

# METHODOLOGICAL ISSUES OF THE ANALYSIS OF INTELLECTUAL PROPERTY OBJECTS

Tuychiev Alisher Zhuraevich, *D.Sc., professor of Tashkent Financial Institute, Uzbekistan*  
*uibp@tfi.uz*

Rizaev Nurbek Kadirovich, *D.Sc., docent of Tashkent Financial Institute, Uzbekistan*  
*rizayevnk@tfi.uz*

Abdusalomova Nodira Bahodirovna, *D.Sc., docent of Tashkent State University of  
Economics, Uzbekistan*  
*n.abdusalomova@tsue.uz*

Tashkenbaeva Zarina Ulugbekovna, *PhD, docent of Tashkent State University of Economics,  
Uzbekistan. zarina\_tashkenbaeva@mail.ru*

**Abstract:** This article provides information on the impact of the pandemic on intellectual property and its consequences, the activities of companies providing intellectual property services in the context of the pandemic, the intellectual ecosystem. Also, this article is devoted to the consideration of issues related to the creation of the intellectual property ecosystem throughout the world, research and experimental developments, R&D expenses, as well as accounting and assessment of innovation products. In the context of global globalization, intellectual property objects are crucial in assessing the property of enterprises. However, the methodology of analysis of intangible assets has not been comprehensively presented in scientific works, therefore, this article developed a methodology for the analysis of intangible assets, in particular the analysis of intellectual property.

**Keywords:** intellectual property, pandemic, ecosystem, artificial property, additive technology, research and development, patent, industrial sample, useful model, invention, accounting, civil code, **items from internet**, intellectual property agency, analysis, accounting, balance, methodology, following indicators the correlation dependencies raise.

*“Our goal is to jointly create fair global system that ensures basic rights, freedoms, health and well-being of every human being.”*

*President of the Republic of Uzbekistan  
Sh.M.Mirziyoyev*

## **INTRODUCTION.**

It is known that the coronavirus pandemic, which started in China in late 2019, almost completely covered the globe. The economic losses that could be occurred from this disaster are estimated at trillions of US dollars. Most notably, hundreds of thousands of people have fallen victim to this terrible virus. In Uzbekistan, radical measures have been developed to prevent the spread of coronavirus. It should be noted that 10 trillion. UZS have been directed

in Uzbekistan as part of anti-pandemic measures. As a result, the Decree “On priority measures to mitigate the negative impact of the coronavirus pandemic and the global crisis on the economy”, “On comprehensive additional measures to prevent the spread of coronavirus infection in the Republic of Uzbekistan” have been adopted.

It is known that the power of the coronavirus pandemic (COVID-19) has almost stopped the world economy. This unexpected biological catastrophe has affected the activities of all major companies and firms that are shaking the world economy. As a result of the pandemic, companies are facing a number of challenges in making their operational and strategic management decisions. The potential economic damage from the disaster is estimated at trillions of dollars. Global growth is slowing. Despite efforts by the world community, including the World Health Organization (WHO), to reduce the spread of the pandemic, many of the world’s largest companies and firms are still struggling to contain their economic and financial activities. or are forced to drive, at least in part. In countries where COVID-19 is prevalent, not only large companies but also small and medium-sized businesses are suffering. Significantly, this pandemic has had a significant negative impact on the development of human intellectual property.

It should be noted that the measures taken around the world to prevent the pandemic have opened a new page in the process of legalization of intellectual property, which means that many patent offices have switched to remote operation. In the registration of intellectual property, ie applications and applications to patent offices are carried out online. In today's pandemic, agencies and organizations that provide services in the field of intellectual property are working at a distance. In particular, in accordance with the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated March 23, 2020 "On additional measures against the spread of coronavirus infection", the staff of the Intellectual Property Agency under the Ministry of Justice organized remote work. In this case, citizens who apply to the Agency can contact the selected department. So, whether we like it or not, we have to get used to working and living in a pandemic.

Currently, human capital, intellectual potential, innovative ideas, as well as high technologies in innovative globalization constitute the basis for rapid and sustainable development. As far as we know, currently the volume of the market of intellectual property objects and innovation products is rapidly increasing throughout the world. In particular, the market of “artificial intelligence”-(AI) rose from 31 percent and in 2017 this indicator accounted for 3 billion USD, and in 2018 this figure constituted 8,1 USD and this year it has amounted to 13,4 billion UZS. Moreover, it is expected, that by 2022 this indicator will total 52,5 billion UZS (Frost & Sullivan, 2019). In this regard, such advanced technologies as “SD model” and “Items from Internet” (IoT) are rapidly developing and their market is annually growing by 10-15 per cent (nowadays this figure accounts for 6 billion USD). This, in turn, requires creation of the intellectual property ecosystem and its further development. Moreover, development of the intellectual property market will be mainly connected with the creation of this ecosystem.

It should be noted, that the concept of “Intellectual property ecosystem” appeared in foreign countries many years ago and currently it has approached the level of development. For example, in the USA the intellectual property ecosystem is referred to the Silicon Valley which unites major venture companies, investors, tart-ups and entrepreneurs. The reason for this that head offices and lab rooms of the famous world-wide known companies and giants of the electronic industry (Apple, Google, Facebook, Intel, AMD, Electronic Arts) are located there. They are involved in the development of intellectual projects and this fact results in the creation and further development of intellectual property ecosystem, which, in turn, leads to ensuring innovative globalization.

The intellectual property ecosystem requires special emphasis on the creation and use of intellectual property through the application of new knowledge and technologies. The growth rates of the global intellectual property market are higher than 10% per year, and with the figure amount to 23 per cent in China, 5 per cent in the USA and Russia and 2 per cent in France. Over the last decade, more than one billion patented objects have been introduced into digital platforms and services for intellectual property management. According to the statistical data, “in the economically developed countries the amount of the total assets of the companies constitutes 89,0 trillion USD, out of which assets in tangible form account for 46,8 trillion USD (52,5 per cent), intellectual property objects (goodwill included) amount to 41,9 trillion USD (in particular, 11,8 trillion USD or 28,1 per cent are intangible assets, and 30,1 trillion USD or 71,9 per cent are intangible assets which haven't been revealed). Even though the intangible assets which are unknown or not detected constitute a major part of the total business value in major companies, they are not accounted in the balance. Denmark (61,0 per cent), Switzerland (42,0 percent) and Belgium (41,0 per cent) are the countries with the highest indicators of the unknown or unrevealed intangible assets.

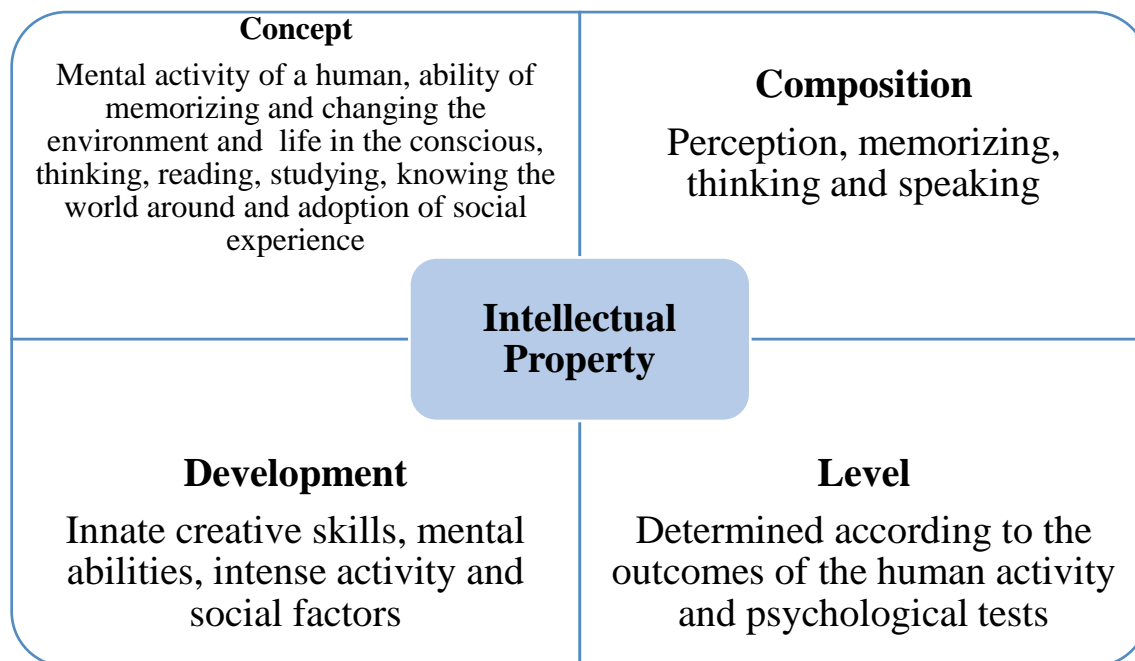
A number of efficient measures are being undertaken in Uzbekistan to shape the intellectual property ecosystem. In particular, in the Innovation Development Strategy of the Republic of Uzbekistan these measures include improvement of the intellectual property assessment mechanisms and raising the amount of the public expenses on the R&D. In 2021 this indicator is expected to account for 0,8 per cent in the Gross Domestic Product (GDP) and by 2030 the share of the expenses on the R&D will amount to 1-1,5 per cent, the share of expenses on the activity of scientists and researchers will constitute 0,4 per cent, and the share of the expenses on the research made in the business sector will amount to 50-55 per cent.

From this point of view, creation and development of the intellectual property ecosystem is the most urgent and top-priority task for the sustainable innovative development of our republic.

## **METHODS.**

When perceiving the nature of the intellectual property ecosystem, first of all, it is important to know what intellectual property is. Currently the economic concepts of “intellectual property”, “intellectual asset”, “intellectual capital”, “intangible asset” and “insignificant or secret items” have various interpretations in different literary sources. In this regard there is the question which concept should be prioritized. It should be noted that scholars and experts demonstrate different approaches to this category and in the statutory acts it is also treated differently. Thus, currently there is no perfect definition of these concepts. The reason for this is there is no limit for the concept of “intellectual” and it is not subject to any standard. In addition, it is a complicated task to determine their value (price) for the goods (which can be sold in the market).

Therefore, there is no precise set or limit in this regard. The technique which is currently considered to be correct, is being applied. In the economic literary sources the word “*intellect*” originated from the Latin word “*intellektus*” which means “to know, to understand, to perceive”. In the broad sense of this word this term means “human's mental activity, life, and environmental consciousness, as well as the ability to reflect, change, think, read, learn, know the world, and adopt social experience. In this regard intellect includes with such psychological processes as perception, memorizing, thinking, expressing ideas, speaking and can be connected with such social factors as creative skills, mental abilities, intense activity and life experience.



**Figure 1. General composition of the “intellect” concept.**

The World Intellectual Property Organization (WIPO) determines the concept of “Intellectual property” as follows: intellectual property refers to creations of the mind: inventions; literary and artistic works; and symbols, names and images used in commerce. Intellectual property is divided into two categories: Industrial Property includes patents for inventions, trademarks, industrial designs and geographical indications”.

Various economists define “intellectual property” in the different ways, for example, in the opinion of A. Stewart, intellectual property is the knowledge embodied in a more tangible form than an idea. He approached this concept in terms of production and considers it as the inherent useful knowledge. In this regard intellectual property is a kind of useful values in a certain form: a list of facts, database, which, in case of their discovery, can turn into the intellectual property. This means that as a result of useful knowledge there are various insignificant properties but which can create a certain value.

K. Sveiby considered the concepts of intellectual property and intellectual capital and in his model he divided a company’s intangible assets (intellectual property) into three groups: external structure (trade mark, image of the company and production recognition), competence of employees (education, intellectual knowledge, experience and skills), internal structure (patent, copyright, management systems, databases and scientific developments). As it is obvious from this model, intellectual property objects are represented only in the external and internal structures of the company. We do not fully agree with this model as it entirely covered intellectual property objects and approached thereto as intangible assets. If they were intangible assets, the K. Sveiby’s model would require a close (alignment) approach to accounting objects.

From the point of view of Thomas P. Carlin, intellectual property represents an ambiguous item in the balance which has a poor quality. In his research he made an emphasis on the value of intellectual property as a key component of intangible assets and justified an opportunity for their assessment. In our opinion, if intellectual property objects had more efficient opportunities for their use, it could be possible to turn into the most profitable asset item of the balance.

B. Leontyev refers intellectual property to the intellectual capital. In addition, he specifies that intellectual property consists of the value of all available assets, intellectual novelties, knowledge, opportunities, and consolidated base of knowledge.

L. Dontsova evaluates intellectual property as a depreciable property of a company from the point of view of economic analysis and considers that their composition includes exclusive rights to various scientific developments, computer programs, patents, copyrights, films, trademarks and service marks. Moreover, she highlights the importance of focusing on receipts (portion of intellectual property) or reducing business costs in determining the economic profit (income) of intellectual property objects and focuses on the analysis methodology for assessing long-term assets of the company.

I. Ivanov considers the concept of intellectual property in terms of the exclusive right of a person to the results of intellectual activity and specifies that it consists of a trademark, a company name, a brand name, and a service mark. He summarizes his views and comes to the conclusion that intellectual property is a part of these intangible assets.

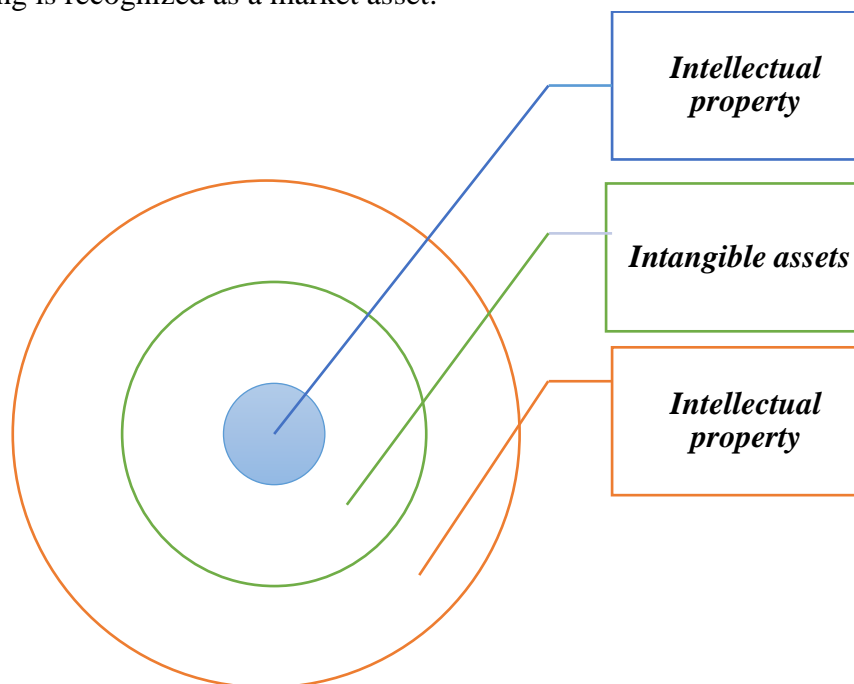
In the opinion of I. Pokrovsky, it is possible to publish and duplicate works without the consent of the owner of intellectual property rights only with the aim of implementing achievements and technical inventions of each owner of the intellectual property (an author).

L. Lytneva evaluates intellectual property as a component of intangible assets and proposes to divide it into the following groups: industrial property objects, objects of copyright and tools for individualization of goods. This classification is practically close to international practice and is grouped according to the intellectual property used by companies.

According to the model of E. Brooklin, intellectual property constitutes an integral part of the company's intellectual capital (Figure 2). According to this model:

*Company's intellectual capital > intellectual property > patent, copyright, trade mark, know-how and service mark.*

As it is obvious from the model, intellectual property constitutes a part of intellectual capital by its objects. On the other hand, a trade mark related to the intellectual property object by E. Brookling is recognized as a market asset.



**Figure 2. Approaches of E. Brookling, A. Poltorak and P. Lerner to the intellectual property.**

Summarizing the above-mentioned statements, in our opinion, the category of intellectual property should be identified as follows: “*Intellectual property is knowledge acquired through the human’s mental capacity, which requires legal protection as knowledge or an object, or assets (funds)*”.

In our opinion, intellectual property objects demonstrate the following peculiarities:  
*first*, in most cases, they come in the form of ideas or information;  
*second*, intellectual property in the form of ideas or knowledge cannot be owned unlike owning something in the tangible form;  
*third*, there is also possibility of unlimited use of these objects at any time;  
*fourth*, ownership of intellectual property rights will be canceled after a certain period of time and soon after it will become a common property and can be used freely or without permission;  
*fifth*, exclusive rights, not property rights are applied to intellectual property objects;  
*sixth*, implementation scope of intellectual property is limited to a specific area;  
*seventh*, there are also personal rights of the authors of intellectual property objects, and the users of these objects shall comply with these rights.

## RESULTS AND DISCUSSION.

The process of globalization requires a further increase in the cost of creating intellectual property, including research and development. Therefore, currently economically developed countries are trying to create new intellectual property and to raise the expenses on the research and development in relation to their GDP. For example, this is an average of 2,4% of the GDP of North America and Western Europe, 2,1% in East Asia and the Pacific, 1,0% in Central and Eastern Europe, and 0,7% in Latin America and the Caribbean, 0,6% in Arab countries, 0,5 % in South - West Asia, 0,4 % in Africa and 0,2 % - in Central Asia<sup>1</sup>. It should be noted that India occupies a special place and ranks the 2<sup>nd</sup> among the countries of East Asia and the Pacific (2,1%). This is due to the fact that recently the Gross Domestic Product of the country has a tendency to increase its spending on research and development.

If we look at the data globally, almost 38% of the USA Gross Domestic Product is generated from the innovative products created in reliance upon the intellectual property. The volume of the created software increased by 31% in 2018, and its market value accounted for 8,2 billion USD. This figure is expected to constitute 29,9 billion USD in 2020 and an increase of 105,8 billion USD is expected till 2025<sup>2</sup>.

The main share in the financing of innovative developments in the world belongs to the business sector. In terms of financing research and development, South Korea has the share of 78,0 % (or 57,2 billion USD), Japan - 77,5% (or 131,8 billion USD), China - 77,3% (286,5 billion USD), the USA - 71,4 % (340,7 billion USD), and this indicator in India accounts for 17,0 billion USD (35,0 %). However, the share of the funds allocated on the research and development by the state is significantly bigger and constitutes 29,0 billion USD or 60,0%. The same situation is observed in Uzbekistan, where public share of funds on the research and development is also relatively high and accounts for 166 million or 48,6%.

**Table 1**

### Innovative developments in the countries throughout the world<sup>3</sup>

№	Countries	Business	State	Education	Others
---	-----------	----------	-------	-----------	--------

<sup>1</sup><http://uis.unesco.org/apps/visualisations/research-and-development-spending/>

<sup>2</sup>Statistics from the World Intellectual Property Organization. <https://www.wipo.int/portal/en>.

<sup>3</sup><http://uis.unesco.org/apps/visualisations/research-and-development-spending/>

		<b>billion USD</b>	<b>%</b>	<b>billion USD</b>	<b>%</b>	<b>billion USD</b>	<b>%</b>	<b>billio n USD</b>	<b>%</b>
1.	United States	340,7	71,5	54,1	11,3	62,3	18,2	19,2	4,0
2.	China	286,4	76,9	58,6	15,7	25,5	6,8	-	-
3.	Japan	131,8	77,7	14,1	8,2	21,3	12,4	2.2	1,3
4.	Germany	74,1	67,8	16,0	14,6	19,4	17,4	-	-
5.	South Korea	57.2	78,0	8,2	14,3	6,6	9,0	1,1	1,5
6.	India	17,0	35,4	29,0	60,0	1,9	3,9	-	-
7.	Israel	9,9	84,6	0,217	1,8	1,5	12,8	0,116	0,9
8.	Argentina	0,924	28,8	1,4	43,7	0,977	30,5	0,58	1,8
9.	Luxembourg	0,382	53,6	0,212	29,7	0,117	16,7	-	-
10.	Uzbekistan	0.108	31,6	0,166	48,6	0,64	18,7	0,3	0,8

In Uzbekistan the share of expenditures on the business sector amounts to 31,6%, on the public administration - 48,5 % and on the education system - 18,7 %, in Kazakhstan these indicators constitute 36,7%,32,7%and 22,1% respectively. It should be noted, that from these figures it is obvious that the country focuses on innovation and makes huge investments in innovation developments.

Nowadays there is a tendency to create and develop an “intellectual property ecosystem” throughout the world. In the nearest future decade innovative globalization will lead to the development of the technologies applied to the qualitative changes around the globe. In addition, nowadays the tendency of the formation and development of the “intellectual property ecosystem” hasn’t been adequately developed yet.

In this regard it is expected that within next decade huge amounts of investments will be made in such sophisticated technologies as Bio Robot Refrigerators, internet solar panels 5G (Project Skybender), 5D storage devices (Superman memory crystal), oxygen particle injection, underwater transport tunnels (Hyperloop), bioluminescence trees, folding TVs, biological lenses for unusual viewing, spray clothing, DNA-originated portraits, unmanned vehicles, a city under the dome (Mall of the World), carbon dioxide and solar-fueled artificial leaves, plasma area to protect against accidents, floating cities (Lilypad), 3D printed copies, bionic insects for human organ transplantation operations (BionicANT), search for a new life in a human being that can live 1000 years and another life in space (FAST), etc. Meanwhile, the amount of expenses made on this sphere is also increasing.

**Table 2**

**The share of regions in terms of expenditures on research activities in relation to the GDP**  
( June, 2019, UNESCO)

<b>Regions of the world</b>	<b>Expenditures on R&amp;D in relation to the GDP, %</b>	<b>Share in relation to total number of researchers, %</b>
North America and Western Europe	2,4	39,7
East Asia and the Pacific	2,1	38,5
Central-Eastern Europe	1,0	10,6
Latin America and the Caribbean	0,7	3,7
The Arab countries	0,6	3,9
South - West Asia	0,5	1,9
Africa	0,4	1,1
Central Asia	0,2	0,6

In North America and Western Europe, the average amount of expenditures on creating intellectual property constitutes 2,4 percent in relation to the GDP, thus totaling 39,7 percent of researchers around the globe. It is also a high indicator in the countries of East Asia and the Pacific (2,1 percent) and covers 38,5 percent of researchers. However, this situation cannot be considered as positive in the Central Asian region, as the share of expenditure on R&D amounts to only 0,2 percent in relation to the GDP and the share of developers of innovation products accounts for 0,6 percent.

One of the key factors in entering the global innovation index is intellectual property. Therefore, we will focus on the position of Uzbekistan in the Global Innovation Index. The increase in these indicators has laid the foundation for Uzbekistan to strengthen its position in the Global Innovation Index(GII). As you know the Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation. Despite the pandemic, Uzbekistan entered the Global Innovation Index in 2020. The following table shows the rankings of Uzbekistan, which is a new entry into the GII economy list in 2020.

**Table 3**

**Rankings of Uzbekistan in 2020**

(Source: WIPO,GII: [2020 ranking](#))

#	Indicators	
1.	Global Innovation Index	93
2.	Innovation inputs	81
3.	Innovation outputs	118

As can be seen from the table data the statistical confidence interval for the ranking of Uzbekistan in the GII 2020 is between ranks 85 and 109. Uzbekistan performs better in innovation inputs than outputs in 2020. This year Uzbekistan ranks 81st in innovation inputs and 118th in innovation outputs. In 2030, Uzbekistan aims to enter the top 50 in this ranking.

**Table 4**

**Expenditure on R&D made by the world largest companies**

(Source: WIPO Statistics Database, March 2020)

Firm and companies	Expenses, billion Euro (2019 / 2018)	Growth in % in 2019 in relation to 2018
Samsung Electronics (Korea)	14,9 / 13,4	11,1
Apple (USA)	14,8 / 9,6	15,4
Wolkswagen (Germany)	14,5 / 13,1	10,6
Microsoft (USA)	13,6 / 12,2	11,4
Huawei (China)	12,5 / 11,3	10,6
Intel (USA)	12,1 / 10,9	11,0
Apple (USA)	10,7 / 9,6	11,4
Roche (Switzerland)	9,8 / 8,8	11,3
Johnson & Johnson (USA)	9,7 / 8,7	11,4
Daimler (Germany)	9,6 / 8,6	11,6
Toyota Motor (Japan)	8,6 / 7,8	10,2
Novartis (Switzerland)	8,1 / 7,3	10,9
General Motors(USA)	6,7 / 7,6	-11,9

The EU Industrial R&D Investment Scoreboard provides statistic data in the form of rating on the expenses (in the amount of 736,4 billion €) made by over 2500 companies from 47 countries on the research and development. In particular, 778 US companies (37 %), 577 companies of the European countries (27 %), 339 Japanese companies (14 %), 438 Chinese



companies (10 %) and 368 companies of other countries (12 %) invested free funds on the R&D.

As the data illustrates, the biggest part of investments in terms of budget in the amount of 14,9 billion Euro belongs to Korean company “Samsung Electronics” the US “Apple” company is in the second place in the amount of 14,8 billion Euro and in German company “Volkswagen” this indicator constitutes 14,5 billion Euro. After top-three companies we can see the US company “Microsoft” (13,6 billion Euro), Chinese Huawei company (12,5 billion Euro), and one of the leading USA companies - “Intel” (12,1 billion Euro). Unfortunately, besides two Russian companies – “Kamaz” with 37,0 million Euro ranked 1956 and “Rosneft” with 31,6 million Euro ranked 2193 – none company from the CIS countries has not been included in this rating (Global -2500).

China’s Huawei Technology remained the top filer of the PCT international applications in 2019. It was followed by Mitsubishi Electric of Japan, Samsung Electronics from the Republic of Korea, Qualcomm of the U.S., and Oppo Mobile Telecommunications of China. According to the indicator of the property rights for the intellectual property objects, North East Asia Asian companies are considered to be leading: “Huawei technologies co.,ltd” (4411 in 2019/ 5405 in 2018/ 4024 in 2017, growth by 81,5 %), “Oppo Mobile” 1927 in 2019, “BOE technology group co.,ltd” (1864/1813/1818, growth by 102,8 %) in China, Mitsubishi electric corporation- 2661/2812/2521, growth by 94,6 %, Sony corporation - 1735 in Japan, LG electronics inc – 1646/1697/1945, growth by 96,9%, Samsung electronic – 2334/1997/1757, growth by 116,8 %nt - in Korea.

According to “Madrid agreement” (*Madrid top 10 countries*) the number of applications submitted for registering trademarks in 2018 accounted for 61200 thousand, and the growth constitutes 108,8 % (in 2016 this indicator amounted to 56200 thousand). Among the biggest users it is possible to mention the USA, Germany and Cnina and the highest growth of applications submitted for registering trademarks belongs to China (79,7 %), Russia (36,3 %) and Japan (29,1 %).

**Table 5**

**Applications submitted for registration of trademarks throughout the world**  
(*Madrid top 10 countries*)

Countries	2016	2017	2018	Growth in relation to 2016, %
USA	7730	7884	8825	114,1
Germany	7545	7316	7495	99,3
China	3838	5230	6900	179,7
Japan	2412	2495	3124	129,1
France	4214	4261	4490	104,7
Great Britain	3012	3292	3347	111,1
Switzerland	3069	3272	3364	109,8
Italy	3082	2878	3140	101,9
Australia	2060	2115	2074	100,4
Russia	1178	1460	1502	136,3

It should be noted that currently the interest of getting a patent for digital technologies in China and South Korea is rapidly increasing. In Germany, the transport sector is considered to be leading in terms of getting patents for digital technologies, but in the USA the leading role belongs to the IT industry. Japan (10,8%), Germany (9,9%) and Korea (9,3%) are dominating in the electric machinery and equipment and in the energy sector.

In 2018 throughout the world the volume of patents submitted for trademarks by technologies and research was the highest in the selected countries. Meanwhile, China (16,7 per cent) is dominating by trade marks in terms of trade, i.e. the trademark is the highest in

the transport sector. Patent agencies in China, the USA, Japan, South Korea and Europe accepted 84 per cent or 3,1 million applications in terms of issuing patents for created industrial property objects. Herewith, China holds 43,6% of all patent applications. Moreover, China, the USA, Japan, Europe and India are considered to be leading companies with 58,0 per cent in terms of registering trademarks. In China (46,3%) the level of creating trademarks is not the matter of only firms and companies, and population of China makes a significant contribution thereto.

These figures justify the fact that consequently the firms and companies of the countries which pay a particular attention to the R&D, allocate huge volumes of investments on the R&D and thus obtain a good reputation and can get huge profits which are constantly increasing. Hence the expenses made on the R&D will definitely be beneficial. Such countries will raise their welfare not due to material assets, but due to intangible assets based on innovative ideas. And this is true.

The urgency and significance of this issue has been emphasized by Sh. Mirziyoyev, the President of the Republic of Uzbekistan: “Currently we are shifting to the innovation development path aimed at the fundamental renewal of the state and society. This fact is definitely not without a reason. Because who will win in the current times of the rapid development? The state which owns a new idea, new thought, which relies on the innovations, will benefit”.

Despite the impact of the pandemic, as it has been mentioned above, Uzbekistan is trying to do its best to take its own place in the creation and development of the World Intellectual Property ecosystem. The intellectual property ecosystem in Uzbekistan is under development, and services are provided remotely. The Intellectual Property Agency of Uzbekistan is a permanent and reliable partner of the World Intellectual Property Organization. The agency carries out its activities in the form of online. That is, intellectual property services have not stopped. Today, all events and meetings at the Intellectual Property Agency are held in the format of video conferences and webinars.

**Table 6**

**Intellectual property objects included in the register by the Intellectual Property Agency in the pandemic**

Indicators	January-August 2020								Compared to January, %
	01.01	01.02.	01.03	01.04	01.05	01.06	01.07	01.08	
<b>Total:</b>	<b>322</b>	<b>405</b>	<b>387</b>	<b>402</b>	<b>363</b>	<b>120</b>	<b>340</b>	<b>382</b>	<b>+18,6</b>
Invented	33	33	25	38	17	22	21	10	<b>-69,7</b>
Useful model	13	17	9	8	10	4	10	11	<b>-15,4</b>
Industrial design	12	8	13	9	14	5	6	5	<b>-58,4</b>
Trademark	125	113	117	151	120	51	77	205	<b>+64,0</b>
Software	128	230	199	181	200	31	222	148	<b>+15,6</b>
Database	2	4	3	3	2	3	1	2	<b>-</b>
Selection achievements	19	5	16	5	-	4	1	1	<b>-99,5</b>

The table shows that in January-August 2020, there was almost no change in the order of registration of intellectual property by Uzbekistan IMA (excluding June, it decreased by 3 times on average). Even this figure increased in August compared to January 2020 (+60 units or 118.6%). That is, the level of services provided by the Agency has improved despite the pandemic. For example, the number of trademark registrations in the intellectual property sector was 125 in January, an increase of 205 (+80 or 164%) by August. The total number of IP registered by the agency in August 2019 was also prevented from falling sharply under the

influence of the pandemic (from 450 in August 2019 to 84.8% compared to August 2020). Of course, this is due to the rapid economic reforms in the country in the context of the pandemic. As a result, Uzbekistan was recognized in the Innovation Index of the World Intellectual Property Organization on the indicator: "Human Capital & Research".

One of the important issues on the development of the intellectual property ecosystem in the Republic of Uzbekistan is to strengthen the legal basis of the technologies of the nearest future. Currently economists, scientists, accountants and specialists are concerned with the question whether 3D model (CAD file) will be recognized as a separate object of the intellectual property or it will remain as a structural element of the software for computing devices. From the point of view of other group of researchers, the problem is that by the legal protection of the intellectual property both 3D-printers and software programs have the same essence and should be protected as the work of authorship. At first sight it seems that there is no difference between the software for computing devices and 3D model (CAD file).

In our opinion, with the aim of further development of the legal bases for intellectual property ecosystem it is recommended to introduce the following articles of the Civil Code of the Republic of Uzbekistan:

*To article 1041: By "Copyright object": "Three dimension object (e-model)";*

*To article 1042: By the types of the copyright objects: "Special software, its electronic model (CAD file), printing device (3D printer) and three dimension form (3D object)";*

*To article 1050: By the protection signs of the copyright: "letter "D" in Latin alphabet inside a circle".*

Thus, 3D model (CAD file) proposed as an advanced technology for future is not considered to be a structural element of the software for computing devices, but as a new type of the object of the intellectual property ecosystem. This, in turn, enables to enhance the volume of innovation products.

In terms of the world globalization, the data on the intellectual property objects is crucially important when assessing the property of enterprises because currently innovative development is considered to be one of the top priorities for companies to raise the volume and value of intellectual property objects. This, in turn, requires a particular attention to be paid not only to accounting but also to economic analysis.

It should be noted that the system of indicators which represent the state and conditions of intellectual property objects hasn't been created by scientists and experts who have developed scientific papers in the field of economic analysis. In particular, I. Abdulkarimov considers intellectual property objects as a component of intangible assets as a major source for the analysis of the accounting balance sheet analysis. However, the methodology for the analysis of intangible assets has not been comprehensively presented in scientific works (the author provides a comprehensive analysis of the status and use of fixed assets in his research).

The first approach to the analysis of intellectual property objects in our country has been made by M. Pardaev who has demonstrated these objects as a component of intangible assets in the following indicators:

- indicators that reflect the state of intangible assets;
- indicators that reflect the efficiency of intangible assets.

Indicators of intangible assets include their total volume, average annual cost, their share in total assets, and depreciation ratio of intangible assets.

In addition, A. Vakhobov and A. Ibrokhimov studied the issues on only fixed assets and methodological aspects of analysis of their use.

The scientific papers of I. Voljin and V. Ergashboyev have not been touched upon the analysis of intellectual property objects, although they have provided the classification of financial reporting and the technique for its analysis.

In the opinion of M. Bakanov and A. Sheremet, balance indicators, including intangible assets, constitute the source for economic analysis. However, there is lack of precise information on the methodology for the analysis of production inventories and there is almost no data on intangible assets (intellectual property objects).

O. Tolpegina and N. Tolpegina focus on the analysis of long-term assets, including comprehensive analysis of depreciable property. Herewith in terms of the analysis scientists have evaluated only fixed assets among the depreciable property.

According to the view of M. Abryutina, intangible assets have become one of the most significant indicators of the balance sheet and play a particular role as the analysis technique. This scientist has not developed any methodology for analyzing precisely intellectual property objects.

N. Kazakova in her research focuses on the issues of diagnosing the state and development of business, where she considers intangible assets as one of the key indicators in the analysis of the balance sheet.

The Russian scientist T. Grigoryeva in her scientific paper considers the status of intangible asset analysis is part of the company's property performance indicators. In addition, in the process of the analysis of the company's liquidity ratios she attributes intangible assets into a group of the assets which are difficult to sell. At the same time, the research of this scientist does not fully regulate the order of analysis of intellectual property objects.

According to N. Voytolovsky, the analysis of intangible assets is included in the financial analysis and taken into consideration in the analysis of the property structure. Moreover, it is stated by the scientist that it should be used as a source of analysis in calculating profitability indicators, though he has not specifically mentioned intellectual property objects.

From the point of view of S. Dybal, the methodology for the assessment of the enterprise's property focuses on the horizontal and vertical analysis of intangible assets, paying a particular attention to their structure and composition. Intangible assets, in the form of patents and licenses resulting from innovative activities, indicate that they have a very small share in the overall property of the enterprise.

In addition, V. Bocharov has studied the structure and dynamics of intangible assets by means of horizontal and vertical analysis of their current state.

Furthermore, Russian scientists O. Yefimova and L. Dontsova have conducted the research on the analysis of intangible assets as well. For example, O. Yefimova provides information on the methodology for the analysis of intangible assets, as well as the primary objectives of the analysis: the composition and structure of intangible assets, estimation of sources of funding and their efficient use. Nevertheless, the scientist provides insights into the methodology for analyzing the composition and structure of intangible assets (however, she hasn't developed the efficiency indicators system).

It is obvious, the scientific paper of this economist can be considered as one of the first works on the analysis and assessment of intangible assets as a separate object of analysis.

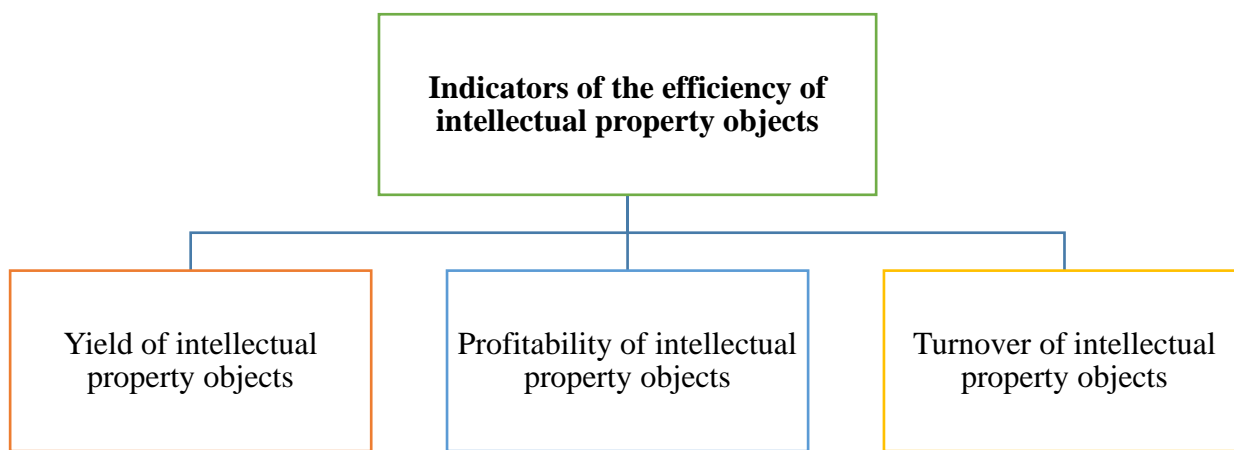
Moreover, L. Dontsova focuses on the analysis of intangible assets in the field of analysis of depreciable assets. The analysis of intangible assets requires revealing of their volume, structure and dynamics. It is the first time when the scientist considers the analysis of the structure and composition of intellectual property objects.

The following indicators constitute the most significant indices of economic potential of intellectual property objects:

- indicators that reflect the state of the intellectual property objects;
- indicators that reflect the performance of the intellectual property objects;
- indicators that reflect the efficiency of the intellectual property objects.

This research represents an empirical analysis which has been performed to determine the impact of intellectual property objects on the sale of goods. After all, each business entity has the ultimate aim to enhance the amount of intellectual property objects focusing more on selling, reducing the prime-cost of the goods manufactured and improving its production efficiency, which will definitely lead to strengthening its market position.

Determining the scope of intellectual property objects represents a complex issue that requires a specific approach made by the accountant-analyst. In some cases, the overall activity of the company depends only on the intellectual property object. For example, a company can launch its own business in reliance upon a license or a patent. It is obvious that the one hundred percent of the financial result is generated due to these objects. As a result, intellectual property objects provide an opportunity to formulate the data in the analysis and evaluation of the objects. The system of indicators that represents efficiency of intellectual property objects is presented below.



**Figure 3. The system of indicators of intellectual property objects in the analysis**

As a result of the research, the significance of these indicators and the relationship between them are considered below.

*Yield of intellectual property objects.* This indicator represents the amount of income (net income from the product sale) per 1 UZS of intellectual property object in the company:

$$K_{IPP} = G_p / IP_A$$

Here:  $G_{profit}$  – Gross profit,  $IP_{Average}$  – average annual value of the intellectual property object.

*Profitability of intellectual property objects.* This indicator enables to determine the amount of net profit that corresponds to 1 UZS of intellectual property object:

$$K_{IPRE} = G / IP_A$$

Here:  $G_{Income}$  – Net profit,  $IP_{Average}$  – average annual value of the intellectual property object.

*Turnover of intellectual property objects.* This formula is used to determine and evaluate the turnover of intellectual property objects during the analysis period:

$$K_{IPT} = P_{from\ sale} / IP_{Average}$$

Here:  $P_{from\ sale}$  – Net proceeds from the sale of product,  $IP_{Average}$  – average annual value of the intellectual property object.

These indicators have been analyzed in the financial data of “Maxam – Chirchik” JSC:

**Table 7**

**Analysis of the performance indicators if the intellectual property objects (IPO) in “Maxam – Chirchik” JSC**

№	Indicator name	2017	2018	Growth rate (in percent)
---	----------------	------	------	--------------------------

				<b>in amount</b>	<b>in percent</b>
1	Proceeds from the sale of products (works, services) ( $P_f$ )	510529428	624612508	+114083080	122,3
2	Gross income ( $G_{pt}$ )	56428187	123859084	+67430897	189,2
3	Net profit ( $G_I$ )	11817700	57403040	+45585340	4,8 times
4	Average annual value of the IPO, ( $IP_A$ )	46681	30081	-16600	64,3
5	Yield of the IPO, ( $K_{IPP}$ )	1208,8	4117,5	+29087	291,0
6	Profitability of the IPO, ( $K_{IPRE}$ )	253,1	1908,3	+1655,2	7,5 times
7	Turnover of the IPO, ( $K_{IPT}$ )	10936,5	20764,3	+9827,8	190,0

In the analyzed company it is possible to positively assess the performance of intellectual property objects. Although the number of intellectual property objects in the company has decreased this year (-16600 this is due to the fact that more depreciation is covered and no new objects have been purchased), their yield accounts for + 290,087 thousand UZS (or 291 percent), profitability amounts to + 1655,2 thousand UZS (7,5 times ) and we can see that their turnover or the amount of net income corresponding to one intellectual property object has increased by +9827,8 thousand UZS (190,0 percent). The yield level of intellectual property objects was affected by the fact that the gross income of the company almost doubled (+67430897 or 189,2 percent). In addition, a 4,8-fold increase in net profit has led to a 7,5-fold increase in the profitability level of intellectual property objects.

It can be concluded that the financial results of the company are adequate and even high. This ensures that the performance of the intellectual property objects have several times better performance indicators. In future, the company will need to raise the number of these objects and its share in the assets of the company. Most significantly, it is essential to determine the amount of proceeds, gross income and net profit with the participation of these intellectual property objects. This, in turn, provides accurate and reliable information about these objects.

Herewith there are proposed the criteria for the analysis and evaluation of indicators of intellectual property objects.

Based on these criteria, their yield ( $K_{IPP}$ ), profitability ( $K_{IPRE}$ ) and turnover ( $K_{IPT}$ ) have been obtained. Fulfillment of all conditions for the recommended indicators is required to be more or equal ( $K_{IPP} \geq 1$  UZS,  $K_{IPRE} > 0,1$ ,  $K_{IPT} \geq 20$  times).

**Table 8**

**Criteria for assessing the intellectual property objects performance (IPO)**

<b>Indicators</b>	<b>Determination</b>	<b>Execution of the condition</b>	<b>Note</b>
Yield of the IPO	$K_{IPP} = G_{pt} / IP_A$	$K_{IPP} \geq 1$ UZS	Determines the amount of income which corresponds to 1 UZS of IPO
Profitability of the IPO	$K_{IPRE} = G_I / IP_A$	$K_{IPRE} > 1$ UZS or $K_{IPRE} > 0,1$	Determines the amount of net profit which corresponds to 1 UZS of IPO
Turnover of the IPO	$K_{IPT} = P_f / IP_A$	$K_{IPT} \geq 20$ times	Determines the turnover rate of the IPO during the analyzed period

In the proposed method of analysis, the yield on intellectual property objects is calculated by determining the amount of income per 1 UZS of intangible asset in the

company, the amount of net profit which corresponds to 1 UZS IPO and turnover rate of the IPO during the analyzed period. In the process of analysis, an overall assessment of the performance of the conditions for each indicator is made and is reflected in the quality of reliable data in management decisions.

Application of the proposed assessment criteria for the performance of the intellectual property objects are illustrated in the following tables:

**Table 9**

**Analysis of the intellectual property objects' performance**

Joint-stock companies	Performance indicators			
	Average annual value, (IP <sub>A</sub> ) thousand UZS	Yield, (K <sub>IPP</sub> )	Profitability, (K <sub>IPRE</sub> )	Turnover, (K <sub>IPT</sub> )
“GMPowertrain – Uzbekistan”	17766524	4,27	0.74	14,53
“Uztransgaz”	55792	54112,7	27488,5	126944,4
«Maxam – Chirchiq»	30081	4117,5	1908,3	20764,3
«Kyzylkumtsement”	5303507	90,3	162,4	211,4
«Andijonyogmoy”	278004	43,7	7,3	195,6
«Ferganaazot»	15717503	6,3	0,02	43,0
“Uz-SeMyung Co.”	305923	37,0	35,4	321,1
«Uzbekistan Railways”	616572	1325,2	777,3	47218,0
“GM – Uzbekistan”	53438061	14,6	5,7	131,0
“Uzpaxtayog” (“Asakayog”)	133645	11,0	113,2	11,0

The following table evaluates the indicators that represent the performance of intellectual property objects. It is obvious from the data in the table that in the analyzed joint-stock companies, the objects of intellectual property have achieved almost a positive result in terms of their performance.

**Table 10**

**Assessment of the indicators of the intellectual property objects' performance**

Joint-stock companies	Yield	Profitability	Turnover
	K <sub>IPP</sub> ≥ 1 UZS	K <sub>IPRE</sub> > 1 UZS	K <sub>IPT</sub> ≥ 20 times
“GMP – Uzbekistan”	4,27 ≥ 1	0.74 < 1	14,53 ≤ 20
“Uztransgaz”	54112,7 ≥ 1	27488,5 > 1	126944,4 ≥ 20
“Maxam – Chirchiq»	4117,5 ≥ 1	1908,3 > 1	20764,3 ≥ 20
«Kyzylkumtsement”	90,3 ≥ 1	162,4 > 1	211,4 ≥ 20
«Andijonyogmoy”	43,7 ≥ 1	7,3 > 1	195,6 ≥ 20
«Ferganaazot»	6,3 ≥ 1	0,02 < 1	43,0 ≥ 20
«Uz-SeMyung Co.”	37,0 ≥ 1	35,4 > 1	321,1 ≥ 20
“Uzbekistan Railways”	1325,2 ≥ 1	777,3 > 1	47218,0 ≥ 20
«GM – Uzbekistan”	14,6 ≥ 1	5,7 > 1	131,0 ≥ 20
“Uzpaxtayog” (“Asakayog”)	11,0 ≥ 1	113,2 > 1	11,0 < 20

If we consider the data in this table regarding the performance indicators of intellectual property objects:

*First, by the yield indicator:* a very high figure was in “Uztransgaz” JSC (54112,7 ≥), i.e. 54112.7 UZS is generated from intellectual property (intangible assets) worth 1 UZS,

“Maxam – Chirchik” JSC (4117,5 ≥) earned 4117,5 UZS, “Uzbekistan Railways” JSC (1325,2%) - 1325,2 UZS and “Kyzylkumtsement” JSC (90,3%) – 90,3 UZS income and their capacity in this regard is highly valued. The reason is that in these companies the share of these objects in the total assets is relatively small, while their financial capacity (revenue, gross income and net profit) demonstrated robust condition.

*second, by the profitability indicator:* the conditions have been fulfilled for almost all joint-stock companies (except for “GMP-Uzbekistan” JSC), out of which the companies with the highest rates were “Uztransgaz” JSC (27488,5 ≥) and “Maxam-Chirchik” JSC (1908,3 ≥), “Kyzylkumtsement” JSC (162,4>), “Uzbekistan Railways” JSC (777,3>). In terms of this condition, the lowest indicator belongs to “Andijanyogmoy” JSC (7,3>).

The net profit ratio was in sound condition in high-profit companies. This has ensured the fact that the amount of the net profit per 1 UZS has been several times more. On the other hand, the value of intellectual property in these companies is relatively low compared to companies with standard or past indicators.

*third, by the turnover indicator:* “Uztransgaz” JSC (126944,4 ≥), “Uzbekiston Railways” JSC (47218,0 ≥), “Maxam – Chirchik” JSC (20764,3 ≥), “Kyzylkumtsement” JSC (211,4 ≥), “Uz SeMyung Co.” JSC JV (321,1 ≥) companies demonstrate high performance indicators. In other words, this indicator can also be expressed as the amount of net revenue per 1 UZS of intellectual property object. According to this indicator, “Uztransgaz” JSC has received 126944,4 UZS for 1 UZS of intellectual property, “GM-Uzbekistan” has received 131 UZS and “Ferganaazot” JSC - 43UZS for 1UZS of the intellectual property object.

In order to determine the relationship between the above indicators of profitability and to assess the status of existing intellectual property in companies, the following indicators have been proposed: the share of gross profit ( $K_g$ ), profitability of the product sold ( $K_p$ ), efficiency of intellectual property objects ( $K_{ip_r}$ ) and profitability of intellectual property objects ( $IP_R$ ). These indicators are determined in the following way:

$$IP_R = G_I / IP_A = G_s (G_I / G_p) \times P_p (G_p / P_f) \times IP_r (P_f / IP_a)$$

Here:  $G_s$  – share of profit in the gross income,  $P_p$  – yield of the product sold,  $IP_r$  – efficiency of the intellectual property objects or:  $IP_R = (G_s \times P_p \times IP_r)$

It is advisable to ensure that the following conditions are fulfilled when evaluating the relationship between the proposed performance indicators:

**Table 11**

**Criteria for assessing the performance of intellectual property objects**

Indicators	Determination	Execution of conditions
Share of profit in the gross income	$G_s = G_I / G_p$ (form 2, line 270 / form 2, line 030)	$K_{g_s} \geq 0,10$
Revenue from the products sold	$P_p = (G_p / P_f)$ (form 2, line 030 / form 2, line 010)	$K_{p_p} \geq 0,30$
Efficiency of the intellectual property objects	$IP_r (P_f / IP_a)$ (form 2, line 010 / from 1, line 022)	$K_{ip_r} \geq 0,20$

According to the proposed assessment criteria:

In this regard it is compulsory to observe the following conditions: if the share of profit in the gross income is bigger or equal to 10 percent ( $K_{g_s} \geq 0,10$ ); if the revenue from the products sold is bigger or equal to 30 percent ( $K_{p_p} \geq 0,30$ ); if the efficiency of the intellectual property objects is bigger or equal to 20 percent ( $K_{ip_r} \geq 0,20$ ).

These indicators are analyzed as a case study of selected objects. As it is obvious from the data, the ratio of the share of profit in the gross income ( $G_s$ ) shows robust position in the “Kyzylkumtsement” JSC (0,12) and “Ferganaazot” JSC (0,07). In terms of the revenue from the products sold ( $P_p$ ), “Kyzylkumtsement” JSC earned 43 UZS per 1 UZS of the intellectual



property object, and “Uzbekistan railways” JSC earned 30 UZS per 1 UZS of the intellectual property object. In terms of the efficiency indicator of the intellectual property objects the best result belongs to “Uzbekistan railways” JSC (4747,5 times, or the proceeds of 4747,5 UZS per 1 UZS of the intellectual property object).

**Table 12**

**Analysis of indicators of intellectual property objects and their interrelation**

№	Indicator	At the beginning of the year	At the end of the year	Difference (+, -)
<b>“Ferganaazot”:</b>				
1.	Share of the profit in the income ( $G_s$ ), ratio	0,08	0,06	-0,02
2.	Yield of the production sold ( $P_p$ ), UZS	0,15	0,14	-0,01
3.	Efficiency of the intellectual property objects ( $IP_r$ ), times	24,6	45,7	21,1
4.	Profitability of the intellectual property objects, ( $IP_R$ ) UZS, ( $G_s \times P_p \times IP_r$ )	0,29	0,38	0,09
<b>“General Motors Powertrain –Uzbekistan”:</b>				
1.	Share of the profit in the income ( $G_s$ ), ratio	0,01	0,05	0,04
2.	Yield of the production sold ( $P_p$ ), UZS	0,27	0,29	0,2
3.	Efficiency of the intellectual property objects ( $IP_r$ ), times	20,6	15,6	-5,0
4.	Profitability of the intellectual property objects, ( $IP_R$ ) UZS, ( $G_s \times P_p \times IP_r$ )	0,05	0,22	0,17
<b>«Kyzylkumtsement”:</b>				
1.	Share of the profit in the income ( $G_s$ ), ratio	0,14	0,10	-0,04
2.	Yield of the production sold ( $P_p$ ), UZS	0,44	0,42	-0,02
3.	Efficiency of the intellectual property objects ( $IP_r$ ), times	171,0	239,4	68,4
4.	Profitability of the intellectual property objects, ( $IP_R$ ) UZS, ( $G_s \times P_p \times IP_r$ )	10,5	10,0	-0,5
<b>“Uzbekistan railways”:</b>				
1.	Share of the profit in the income ( $G_s$ ), ratio	0,05	0,16	-0,11
2.	Yield of the production sold ( $P_p$ ), UZS	0,32	0,28	-0,04
3.	Efficiency of the intellectual property objects ( $IP_r$ ), times	4900,0	4595,5	-304,5
4.	Profitability of the intellectual property objects, ( $IP_R$ ) UZS, ( $G_s \times P_p \times IP_r$ )	78,4	205,8	127,4

General assessment of the profitability of the intellectual property objects has been made when performing their factor analysis. We proposed to use the following formulas to determine the factors on the performance of intellectual property objects:

*First factor:* Share of the profit in the income on the change of the intellectual property objects’ profitability ( $IP_{R.pf}$ ).

$$IP_{R.pf} = (G_s^a \times P_p^p \times IP_a^p) - (G_s^p \times P_p^p \times IP_a^p)$$

Here:  $G_s^{\text{planned}}$  – share of the planned profit in the income,  $G_s^{\text{actual}}$  – share of the actual net profit in the income,  $P_p^{\text{planned}}$  – yield of the planned product sold,  $IP_a^{\text{planned}}$  – profitability of the planned intellectual property objects.

*Second factor:* Impact of the yield of the product sold on the change of the intellectual property objects' profitability ( $IP_{R.ip}$ ).

$$IP_{R.ip} = (G_s^a \times P_p^a \times IP_a^p) - (G_s^a \times P_p^p \times IP_a^p)$$

Here:  $P_p^{actual}$  – actual yield of the product sold.

*Third factor:* Impact of the turnover rate of the intellectual property objects on their profitability change ( $IP_{R.fa}$ ).

$$IP_{R.fa} = (G_s^a \times P_p^a \times IP_a^a) - (G_s^a \times P_p^p \times IP_a^p)$$

Here:  $IP_a^{actual}$  – actual profitability of the intellectual property objects. As a result, the impact of all factors is equal to the total difference of the result obtained:

$$\Delta IP_R = \Delta IP_{R.pf} \pm \Delta IP_{R.ip} \pm \Delta IP_{R.fa}$$

In reliance upon the formulas specified above, there has been performed the assessment of the factors influencing the efficiency of the intellectual property objects on the basis of the chain replacement method:

**Table 13**

**Assessment of the factors influencing the efficiency of the intellectual property objects on the basis of the chain replacement method**

№	Indicator	At the beginning of the year	At the end of the year	Difference (+, -)	Chain replacement		
					Factor 1	Factor 2	Factor 3
1	2	3	4	5	6	7	8
<b>“Ferganaazot”:</b>							
1.	Share of the profit in the income ( $G_s$ ), ratio	0,08 ( $G_s^p$ )	0,06 ( $G_s^a$ )	-0,02	0,06 ( $G_s^a$ )	0,06 ( $G_s^a$ )	0,06 ( $G_s^a$ )
2.	Yield of the production sold ( $P_p$ ), UZS	0,15 ( $P_p^p$ )	0,14 ( $P_p^a$ )	-0,01	0,15 ( $P_p^p$ )	0,14 ( $P_p^a$ )	0,14 ( $P_p^a$ )
3.	Efficiency of the intellectual property objects ( $IP_r$ ), times	24,6 ( $IP_r^p$ )	45,7 ( $IP_r^a$ )	+21,1	24,6 ( $IP_r^p$ )	24,6 ( $IP_r^p$ )	45,7 ( $IP_r^a$ )
4.	Profitability of the intellectual property objects, ( $IP_R$ ) UZS, ( $G_s \times P_p \times IP_r$ )	0,29	0,38	+0,09	0,22	0,20	0,38
<b>“General Motors Powertrain –Uzbekistan”:</b>							
1,	Share of the profit in the income ( $G_s$ ), ratio	0,01 ( $G_s^p$ )	0,05 ( $G_s^a$ )	-0,04	0,05 ( $G_s^a$ )	0,05 ( $G_s^a$ )	0,05 ( $G_s^a$ )
2,	Yield of the production sold ( $P_p$ ), UZS	0,27 ( $P_p^p$ )	0,29 ( $P_p^a$ )	+0,2	0,27 ( $P_p^p$ )	0,29 ( $P_p^a$ )	0,29 ( $P_p^a$ )
3,	Efficiency of the intellectual property objects ( $IP_r$ ), times	20,6 ( $IP_r^p$ )	15,6 ( $IP_r^a$ )	-5,0	20,6 ( $IP_r^p$ )	20,6 ( $IP_r^p$ )	15,6 ( $IP_r^a$ )
4,	Profitability of the intellectual property objects, ( $IP_R$ ) UZS, ( $G_s \times P_p \times IP_r$ )	0,05	0,22	+0,17	0,27	0,29	0,22
<b>«Kyzylkumtsement”:</b>							
1,	Share of the profit in the income ( $G_s$ ), ratio	0,14 ( $G_s^p$ )	0,10 ( $G_s^a$ )	-0,04	0,10 ( $G_s^a$ )	0,10 ( $G_s^a$ )	0,10 ( $G_s^a$ )

2,	Yield of the production sold ( $P_p$ ), UZS	0,44 ( $P_p^p$ )	0,42 ( $P_p^a$ )	-0,02	0,44 ( $P_p^p$ )	0,42 ( $P_p^a$ )	0,42 ( $P_p^a$ )
3,	Efficiency of the intellectual property objects ( $IP_r$ ), times	176,0 ( $IP_r^p$ )	239,4 ( $IP_r^a$ )	+68,4	171,0 ( $IP_r^p$ )	171,0 ( $IP_r^p$ )	239,4 ( $IP_r^a$ )
4,	Profitability of the intellectual property objects, ( $IP_R$ ) UZS, ( $G_s \times P_p \times IP_r$ )	10,5	10,0	-0,5	7,5	7,2	10,0
<b>“Uzbekistan Railways” :</b>							
1,	Share of the profit in the income ( $G_s$ ), ratio	0,05 ( $G_s^p$ )	0,16 ( $G_s^a$ )	+0,11	0,16 ( $G_s^a$ )	0,16 ( $G_s^a$ )	0,16 ( $G_s^a$ )
2,	Yield of the production sold ( $P_p$ ), UZS	0,32 ( $P_p^p$ )	0,28 ( $P_p^a$ )	-0,04	0,32 ( $P_p^p$ )	0,28 ( $P_p^a$ )	0,28 ( $P_p^a$ )
3,	Efficiency of the intellectual property objects ( $IP_r$ ), times	4900,0 ( $IP_r^p$ )	4595,5 ( $IP_r^a$ )	-304,5	4900,0 ( $IP_r^p$ )	4900,0 ( $IP_r^p$ )	4595,5 ( $IP_r^a$ )
4,	Profitability of the intellectual property objects, ( $IP_R$ ) UZS, ( $G_s \times P_p \times IP_r$ )	78,4	205,8	+127,4	250,8	219,5	205,8

It can be seen from the data in the table, the positive result has been obtained when making calculations on the basis of the chain replacement of the factors influencing performance of the intellectual property objects in the objects selected. Below it is obvious which result has been obtained due to the impact of each factor:

**Table 14**

**Share of the profit in the income ( $G_s$ ), ratio**

<b>By factor 1:</b>			
№	Company name	Result: ( $IP_R$ )	Conclusion: ( $G_s$ )
1	2	3	4
1.	“Ferganaazot”	$0,22 - 0,29 = -0,2$	Reduction of the share of profit in gross income by 0,02 has resulted in the decrease of IPO yield by 2 UZS
2.	“General Motors Powertrain –Uzbekistan”	$0,27 - 0,05 = 0,22$	Increase of the share of profit in gross income by 0,04 has resulted in the growth of IPO yield by 22 UZS.
3.	“Kyzylkumtsement”	$7,5 - 10,5 = -3,0$	Reduction of the share of profit in gross income by 0,04 has resulted in the decrease of IPO yield by 300 UZS.
4.	“Uzbekistan railways”	$250,8 - 78,4 = 172,4$	Increase of the share of profit in gross income by 0,11 has resulted in the growth of IPO yield by 17240 UZS.

The first factor in this is table illustrates how much the share of profit ( $G_s$ ) in the income raises or reduces the profitability of the intellectual property object. The highest result on this factor belongs to “Uzbekistan Railways” JSC ( $250,8 - 78,4 = 172,4$ ). The increase in the share of profit of this company by + 0,11 in gross income has increased the profitability

of intellectual property by 17 240 UZS. However, “Kyzylkumtsement” JSC experiences negative situation by this indicator ( $7,5 - 10,5 = -3,0$ ). As a result of the  $-0,04$  decrease of the share of the profit of this company, the profitability of intellectual property objects decreased by 300 UZS.

**Table 15**

**Yield of products sold ( $P_p$ )**

<b>By factor 2:</b>			
<b>№</b>	<b>Company name</b>	<b>Result: (<math>IP_R</math>)</b>	<b>Conclusion: (<math>P_p</math>)</b>
1.	“Ferganaazot”	$0,20 - 0,22 = -0,02$	Reduction of the yield of products sold by 0,01 has resulted in the decrease of the IPO efficiency by 2 UZS.
2.	“General Motors Powertrain – Uzbekistan”	$0,29 - 0,27 = +0,02$	Increase of the yield of products by 0,02 has resulted in the increase of the IPO efficiency by 2 UZS.
3.	“Kyzylkumtsement”	$7,2 - 7,5 = -0,3$	Reduction of the yield of products sold by 0,04 has resulted in the decrease of the IPO efficiency by 30 UZS.
4.	“Uzbekistan railways”	$219,5 - 250,8 = -31,3$	Reduction of the yield of products sold by 0,04 has resulted in the decrease of the IPO efficiency by 3130 UZS.

According to this factor (yield of the product sold ( $P_p$ )), the indicators of “General Motors Powertrain – Uzbekistan” JSC have a slightly positive result compared to other companies ( $0,29 - 0,27 = +0,02$ ). The increase in the yield of the product sold by 0,02 UZS increased the profitability of the IPO by 2 UZS. It should be noted, that it is the only company where the yield of the product sold has increased. In other companies this trend is declining (“Kyzylkumtsement” JSC has decreased by 30 UZS and “Uzbekistan Railways” - by 3130 UZS).

**Table 16**

**Profitability of the intellectual property objects ( $IP_R$ )**

<b>By factor 3:</b>			
<b>№</b>	<b>Company name</b>	<b>Result: (<math>IP_R</math>)</b>	<b>Conclusion: (<math>IP_r</math>)</b>
1.	“Ferganaazot”	$0,38 - 0,20 = 0,18$	Increase in the turnover rate of the IPO by 1,4 times has resulted in the growth of its profitability by 18 UZS.
2.	“General Motors Powertrain – Uzbekistan”	$0,22 - 0,29 = -0,07$	Reduction in the turnover rate of the IPO by 0,5 times has resulted in the decrease of 7 UZS.
3.	“Kyzylkumtsement”	$10,0 - 7,2 = 2,8$	Increase in the turnover rate of the IPO by 68,4 times has resulted in the growth of its profitability by 280 UZS.
4.	“Uzbekistan railways”	$205,8 - 219,5 = -13,7$	Reduction in the turnover rate of the IPO by 304,5 times has resulted in the decrease of 1370 UZS.

According to the results of the third factor impact on the intellectual property objects ( $IP_R$ ), “Kyzylkumtsement” JSC has demonstrated a good performance (due to the fact that the turnover of intellectual property has increased by 68,4 times its profitability has increased by

280 UZS). In addition, we can see an increase in “Ferganaazot” JSC by 18 UZS (as a result of an increase in the IMO turnover rate by 1,4 times). This can be seen in “Uzbekistan Railways” JSC (turnover at this enterprise decreased has by 304,5 times, and as a result the profitability of intellectual property objects decreased by 1370 UZS).

The following table evaluates the usefulness of intellectual property objects as a result of calculating the impact of all factors.

**Table 17**

**Assessing the results obtained from the impact of all factors**

№	Company name	Result:	Conclusion:
$\Delta IP_R = \Delta IP_{R,pf} \pm \Delta IP_{R,ip} \pm \Delta IP_{R,fa}$			
1	2	3	4
1.	“Ferganaazot”	$\Delta IP_R = (-0,07) \pm (-0,02) \pm (+0,18) = + 0,09$	At the end of the reporting period the usefulness of the IPO has increased by 9 UZS in comparison with the beginning of the year.
2.	“General Motors Powertrain – Uzbekistan”	$\Delta IP_R = (+0,22) \pm (+0,02) \pm (-0,002) = + 0,22$	At the end of the reporting period the usefulness of the IPO has increased by 22 UZS in comparison with the beginning of the year.
3.	“Kyzylkumtsement”	$\Delta IP_R = (-3,0) \pm (-0,3) \pm (+2,8) = - 0,05$	At the end of the reporting period the usefulness of the IPO has reduced by 5 UZS in comparison with the beginning of the year.
4.	“Uzbekistan railways”	$\Delta IP_R = (+172,4) \pm (-31,3) \pm (-13,7) = +127,4$	At the end of the reporting period the usefulness of the IPO has increased by 12740 UZS in comparison with the beginning of the year.

It can be concluded from this table that the usefulness of intellectual property objects as a result of calculating the impact of all factors has achieved a positive result in three companies. In particular, in “Ferganaazot” JSC it has increased by 9 UZS, in “General Motors Powertrain – Uzbekistan” JSC by 22 UZS and in “Uzbekiston Railways” JSC - by 12740 UZS. However, according to this indicator, the situation in “Kyzylkumtsement” JSC is not favourable (IMO usefulness has decreased by 5 UZS).

In assessing the results of the analysis of intellectual property objects and the factors influencing it, and in making managerial decisions in this regard, we have proposed the following:

**Table 18**

**Decision-making by the analysis results**

Stages of analysis	Name	Recommended level	Conclusion
<i>Third</i>	Analysis of indicators representing the efficiency of intellectual property objects	Ensuring <i>the</i> following: $K_{IPP} \geq 1$ UZS $K_{IPRE} > 1$ UZS $K_{IPT} \geq 20$ times	In terms of the analyzed period it illustrates high efficiency of the intellectual property objects (yielding a profit) and speeding up the turnover period
<i>Fourth</i>	Interrelation between the	It is required that $IP_R \geq 0,20$	In terms of the analyzed period it illustrates positive

	indicators representing the efficiency of the intellectual property objects	$(K_{g_s} \geq 0,10 + K_{p_p} \geq 0,30 + K_{i_r} \geq 0,20)$	interrelation between profit, products sold and intellectual property objects.
<i>Fifth</i>	Factor analysis of the efficiency of the intellectual property objects	$\Delta IP_R = \Delta IP_{R,pf} \pm \Delta IP_{R,ip} \pm \Delta IP_{R,fa}$	In terms of the analyzed period it illustrates usefulness of the intellectual property objects due to certain factors (profit, products sold, turnover).

**Managerial decision:**

Achieving the recommended indicators for each stage of the analysis will result in the increase in the volume of intellectual property, a growth in revenue from the sale of products due to their efficient use, as well as an increase in net profit.

Intellectual property objects, long-term assets and current assets have been accepted as factors affecting proceeds from the sale. The reason for performing an empirical analysis by types of assets is that enterprise's assets play a key role in the production of assets. The descriptive statistics of the variables specified above are presented in the table:

**Table 19**

**Descriptive statistics analysis for the intellectual property objects**

Indicators	Proceeds from sales of products	Intellectual property objects	Long-term assets	Current assets
Medium	2312060501	14971664.64	1768873084	1029396462
Standard deviation	3477179347	31022214.4	3019015268	2050982284
Minimum	47098879	14000	6934845	1372562709
Maximum	10261781347	102822702	10222335009	6291970206
Number of objects	11	11	11	11

As the analysis of the descriptive statistics illustrates that the standard deviation of proceeds from sales and long-term assets is quite bigger than of other variables due to the fact that enterprises are operating in different areas. According to the minimum value, the value of "AAA" enterprise which has the least number of intellectual property objects among other business entities constitutes 14 million UZS. The value of "BBB" enterprise which has the biggest number of intellectual property objects among other business entities accounts for over 102 billion UZS. An important part of the empirical analysis of the correlation of these variables is presented in the following table: as the correlation matrix of variables:

According to the correlation matrix, the correlation between the proceeds from sales and the other variables demonstrates a positive correlation.

It should be noted that the correlation of proceeds from sales with intellectual property objects is much higher than the correlation with other variables (Table 9)

The correlation between types of assets is also positive and the correlation between intellectual property objects and current assets is highly dependent. This implies a careful approach to the outcome when inputting these two variables into the regression model because such a high correlation of the independent variables can cause a multicollinearity problem.

The correlation dependencies enable to provide a more comprehensive view of the linear model. Therefore, below there are presented correlations of some variables of natural logarithms. From the Figure given below it is obvious that there is a high positive correlation between the proceeds from the sales of goods and other variables.

**Table 20**

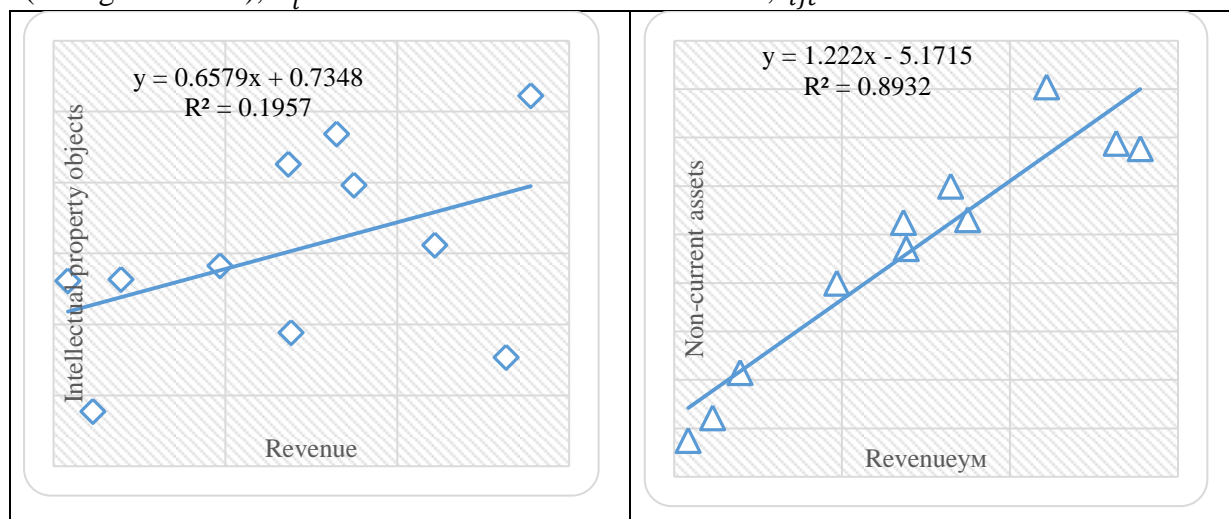
**Intercorrelation matrix of variables**

	Proceeds from the sale	Intellectual property objects (Intangible assets)	Long-term assets	Current assets
1. Proceeds from the sale	1.00			
2. Intellectual property objects	0.68	1.00		
3. Long-term assets	0.44	0.08	1.00	
4. Current assets	0.57	0.83	0.42	1.00

Herein the empiric model can be represented in the following way:

$$VCT_i = a + bNA_i + gX_i^j + e_i$$

where  $VCT_i$  –  $i$  – proceeds from the sales of goods,  $NA_i$  –  $i$  – intellectual property objects (intangible assets),  $X_i^j$  – other assets included in the model,  $e_{ijt}$  – error.



**Figure 4. Linear chart of variables**

The main aim of conducting regression analysis of the intellectual property objects is opportunity to calculate how the increase of the intellectual property objects by 1 UZS will raise the proceeds from sales. The following Table demonstrates three models that have been calculated by the least square method (Table 3).

**Table 21**

**Regression model results**

	Model [1]	Model[2]	Model[3]
Intellectual property objects (Intangible assets)	76.67** (27.25)	73.02** (24.67)	143.95** (48.29)
Long-term assets		0.44 (0.25)	0.76** (0.30)
Current assets			-1.33 (0.80)

Constant	1164125369 (903486969)	433932776 (915439957)	171611221 (844394064)
R-square	0.47	0.62	0.72

\*\*\* statistic significance of 1 per cent

\*\* statistic significance of 5 per cent

\* statistic significance of 10 per cent

According to the results of various models of regression analysis, positive impact of intellectual property objects on the proceeds from sales has been confirmed on the basis of the empirical analysis. The impact of intellectual property objects on the proceeds from sales of goods in all peculiar properties of all models is considered positive and has high social significance.

According to the models, it is possible to make a conclusion that an increase of intellectual property objects (intangible asset) of any enterprise by 1000 UZS will result in average increase of proceeds from sales by 98000 UZS.

In conclusion it should be noted that improvement of analyzing intellectual property objects it will enable to:

- assess changes by the structure of the intellectual property objects;
- assess the state and flow of the intellectual property objects in terms of their structure;
- evaluate amendments in the ownership right and the right to dispose intellectual property objects.

### CONCLUSION.

The following measures should be undertaken for developing the intellectual property ecosystem and innovation activity in the republic:

development of drafts of new statutory acts aimed at improving the competitiveness of the national innovation system;

bringing copyright protection legislation in compliance with the international standards;  
creation of the national innovation system which absorbs the world scientific research innovations and possibilities for their implementation;

when financing research field, allocating funds to fundamental research areas and practical activities of the private sector;

improvement of mechanisms for commercialization of research results, providing appropriate incentives for the creation of innovative technoparks in the regions;

proceeding from the peculiarities of the national economy establishment of the innovation centres at the local level;

development of innovation determining standards with the account of the world standards;

encouraging establishment of research and project institutes at the branch enterprises and gradual application of international standards into the patenting system of the republic;

it is necessary to create a special “customer-researcher-investor” chain for commercialization of scientific research and to implement the mechanism encouraging introduction of scientific achievements in the economy.

Efficient criteria of the intellectual property ecosystem will be demonstrated in the following aspects:

*first*, it will be designed for commercialization of innovation products of the successful intellectual property ecosystem;

*second*, efficient intellectual property ecosystem will ensure constant change of existing and generating new ideas;



*third*, efficient intellectual property ecosystem represents a collaborative network of professionals who provide continuity in the creation of innovative products.

In conclusion it should be noted that by 2021-2030 Uzbekistan has been assigned the task to reach and be included in the list of international ratings and indices, such as Global Competitiveness Index, World Economic Forum, Global Innovation Index, INSEAD International Business School, Cornell University, World Intellectual Property Organization (WIPO), Global Green Economy Index - Dual Citizen LLC, as well as Competitive Industrial Performance Index by the United Nations Industrial Development Organization (UNIDO).

This means that global economic growth will not return to pre-pandemic levels. We have to get used to it, intellectual property has been badly damaged by the pandemic, but the pandemic has taught us to work together more than ever. We will definitely overcome this pandemic disaster and endure its hardships. Human capital and intellectual property will continue to grow and develop. The creation of new intellectual property in the world will never stop.

*We think say with confidence that intellectual property can overcome any coronavirus pandemic!*

#### **REFERENCE.**

1. Analysis of financial statements: study of the educational program. / O. V. Efimova et al. M.: "Omega-L", 2013. 388 p.
2. Analysis of financial statements: student / -6th edition. Trans. and additional publishing house "Delo and Service", 2008. -368 p.
3. Abryutina M.S., Grachev A.V. Analysis of the financial and economic activity of the enterprise: Textbook. –M.: "Business and Service". 1998.-256 p.
4. Bakanov M.I., Sheremet A.D. The theory of economic analysis: Textbook. 3rd ed. M.: Finance and statistics, 1996.-288 p.
5. Brooking A., Motta E.A (1996). Taxonomy of Intellectual Capital and Methodology for Auditing It/17th Annual National Business Conference, McMaster University, Hamilton, Ontario, Canada. January 24-26.
6. Grigorieva T.I. Financial analysis for managers. Textbook. Yurayt, ID. Yurayt, 2015. -486 p.Frost & Sullivan (2019).<http://www.tadviser.ru>.
7. Economic analysis: textbook / ed. N.V. Voitolovsky and friend. Publishing house Yurayt, 2016. -548 p. Series: Bachelor. Advanced course.Dontsova L.
8. Dontsova L. Analysis of Financial Statements: Textbook, 6<sup>th</sup> edition. Edited. "Delo - Service" publishing house, 2008. -368 p.
9. Jumaev N.H., Ataniyazov J.X. Foreign direct investments as a factor of increasing competitiveness of the economy. International Journal of Economics, commerce and Management. United Kingdom <http://ijecm.co.uk/>. Vol. VI, Issue 11, November 2018. ISSN 2348 0386. (Impact Factor #3,5).
10. Pulatov M.E. "Improving the methodology of accounting and auditing of intellectual capital", 08.00.08 - "Accounting, economic analysis and audit", Abstract, 2017, 64 p.
11. Rizaev N.K. Organization methodology of accounting and analysis of intellectual property objects. Monograph. - T.: TFI, "Iqtisod-Moliya", 2018 220 p.
12. Forecast: 3D-Printers, Worldwide, 2018, Gartner, 17 September 2018,G00277739. <https://www.gartner.com/doc/3132417/forecast-d-printers>
13. Tadviser (2019). <http://www.tadviser.ru/index.php>.

14. Stewart T.A. Intellectual Capital. The New Wealth of Organizations. N.Y.-L., Doubleday / Currency, 1997. Copyright - T.A.Stewart 1997.
15. Leontyev B.B. (2002). Price for intellect Intellectual capital in Russian business. – M.: «Aktционер».
16. Ivanov I.V et al (2008). Financial Management: Cost approach: educational aid. - M.: Alpina Business Books.
17. Lytneva L. (2006). Accounting. Textbook: M-Forum: INFRA-M, -496 p.
18. Mirziyoyev Sh. M. (2017). Message of Shavkat Mirziyoyev, the President of the Republic of Uzbekistan to the Oliy Majlis. December 22, 2017.
19. Tolpegina O, Tolpegina N. Complex economic analysis. economic activity. At 2 hours, Part 1: Textbook-M.: Yurayt Publishing House, 2016.-363s.
20. Thomas P. Carlin. Albert R. Makmin, III. Analysis of financial statements (on the GAAP basis). Textbook. Translation of the IV-th English edition.M.: INFRA-M.1998.-448p.
21. Sveiby K.E. Intellectual Capital and Knowledge Management.1998.213 p.
22. Speech by the President of the Republic of Uzbekistan Sh.M.Mirziyoyev at the 75th Session of the United Nations General Assembly. <http://uza.uz/en/politics/speech-by-the-president-of-the-republic-of-uzbekistan-h-e-mr-23-09-2020>
23. Decree (2018). Decree of the President of the Republic of Uzbekistan №5544 “On approving the strategy for innovative development of the Republic of Uzbekistan for 2019 – 2021” as of September 21, 2018.
24. Decree (2019). Decree of the President of the Republic of Uzbekistan №5544 “On approving the strategy for innovative development of the Republic of Uzbekistan for 2019 – 2021” as of September 21, 2018.
25. UNESCO (2019).<http://uis.unesco.org/sites>.
26. Brand Finance NB. 2018.<http://brandfinance.com/who-we-are/our-story/>.
27. Brand Finance GIFT 2016 with CIMA and IPA 2016 10 P.[enquiries@brandfinance.com](mailto:enquiries@brandfinance.com)
28. Worldwide-research (2019). <https://www.statista.com/statistics/732247>
29. Worldbank. (2019). <https://data.worldbank.org/indicator/gb.xpd.rsdv.gd>
30. [http://brandfinance.com/images/upload/global\\_500\\_2019\\_locked.pdf](http://brandfinance.com/images/upload/global_500_2019_locked.pdf)
31. <http://www.wipo.int/ipstats/en/index.html>Source: WIPO Statistics Database, March, 2018.
32. <https://www.wipo.int/edocs/infogdocs/en/ipfactsandfigures2018/>
33. <https://www.wipo.int/edocs/infogdocs/en/2019/> (Facts and Figures).
34. <http://www.wipo.int/edocs/infogdocs/en/2019/> (PCT top tech fields).
35. <https://www.wipo.int/ipstats/ru/>
36. [http://www.wipo.int/edocs/infogdocs/2018.](http://www.wipo.int/edocs/infogdocs/2018/) (Madrid top 10 countries)
37. <https://www.wipo.int/portal/en/index.html>
38. <https://ru.wikipedia.org/wiki/>.
39. <https://mininnovation.uz/>
40. <https://president.uz/uz/3158>
41. <http://financials.morningstar.com/balance-sheet/bs.html?t=GM>.
42. <https://www.columbia.edu/> (Columbia University).
43. <https://innovation.ox.ac.uk/universit> (University of Oxford).
44. [https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_gii\\_2020/uz.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020/uz.pdf)
45. <https://rg.ru/2018/10/21/kak-upravliat-intellektualnoj-sobstvennostiu>.