



Innovation Industry and Intellectual Property Training for Students

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The subject matter of this paper is the training in the discipline “Innovation Industries and Intellectual Property”, including digital learning. The course aims to provide students with knowledge about the nature and types of innovation industries. Participants in the innovation industries are analyzed. The models are considered and the connection between the innovative activity of the enterprises and the protection of the innovative products as objects of industrial property is indicated. The essence of the innovative product and the ways to protect innovative products such as inventions and utility models are indicated. The focus is on business and the need for intellectual property management in innovation industries. The course provides knowledge of strategies for the development of innovation industries based on patents and strategies for protection and management of industrial property. The role of intellectual property in the competitiveness of innovation industries and enterprises is affected. Examples of innovative companies that gain a competitive advantage through their industrial property holdings have been identified.

Keywords: *Innovation industries, intellectual property education, patent protection, digital learning, competitiveness.*

1. Introduction

This paper will address the topic of innovation industries, by identifying the protection of the innovative products as objects of industrial property and presenting the main points of the training provided to students in the discipline "Innovation Industries and Intellectual Property", including online learning in a digital environment. It is important for companies in today's world to create technological developments that they can protect through the industrial property system, which they can use in a way that generates profits and contributes to their competitiveness with other business players in the market. A key role for the company's competitiveness is played by the company's IP portfolio. [1] Companies that create innovative products that are protected as industrial property objects contribute to their corporate competitiveness. Students studying the discipline will understand the nature and types of innovative industries, gaining knowledge on strategies for the protection and management of industrial property objects, which supports the business development of companies. Different examples of innovative enterprises are presented, which manage to establish themselves in the market and gain a competitive advantage over other business entities through their ownership of industrial property objects.

The subject matter of this paper are the innovation industries and intellectual property training for business students.

2. Innovation Industries

In theory and practice there is no single definition defining the concept of "innovation industries". There are many formulations of different scholars and researchers who give their own definitions of the terminology under consideration. The role of knowledge, new technologies and their protection as objects of intellectual property contribute to the emergence and development of innovation industries and to the creation of competitive products.



Students studying the discipline "Innovation Industries and Intellectual Property" should be aware of the nature and types of innovation industries.

2.1. Nature OF Innovation Industries

Innovation industries are a set of innovative enterprises carrying out innovation activities in specific business sectors. The economic sector in which innovation enterprises carry out their innovation activities is defined by the type of research and development carried out and the products created - inventions, utility models, new plant varieties, animal breeds and know-how. [2]

These are industries in which there are enterprises engaged in the creation and industrialization mainly of objects of industrial property such as inventions, utility models, know-how as well as new varieties of plants and breeds of animals and of objects of artistic property such as software. The innovation activity of enterprises in these industries is shaped by the product and technological innovations created and implemented in their production process, i.e., by industrialized inventions, utility models and new varieties of plants and animal breeds. It is also determined by the organizational and marketing innovations (know-how) carried out by enterprises on the territory of Bulgaria. [3]

The innovation activity of enterprises in innovative industries depends on some certain factors that influence their innovation activity and are related to the achievement of the following positive effects:

- consolidation of the enterprise's prestige as an innovation leader;
- enhancing financial performance;
- optimal use of the intellectual and technological capital of the enterprise;
- gaining a serious competitive advantage;
- maintaining and expanding market shares and forming a loyal consumer segment; and
- the possibility of modifying the innovative product, which reduces the level of risk.

2.2. Types of Innovation Industries

Globally, there are a number of innovation industries that influence the development of technology, society and the economy. Alec Ross, former chief innovation adviser to US Secretary of State Hillary Clinton, identifies robotics, genetics, money codification and big data as the "industries of the future". To be able to identify the types of innovation industries, we need to examine the innovation sectors in which innovative businesses are developing. Currently there is no single classification that identifies the types of innovation industries, but according to the areas in which they operate we could group them into:

- Medical innovation industries;
- Innovative industries in mechanical engineering;
- Innovative industries in the field of food industry;
- Innovation industries in logistics and transport;
- Innovation industries in agriculture and agribusiness;
- Innovation industries in the financial and insurance sectors;
- Security innovation industries;
- Innovation industries in information and communication technologies;
- Innovation industries in robotics and artificial intelligence;
- Innovation industries in the field of additive manufacturing;
- Big data innovation industries;
- Innovation industries in international trade, etc.

2.3. Participants in Innovation Industries

Students teaching the discipline "Innovation Industries and Intellectual Property" should be aware of the participants in innovation industry. This paper will cover some of the main participants in innovation industries.

2.3.1. Individual inventors

Sole or individual inventors are people who create inventions independently, without the involvement of an employer. The inventor is the person who created the invention or utility model. Many independent inventors patent their inventions to obtain exclusive rights to them. Their main objective, after obtaining a patent, is to be able to economically realise the patented invention.



2.3.2. Technological parks

In the Technological Park, start-ups or existing technology-driven companies can find the right intellectual environment, as well as support in launching and developing their business, access to markets, technologies and specialized services to support their sustainable and competitive development. In contrast to a science park, a technology park involves both research and development, culminating in the creation of a prototype, and the implementation of production activities. In general, technology parks are established on the initiative of the State and are legal entities created in accordance with the legislation in force. [4]

2.3.3. Technology Transfer Centre

The Technology Transfer Centre is the most appropriate place where science and business find their intersection. The Technology Transfer Office (TTO) is established for the purpose of identifying, protecting and transferring university intellectual property for commercialisation. They are responsible for technology transfer and other commercialization aspects of research taking place at a university.

2.3.4. Business incubator

A business incubator is a company that helps new and start-up companies grow by providing services such as management training or office space. Business Incubation is a comprehensive business start-up support programme that provides premises, a wide range of affordable business services, a micro-finance scheme, business advice, training programmes, and assistance with going public.

2.3.5. Small and medium-sized enterprises

Small and medium-sized enterprises (SMEs) are often called the backbone of the European economy, providing a potential source of jobs and economic growth. SMEs are defined by the European Commission as enterprises employing fewer than 250 people. They must also have an annual turnover of up to EUR 50 million or a total balance sheet of no more than EUR 43 million (Commission Recommendation of 6 May 2003).

2.3.6. Transnational corporations

Transnational corporations are also known as multinational companies, or multinational corporations, are those that spread their activities across two or more countries. A transnational corporation is "any enterprise that undertakes foreign direct investment, owns or controls income-generating assets in more than one country, produces goods or services outside its country of origin, or engages in international production." Multinational companies have facilities and other assets in at least one country outside the company's home (national) territory.

2.3.7. Conglomerates

A conglomerate is a corporation made up of several different, independent businesses. In a conglomerate, one company owns a controlling interest in smaller companies that conduct separate business operations. Conglomerates are large parent companies that are made up of many smaller independent entities that may operate in different industries. Each of the subsidiary businesses of a conglomerate operates independently of the other business units, but the managers of the subsidiaries report to the senior management of the parent company. [5]

3. Innovative Product

Innovative product is determined by the innovation activity of enterprises and is of primary importance for assessing the performance of the country's innovation system. Innovative products created because of the innovation activity of enterprises could, under certain conditions, be protected as objects of industrial property, in particular as inventions and utility models. By protecting themselves as objects of industrial property, innovative products can realize their economic advantage only for the right holder and / or the licensee, provided that a license is granted. Otherwise, any person can freely and unhindered use the object of industrial property. In order to gain a competitive advantage, long-term economic realization and profit generation, innovative products must be protected under current industrial property law.

Students studying the discipline "Innovation Industries and Intellectual Property" should be aware of the ways of protection of innovative products such as inventions and utility models.



3.1. Protection of the Innovative Product as an Invention

The inventions help the people to solve various problems in the science and technology. The intellectual product obtained must necessarily be a technical solution to a problem, and the task can be in any field of public economy. To be granted a patent for an invention, it must cumulatively meet the three criteria of patentability - novelty, inventive step, and industrial applicability. [6]

The patent protection of the invention is granted by patent. Once issued, its holder gains exclusive rights to the patentable invention, which include the right to use the invention, the right to dispose and prohibiting other persons from using the invention without the consent of the patentee. In this way, on the one hand, the interest of the business is protected for access to new technological products, for the development of innovative production and on the other hand, the interest of the patent holder is protected - it holds monopoly rights for a fixed term and for a specific territory. The term of protection of the invention is 20 years from the date of filing of the patent application. A patent has a territorial effect - it operates within the territory of the country to which it was issued. [7]

3.2. Protection of the Innovative Product as a Utility Model

Innovative products are also protected as utility models, which largely contain the same specific features and characteristics as the invention. A utility model is also referred to as a "small invention" in the specialist literature. A utility model is an industrial property object that exists in special industrial property laws, but it is not possible to obtain protection for a "utility model" in every country. For example, it is not possible to register a utility model for the territories of the UK and Canada. Objects which are technological in nature and represent devices, articles, apparatus, or parts thereof can be protected as utility models. In the case of utility models, the technological progress required is less than the technological progress ("inventive step") required for invention. There are various examples of registered utility models, such as an eco-ribbon cutting device, a linear knitting machine, and types of assembly and production lines for the manufacture of clothing or confectionery. Under Bulgarian law, the initial term of protection of a utility model is 4 years from the filing date of the application. It may be extended for two consecutive periods of three years each. The total term of registration is 10 years from the date of filing of the application.

4. Strategies for Commercialization of Industrial Property Objects

Students studying the discipline "Innovation Industries and Intellectual Property" should also be aware of the strategies for the development of innovation industries based on patents for inventions and registered utility model, and strategies for protection and management of industrial property.

Commercialization strategies for industrial property objects, in particular inventions and utility models, are of utmost importance for enterprises. In order for rights holders to be able to generate a profit from their IPRs, they need to successfully commercialize them in competitive markets. Commercialization activities are a matter of corporate culture and business model. The commercialization strategy for industrial property objects is based on company research and technological development to develop its own innovative products, which are protected by a patent and/or a registered utility model.

The commercialization of industrial property objects is most often carried out independently by the patent holder of the invention or the holder of the utility model. Commercialization could also be achieved through the sale of industrial property object. When industrial property objects are sold, the exclusive rights to exercise the protection are transferred to the successor and the original right holder is no longer the owner of the invention, utility model or other IP object.

Industrial property objects could also be commercialized through business partnerships. This type of business partnership is implemented in the licensing of industrial property and the establishment of joint ventures and spin-off companies. [8]

5. Examples of Innovative Enterprises

There are various examples of innovative enterprises, both at the international level and on the territory of Bulgaria. The paper will focus on some of the Bulgarian innovative companies.

5.1. "I Rice Mechanics 357"

"I Rice Mechanics 357" is the creator of a robotic verticalizing aid for people with motor disabilities. "OMNIBOT is a robot created by a Bulgarian team that helps paralyzed people to stand up and move freely. "OMNIBOT" is a device designed for people with spinal disabilities and paralysis from the waist down who spend most of their daily life in a wheelchair. The robot allows safe and secure movement, upright body position and better accessibility to distant and elevated objects. [9]



5.2. “OS Implants”

"OS Implants is an enterprise that is revolutionizing the way bone disease is treated. It is developing a 3D printing platform for artificial bones to produce anatomical and surgical models for training undergraduate and postgraduate students. It produces customized implants for the specialized needs of humans and animals, designed according to patient specifics. [10]

5.3. “Musala Soft“

"Musala Soft is a leading software company with experience in building innovative enterprise software solutions for multinational companies and government institutions worldwide. The company's clients are challenging, innovative and trendsetting, dedicated to stability and growth, daring to implement new ideas and build the future. The company collaborates with leading technology vendors and "gold partners" IBM Premium Business Partner, Microsoft and Oracle. [11]

5.4. “Comrad Cooperative”

The company is the winner in the category "Social Innovation" for an innovative enterprise for 2018. The cooperative is engaged in the development of innovative software products based on blockchain and artificial intelligence. The association is building an infrastructure called “Wetonomy” to manage decentralized autonomous organizations on the blockchain through smart contracts, and is developing the Scynet platform to create and train artificial intelligence based on the blockchain.[12]

6. Conclusion

The protection of innovative products as objects of industrial property and in particular as inventions and utility models, as well as the creation of innovative industries is essential for business and for obtaining competitiveness of innovative companies. The protection of industrial property objects and their proper management, including the different ways of commercialising IP objects, contributes to obtaining profits, business development for companies and competitiveness for enterprises. The implementation of IP into a business offer has the significant aim to achieve economic benefits from the implemented innovations and/or business indicators and to receive future revenues. [13] The course "Innovation Industries and Intellectual Property" provides students with a wealth of knowledge and skills for the creation of innovative products, their protection as objects of industrial property, innovative enterprises, innovation industries and the way in which they have a positive impact on business, the development of companies and their competitiveness.

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