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Intellectual property in construction

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The article considers the economic approach to the assessment of intellectual property rights. The place and role of intellectual property in the activities of construction entities are described. The purpose of the article is a comprehensive analysis of the place and role of intellectual property in the concept of economic sustainability of construction companies, as well as identifying the most important areas and practical measures to intensify the use of intellectual property in their activities. Achieving the goal was solved by methods of theoretical research on intellectual property issues of the construction industry; research of innovations in the field of theory and practice of construction production.

Key words: construction, intellectual property, intangible assets

Інтелектуальна власність в будівництві

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У статті розглянуто економічний підхід оцінки прав на інтелектуальну власність, який визначається конкретними комерційними інтересами суб'єктів ринкової економіки. Доведено, що покупець, купуючи права власності на результати інтелектуальної діяльності, повинен, перш за все, виходити з власних конкретних можливостей використання цих результатів з прибутком. Підтверджено, що в даний час ключовим фактором розвитку економіки є інтелектуальні ресурси - знання та інформація. Проведено аналіз існуючих класифікацій складових інтелектуальної власності будівництва. Розкрито основні підходи до визначення поняття «інтелектуальна власність». Описано місце та роль інтелектуальної власності у діяльності суб'єктів будівництва. Мета статті полягала в комплексному аналізі місця і ролі інтелектуальної власності в концепції економічної стійкості будівельних підприємств, а також виявлення найважливіших напрямків і практичних заходів щодо активізації процесів використання інтелектуальної власності в їх діяльності. Досягнення мети вирішувалося методами теоретичних досліджень щодо питань інтелектуальної власності будівельної сфери; дослідженням інновацій в області теорії і практики будівельного виробництва. Процес затвердження інтелектуальної власності в українському правовому полі і на ринку - дуже складний і суперечливий процес, особливо якщо мова йде про будівництво, де основним джерелом прибутку є матеріальне виробництво, а не інші дії з якими б то не було об'єктами інтелектуальної власності. Для підвищення ефективності будівельного виробництва в перспективі, для поліпшення економічних показників діяльності будівельних підприємств і для досягнення максимального прибутку, необхідно вишукувати нові джерела, якими можуть і повинні стати об'єкти інтелектуальної власності та права користування ними.

Ключові слова: будівництво, інтелектуальна власність, нематеріальні активи



Introduction

In the context of the economic development of the country or its individual industries, the scale and quality level of intellectual property become the most important indicators of the durability of market positions both at the state level and at the regional level and at the level of individual enterprises and organizations.

Intellectual property as a new phenomenon requires qualitatively different views and approaches than developed in the previous historical and economic period. It is possible that in today's conditions, unfamiliar innovative thinking has not fitted into the usual, traditional concepts and schemes yet.

The solution to this problem requires multilateral research, first of all, a theoretical understanding of economic and legal concepts and categories of intellectual property, as well as practical developments in the field of commercial and economic use of intellectual property in order to increase the profitability of construction enterprises.

Review of research sources and publications

Economics has made a significant contribution to the study of intellectual problems in the days of command-and-control principles of management, but from the point of view of political economy. A significant place in the development of these problems belongs to such scientists as Anchishkin A., Elmeev V., Shcherbakov A., Shishkov G., Voychinsky A., Yudelevich M., Zavlin P. and others.

Research in this direction was carried out in the works of Kekukh B., Kolyada N., Korchagin A., Kozyrev A., Nikonov A., Novoseltsev O., Oleynikov S., Orekhov A., Polyakova S., Yakutin Y., Yurieva T. and others.

Definition of unsolved aspects of the problem

In our opinion, in the modern economic literature there are not enough publications devoted to the definition of the place of intellectual property in enterprises in the implementation of the concept of its commercial and domestic use. There is almost no work on the issues of alternative use of intellectual property in the activities of construction companies in order to increase profitability and profitability indicators.

Objective of the work and research methods

The purpose of the article is a comprehensive analysis of the place and role of intellectual property in the concept of economic sustainability of construction enterprises, as well as identifying the most important directions and practical measures to enhance the use of intellectual property in their activities.

The goal was achieved by the following methods:

- theoretical research on intellectual property in the construction sector;
- research of innovations in the field of theory and practice of construction production.

Basic material and results

Intellectual property is the result of the intellectual, creative activity of one person (author, performer, inventor, etc.) or several people [1].

Intellectual property in the system of economic activity acquires the status of intangible assets. It accompanies investment and innovation activities. Objects of intellectual property rights in economic activity are assets that have the appropriate characteristics, and, above all, the price (value). Their use should be considered from the standpoint of economics, investment, pricing, and accounting.

All over the world, the processes of incorporation of intellectual property into economic circulation have been going very rapidly lately. In fact, we are talking about unaccounted funds of enterprises. On the one hand, they are not taxed, and it becomes possible to dispose of property without the consent of the owner, and on the other hand, an enterprise that does not amortize its intellectual property overpays income taxes. Therefore, the corresponding development funds are not formed. Moreover, it thereby unwittingly refuses the additional income received as a result of the transfer of rights to use intellectual property objects on the basis of licensing agreements and other transactions. Therefore, the belief in the uselessness of including intellectual property objects in the property complex of an enterprise is today a serious mistake. In addition, if an enterprise uses an intellectual property object in its activities, then, according to the legislation, it must be reflected in the enterprise's reporting documents. Otherwise, the use of this intellectual property object is considered illegal [11, 15].

Today, one of the decisive conditions for the development of the construction market and the growth of construction production is the ever-expanding range of technological processes, which is based on a great variety of modern building materials and means of mechanization.

The steady trend of improving existing and creating new technologies is characterized by a focus on achieving the requirements of creating competitive products. The release of such products can be customized only on the basis of the latest technological solutions and with the use of intellectual property objects.

In the scientific literature, there are significant differences in approaches to the composition of intellectual property objects. Nowadays, there is no unified system in the formation of intellectual property objects, which negatively affects not only the practice of their use in the activities of individuals and legal entities, including in not only the assessment of business, but also in understanding the possibilities of protection, including from unfair competition [13].

We have identified the most acceptable and most frequently used objects of intellectual property in construction (Fig. 1):

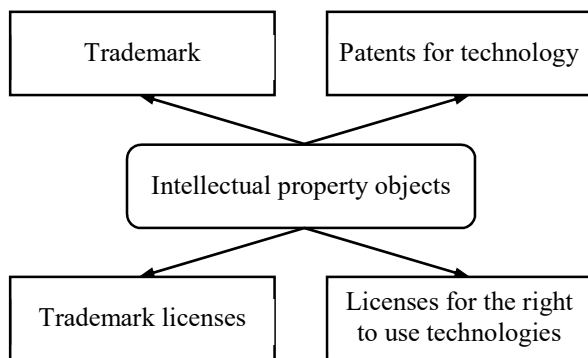


Figure 1 – Objects of intellectual property in construction

The acquisition of intangible assets is carried out under a license agreement on the transfer of rights to use the subject of the license and the relevant conditions specified in the license agreement. Trading in licenses is the implementation of trade agreements under which the seller (licensor) grants the buyer (licensee) the right (license) to use an intangible asset (subject of the license) on the terms of the license agreement, as well as to carry out operations in the secondary market for intangible assets.

It should be borne in mind when assessing the value of objects of intellectual property rights, only valid titles of protection (patents, certificates, etc.) and license agreements (contracts) are taken into account, considering the annexes to them, which determine the value of such objects [3].

We came to the conclusion that the decision on the advisability of creating and introducing intellectual property objects into the production and economic activities of construction enterprises should be made on the basis of the economic effect, determined in accordance with the annual production of construction products.

We believe that it is necessary and sufficient for construction companies to calculate the effect of the use of new technology on the following three options:

- calculation of the annual economic effect from the use of new technology;
- calculation of the annual economic effect from the introduction of new technology based on the rationalization proposal;
- determination of the profit received from the use of new technology in the production process.

If we are talking about the trademark of the enterprise, in this case a simple analysis of the cash flows of revenue and profits obtained using this trademark is sufficient.

The inclusion of intellectual capital in the economic circulation depends on the goals pursued by each enterprise:

- if the enterprise needs to generate a significant amount of authorized capital without diversion of funds, it is necessary to use the first case (contribution to the authorized capital);

- if the company plans to obtain a loan, loan, loan and it needs to increase profitability, profitability and efficiency, you should use the second case (voluntary conveyance);

- if the main task of the enterprise is to put on the balance of intellectual property with the subsequent receipt of income from the sale of licenses for the right to use these objects to other individuals or legal entities, then the enterprise puts the intellectual property on the balance sheet at cost (as an object created within the enterprise itself) [12].

Legal regulation of intellectual property is an important area of development of the Ukraine legal system in modern conditions. Intellectual property is a new phenomenon of public life. And the future of the country largely depends on how it will develop, including what its legal support and legal status of a creative person will be.

The construction process begins with design. Often, during the implementation of development projects between customers and developers of the construction project, there are disputes concerning the observance and protection of copyright. Sometimes customers violate the rights of the developer of an architectural project, illegally using or otherwise violating the rights of the author, and sometimes, on the contrary, the authors abuse their position, demanding that customers pay additional fees. Such issues can be avoided with a proper elaboration of the terms of the project development contract [14,16].

Architectural activity is a complex conglomeration of numerous processes, including the creation of an architectural project, the development of design, and working documentation, the ultimate goal of which is to create an architectural object in the form of buildings, structures, etc. However, only some of these processes are subject to legal protection of copyright. Judicial and arbitration practice clarified that the object of legal protection is not all project documentation on the creation of a real estate object, but only its architectural part, as the embodiment of the author's creative idea [2].

There is a state system for the legal protection of intellectual property.

A system is a set of elements that have characteristic features, parameters, and spatial structure that ensure the achievement of a single revenge or function. The structure of the system can be represented as a graph. The subsystem in turn can be a system that consists of a set of its elements (Fig. 2).



Figure 2. The state system structure of intellectual property legal protection [4]

The analysis of Western experience in the valuation of intangible assets showed that a promising direction for assessing the business of companies is a concept based on the use of the theory of the optimal portfolio of exclusive rights. It is the assessment of the entire set of intellectual property of companies, and not of individual objects linked into a single optimal portfolio, that will make it possible to effectively use intangible assets to manage business in a company, as well as to control more significant shares of world technology markets.

Modern business actually has three types of capital: financial, physical and intellectual. Each of the three capitals is often divided into equity and debt. It is interesting to note that not only money, but also tangible and intangible assets and even temporary personnel can be used as a loan.

First of all, in the management system of the enterprise, where the dominant role is given to intellectual capital, the priorities change in favor of working with staff to find new valuable ideas and increase intellectual advantages over competitors. In this case, the legal protection of creative results is mandatory to avoid large losses in the future.

In the creative potential of enterprise employees it is necessary to take into account the following characteristics that determine the level of intellectual capital:

- 1) the degree of business reputation of the organization;
- 2) qualification and experience of the company's employees;
- 3) regular development and introduction of new achievements of science and technology into production;
- 4) release of original products that are in demand on the commodity market;
- 5) the presence in the organization of a structural unit, the main functions of which should be innovation [8].

Intellectual capital should be understood as accumulated by saving and effectively organizing a fund of economic benefits in the form of intellectual advantages that can be converted into money and capital goods. Intellectual capital is attracted to the economic and commercial turnover by its owners as the most important investment resource and factor of production in order to obtain super-profits.

Its use is based on the principles of market relations and is associated with factors of time, risk, liquidity and payback.

It is intellectual capital that sets the pace and nature of the renewal of production technologies and their products, which then become the main competitive advantage in the market. Intellectual capital is not just good brains and, as a result, good technical and organizational solutions.

This is, first of all, a system of capital sustainable intellectual advantages of a given company or firm in the market. It is one thing to have these advantages, and another thing to know how to use them.

Intellectual capital is an intangible asset (IA) of an enterprise that:

- has no physical substance;
- manifests itself by its economic properties;
- gives rights and privileges to their owner;
- generates income for their owner [7].

In the construction industry, the following main types of work and activities can be classified as intellectual capital in general:

- formation of plans for investment programs and local decisions;
- all stages of investment activity;
- organization of research and design work;
- analysis of the results of topography and geological exploration;
- all types of design and engineering work;
- optimization of design solutions;
- development of organizational and technological solutions for construction;
- organization of material and technical support;
- logistics of transport and supply operations;
- creation of new materials;
- development of new designs and calculation methods [9].

To substantiate plans for capital investments in construction, it is necessary to perform a large amount of various intellectual and creative works, the material return of which can manifest itself only after a significant period of time and only after the practical implementation of the plan.

It should be noted that at all stages of construction activities there is intellectual capital, the value of which, depending on the cost of a particular stage, can be roughly presented as shown in table 1.

Since the costs of the stages are usually known (estimates, bank documents, etc.), it is not difficult to determine the price of intellectual capital as part of a work stage. A more difficult task is to determine dividends for creators of intellectual capital, which may arise during the implementation of the project and after the start of operation of the construction facility. Usually the

revenue part from the sale of construction projects, in contrast to industrial goods, arises after many years.

Complex construction projects can be put into operation for many years (gas and oil pipelines, residential areas, seaports, highways, railways, etc.). Therefore, the economic and construction sciences need to develop methods for calculating the cost of intellectual capital for the main stages and varieties of ways to implement investments in construction.

To use the results of intellectual activity in its activities, the enterprise must have special rights that differ significantly from property rights to tangible objects.

Table 1 – The importance of intellectual capital in the main stages of construction [6]

Names of stages of works	Share of intellectual costs, %	Share of associated costs (business trips, equipment)
1. Development of investment programs and validity of construction plans	70	30
2. Organization of research and design work, data processing of topology and geological exploration, construction optimization	60	40
3. Design work and optimization of design solutions	90	10
4. Development of organizational and technological solutions for construction	95	5
5. Organization of material and technical support, logistics of transport and supply operations	50	50
6. Development of new materials, structures and calculation methods	60	40

The monopoly on the use of the obtained results of intellectual activity in legal terminology is called the exclusive right and means that no one has the right to use an intangible object without the permission of the owner.

For the successful implementation of the innovation process, an adequate organization of intellectual property management is required, including a mechanism for the creation and further commercialization of intellectual property.

For the effective development of international exchange of technologies in the construction sector, appropriate conditions are needed:

- legal (protection of intellectual property in a foreign state);
- financial (lending, insurance, improving the efficiency of financial settlement schemes);

- institutional (the presence of international organizations regulating the international exchange of production technologies);

- innovative (improvement of existing technologies and their subsequent transfer) [10].

The trends in the development of intellectual resources in leading Western firms are associated with the following key points:

- continuous development and implementation of new strategies for personnel training in order to deepen the intellectualization of labor;

- development of the creative abilities of the individual on the basis of a continuous increase in investment in human capital;

- expansion of the practice of software cooperation of companies in the form of joint laboratories or inter-firm scientific and technical centers, illustrated by the positive dynamics of indicators such as the number of joint patents; growth in the scale of corporate patenting and licensing, including and general on the basis of cooperative interaction: in the field of innovation;

- development of effective strategies [4].

The main problem in the field of intellectual property is ensuring that the rights of the copyright holder are respected.

Many countries of the world have managed to achieve this, and as for Ukraine, we still need to learn a lot from other developed countries. We have not created such conditions. This, of course, damages the country's business reputation and undermines its credibility, not only economically, but also politically. Therefore, the state should pay special attention to this problem and take effective measures to combat infringers of intellectual property rights, in particular in the construction sector.

Conclusions

The modern model of the system integrated innovation process, the diversity of intellectual products necessitate the development of intellectual property relations and the improvement of their legal regulation.

Today, the problems of economic development and increasing the profits of construction companies through the involvement, expert evaluation, legal consolidation and use in the turnover of intellectual property are relevant.

The perception of intellectual property as one of the most important categories for Ukraine has not yet taken place, that is, it has not become the norm. The process of approval of intellectual property in the Ukrainian legal field and in the market is a very complex and controversial process, especially when it comes to construction, where the main source of income is material production and no other actions with any intellectual property.

To increase the efficiency of construction production in the future, to improve the economic performance of construction enterprises and to achieve maximum profit, it is necessary to seek new sources, which can and should become objects of intellectual property and the right to use them.

References

1. Вікіпедія [Електронний ресурс]. Режим доступу: <https://uk.wikipedia.org/wiki/>
2. Еннан Р. (2011). Права на результати інтелектуальної діяльності: зміст та сутність. *Теорія і практика інтелектуальної власності*, 6, 10-15
3. *Інтелектуальна власність в Україні: Проблеми теорії і практики* (2002). Київ: Інститут держави і права ім. В. М. Корецького
4. Підпригора О.А., Бутнін-Сіверський О.Б., Дроб'язко В.С. (2004). *Право інтелектуальної власності*. Київ: Видавничий Дім "Ін Юре"
5. Arbor A. (1996). *Technological competitiveness of Japanese multinationals*. Michigan University Press
6. Chandler A., Solvele J. (1998). *The Dynamic firm. The role of technology strategy organization and regions*. Oxford
7. May C. (2000). *The Global Political Economy of Intellectual Property Rights: The New Enclosures?* Routledge
8. Мэггс П.Б. (2000). *Интеллектуальная собственность*. Москва: Юрист
9. Рейли Р., Швайс Р. (2005). *Оценка нематериальных активов*. Москва: Квинто Консалтинг
10. Rodov I., Leliart Ph. (2002). FIMIAM: financial method of intangible assets measurement. *Journal of Intellectual Capital*, 3, 323-336
11. *Medium Term Strategic Plan for WIPO* (2010). A/48/3. [Електронний ресурс]. Режим доступу: <http://www.wipo.int>
12. *Unified Patent Court*. [Електронний ресурс]. Режим доступу: <https://www.unified-patent-court.org>
13. *GNU Lesser General Public License / Free Software Foundation*. URL: <http://www.gnu.org/licenses/lgpl.html>
14. Qian Y. (2007). Do National Patent Laws Stimulate Domestic Innovation in a Global Patenting Environment? A Cross-Country Analysis of Pharmaceutical Patent Protection, 1978-2002. *The Review of Economics and Statistics*, 89(3), 436-453
<http://dx.doi.org/10.1162/rest.89.3.436>
15. *Global Leadership Forecast 2018. 25 Research Insights to Fuel Your People Strategy. Development Dimensions International* (2018). [Електронний ресурс]. Режим доступу: <https://www.ddiworld.com>
16. *World Intellectual Property Indicators 2018* (2018). [Електрон. ресурс]. Режим доступу: <http://www.wipo.int>
17. Granstrand O. (2010). *Industrial Innovation Economics and Intellectual Property*. Gothenburg: Svenska Kulturkompaniet
1. Wikipedia [Electronic resource]. Access mode: <https://uk.wikipedia.org/wiki/>
2. Ennan R. (2011). Rights to the results of intellectual activity: content and essence. *Theory and practice of intellectual property*, 6, 10-15
3. *Intellectual property in Ukraine: Problems of theory and practice*. (2002). Kyiv : Institute of State and Law V.M. Koretsky
4. Pidoprygora O., Butnin-Siversky O., Drobiazko V. (2004). *Intellectual Property Law*. Kyiv: Publishing House "In Jure"
5. Arbor A. (1996). *Technological competitiveness of Japanese multinationals*. Michigan University Press
- Chandler A. Solvele J. *The Dynamic firm. The role of technology strategy organization and regions*. Oxford, 1998. – 469 pp.
7. May C. (2000). *The Global Political Economy of Intellectual Property Rights: The New Enclosures?* Routledge
8. Meggs P.B. (2000). *Intellectual property*. Moscow: Jurist
9. Reilly R., Schweiss R. (2005). *Valuation of intangible assets*. Moscow: Quinto Consulting
10. Rodov I., Leliart Ph. (2002). FIMIAM: financial method of intangible assets measurement. *Journal of Intellectual Capital*, 3, 323-336
11. *Medium Term Strategic Plan for WIPO* (2010). A/48/3 [Electronic resource]. Access mode: <http://www.wipo.int>
12. *Unified Patent Court*. [Electronic resource]. Access mode: <https://www.unified-patent-court.org>
13. *GNU Lesser General Public License / Free Software Foundation*. URL: <http://www.gnu.org/licenses/lgpl.html>
14. Qian Y. (2007). Do National Patent Laws Stimulate Domestic Innovation in a Global Patenting Environment? A Cross-Country Analysis of Pharmaceutical Patent Protection, 1978-2002. *The Review of Economics and Statistics*, 89(3), 436-453
<http://dx.doi.org/10.1162/rest.89.3.436>
15. *Global Leadership Forecast 2018. 25 Research Insights to Fuel Your People Strategy. Development Dimensions International* (2018). [Electronic resource]. Access mode: <https://www.ddiworld.com>
16. *World Intellectual Property Indicators 2018* (2018). [Electronic resource]. Access mode: <http://www.wipo.int>
17. Granstrand O. (2010). *Industrial Innovation Economics and Intellectual Property*. Gothenburg: Svenska Kulturkompaniet