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## **INTERPRETATION OF FINANCIAL ASPECTS OF INTELLECTUAL PROPERTY COMMERCIALIZATION AS AN INNOVATIVE PRODUCT**

**Abstract.** Establishing a mechanism for commercialization of the results of scientific and technical activities created at the expense of budgetary funds or funds of individuals and legal entities, ensuring its functioning and attracting intellectual property to the economic turnover can ensure a significant increase in additional revenues to the budget and facilitate the expansion of innovative processes in the country. Intellectual property contains the notion of exclusive right to the results of creative work; accordingly, labor, as appropriate human activity, must end with remuneration, including financial ones. It is proposed to distinguish the specifics of the financial aspects of intellectual property from a number of differential characteristics of the subject of study in two directions, depending on the understanding of the product movement: the aspect of financial security, which heads the specificity of forms, approaches, sources of funding for research (as one of the conditions for the creation of intellectual property) the commercialization of intellectual property as an effective indicator of understanding the meaning of creating an innovative product. The dynamics of gross domestic expenditure on research, as a share of gross domestic product, in the countries that are members of the Organization for Economic Cooperation and Development (OECD) and separately in 28 countries of the European Union have been analyzed. A typology of existing forms of intellectual property commercialization as a range of innovative product realization opportunities for economic benefit has been developed. The process of intellectual property commercialization is modeled, in the form of a generalized visualization of its movement to an innovative product, which involves four successive steps (the path to the market), choosing one of the forms of commercialization typology that provides the maximum possible variability for choosing the optimal strategy.

**Keywords:** intellectual property, commercialization, financial support, innovation, market.

Formulas: 0; fig.: 1; tabl.: 4; bibl.: 10.

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## **ТРАКТУВАННЯ ФІНАНСОВИХ АСПЕКТІВ КОМЕРЦІАЛІЗАЦІЇ ІНТЕЛЕКТУАЛЬНОЇ ВЛАСНОСТІ ЯК ІННОВАЦІЙНОГО ПРОДУКТУ**

**Анотація.** Побудова механізму комерціалізації результатів науково-технічної діяльності, створених за рахунок бюджетних коштів або коштів фізичних та юридичних осіб, забезпечення його функціонування і залучення об'єктів інтелектуальної власності до господарського обороту може забезпечити істотне зростання додаткових надходжень до бюджетів та сприяти розширенню інноваційних процесів у країні. Інтелектуальна власність несе поняття виключного права на результати творчої праці, відповідно праця, як доцільна діяльність людини, повинна закінчуватися винагородою, фінансовою в тому числі. Запропоновано специфіку фінансових аспектів інтелектуальної власності виокремлювати з ряду диференційних характеристик предмета дослідження у два напрями, залежно від розуміння руху продукту: аспект фінансового забезпечення, який очолює специфіку форм, підходи, джерела фінансування наукових досліджень (як однієї з умов створення інтелектуальної власності) та аспект фінансової комерціалізації інтелектуальної власності як результативного індикатора розуміння сенсу створення інноваційного продукту. Аналітично досліджено динаміку валових внутрішніх витрат на наукові дослідження як частку валового внутрішнього продукту у країнах, які є членами Організації економічного співробітництва та розвитку (OECD), та окремо у 28 країнах Європейського Союзу. Розроблено типологію наявних форм комерціалізації інтелектуальної власності як коло можливостей реалізації інноваційного продукту з метою отримання економічної вигоди. Змодельовано процес реалізації комерціалізації інтелектуальної власності шляхом узагальненої візуалізації її руху до інноваційного продукту, що припускає чотири послідовні кроки (шлях до ринку), обираючи одну з форм типології комерціалізації, яка надає максимально можливу варіативність для вибору оптимальної стратегії.

**Ключові слова:** інтелектуальна власність, комерціалізація, фінансове забезпечення, інновація, ринок.

Формул: 0; рис.: 1; табл.: 4; бібл.: 10.

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## **ТРАКТОВКА ФИНАНСОВЫХ АСПЕКТОВ КОММЕРЦИАЛИЗАЦИИ ИНТЕЛЛЕКТУАЛЬНОЙ СОБСТВЕННОСТИ КАК ИННОВАЦИОННОГО ПРОДУКТА**

**Аннотация.** Аналитически исследована динамика валовых внутренних затрат на научные исследования как долю валового внутреннего продукта в странах, которые являются членами Организации экономического сотрудничества и развития (ОЭСД), и отдельно в 28 странах Европейского Союза. Разработана типология существующих форм коммерциализации интеллектуальной собственности как круг возможностей реализации инновационного продукта с целью получения экономической выгоды. Смоделирован процесс реализации коммерциализации интеллектуальной собственности в виде обобщенной визуализации ее движения до инновационного продукта, что предполагает четыре последовательных шага (путь к рынку), выбирая одну из форм типологии коммерциализации, которая предоставляет максимально возможную вариативность для выбора оптимальной стратегии.

**Ключевые слова:** интеллектуальная собственность, коммерциализация, финансовое обеспечение, инновации, рынок.

Формул: 0; рис.: 1; табл.: 4; библи.: 10.

**Introduction.** The challenges of the rapidly evolving globalization space, the global competition in the field of high technologies, necessitate the reorientation of the innovative product management system to actively attract the results of intellectual activity to the economic circulation. Domestic enterprises are far from fully utilizing this competitive advantage, which is manifested in a small proportion of commercialization of high-tech products. Intellectual property must form the basis of a country's national wealth, determine its economic positioning in a number of other countries, and provide conditions for stable economic development.

**Research analysis and assignment.** S. Kinsella [1], I. Shushakova [2], I. Plikus [3] devoted their research to intellectual property valuation and commercialization. The writings of J. Romary [4], J. Schrire [5] and others set out the methodological foundations for managing market processes

for the use of intellectual property. The importance of joint venture agreements in commercialization and technology transfer is discussed in the studies by P. Warda, [7], I. Kuksa, [8], J. Oxley [9]. Various aspects of the commercialization of technology created in higher education institutions are covered in articles by A. Arora, A. Gambardella [10] and others. However, it should be noted that each of the scientific work of these scientists is dedicated to specific issues and only partially affects a separate financial aspect in the context of the creation, use and commercialization of intellectual property.

The purpose of the study is to determine the specificity of the financial aspect of intellectual property, to develop a typology of forms of its commercialization in order to present a generalized visualization of the movement of intellectual property as an innovative product in the market.

**Research results.** In the conditions of transformation of world economies, it is expedient to consider the essence of intellectual property (hereinafter — IP) as an innovative product created with the requirements of the globalization market. Specificity of financial aspects of IP is distinguished from a number of differential characteristics of the subject of study in two directions, depending on the understanding of the product movement:

1. The aspect of financial security that heads the specifics of forms, approaches, sources of funding for research (as one of the conditions for creating intellectual property).

The creation of intellectual property is preceded by the funding of research. The specificity of financing the creation of intellectual property is the need to attract funds from third parties. Since the creation and commercialization of intellectual property are associated with high risks (risks of development and use of the intellectual property object in various industries, including risks of lack of technical, economic, operational and environmental characteristics) and mean payback in the medium and long term prospects, so finding interested investors to invest in this sector of the economy is a time-consuming factor in financial security. The positive dynamics of gross domestic expenditure on research, as a share of gross domestic product, in the OECD countries and separately in the 28 countries of the European Union are presented in *Table 1*.

Table 1

**Gross domestic expenditure on research (GERD),  
as a percentage of gross domestic product (GDP)**

Indicator	GERD, % of GDP									
Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Country</b>										
European Union (28 countries)	1,69	1,7	1,77	1,84	1,84	1,88	1,92	1,93	1,95	
OECD - Total	2,19	2,22	2,29	2,34	2,3	2,33	2,34	2,37	2,38	

Source: <https://stats.oecd.org> [4].

The share of state-funded R&D in individual OECD countries (*Table 2*) does not have the same trend of change over the presented time series, indicating a juggling of public-private-sector research funding with a steady increase in GERD total volumes.

Table 2

**Government-funded Gross Domestic Expenditure (GERD)  
as a percentage of gross domestic product (GDP)**

Indicator	GERD, financed by government, % of GDP										
Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
<b>Country</b>											
Austria	0,76	0,79	0,96	0,91	1,05	0,96	1,11	1	1,11	1,13	
Belgium	0,41	0,41	0,45	0,5	0,52	0,5	0,68	0,69	0,68	0,69	
Canada	0,61	0,61	0,63	0,66	0,65	0,61	0,61	0,59	0,56	0,56	

Source: <https://stats.oecd.org> [4].

We believe that tax incentives for RDs are an effective tool for stimulating the implementation and funding of research by business entities as a foundation for creating an innovative IP product. Based on the data in *Table 3* collected in RD tax incentive studies, we track the estimate of time series based on tax credit, rate of allowance by firm size and profitability

scenario. The tax subsidy rate is defined as 1 minus the B-index, a measure of the pre-tax income required by a firm to overcome even \$ 1 in RD costs [5].

Table 3

**Hidden tax subsidies on research expenditures (RD)**

ProfitScenario		Profitable									
Year		2006	2007	2008	2009	2010	2011	2012	2013	2014	
Country	FirmSize										
Austria	SME	0,09	0,09	0,09	0,09	0,09	0,12	0,12	0,12	0,12	
	Large firm	0,09	0,09	0,09	0,09	0,09	0,12	0,12	0,12	0,12	
Belgium	SME	0,09	0,1	0,13	0,15	0,15	0,15	0,15	0,16	0,16	
	Large firm	0,09	0,1	0,13	0,15	0,15	0,15	0,15	0,16	0,16	
Canada	SME	0,32	0,33	0,33	0,33	0,33	0,33	0,33	0,33	0,31	
	Large firm	0,17	0,18	0,18	0,18	0,18	0,18	0,18	0,18	0,13	

Source: <https://stats.oecd.org> [4].

As a component of the tax part of consumer spending on RD, the B-index is directly linked to the effective marginal tax rate measures. Tax subsidy rate measures, such as those based on the B-index, are a convenient indicator of the application of tax benefits and characterize the loyalty of the tax system per unit of cost of RD. For a more accurate presentation of different scenarios, B-indexes are calculated for firms according to whether they can claim tax benefits for their tax liability in the reporting period. Forwarding is modeled as a discounted option to seek incentives in the future, assuming a constant annual return probability of 50% and a nominal discount rate of 10% [4].

2. Aspect of financial commercialization of IP, as a productive indicator of understanding of the meaning of creating an innovative product. The problem of achieving this result will be noted:

- Imperfection of the intellectual property market;
- The risk of the complexity of forecasting the effect and benefit of investing in the transformation of intellectual property into an innovative product for market supply;
- The complexity of determining and controlling the end result, which is that it can only occur in the long run;
- The need to improve the legal framework for the protection of intellectual property rights in the form of modeling the harmonization of interests of participants in the creation of IP;
- There is a high level of information asymmetry in the value and characteristics of IP.

For the authors of research, the challenge is to move from the stage of created intellectual property to the stage of innovative product as a proposal for the market, due to the lack of generalized information about the opportunities to «earn», profit from the implementation of the author's proposal. Therefore, we propose a typology of existing forms of IP commercialization developed in *Table 4*.

Table 4

**Typology of forms of IP commercialization as a range of possibilities for realization of an innovative product**

№	Form of IP commercialization	Essence
1	Alienation of IP rights	The agreement on the transfer of exclusive intellectual property rights in part or in full under certain conditions is transferred to the successor
2	License agreement	Promotes efficient transfer of the latest science-based technologies from scientific organizations and small innovative enterprises to big business, capable to make additional investments in applied development and introduction of new technologies in production.
3	Cross-licensing	An agreement between two parties where each party grants its intellectual property rights to the other party.
4	Leasing of IP	IP leasing is a contract between three independent economic agents, in which the leasing company has the right to revoke the license from the lessee in case of breach of contractual obligations.
5	Franchising	It is a form of cooperation between legally and financially independent parties in which one party (franchisor) with a successful business, a well-known trademark, know-how, trade secrets, reputation and other intangible assets allows the other party (franchisee) to use this system under certain conditions.

6	Alliances without equity participation	Corporate venture strategy when investing in young innovative firms.
7	Joint venture (university equity spin-out)	Key features of the Joint Venture Agreement: equity participation, residual income rights, rights of observation and control of each party to the agreement. Not only does the company provide financing, but it also provides management resources, manufacturing facilities, distribution channels, brand names and other key assets.
8	Own business	Organization of own business based on the results of intellectual activity

Source: systematized by authors [6].

A model for implementing the IP commercialization process is proposed, in the form of a generalized visualization of the intellectual property movement as an innovative product, which involves four consecutive steps (the path to the market), choosing one of the forms of commercialization typology that provides the maximum possible variability for the choice of the optimal strategy (Fig.).

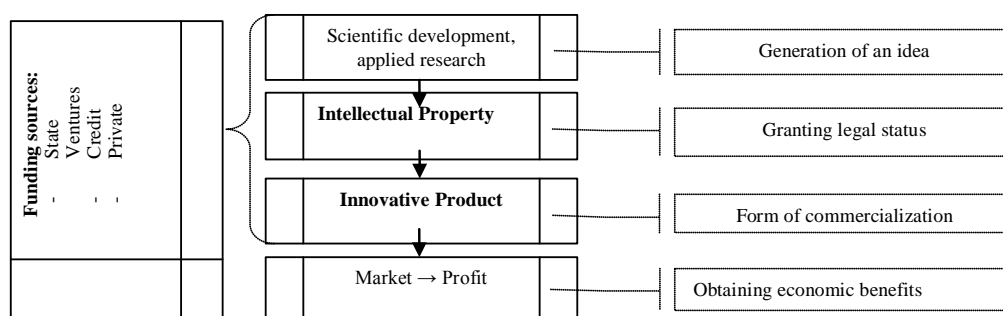


Fig. Visualization of the Intellectual Property Movement as an Innovative Product

Source: Created by the authors.

The emergence of an innovative product is a more comprehensive concept that includes processes that take place under the condition of financial security and the creation of a market proposal. Part of the innovation process is the process of IP commercialization that takes place at the enterprise level. Commercialization occurs only if the IP is successfully implemented and results in a commercial effect (income and profit). As a result of the completed commercialization cycle, an innovative product emerges — at the point of launch.

**Conclusions.** The potential of IP is revealed in its essence as a key factor in the competitive supply of an entrepreneurial structure, the main source of value added formation, as a real or possible economic benefit from the realization of a bundle of rights in relation to objects related to intellectual activity.

It is revealed that one of the components of the innovation activity is the commercialization of IP, which acts as a complex that integrates the process and form of building a real business and social sphere on the basis of scientific achievements. The proposed approach allows to investigate the interconnection and interaction of internal and external factors, identify the most problematic areas, carry out point measures to improve the effectiveness of each step separately and, as a consequence, a generalized understanding of the movement of IP commercialization as a whole.

The innovation breakthrough strategy must be linked to the dynamic development of research with a real prospect of mobile transformation into an innovative product through commercialization, focusing on accelerating economic growth.

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*Статтю рекомендовано до друку 03.06.2020*

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*The article is recommended for printing 03.06.2020*

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