration of networking model of HEI's functioning;
- working out the R&D joint program with foreign HEIs, study visits;
- obligation to elaborate IP strategy of the university;
- further improvement of the level of awareness of IP enforcement and commercialization of HEIs researchers;
- distance learning programs via the Internet;
- IP strategy, IP conception, Plan for realization;
- changes in the legislation: to impose on HEIs obligation of commercialization during fixed period and measure the knowledge dissemination.

So by establishing separate department of strengthening links with the research community (in the structure of the NPO) which provides IP information services and support facilitates R&D activity of HEIs and bring them to a new level of innovation and knowledge based society and environment.

To sum up, we have to understand that achieving success is not without challenges. But it is obvious that without real institutional reforms and understanding that research and innovation is core of HEIs activity (education is its' traditional function as it is always been), without taking practical steps towards organizational models and systems, legal provisions and sustainable funding will not bring the desired result.

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