

CZU 341.215.2

DOI <https://doi.org/10.52388/2345-1971.2023.1.18>

ORGANIZAȚIILE INTERNAȚIONALE ȘI EVALUAREA PROPRIETĂȚII INTELECTUALE ÎN ECONOMIA MONDIALĂ

Vladlena LÎSENCO

Doctor în drept, cercetător științific, Universitatea de Studii Europene din Moldova,
Republica Moldova

e-mail: vlada.lisenco@gmail.com

<https://orcid.org/0000-0002-9846-2750>

Subiectul analizei prezentate este proprietatea intelectuală și rolul organizațiilor internaționale ca factor de influență a dezvoltării inovatoare a economiilor diferitelor state. Articolul notează dependența nivelului și calității creșterii economice de gradul de implicare în procesul de dezvoltare științifică și tehnologică. Partea principală conține diverși factori de dezvoltare inovatoare, rolul instituției proprietății intelectuale ca unul dintre factorii-cheie pentru funcționarea cu succes a sistemelor inovatoare la nivel macro și micro. Recunoașterea globală a proprietății intelectuale ca principal instrument de transformare inovatoare este confirmată de includerea indicatorilor de utilizare a proprietății intelectuale în principalii indici mondiali ai dezvoltării inovatoare. Articolul concluzionează că majoritatea inovațiilor se bazează pe proprietatea intelectuală.

Cuvinte-cheie: inovare, organizații internaționale, modernizare, comercializare a proprietății intelectuale, transformare a dreptului, piață digitală.

INTERNATIONAL ORGANIZATIONS AND VALUATION OF THE INTELLECTUAL PROPERTY IN THE WORLD ECONOMY

The subject of the presented analysis is intellectual property and role of international organizations as a factor influencing the innovative development of the economies in different states. The article notes the dependence of the level and quality of economic growth, the degree of involvement in the process of scientific and technological development. The main part contains different factors of innovative development, the role of the institute of intellectual property as one of the key factors for the successful functioning of the innovation macro- and micro-level systems. Global recognition of intellectual property as the main instrument of innovative transformation is confirmed by the inclusion of indicators use of intellectual property in the main world indices of innovative development. The article concludes that most innovations are based on intellectual property.

Keywords: innovation, international organizations, modernization, commercialization of intellectual property, transformation of law, digital market.

LES ORGANISATIONS INTERNATIONALES ET L'ÉVALUATION DE LA PROPRIÉTÉ INTELLECTUELLE DANS L'ÉCONOMIE MONDIALE

Le sujet de l'analyse présentée est la propriété intellectuelle et le rôle des organisations internationales en tant que facteur d'influence sur le développement innovant des économies des différents États. L'article note la dépendance du niveau et de la qualité de la croissance économique sur le degré d'implication dans le processus de développement scientifique et technologique. La partie principale contient divers facteurs de développement innovant, le rôle de l'institution de la propriété intellectuelle comme l'un des facteurs clés du bon fonctionnement des systèmes innovants aux niveaux macro et micro. La reconnaissance mondiale de la propriété intellectuelle en tant que principal outil de transformation innovante est confirmée par l'inclusion d'indicateurs de l'utilisation de la propriété intellectuelle dans

les principaux indices mondiaux de développement innovant. L'article conclut que la plupart des innovations sont basées sur la propriété intellectuelle.

Mots-clés: innovation, organisations internationales, modernisation, commercialisation de la propriété intellectuelle, transformation du droit, marché numérique.

МЕЖДУНАРОДНЫЕ ОРГАНИЗАЦИИ И ОЦЕНКА ИНТЕЛЛЕКТУАЛЬНОЙ СОБСТВЕННОСТИ В МИРОВОЙ ЭКОНОМИКЕ

Предметом представленного анализа стала интеллектуальная собственность и роль международных организаций как фактора, влияющего на инновационное развитие экономик разных государств. В статье отмечается зависимость уровня и качества экономического роста от степени вовлеченности в процесс научно-технического развития. Основная часть содержит разные факторы инновационного развития, роль института интеллектуальной собственности как одного из ключевых факторов успешного функционирования инновационных систем макро- и микроуровня. Мировое признание интеллектуальной собственности как основного инструмента инновационной трансформации подтверждается включением показателей использования интеллектуальной собственности в основные мировые индексы инновационного развития. В статье делается вывод о том, что большинство инноваций основано на интеллектуальной собственности.

Ключевые слова: инновации, международные организации, модернизация, коммерциализация интеллектуальной собственности, трансформация права, цифровой рынок.

Introduction

World experience proves that the sustainable long-term development of the economy of a single country depends not so much on its resource capabilities as on the ability to develop and implement innovations. Thanks to innovations, science becomes a direct productive force, and innovations in the form of intangible assets become the main capital of the economic development of the state. In this regard, it becomes important to study the institute of intellectual property, which is understood as a set of norms, relations, mechanisms and processes of formation and circulation of intellectual labor products. Within the framework of this institute, innovation is reproduced by turning the results of intellectual activity into objects of intellectual property. Its analysis involves the study of the sphere of intellectual activity and the creation of an intellectual product, which comes to the fore in the “new” innovative economy.

In the modern world, the “survival” of the state depends, in the broad sense of the word, mainly on ensuring its competitiveness [17].

In turn, competitiveness is impossible without maintaining the world level of scientific and technological progress. This means the need to maintain a constant and increasing flow of innovations (mainly technical), today this is called the term “innovation”. To a large extent, such innovations are nothing more than the results of intellectual activity.

In a general sense, innovation activity affects all scientific, technological, organizational, financial and commercial activities. This includes investments in new knowledge, which, in turn, lead to the emergence of innovations or innovative processes. It follows that innovations can be present in every area of human activity. They represent ideas implemented as a real product of intellectual activity and present in economic turnover. In modern conditions, the economic development of any country increasingly depends on the creation and effective use of high technologies, the introduction of fundamentally new technology and the widespread use of information resources. All this can be expressed in such a category as “innovation”. Innovation is a new phenomenon in various fields of human acti-

vity. Innovation means carrying out a number of measures leading to fundamental improvements in the field of production, management, education, social sphere and much more. The achievements of scientific and technological progress are an example of the greatest innovations of our time. Therefore, when forming national strategies for the innovative development of states, we are primarily talking about innovations in the field of production, i.e. technological innovations. Innovative achievements in the field of research and development are transferred to the business sphere. Thus, it can be argued that in all cases when intellectual property objects are created and used, we are dealing with innovations. In other words, most often innovations are objects of intellectual property applied in practice [18].

The concept of “intellectual property” was first used in 1967 by the Stockholm Convention in Sweden, which established WIPO (World Intellectual Property Organization). According to article 2 of the Convention, intellectual property includes: literary, artistic and scientific works; inventions in all spheres of human activity; trademarks, service marks, trade names and commercial designations; industrial designs; scientific discoveries; other objects of intellectual activity in the industrial, scientific, literary and artistic fields [1]. Intellectual property may include objects of copyright, related rights and industrial property protected by law. All types of intellectual property are united by the fact that they all relate to the results of creative activity.

Table 1

The relationship between intellectual and industrial property

Industrial property		
Intellectual property		Patent law; invention; utility model; industrial design
Copyright and related rights; works; objects of related rights	Means of individualization; trademarks; service marks; brand names	New objects of individual property; breeding achievements

Source: Elaborated by the author.

Industrial property was first used in the text of article 1 of the Paris Convention on the Protection of Industrial Property. Objects of industrial property protection: patents for inventions; utility models; industrial designs; trademarks; service marks; trade names; indication of origin or the name of the place of passage [2].

Intellectual property is not only a system of legal norms, but also a separate economic institution that has a very strong impact on the innovation process. The effectiveness of innovation creation depends on the degree of legal

protection of the results of intellectual activity. Increasingly, intellectual property objects – products of intellectual labor – are initially created precisely for successful functioning on the market.

Economics of Intellectual Property

The history of innovative development of leading countries in the middle of the XX - beginning of the XXI century gives many examples when the creation, modernization and accelerated development of national economies took place due to the large-scale use of the la-

test national and foreign results of intellectual activity that have legal protection. Thus, the restoration of the national economies of Japan, Germany, and other European countries destroyed as a result of World War II and the formation of new knowledge-intensive industries (electronics, nuclear and space industries, computer technology, information technology, and much more) took place not on the basis of existing technologies. It went primarily through the acquisition and development of advanced foreign technologies, as well as domestic developments. In the absence or acute shortage of material, technical and financial resources, scientific base and fierce competition in the markets of high-tech products, previously applied classical methods of gradual development of national innovative economies have become unacceptable for many countries. They faced the challenge of losing their former leading positions in the world economy.

The beginning of the existence of intellectual property (XVIII—XIX centuries) as an independent sector of the world economy is legitimately associated with the adoption during this period of national laws on privileges, patenting, copyright and related rights in leading countries and the conclusion of international agreements in this area.

Focusing on national goals in economic development, an increasing number of countries consider the sphere of intellectual property as an independent object of strategic planning. For the purposes of the study, the experience of implementing strategies in the field of intellectual research development of the leading countries of the WIPO rating, demonstrating stable growth in patent activity: the USA, China, Japan, Austria, India, was summarized. China's practice deserves special attention [9, p.27]. From 2012 to 2021, China rose from 34th place to 11th in the ranking of the Global Innovation Index, China became one of the innovative countries. The construction of

high-speed railways, 5G networks and much more occupies a leading position in the world, and major breakthroughs have been achieved in the field of manned space flights and Mars exploration. According to the International Monetary Fund, China's economy ranks second in the world in terms of GDP (\$13.407 trillion) [3].

The United States has adopted a strategic plan for the development of intellectual property for the period 2018-2022. Being the undisputed leader of patenting, the United States aims the following strategy to strengthen its position by improving legislation and the quality of service of the work of national patent offices. In addition, the need to improve the quality and timing of consideration of applications for inventions and trademarks was noted.

Singapore's ambitious strategic goals to create an IP Hub as the basis for the country's innovative development and ensuring the economy of the future are explained by the achievement of a sufficiently high level of innovation of the economy. In 2013, the Singapore government announced a 10-year plan to help the country become a global IP hub in Asia. The IP Hub Master Plan aims to use the opportunities presented by the expansion of activities at the international level to stimulate business and economic growth in Singapore [19].

Over the past decades, India has transformed from a backward third world country into a global locomotive of the digital economy. Today, many international companies see great opportunities in the local market. The Indian economy as a whole is free and highly competitive, especially against the background of other developing countries. Back in 2013, it was on the 142nd place in the ranking of ease of doing business, and by 2021 it moved to 63rd place, overtaking countries such as Greece and South Africa. The IT sector, which today is the main driving force of the national

economy. The total market size is \$191 billion and creates about 10% of GDP. India accounts for 55% of the global IT services outsourcing market. Many international companies began moving their offices here in the 1990s to save on labor. [3,21].

Global Innovation Index and Innovation clusters

Currently, a large number of international studies are conducted, according to the results of which various ratings are formed. These ratings evaluate the achievements of the countries of the world in certain areas of life. In the context of the generation and dissemination of protected knowledge, we can name such ratings as: KET (Knowledge Economy Index); GCI (Global Competitiveness Index); BCI (Business Competitiveness Index); GII (Global Innovation Index); HDI (Human Development Index); ISI (Information Society Index).

Within the framework of this work, it seems appropriate to include the Global Innovation Index, calculated according to the INSEAD International Business School [3], in the composition of indicators of innovation activity. The Global Innovation Index 2022 analyzes the latest global trends in innovation in the context of the ongoing COVID-19 pandemic, slowing labor productivity growth and other urgent challenges. Assessing the effectiveness of innovation activities of about 132 economies and noting their strengths and weaknesses in the relevant area, the authors identify the most advanced countries in the world in terms of innovation.

In 2022, for the twelfth time, Switzerland ranks first in the ranking of the most innovative countries and territories in the world, followed by the United States of America, Sweden, the United Kingdom and the Netherlands. China is getting closer to the top ten, and Turkey and India are among the top 40 leaders in terms of innovation development for the first time.

The secrets of the success of the economies of the world leaders of innovative development include the following components: the state strategy of innovative development through the intellectual property market; a centralized horizontal and vertical system of state administration of processes in the field of intellectual property in order to reduce administrative barriers to market development; uniform rules – standards for the formation, turnover (commercialization) and protection of intellectual property; trained staff of professional intermediaries in the field of law, economics and intellectual property management.

The Global Innovation Index 2022 lists the world's leading scientific and technological innovation clusters with the largest concentration of inventors and authors of scientific articles. Such clusters are often called centers of scientific and technical activity.

Table 2

Ranking of the countries of the world according to the innovation index (2022)

1	Switzerland	(1-st) place in 2021	11	China	(12)
2	USA	(3)	12	France	(11)
3	Sweden	(2)	13	Japan	(13)
4	United Kingdom	(4)	14	Hong Kong, China	(14)
5	Netherlands	(6)	15	Canada	(16)
6	Republic of Korea	(5)	16	Israel	(15)
7	Singapore	(8)	17	Austria	(18)
8	Germany	(10)	18	Estonia	(21)
9	Finland	(7)	19	Luxembourg	(23)
10	Denmark	(9)	20	Iceland	(17)

Source: [3].

In 2022, the Tokyo-Yokohama cluster became the world's leading scientific and technological cluster, followed by Shenzhen – Hong Kong – Guangzhou (China and Hong Kong,

China), Beijing (China), Seoul (South Korea) and San Jose –San Francisco (United States of America).

The engine of the global movement is the innovation clusters of the USA. Since the 1980s, the government has been actively working on creating programs designed for their education and development, one of them is the “Regional Cluster Initiative”. For this purpose, significant sums of money are allocated annually from the country’s budget.

In 2006, the European Union issued the “Manifesto of Clustering in the EU countries”, which makes it possible to increase the competitiveness of individual EU members and improve the position in the world markets of the Union as a whole. In high-tech Germany, federal cluster programs such as Bioregio are working, which stimulate cooperation between local enterprises and organizations in order to accelerate innovation processes. India is also known for its innovation clusters. There are 2000 units operating on the territory of the country. The biggest one’s work in IT, foundry and pharmaceutical industries [3,21,22].

Innovation clusters or innovation clusters are global economic “hot spots” where new technologies are developing at an amazing rate and where the pooling of capital, experience and talent contributes to the development of new industries and new ways of doing business. These are vibrant, bubbling ecosystems consisting of startups, businesses supporting the startup process, and mature businesses, many of which have developed rapidly. In these ecosystems, human resources, capital and know-how are smoothly mobile, and the speed of transactions is determined by the relentless pursuit of the possibility of phased financing and short business model cycles.

Innovation clusters, according to X. Ferras-Hernandez and P. Nylund, can be defined as “engines” of innovative development [20, p.55]. An innovation cluster is similar to the

generally accepted understanding of a business cluster, but somewhat different from it. In 1990, Michael Porter described business clusters as a geographical concentration of a critical mass of interconnected companies and institutions in a certain area. This clustering concept explains how areas specializing in a particular industry gain competitive advantages through economies of scale and reduced transaction costs. But he does not explain how highly innovative clusters can support the continuous emergence of fast-growing firms, some of which diverge from the initial concentration of business.

Innovation-oriented business clusters began to attract more and more attention in the 1990s. The term “innovation cluster” began to be used more widely, but it still lacked a separate definition.

Issues of formation and increasing attention is paid to the development of clusters in the world economy. The experience of foreign countries in this area shows a high effect from their creation, which is to increase the competitiveness of organizations and improving the well-being of the population based on the strengthening of innovative enterprise activity. The specifics of the functioning of innovative clusters that allow creating new technologies, carrying out deep technological modernization and innovative development of industry based on their own or borrowed technologies, as well as training personnel for work in a new industrial and technological formation are characterized by the presence of three components: the presence of fundamental practice-oriented science, innovative industry, developing education.

Research and Development (R&D) and protection of intellectual property rights

In the conditions of an innovative economy, achievements in the field of science, technology and innovation have become the determi-

ning factors of economic growth. Therefore, today the place of any country in the world economic system is determined by the knowledge-intensive economy of this country. Accordingly, countries with economies in transition will be able to successfully integrate into the system of world economic relations only if the knowledge intensity of their national economies increases. To fulfill this requirement, special attention within the framework of innovation policy should be paid to scientific and research developments, especially in the field of priority areas. In world practice, there is a steady increase in the volume of R&D financing. This trend is primarily determined by the leading countries of the world, where over the past 20 years absolute R&D expenditures have increased 2-3 times. The relative expenditures of the leading countries on R&D in the gross domestic product also show a positive trend.

The level of national spending on R&D is a relative value, which is calculated as the total amount of public and private spending on all types of research and development work during the calendar year, including government budgets at all levels, budgets of commercial organizations, grants and donations from private foundations and non-governmental organizations. The level of R&D spending is expressed as a percentage of gross domestic product (GDP). R&D is a set of activities aimed at obtaining new knowledge and its practical application to solve specific problems. It includes three main groups of activities: fundamental research; applied research; experimental design and technological developments. National spending on R&D is considered one of the key indicators of a country's scientific and technological development.

The indicator is calculated on the basis of data from national statistics and international organizations. The source of information is the database of the Institute of Statistics of

the United Nations Educational, Scientific and Cultural Organization (UNESCO), which is updated annually, but is delayed by an average of two years and does not cover all states, since many countries cannot provide annual statistics for this indicator [3,21].

More than 30 countries raised their research spending between 2014 and 2022. Although research expenditure rose in most regions between 2014 and 2020, 80% of countries still invest less than 1% of GDP in R&D. The G20 countries still account for nine-tenths of research expenditure, researchers, publications and patents. Following the Covid-19 pandemic, research spending as a share of GDP may see a mechanical rise as the GDP of many countries declines. It remains to be seen whether countries will maintain stable investment in research in monetary terms. [3,21,22].

Table 3

Level of expenditure on R&D in some countries of the world

Country	Expenditure on R&D (in % of GDP) by years		
	2013	2016	2020
Austria	2.95	3.13	3.2
Great Britain	1.64	1.68	1.72
Germany	2.82	2.92	3.1
Israel	4.09	4.51	5.4
India	0.71	0.67	0.65
China	2.0	2.12	2.19
Luxemburg	1.30	1.30	1.1
Norway	1.65	2.03	2.3
USA	2.71	2.76	3.5
France	2.24	2.22	2.4
Sweden	3.30	3.27	3.5
South Korea	4.15	4.23	4.81

Source: [23].

In the context of widespread globalization, one of the most difficult problems of the modern market is the protection of intellectual property rights.

The concept of intellectual property rights protection includes a whole range of issues,

such as the fight against intellectual piracy, ensuring the interests of free competition, problems of parallel import and much more.

Securing intellectual property rights is one of the main requirements of the Agreement on Trade-Related Aspects of Intellectual Property Rights (abbreviated TRIPS Agreement). The issues of intellectual property rights protection are also a priority for countries with economies in transition. In most of these countries, there are industries related to innovation and creativity that benefit from effective protection of intellectual property rights [14].

Experts note a significant increase in the number of copyright violations on the Internet. It should be noted here that in the conditions of the information society, the issues of protection of intellectual property rights and, first of all, copyright in the digital environment have grown into a huge problem. This problem urgently requires independent research and, based on them, the adoption of separate documents at the international level.

As is known in world practice, there are different approaches to solving this problem. In some countries, special courts for intellectual property rights have been established, in other countries, issues are considered in courts of general jurisdiction. Specialized courts, for example, in the field of intellectual property operate in the following states: Belarus, Hungary, Greece, Russia, Slovakia, Turkey, Czech Republic, Romania. In a number of other countries, special judicial boards have been established as part of the courts, for example, in Ukraine, in the system of economic courts there are specialized courts on intellectual property issues and a specialized Panel of judges in the Supreme Economic Court.

Customs authorities are an important link in the general system of intellectual property rights protection. The Customs Register of Intellectual Property Objects, which has been

created in many countries, is a modern tool for combating intellectual piracy.

Intellectual property objects and artificial intelligence technologies

The rapid development and widespread use of artificial intelligence technology raises a number of questions, including whether artificial intelligence can create intellectual property objects. There are still numerous discussions about the legal consequences of using such technologies in the world [16].

The World Intellectual Property Organization, as an international organization, emphasizes the relevance of the question of where the line should be drawn between human and machine creativity, that is, what should be the amount of contribution or the degree of human participation so that the result of labor belongs to the first or second category mentioned above.

The experience of Great Britain seems to be an interesting experience in regulating relations in the field of intellectual property implemented using artificial intelligence.

In accordance with the existing patent legislation of the United Kingdom, only an individual (that is, a person) can and should be indicated as an “inventor” in a patent application (Article 7 of the UK Patent Law 1977 3). This rule has recently been reflected in various decisions concerning patent applications for inventions created using an artificial intelligence system called DABUS [15].

In the USA, there is a separate approach to copyright objects created by artificial intelligence technology. As a rule, two main conditions are required to grant copyright. Firstly, the work must be in a tangible form, and secondly, it must be original. Since one of the modern fields of application of artificial intelligence is the creation of literary and artistic works, the study of copyright in the context of artificial intelligence is an urgent area of legal scien-

ce and practice in the United States. Understanding the main problems in this context is possible by analyzing the oldest fundamental precedents: *Burrow Gilles Lithographic Co. v. Saroni* [11, p.76], *Bleistein v. Donaldson's lithograph* [12, p.23], *Alfred Bell & Co. against Catalda's fine Arts* [10].

As for the actual American approach to copyright objects, in the creation of which a person did not directly participate, the approach still prevails in the law enforcement practice of the competent authorities of the United States [13].

In the context of the analysis of regulatory approaches to the regulation of relations using artificial intelligence technology, the experience of the European Union as an example of the unification of norms at the regional level is noteworthy. Currently, the EU is increasing investments in the development of artificial intelligence technologies, expanding the scope of its application everywhere.

Considering the question of whether exclusive rights to copyright objects created by artificial intelligence are recognized, we turn to Article 2 of Directive 2009/24/EC of April 23, 2009 “On the legal protection of computer programs” [4], as well as Article 4 of Directive 96/9/EC of the European Parliament and of the Council of March 11, 1996. “On the legal protection of databases” [5], in which an individual or a group of individuals who created the object is indicated as the author, implying the human factor.

In October 2020, the European Parliament adopted three important documents regulating various spheres of relations within the framework of the functioning of artificial intelligence technology: Resolution of October 20, 2020 “Ethical principles in the field of artificial intelligence, robotics and related technologies”, dedicated to ethical approaches in the field of regulating relations related to the implementation of artificial intelligence tech-

nologies; Resolution from October 20, 2020 “The regime of civil liability arising from the use of artificial intelligence technology”, dedicated to civil liability for damage caused by artificial intelligence technology, as well as considering the issue of intellectual rights to works created directly by artificial intelligence or with the help of it; Resolution of October 20, 2020 “On Intellectual Rights in the development of artificial Intelligence technologies”, which contains approaches to regulating attitudes in the context of the relationship between artificial intelligence and intellectual rights.

The European Parliament also enshrined in the above resolutions the concept of an artificial intelligence system (paragraph “a” of Article 4 of the Regulations, the text of which is contained in the Resolution of October 20, 2020 “Ethical principles in the field of artificial intelligence, robotics and related technologies”, as well as paragraph “a” of Article 3 of the Regulations, the text of which is contained in the Resolution dated October 20, 2020, “The regime of civil liability arising from the use of artificial intelligence technology”)[6,7,8].

Conclusions

In modern conditions, the practical application and wide dissemination of the results of scientific, technical and research activities, formalized in the form of objects of intellectual property, is a necessary factor in the economic development of any country. The relevance of innovative activity has now increased significantly and determines the position of the countries on the economic and political map of the world.

In modern society, achievements in the field of science and technology have begun to determine the dynamics of economic growth of states, the level of competitiveness of products and services, the degree of integration into the world economy. World experience shows that there is no other way of development for a

knowledge-based economy other than innovation. The main factors in the growth of production, employment, investment, and foreign trade turnover are the creation, introduction and widespread dissemination of new products, services, and technological processes.

Science and high technology are international in nature, although the contribution of each country to the global scientific potential is unique in its own way. Today, big science from the state positions of the leading countries of the world is considered in the system "science - innovations - real economy". In civilized market conditions, the main engine in moving along this chain is intellectual property, its protection, regulation of the transfer of rights and commercialization.

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