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## **«ЭКОНОМИКАЛЫҚ БЕЛГІСІЗДІК ЖАҒДАЙЫНДА ҚАРЖЫ-БАНК СЕКТОРЫН ДАМУДЫҢ ҚАЗІРГІ ЗАМАНҒЫ ҮРДІСТЕРІ»**

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Международной научно-практической конференции  
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## THE IMPORTANCE OF PATENTS IN ECONOMICS

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**Abstract.** Intellectual property is a fairly broad topic for economic studies, but quite specific to Law. This article examines the theoretical aspects of patents and how they interact with various innovation indicators. Patents are a type of intellectual property as well as an outcome of innovation. Patents did not previously play a role in measuring economic growth. However, today we see the importance of increasing patents, and strengthening the protection of the intellectual property is a necessary condition for the growth of innovation activity in the country.

**Keywords:** Patent, Innovation, Economic Growth, Kazakhstan

**Introduction.** We associate it with "invention" whenever we talk about a patent. Nevertheless, the concept of a patent involves not only an invention patent, but utility patents, design patents, and plant patents. It is a tremendous difference between the four objects of patenting. Design patents represent design, shape, etc. Plant patents are interconnected with new species of plant and animal varieties. An utility patent implies an improved version of a previously granted patent or an improved part of an existing invention. However, the utility model is not recognized by some country members of the Paris Convention. Therefore, an invention patent is the most common object of intellectual property after a trademark.

This article needs to clarify the role of patents in the economic cycle, how it communicates with innovation by R&D, and how it works in the world and in Kazakhstan. Through these questions, it opens the goals of the paper – to know the impact of the patent. This article includes a theoretical overview and statistical data for understanding the role of a patent in economics

What is an invention patent?

A patent for an invention is the inventor's exclusive right to commercial exploitation for a certain time under certain conditions in exchange for disclosure of information to the public. The patent document contains the following information: the name of the invention, the abstract and the full description of the invention; the name, address, and nationality of the inventor; the name, address, and nationality of the owner of the invention; the technological classes that the patent belongs to, references to previous patents, etc. [1]. Patenting has several negative aspects, for instance, the length of patent registration. Occasionally, it leads either to creating a patent family where one patent protects the next and can be considered a positive attribute. Unfortunately, a long registration period can adversely affect the technological chain from registration to the commissioning of the invention. Furthermore, not every invention can be patented [2]. In this case, firms use another tool – trade secrets.

A patent represents not only a part of intellectual property but also an important source of information in the scientific world. The patent citation contains knowledge about the last level of ingenuity in the world and the technical characteristics of the last technologies [3]. Precisely, Patent citation makes it possible to improve subsequent technologies or minimize time losses in scientific fields. Therefore, data concerning inventions and utility models are open sources for worldwide knowledge exchange. However, there is also an opposite opinion regarding the usefulness of patent information, namely that "patent disclosures play an important role in promoting R&D spillovers".

For the disclosure of information, the inventor or patent-holder receives the right of monopoly ownership of a patent or a group of patents for about 20 years, depending on the legislation of each country separately. There have been debates for many decades regarding the length of patent protection of invention

that led to a general opinion equated to two decades of patent protection for invention. It is also reflected in several legislative acts of countries, including the TRIPS agreement.

Talking about inventions and patents, society understands that some technologies require more time to develop a product or process. Thus, patent information is a technology planning tool. Specifically, patent indicators help to analyze competitors, plan the direction of R&D, track technological trends, and understand which technologies are improving and which are disappearing. Patent indicators help in managing and building a strategy for the development of the company's technological potential in the long term. Due to these data, the manager has the opportunity to read the age of the firm, the technological base, and the strengths and weaknesses of a particular company, to find out what firms have left the technological game and who are going to enter the market of the manager's company.

Balancing the private stimulus of the pioneer and public access to innovative fruits [4], the patent is also considered from the economic side. To determine the economic component of the patent itself, it is necessary to understand its scope. The scope of the patent is formed by the field of application of the patent. The larger field of application of a patent the more competing companies for the production of products or processes may violate it.

Patent data also has an impact on economic indicators. Significant works related to patent indicators as a measure, laid the foundation for the economic measurement of patents for inventions. Many scholars are divided in opinion regarding patent data. For example, Schmuckler (1966) believes that patent data is useless for measuring innovation. His empirical research shows a high correlation of patent data with the number of technology workers and R&D expenditures. A later study showed that the growth of patent activity leads to an increase in economic growth and labor productivity in a long-term relationship. The following patent indicators were used to measure innovation: inventive efficiency and productivity of inventions, priority patent applications filed by inventors of the country, and the number of patents per capita, etc.

Several scientists have studied the effect of temporary monopoly rights on an invention and its impact on innovation. The temporary restriction on the granted patent allows the patent holder to gain an advantage by blocking other innovative solutions under certain conditions. There have also been investigations regarding the use of patent data in the calculation of innovations. One of the studies tells about an innovation meter – patent success ratio that showed a strong connection with real GDP.

Another research related to the attribution of patent quality indicators to patent commercialization variables is based on the Swedish patent database. The process of patent prolongation and patent equivalent showed a positive relationship with the probability of innovation. While a Japanese study showed a negative correlation between patent equivalents and innovations. However, these researches have several limitations on the scope of patents owned by small firms and individuals. Additionally, the patent base consists of patents of large firms that create non-commercial patents to protect a group/family of patents. Moreover, many companies prefer to protect their technologies through secrecy/trade secrets.

An international rating board, which includes patent data indicators and others, is one of the most extensive studies of innovations. They show a good trend in measuring innovation over a certain period. Innovative indicators record the average value for the country. The main tools for country analysis of innovation activity are the Global Innovation Index, the European Innovation Scoreboard, the Technological Innovation Index, the Consolidated Innovation Index, and so on. They take different approaches to calculating innovation. In particular, the Global Invention Index uses more than 80 indicators when calculating innovations and has no territorial limitation., the European Innovation Scoreboard considers territorial identity, and uses a different methodology for counting innovations. At the same time, the EIS has included other types of intellectual property in the innovation dimension besides patents: trademarks and design registration after 2008.

Despite all these approaches, patent indicators are an underestimated source for calculating technological growth and play a secondary role in determining it. In recent decades, patent indicators have been actively involved in the calculation of innovations, showing how core economies or non-core economies indicators.

Patent interconnection with Research and Development.

The utility of patent and R&D indicators is always compared for calculating economic data or innovation, contrasting one with the other. In modern practice, scientists try to use these two indicators simultaneously for a more accurate calculation of innovation. This chapter will examine the impact of patents on R&D and vice versa.

Patent protection is a tool to encourage innovation in the form of a temporary monopoly right for the inventor. Temporary monopoly rights allow patent holders to increase profits by encouraging further investment in private R&D. In this case, patent protection allows the development of private R&D investments. Especially, it is true for biopharmaceuticals, where R&D costs represent not only the money spent, but also time, effort, and knowledge. Only one of the eight drug candidates stand up for clinical testing. Certainly, the company wants to feel confident in the monopoly distribution of a new drug through patenting. In the lack of exclusive technology protection, the company will not invest huge amounts of money in R&D. Thus, the further development of R&D in the biopharmaceutical field depends on patent power. Previously, empirical studies have established a close relationship between R&D expenditures and the number of patents. Especially, it concerns pharmaceutical research, where the level of R&D costs contributes to the rapid growth of new drugs [5]. Whereas pharmaceutical companies that spent less on R&D showed low results for new medicines. Moreover, recent studies show a high level of patenting among companies that pay attention to the development of fundamental and applied research. Thus, the contribution of R&D to the development of the patent is also significant.

Private investment in R&D is quite risky for companies, so in this case, are public expenditures on R&D Long-term strategic projects are often supported by state funds. The state stimulates innovation capacity through enterprises, universities, and public research institutes [36]. A way to increase patents for companies is to access university research [6]. Moreover, the orientation towards technological recombination strengthens the relationship between the university and firms, whereas ordinary research activity leads to a weakening (Soh and Subramanian, 2014).

R&D is a criterion for investments in innovation, and patents are a criterion for the outcome of innovation. Thus, the interaction of patents and R&D shows a strong connection with each other.

Patent System in Kazakhstan. During the independence of the Republic of Kazakhstan, more than 37,553 inventions, 4,558 utility models, 3,586 industrial designs, and 917 new varieties successes have been filed until 2019. These are elements of intellectual property that have a direct impact on Patent law and patenting. In this research, we have taken only patents on inventions as a basis. So, this part will mainly cover one of the largest parts, after trademarks, and patents for inventions.

Currently, the Kazakhstan Patent Office has received 973 innovation applications, including 811 from domestic applicants and 162 from foreign applicants. These numbers are 0.9% lower than the same indication in 2018. The proportion of domestic and international applicants was around 83% and 17%, respectively. In addition, 544 national applicants and 186 international applicants received patent protection paperwork for the invention in 2019. In 2019, the number of applications submitted under the Patent Cooperation Agreement (PCT) protocol increased by 38.9% over 2018, while the number of applications filed under the Eurasian Patent Convention (EAPC) procedure increased by 14.6%.

In terms of Kazakhstan's regions, the Almaty, Nur-Sultan, and Karaganda regions submitted the most patent applications at the end of 2019. 811 innovation applications were filed as part of national applications, with 466 receiving from legal companies and 345 from individuals.

Many factors influence this growth: more intensive development of researcher potential in big cities and Kazakhstan's largest region; large R&D budgets; high concentration of young people; easier access to new knowledge; conferences; seminars; international cooperation; more opportunities to find investors; and so on. According to the data, there is an unequal distribution of creative potential among areas, as well as a slowed rate of innovation development. Kazakhstan must aim for a balanced distribution of patent applications across the country. This means that regional universities, research institutions, commercial research organizations, and inventors should have financial and human resources available to create R&D and instruments to encourage creativity. It is also vital to research the experience of generating successful city inventions, taking into consideration regional characteristics, geographical location, population, and so on.

The distribution of applications for inventions by country of origin shows that the largest number of applications received were from applicants from the United States (15.4%), Russia (14.8%), and Switzerland (14.2%).

Invention patents were issued in 730 cases in 2019, down 6.2% from the previous year. The dynamics of issuing patents for inventions over the entire period of the patent office are 37,553. They were separated into national and international applicants in the calculation of protection documents for innovations – 544 and 186 in 2019. According to International Patent Classification, the distribution of documents of title granted for innovations in the IPC sections in 2019 were with the higher number of issued documents under sections A – "Human needs" (32.3%) and C - "Chemistry; Metallurgy" (21.5%).

**Conclusion.** Intellectual property is important as the source to study and monitor innovation activity and performance. The concept of the economic value of a patent is difficult to calculate unequivocally. When calculating the cost of a patent consider the importance of the patent market, the validity of the patent, the amount of the prior art, and the patent value (WIPO). However, the cost of a patent and the value that a patent contributes to innovative performance are different at the country level. Due to the limit of this paper size we recommend in future research focus on the impact of patents on economic growth through empirical results.

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