

Effective mechanism of intellectual property management in a company

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Abstract. The article considers the role of intellectual property (IP) system in the modern economy; defines main functions of innovations and intellectual property objects in the knowledge economy and basic properties of an innovation, such as scientific and technical novelty, industrial applicability, commercial feasibility, under interconnection with IP management. Current paper researches intellectual property objects as the results of innovation activity; reveals the main principles of effective intellectual property management and the essential elements of the effective mechanism of intellectual property management in a company under the conditions of knowledge economy. The study presents the author's definition of the term "intellectual property management", considers the essence of effective IP management mechanism and develops the author's mechanism of intellectual property management in a company. The study substantiates that the continuous introduction of innovations and expansion of intangible assets, which occurs due to a developed intellectual property management system that ensures the protection of intellectual rights, is a strategic factor of the company's competitiveness. Keywords: Intellectual Property Management, Intellectual Property Objects, Innovations, Knowledge Economy.

1 Introduction

Currently, the global economy is experiencing a boom of innovation: under the conditions of alternation of economic management forms and methods, all the economic entities have to deal with innovations. In the conditions of modern technological structure, intellectual property (IP) is an important asset of any company and has a significant impact on innovation performance. In the context of the development of the knowledge economy, intangible assets and products are becoming increasingly important to meet the needs of society and business.

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Development of the knowledge economy in today's world is accompanied by the increasing role of intellectual capital. Thus, it is necessary to innovative the mechanisms of intellectual resources management of a company to stay up to date.

There are number of works devoted to the problems of IP expansion, which reveal issues of innovation development [1-3]; modeling of IP management and valuating processes of companies [4-7]; boosting of the IP strategies effectiveness [8; 9]. But still in the works, devoted to the enhancement of IP assets within global value chains, the issues of intellectual property management in a company remain insufficiently studied, including determining the essential elements and efficiency criteria of IP management mechanism. As in a progressive society, development is closely connected with the innovations and creativity, this problem is always relevant for any developing social-economic system.

In connection with the above, the aim of the current paper is to consider the alternatives to the solution of the problem of intellectual property management in the knowledge economy and to develop the effective mechanism of IP management in a company.

2 Materials and Methods

The study base on theoretical and practical highlights of IP role in innovation development, profiting from innovation, IP protection and IP management practices.

The link between innovation and IP management is revealed through systemic technology innovation management and analysis of other forms of IP protection [1], necessary leverage for effective innovation in times of crisis [2], and by focusing on the role of open innovation in decisions to terminate underperforming NPD projects [3]. A broad range of aspects of increasing the value of intellectual assets is considered in works [4; 5]. The wide revue of strategies for managing intellectual property value is presented in work [6]. Building value and growth for small businesses through IP protection is revealed in article [7]. The study [8] proposes a framework for responsible intellectual property strategy based on five case studies of sustainable companies in different sectors. The article [9] explores IP models affection on green innovation diffusion.

The study used an array of information about IP indicators worldwide from analytics and statistics of World Intellectual Property Organization [10; 11].

To conduct the research the general scientific methods were used such as dialectical, theoretical cognition (to form the theoretical basis of IP system); generalization and comparison (to study the interdependence between innovation and IPOs); systematic approach (to generate the essence and the content of the effective mechanism of IP management in a company, and to define the main criteria for IPOs inclusion to the IP portfolio of a company); system analysis and synthesis (to develop the effective mechanism of IP management in a company).

3 Results

Intellectual property is understood as the rights to the results of intellectual and creative activity subject to legislative protection, the acquisition of which makes it possible to control their use. In modern conditions of innovative transformation, the IP system provides both protection of innovative products and services and prevention of loss of the results of creative work. IP rights create proprietary rights on such objects as inventions, literary and artistic works, design developments, software, symbols, names and images used for commercial purposes, those are the intellectual property objects (IOPs). Since the results of intellectual work that can be used to create new or improved products, services or

technologies represent innovations, the IP system contributes to the global expansion of innovation, as well as competitiveness and the development of the knowledge economy. Being the results of innovative activity, in the conditions of the modern knowledge economy, IPOs carry important functions, in many respects similar to the functions of innovations (figure 1).

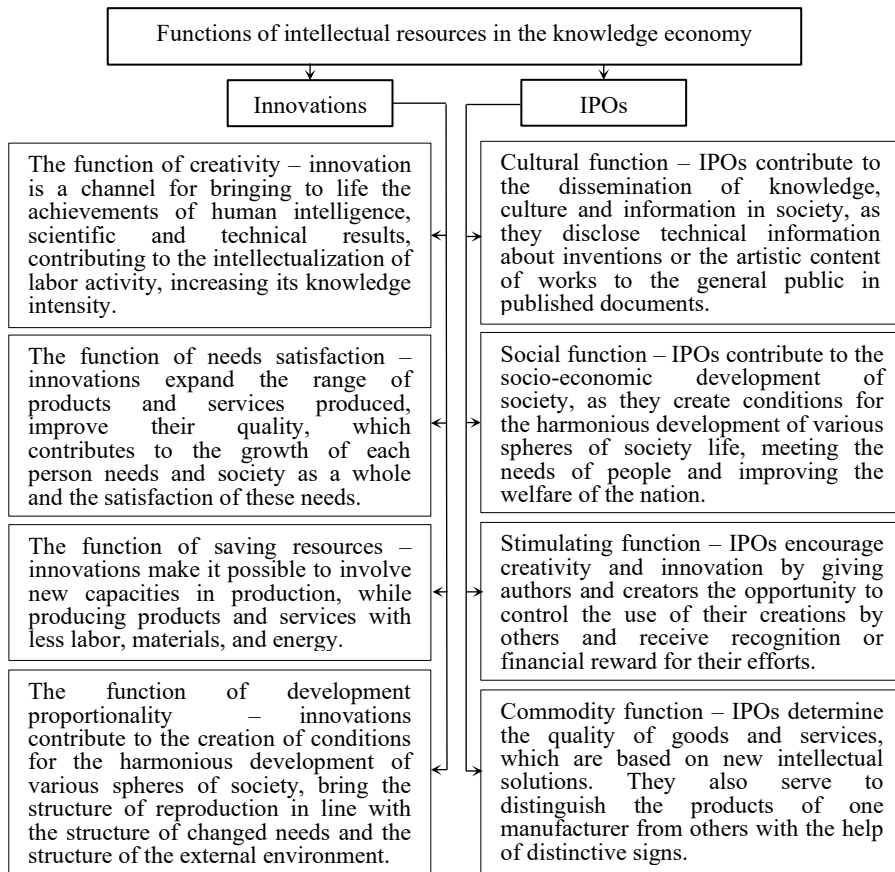


Fig. 1. Main functions of innovations and IPOs in the knowledge economy [developed by the authors]

Since IPOs are the result of innovative activity, in the process of IP management it is important to rely on the basic properties that an innovation must possess in order to be considered an innovation [1-3]:

- Scientific and technical novelty means that innovation contains new knowledge, ideas, methods or solutions that differ from existing or traditional ones;
- Industrial applicability means that innovation can be implemented in a specific project, process or product, and also has the necessary conditions and resources for this;
- Commercial feasibility means that innovation is able to meet certain needs and demands of consumers in the market, as well as bring profit to the manufacturer or creator.

Therefore, IP management is inextricably linked with the competitiveness of created innovations. The main principles of effective IP management should base on value creation from company's IPOs and gaining a competitive advantage in the market [4; 5]. It follows

that the mentioned principles conclude in methods and tools optioning for IP rights protection, optimization of the innovation cycle and monetization of intellectual assets.

For the effective IP management during an innovation process, it is necessary to make IPOs structuring, which lists the IPOs, carries out its classification, evaluates the economic efficiency and the effect of the IPO implementation in the company and makes recommendations for further commercial use. To estimate the feasible proceeds of intellectual assets using it is necessary while project development to choose the method of IPOs evaluation, which will be applied on its further commercialization. IPOs value substantiation rely on both intellectual creation costs assessment and intellectual products using utility. The principal methods for valuing IP assets are the income method, the market method and the cost method, each of those has its advantages and limitations, depending on the type and characteristics of the IP asset, the availability and reliability of data, and the purpose and context of the valuation [5].

IP valuation can be useful for various purposes, such as licensing, sale, donation, litigation, taxation, accounting, or financing. The increase in the value of IP is due to the use of certain strategies, such as choosing the most profitable location for IPOs protection and enforcing, broadening patent claims and filing for continuations, license, sell or use patents as collateral [6-9]. In the process of IPOs structuring for the selection of IPO for commercialization a method of evaluating the effect of the implementation of an IPO in a company may be used, herewith in addition to total income, the savings of all production resources should be considered, that will be received by a company as a result of the IPO creation and using. As an indicator of the commercial significance of IPO, it is advisable to consider the cumulative net cash flow (NCF). At the same time, the net present value indicator (NPV) reflects the distribution of cash flows during the implementation of the innovation project. Using this indicator, the project manager tracks the dynamics of profit from IPO implementation. Profitability index of an innovative project can be used as the final characteristic of the results of IPO commercialization.

To ensure the effective use of IPOs, companies need to implement IP management mechanisms. IP management is a set of activities aimed at ensuring effective planning, organization and control of processes IPOs creation or acquisition, providing a suitable protection mode and IP rights using to achieve economic and other effects. The essence of the effective mechanism of IP management in a company lies in regulation and guidance tools using for ensure strategic goals of innovative development by maximizing the effects of IP implementation.

Based on the above effective IP management mechanism must include:

- Building of the IP management system, including a functional subsystem, target and support subsystems;
- Formation and valuation of IPOs, accounting as intangible assets (capitalization);
- Legal protection of IPOs, which assume formation of IP rights portfolio for secure protection and disposal of IP rights;
- Selection of way to commercialize the IPOs (figure 2).

During the formation of the IP portfolio of a company as the main criteria for the inclusion of IPOs in the portfolio, especially in the context of innovation and competitiveness, the following can be defined: patent clearance; the impact of an intangible asset on increasing the market value of a company; the scientific and technical level of IPO, the prospects of its development; availability of tools for commercializing and exploiting IP rights; the presence of positive social, environmental, and other effects.

Thus, the task of implementing an IP management mechanism in a company is to identify protectable objects, select the optimal form of legal protection and commercialization. The main indicators of the effectiveness of this mechanism are the

realization of strategic goals of corporate innovative development, such as strengthening competitiveness, achieving economic, social and other effects.

4 Discussion

Development of modern knowledge economy is being driven forward by innovation and digitalization, the expansion of which is based on IP rights implementation. Over the last decade, there was strong growth in IP filings as well as IP rights in force worldwide (table 1; 2).

In 2021, the largest growth was demonstrated by applications for industrial designs, which grew by 9.2 % compared to the previous year, and IP rights in force of utility models that grew by 31.4 %. Compared to 2012 the greatest growth was typical for utility models: this type applications grew by 253.1 % and IP rights in force – by 409.4 % in last ten years.

Table 1. Total applications growth in 2013 – 2021 (%) [calculated by the authors based on 10]

Type	2013	2014	2015	2016	2017	2018	2019	2020	2021
1. Industrial design (design count):									
by last year	2.2	-7.6	1.1	7.0	-0.7	5.2	1.3	2.0	9.2
by 2012	2.2	-5.5	-4.5	2.2	1.5	6.8	8.1	10.3	20.4
2. Patent:									
by last year	8.8	4.5	7.7	8.3	1.4	5.2	-3.0	1.5	3.6
by 2012	8.8	13.7	22.5	32.6	34.5	41.4	37.2	39.3	44.3
3. Trademark (class count):									
by last year	6.4	8.1	12.9	13.0	26.6	15.6	5.7	13.7	5.5
by 2012	6.4	15.1	30.0	46.9	86.0	115.0	127.3	158.3	172.6
4. Utility model:									
by last year	18.2	-3.0	27.0	28.8	13.4	21.8	9.1	28.1	-2.5
by 2012	18.2	14.6	45.6	87.6	112.7	159.1	182.7	262.2	253.1

Table 2. IP rights in force growth in 2013 – 2021 (%) [calculated by the authors based on 10]

Type	2013	2014	2015	2016	2017	2018	2019	2020	2021
1. Industrial design (design count):									
by last year	5.1	0.1	3.7	4.3	5.7	6.9	13.0	11.0	10.9
by 2012	5.1	5.3	9.1	13.9	20.3	28.7	45.4	61.3	79.0
2. Patent:									
by last year	6.8	5.7	5.3	6.8	7.4	6.6	7.0	6.3	4.2
by 2012	6.8	12.9	18.9	27.0	36.4	45.4	55.7	65.5	72.5
3. Trademark (class count):									
by last year	5.6	6.9	8.3	8.9	9.5	13.5	14.9	11.2	14.3
by 2012	5.6	12.9	22.2	33.1	45.7	65.5	90.2	111.5	141.8
4. Utility model:									
by last year	22.8	15.2	16.1	13.3	12.9	20.2	18.0	30.1	31.4
by 2012	22.8	41.5	64.3	86.0	110.1	152.5	198.0	287.6	409.4

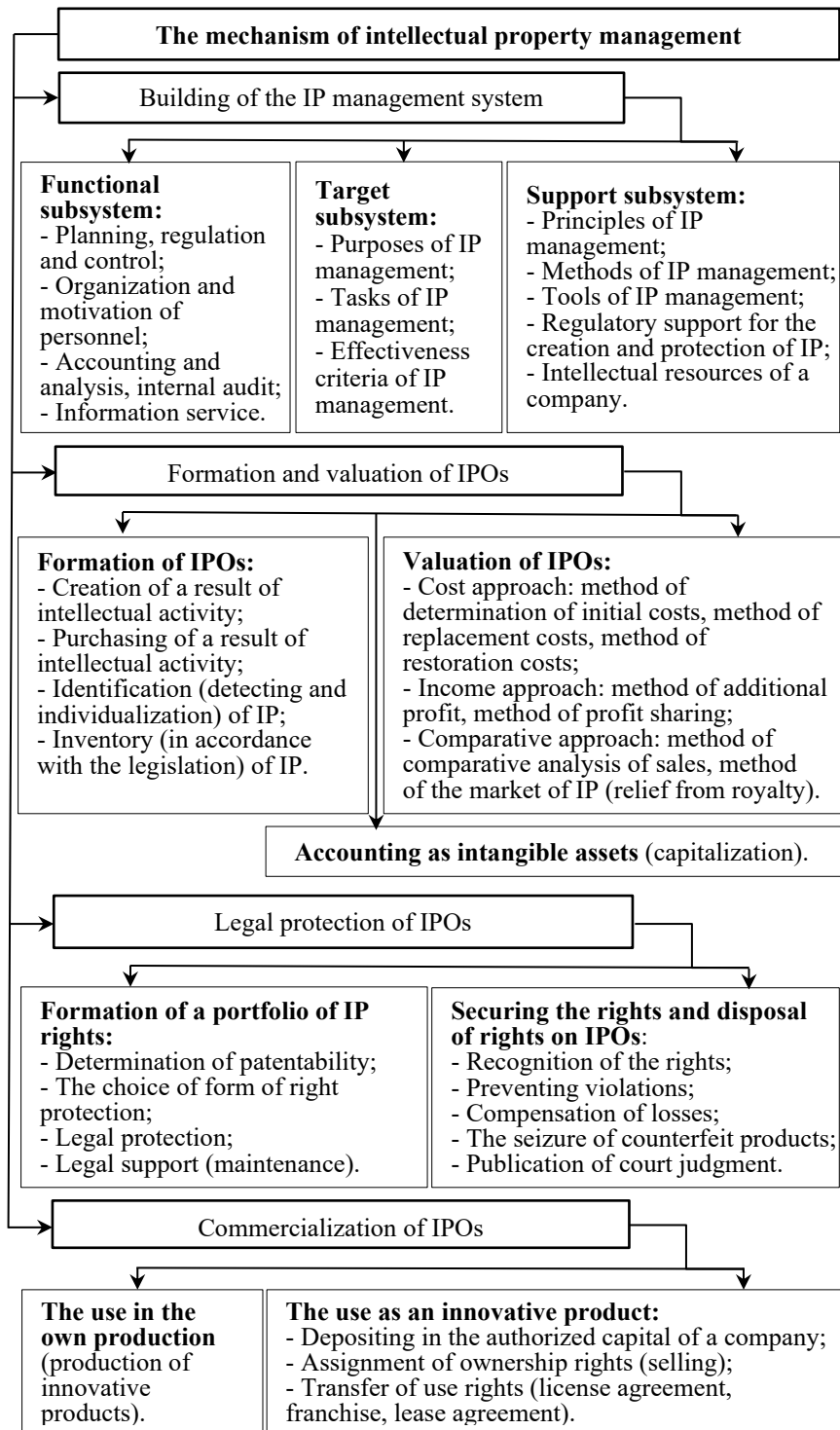


Fig. 2. The effective mechanism of IP management in a company [developed by the authors]

The United States, China, and Japan are the three largest economies in the world (as measured by nominal GDP according to the International Monetary Fund) and have the largest share of world total IP key numbers (table 3).

Table 3. The countries of the largest share of applications in 2021 [11]

Type	Country	Share of world total (%)
Patents applications	China	46.6
	US	17.4
	Japan	8.5
Utility models applications	China	97.5
	Germany	0.4
	Russian Federation	0.3
Trademarks application class counts	China	52.1
	US	5.0
	EUIPO (EU office)	2.7
Industrial designs application design counts	China	53.2
	EUIPO (EU office)	7.7
	UK	4.9

IP right is a valuable asset that the most successful companies use to grow its business. According to the Fortune Global 100, the top five companies in the 2021 ranking are Apple, Saudi Aramco, Microsoft, Amazon.com, Alphabet. At the same time, for example, Apple and Amazon have four times fewer patents than IBM, which have the most patents in the US while in 2020 occupied 38th place and in 2021 is not in the rank. In this regard, the competitiveness or profitability of a company depends not the number or types of IP, but effectiveness of IP management that reflects the strategy and vision of a company.

Effective mechanism of IP management in a company must be integrated with business strategy, what provides competitive advantage reinforcement by IP rights using. IP management aligns IP strategy with the overall goals and is important for businesses because it protects its innovation and creativity, provides information to the public, adds value to the products and services.

5 Conclusions

The development of the knowledge economy is accompanied by an increase in the role of intellectual capital, the continuous innovation and the expansion of intangible assets, which occurs due to the IP system development that ensures the protection and security of intellectual rights. Intellectual resources in modern socio-economic systems contribute to the intellectualization of labor activity, expand the range of products and services and meet the needs of people, promote to creation of conditions for the harmonious development of various spheres of society. Intellectual property is one of the key factors for increasing the market share and potential profit of companies, as it makes their products and services more distinctive from others.

Intellectual property objects are different types of original material, created by human intellect and protected by law. IPOs are the results of innovative activity and as intangible assets can provide value and competitive advantage to their owners and creators.

To manage intangible assets and products IP management is required that supposes IPOs structuring, evaluation and further commercialization. To create and hold sustainable competitive advantages, innovative companies needs to apply an IP management

mechanism that ensures the effective implementation of IP rights and contributes to IP commercialization strategy.

Effective mechanism of IP management in a company is considered as the process includes IPOs creation or acquisition and IP rights using to achieve economic and other effects.

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