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ВЕСТНИК

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NAS RK is pleased to announce that Bulletin of NAS RK scientific journal has been accepted for indexing in the Emerging Sources Citation Index, a new edition of Web of Science. Content in this index is under consideration by Clarivate Analytics to be accepted in the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index. The quality and depth of content Web of Science offers to researchers, authors, publishers, and institutions sets it apart from other research databases. The inclusion of Bulletin of NAS RK in the Emerging Sources Citation Index demonstrates our dedication to providing the most relevant and influential multidiscipline content to our community.

Қазақстан Республикасы Ұлттық ғылым академиясы "ҚР ҰҒА Хабаршысы" ғылыми журналының Web of Science-тің жаңаланған нұсқасы Emerging Sources Citation Index-те индекстелуге қабылданғанын хабарлайды. Бұл индекстелу барысында Clarivate Analytics компаниясы журналды одан әрі the Science Citation Index Expanded, the Social Sciences Citation Index және the Arts & Humanities Citation Index-ке қабылдау мәселесін қарастыруда. Web of Science зерттеушілер, авторлар, баспашылар мен мекемелерге контент тереңдігі мен сапасын ұсынады. ҚР ҰҒА Хабаршысының Emerging Sources Citation Index-ке енуі біздің қоғамдастық үшін ең өзекті және беделді мультидисциплинарлы контентке адалдығымызды білдіреді.

НАН РК сообщает, что научный журнал «Вестник НАН РК» был принят для индексирования в Emerging Sources Citation Index, обновленной версии Web of Science. Содержание в этом индексировании находится в стадии рассмотрения компанией Clarivate Analytics для дальнейшего принятия журнала в the Science Citation Index Expanded, the Social Sciences Citation Index и the Arts & Humanities Citation Index. Web of Science предлагает качество и глубину контента для исследователей, авторов, издателей и учреждений. Включение Вестника НАН РК в Emerging Sources Citation Index демонстрирует нашу приверженность к наиболее актуальному и влиятельному мультидисциплинарному контенту для нашего сообщества.

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COMMERCIALIZATION OF INTELLECTUAL DEVELOPMENT OF KAZAKHSTAN

Abstract. The article is devoted to the legal and organizational mechanisms for ensuring the commercialization of intellectual property in the Republic of Kazakhstan. Authors analyzed the factors, infrastructure and institutions of commercialization, assessed the activities of subjects of commercialization. The activity of enterprises in obtaining security documents for intellectual property was analyzed. The types of intellectual property that occupy the greatest share in the structure of issued security documents are identified. An assessment of the licensing activities dynamics related to innovation is given. The analysis of innovative activity of enterprises in Kazakhstan was carried out and the main trends of its dynamics were identified. Authors proposed measures to stimulate the commercialization of the intellectual development of Kazakhstan based on the studied foreign experience. The authors suggest that the greatest potential for stimulating the commercialization of intellectual property results is the development of venture capital financing. The most effective way is the adoption and implementation of the state program for the development of venture capital investment, because the state will be able to act as a guarantor of reliability. In addition, the authors proposed the use of venture financing methods tested in international practice, in which investments are made in stages to reduce risks.

Keywords: commercialization, intellectual activity, technopark, design office, start-up company, business incubator, intellectual cluster.

Introduction. Commercialization of intellectual activity results became integral to innovative development in the modern world. Namely this allows distributing the results among a wide variety of customers providing the income of means necessary for the next round of intellectual processes circulation in human society. The commercialization notion is differentiated and transformed with changing of its scale. Its following levels and typical features can be noted.

In Kazakhstan, the Law “On Commercialization” determines clearly the division of ownership rights on the results of intellectual activity. According to it the “intellectual property right obtained by the subjects of scientific and (or) scientific and technological activity as a result of scientific and (or) scientific and technological activity conducted under the budget funds belongs to research organization, unless otherwise provided for by the contract between them and an author (authors) of the intellectual property object [1].

The exclusive rights on the results of scientific and scientific and technological activity created within the implementation of scientific-research and development works by the subjects of scientific activity together with subjects of private entrepreneurship and quasi-public sector belong to them jointly. If the Agreement provides that the exclusive rights on the results of such activity belong to the subject of scientific activity, then the subject of private entrepreneurship and quasi-public sector reserves a right on the unpaid nonexclusive license to use these results in its own manufacture process.

In addition, higher education establishments and research organizations may themselves dispose of property rights on the results of intellectual activity, and of the income received as a result of the created start-up companies' activity, and together with subjects of private entrepreneurship and quasi-public sector. And the subjects of private entrepreneurship and quasi-public sector have a right to book pro se the intellectual property right basing on a Contract concluded with another participant of scientific activity results commercialization. And the authors of the results of scientific and scientific and technical activity are paid a reward, and a right holder may dispose of property himself without agreeing with an authorized body [2].

The precision of a property right holder on a product of intellectual labor is an obligatory condition of its further commercialization. At the present time, the world countries do not have a common approach to this issue. Many European countries – Austria, Belgium, Denmark, France, Ireland, Germany, Portugal, Spain, and Great Britain – have rendered the rights declared as intellectual property rights to the organization-employer. At the same time, Finland, Sweden, Italy, and Greece have a mixed form of property or exclusive right of property rendered to a researcher. Interesting is the fact that a researcher-owner in these countries does not in a hurry to commercialize his product, but an organization as an owner manages this issue more effectively.

According to the legislation [3], in Kazakhstan, the State organizations, state higher education establishment are approved to create, even together with others, organizations which activity is directed on practical application (commercialization) of results of scientific and scientific and technological activity. As a contribution to the equity capital these can enter the intellectual property rights only, and dispose of the ownership rights on intellectual property without agreeing with an authorized national body – owner of their property.

The revenues received from the participation shares management of the equity capital of start-up companies the founders and participants of which are the state higher education establishments, state research organizations, and a part of start-up companies income received by these organizations enter its individual disposition.

The earnings received from start-up companies' activity can be directed on legal protection of intellectual property, reward payment to the author and persons assisted in commercializing the results of scientific and scientific and technological activity. At the same time, the share of authors should be not less than thirty percent of the start-up company income share received by higher education establishments, research organizations. If the start-up company is liquidated the exclusive rights on the results of scientific and scientific and technological activity contributed into the equity capital are returned to the owners, and the license on the application rights of the scientific activity results is terminated.

Results and discussion. Kazakhstan conducts the stimulating policy in the field of commercialization of intellectual activity results. This policy is based on the following principles [4]:

- Transparency at interaction of all participants of the process;
 - Guarantee of rights and interests of persons involved in receiving the results of scientific and scientific and technological activity, income generation;
 - Economic stimulation of commercialization of scientific and scientific and technological results in domineering sectors of economics;
 - Integration of education, science, manufacture, and institutes of innovative development.
- Commercialization mechanisms include:
- Conclusion of a license contract and exclusive rights assignment agreement on the results of scientific and scientific and technological activity;
 - Establishment of a start-up company;
 - Introduction (application) of results of scientific and scientific and technological activity in the own manufacture.

By data of the National Institute of Intellectual Property for 2016, 304 assignment agreements for the intellectual property objects were submitted for registration, as well as 289 license contracts including sublicense contracts and additional agreements to the registered license contracts, 27 contracts on joint entrepreneurship license containing the conditions on rendering a right for application of intellectual property objects. 611 contracts on exclusive rights disposition for the intellectual property objects were registered.

In 2012–2017 the number of the registered assignment agreements for protection documents reduced from 1400 to 1011, or by 27%.

The number of the issued patents by all types in 2016 diminished. The tendency of activation of the national inventors for patents receiving is observed (table 1). In the structure of the issued documents its share has increased from 11.07% in 2012 to 32.7% in 2016.

Table 1 – The dynamics of distribution of the copyright protection assignment agreements registered in Kazakhstan

Document type	2012	2013	2014	2015	2016	2017	2017 to 2012
Total number issued, including	1400	1500	1504	1504	1011	869	-531
National patent applicants							
Provisional patents	3	–	–	–	–	–	-3
Patents	155	199	203	250	331	638	483
%	11,07	13,2	13,49	16,62	32,7	73,4	62,33
Innovation patents	1090	1120	1091	1084	476	12	-1078
%	77,85	74,6	72,73	72,07	47,08	1,38	-76,47
Foreign patent applicants							
Provisional patents	–	–	–	–	–	–	0
Patents	139	179	208	158	202	219	80
%	9,92	11,93	13,8	10,50	19,98	25,2	15,28
Innovation patents	13	2	2	12	2	0	-13
%	0,92	0,13	0,13	0,79	0,19	0	-0,92
<p><i>Source.</i> Annual report of the Institute of Intellectual Property // http://kazpatent.kz/sites/default/files//booklet_go_rus_legkiy_ll.pdf</p>							

From 2012 the activity of the economy subjects on innovation patents receiving decreases; in 2017 the decrease was about 98% in comparison to 2012. Its share in the structure of the issued documents also decreases, from 77.85 % in 2012 to 1.38 in 2017. The same situation is with the foreign patent applicants whose activity regarding the innovation patents almost stopped. All this occurs despite the activation of the government efforts on ensuring the access and attractiveness of innovation patents.

Among the registered copyright protection assignment agreements the most part of submitted and registered applications were for the exclusive rights on trademarks. In 2017 the relative share of the indicator “Exclusive rights on trademarks in total amount of the registered copyright protection assignment agreements” was 94.74% (table 2).

Table 2 – Dynamics of distribution of the copyright protection assignment agreements registered in Kazakhstan

	2012	2013	2014	2015	2016	2017	2017 to 2012
A	1	2	3	4	5	6	
Protection documents for inventions	6	21	19	21	19	7	1
%	5,17	7,08	7,50	7,60	6,69	2,46	-2,71
Protection documents for useful models	2	7	7	3	9	6	4
%	0,17	2,06	2,76	1,08	3,16	2,11	1,93
Protection documents for industrial samples	7	12	4	5	4	2	-5
%	6,03	4,46	1,58	1,81	1,40	0,7	-5,32
Exclusive rights for trademarks	101	229	223	247	249+3(D)	270	169
%	87,0	85,1	88,14	89,49	88,73	94,74	7,73
Total	116	269	253	276	284	285	169
<p><i>Source.</i> Annual report of RIIP // http://kazpatent.kz/sites/default/files//booklet_go_rus_legkiy_ll.pdf</p>							

In 2017 comparing to 2012 the structure of the registered contracts shows positive dynamics in issuing the protection documents for inventions by 16.6%, protection documents for useful models – by two times, and exclusive rights for trademarks – by 1.67. The share of the protection documents for industrial samples in the structure of the issued documents remains quite small and has a tendency to quantitative decrease. Thus, if in 2012 there were 7 units, in 2017 there were only 2 units. This shows low interest of the real sector in the national developments at its significant capital intensity. In whole, the positive dynamics of the number of the registered copyright protection assignment agreements may testify the existence of this market and activation of innovations owners on its commercialization.

The commercialization results are expressed in issuing the licenses on application of the intellectual activity objects. In 2016 there was small increase of such licenses issue in Kazakhstan. However, the national economy subjects prefer pay money for utilization of the trademarks and franchise of foreign companies for which there is most part of applications, and licenses given (table 3).

Table 3 – Distribution of the registered license agreements for utilization of industrial property objects in Kazakhstan

	2012	2013	2014	2015	2016	2017	2017 to 2012
Inventions	2	14	17	14	18	11	9
%	1,96	6,08	6,13	4,6	5,50	5,42	3,45
Useful models	1	5	5	5	2	5	4
%	0,98	2,17	1,80	1,64	0,61	2,46	1,48
Industrial samples	–	3	2	3	2	–	0
%	–	1,30	0,72	0,98	0,61	–	0
Trademarks and service marks	54+34(D)	193	236	260	258	169	81
%	87,2	83,91	85,19	85,5	78,89	83,25	–3,94
Successful breeds	8	11	4	–	14	18	10
%	7,84	4,78	1,44	–	4,28	8,87	1,03
Franchise agreement	2	2	7	19	27	–	0
%	1,96	0,86	2,52	6,25	8,25	–	0
Security and pledge agreement	1	2	6	3	3+3(D)	–	0
%	0,98	0,86	2,16	0,98	1,83	–	0
Total	102	230	277	304	327	203	101

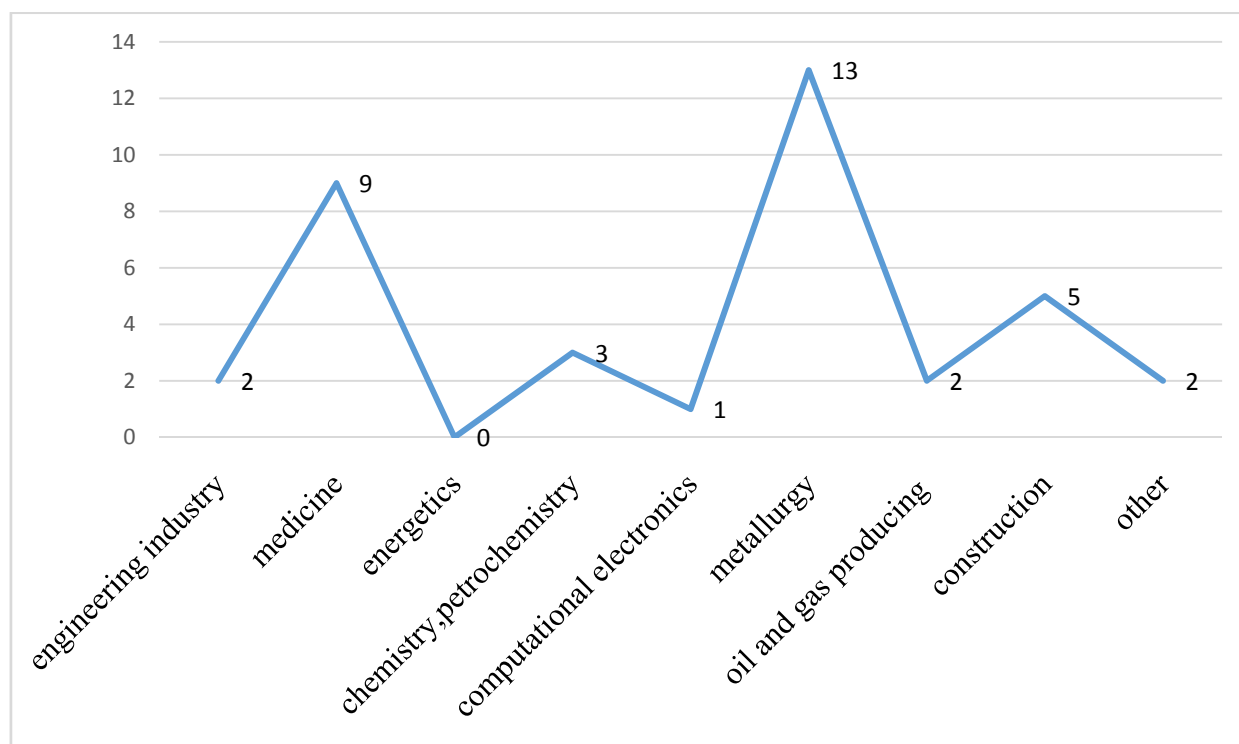
Source. Annual report of RIIP //http://kazpatent.kz/sites/default/files/godovoi2016.pdf

Thus, in 2017 the share of license agreements on the trademarks and service marks was 83.25% of all registered agreements that is by 81 units more than in 2012. The similar situation is with franchise agreements – in 2016 its share was 8.25%, in numerical terms for the past 5 years its growth was 25 units. Data for 2017 are not shown in the report. The ratio of the number of license agreements for inventions and successful breeds in 2017 changed, if in 2016 the shares were almost equal, in 2017 these were 5.42% and 8.87%, respectively, and positive dynamics is observed in this field. These data show the high interest of the national economic subjects to already trusted and steadily operating foreign technologies and goods.

In the industrial section, most of the invention patents are forwarded for the utilization in metallurgy, medicine, chemistry, construction, and engineering fields (figure 1).

This is supported by the priorities of the policy on industrially innovative development of the country. The indicators in the field of energy and electrical technologies, electronics and computational technologies fall behind significantly, although the products of these fields are much-in-demand today.

The world experience shows that the effective instrument of innovation activity development and commercialization of its results is clustering. The intellectual cluster is able to join the interested and interdependent organizations to achieve a common goal. In Kazakhstan the intellectual clusters should be developed on the base of the leading universities of the country, for example, K. Satpayev KazNRTU,



Source. Annual report of RIIP // <http://kazpatent.kz/sites/default/files/godovoi2016.pdf>

Figure 1 – Registered agreements on a right for application of invention patents (by technological fields), 2016

Al-Farabi KazNU, and L. Gumilyov ENU. The intellectual cluster that creates, distributes, and applies knowledge as a resource, and as a product [5]. This cluster satisfies the society demands in producing of individual types of values at optimal and rational usage of resources.

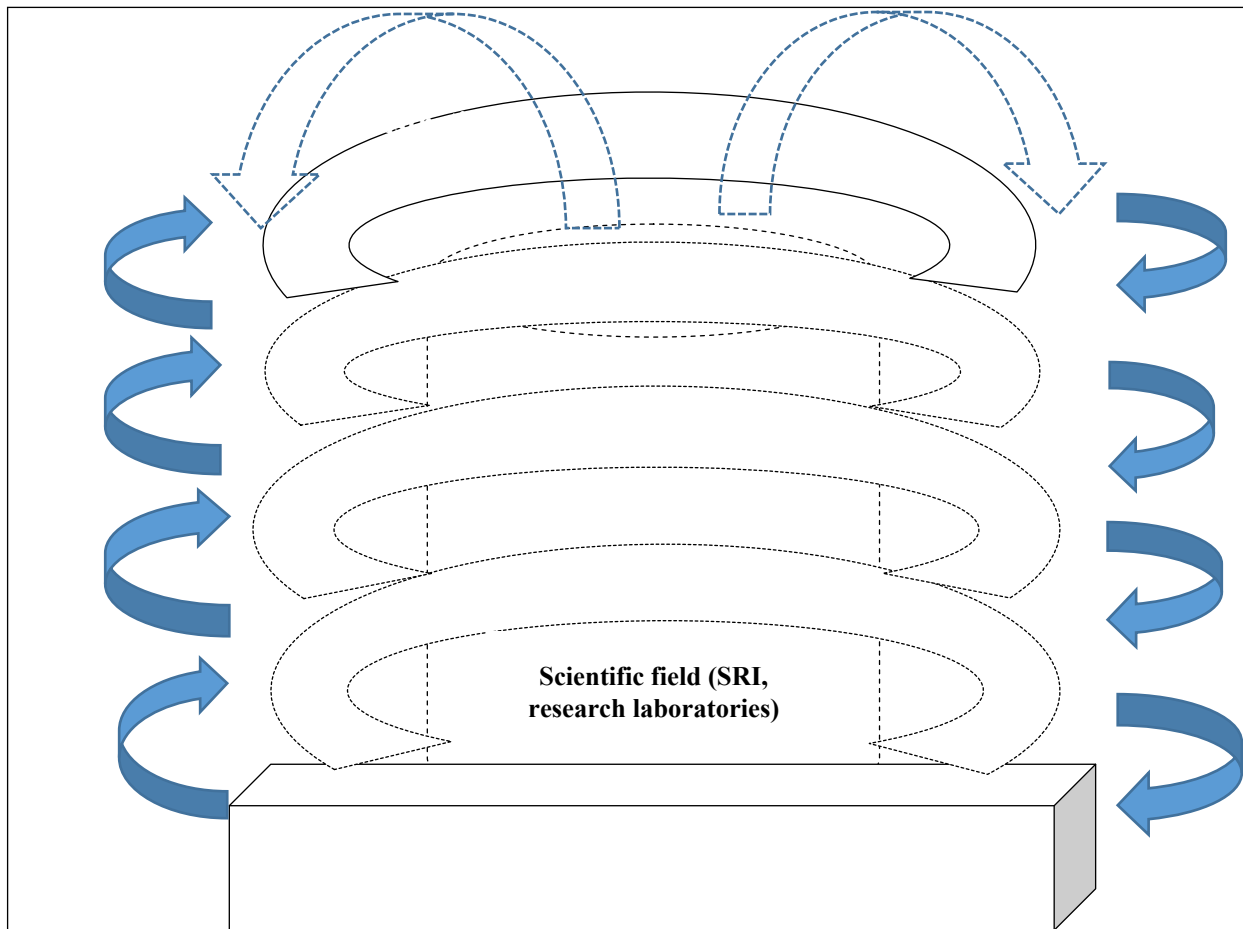
For the effective work of the intellectual cluster on the base of a university, it is necessary to reconsider the system of university management, strengthen its independence and interest in results of the innovative activity. The model of future intellectual cluster is shown in figure 2.

This model provides the interrelation of the research and educational structural divisions of a university with commercialization organizations, and with potential customers and consumers of the intellectual product. The base of the intellectual cluster is education as a platform favoring the formation of competent intellectual employees. The central core of the cluster is the developed scientific sphere that provides the most part of innovations in all fields, favors the increase of fundamental science role, interdisciplinary and transdisciplinary knowledge generating in its turn new ideas and knowledge. Quite often the education and science form the integral whole and can serve as a university subdivision generating the ideas and forming the base of future intellectual product or innovative project. Other structures are related to supporting infrastructure that includes:

- Innovation sector – venture funds, technological parks, business incubators, design bureau, commercialization offices and Centre for transfer and commercialization of technologies, science Fund;
- Financial sector – lending financial institutions, investment funds, insurance companies;
- Service sector – consulting companies, engineering companies, broker office, students business incubator, Centre on entrepreneurship development, “Damu” Fund;
- Administrative sector – government authorities, administrative bodies of a city, region.

Activation of supporting infrastructure participation depends of the stage and phase of an intellectual project life cycle.

Functioning of the intellectual cluster allows using effectively the advantages of such methods of economic system coordination as in-company hierarchy and market mechanism favoring quick and effective distribution of new knowledge, ideas, and products.



Note. Compiled by the authors.

Figure 2 – The model of the intellectual cluster on the base of a university in Kazakhstan

The intellectual cluster must have the following features [6]:

- Vertical that includes related stages of manufacture process from the idea to the end product and its commercialization.

- Lateral that joins different sectors providing the economy due to scale effect and creating new combinations of cooperation;

- Focus that provides concentration around one center – science and education.

The activity of the intellectual cluster subjects should be based on the following principles [4]:

- Competitive-cooperative, that means the competition of the subjects inside the cluster on the one hand, and their mutual help to each other on another;

- Infrastructural unity, means relying of the cluster subjects on one social-economic infrastructure localized in the space of these subjects interaction;

- Functional unity – joint participation of the cluster subjects in logistics operations, financial and investment projects, information resources exchange, intellectual and innovative interaction;

- Strategic unity – application of a common strategy or related strategies of social and economic development by the cluster subjects;

- Spatial-structural unity – belonging of the cluster subjects to the same space or related spaces;

- Innovation – means integration of the available scientific and innovative potential of the cluster subjects.

The advantage of the intellectual cluster is in effective partnership that ensures the transfer of fundamental knowledge gained at academic universities to applied knowledge, industrial technologies of

manufacture, and commercialization of results. The creation of such interaction allow joining the science (as a resource of new knowledge, generation of new business ideas, research and technical developments), education (as a base for training of necessary highly qualified specialists), manufacture (as a base of a new product manufacture and technological solutions), and business (as a source of the result commercialization). The platform for the effective interaction under the cluster conditions will be high integrity, interdisciplinarity, and circulation of different types of knowledge [7].

The represented model provides the interconnection of scientific and educational structure divisions of universities with commercialization organizations and with potential customers and consumers of the innovative product at each stage of the innovative product development. The intellectual cluster as a mobile integrated network infrastructure [8] generating the inventions and promoting the technological innovations is an effective instrument of the knowledge economy development.

The instruments supporting the commercialization of intellectual activity results in Kazakhstan are:

1. Competitions in different categories.
2. Issuing of innovative grants for priority fields.

The indicator of Kazakhstan reality is that the subjects of real sector of economics are not interested in the results of R&D of SRI and universities. The main reason is that the investors need a complete view on an innovation demand in the market, on expenses for adoption and future profits. Most of researchers do not have skills and knowledge to estimate such indicators. In addition, the existing institutes and subjects of commercialization infrastructure start to provide these services for already final innovative products, and this explains the low efficiency of their activity [9].

For instance, the Science Fund has created a Register of technological tasks of enterprises and available developments on the part of science trying to join the interests of science and business. If an enterprise and a scientist have a common interest, the Fund arranges their meeting to discuss the prospects of cooperation, and simultaneously consults on opportunities to apply for a grant to commercialize the results of research or research and technological activity. In addition, the Fund concludes Memorandums with service organizations, technological parks, and design bureau able to render different types of services on further implementation of the project.

The existing gap between the manufacture and research laboratories has led to impossibility to conduct semi-industrial tests to receive pilot lot of products as a necessary condition for R&D adoption. In this regard, the problem can be solved by joint work only. It is necessary to attract the industrial enterprises to conduct R&D by engagement in financing. This engagement can constitute from 20 to 50% of the total cost of a project. In this case, it is not necessary for the State to control strictly the process of priorities ranking for the applied research and control designated use of funds. The priorities will be determined by the project participants themselves. The project should reflect the interests of three parts – the State as one of the investors of SRI or research laboratory, as the owner of intellectual property and industrial enterprise, as the investor, the consumer, and the seller of manufactured products [10].

To attract the funds it is necessary to apply the whole range of methods of indirect effect. For instance, in the field of technical sciences, metallurgy, and subsurface management there are large private companies that have ecological liabilities, and realization of functions on decrease of negative ecological consequences of its activity should be implemented by financing of researches in this field. Today, the foreign companies apply western technologies that can have low results in Kazakhstan conditions. The national researchers are focused, first of all, on the peculiarities of Kazakhstan nature and climate, and technical and technological conditions. As a stimulating means in this cooperation should be an opportunity to transfer the results of intellectual activity created under its financing from RSI and universities to a private investor. It is necessary to develop the rules of technologies transfer considering the interests and rights of the joint work participants.

The significant problem is lack of reliable information on real innovative activity of the national economic subjects and results of its activity. In Kazakhstan, the national registering of R&D and STP and its informational and analytical guidance is conducted by “NCSTI” JSC. The Law of RK “On Science” states that the STP and R&D implemented at the expense of the national budget are obligatory for the state registration. At the same time, the projects implemented by own funds of the organizations-executors are registered on a voluntary basis. Taking into account the specifics of the registration procedure and financial expenses, hardly these executors will register their reports.

In addition, the criteria of innovativeness estimation are more of a formal character. For example, to analyze the effectiveness of the implemented programs the NCSTI JSC applies such indicators as: volume of financing, number of specialists of high education, number of received protection documents, research publications, and adopted developments. The comparative analysis of different STP is conducted by such indicators as: expenses for 1 specialist, patent activity and number of adopted developments per 1 organization, publication activity per 1 specialist [11].

The shown indicators of effectiveness reflect mainly the volume of means expensed on implementation of this STP, and patent and publication activity. The only indicator of effectiveness in view of commercialization potential is adoption process. However, most often, it does not contain the information of economic effect received by an enterprise after adoption.

In this regard, it is necessary to correct the requirements to the statistical reporting of companies conducting innovative researches and adopting the innovations, and foresee the tax benefits to stimulate such activity. For example, the remarkable is the experience of Norway that obliges the foreign corporations operating in the local market make localization by placing orders for the developments of this or that technologies in this country. This refers to an order for practical developments by local scientific-research institutes. The investors who follow this rule receive significant tax benefits and preferences from Norway. The State decreases the tax deductions by 18-20% (depending on the number of company employees) at the same amount of expenses on R&D. The Norway government has developed the rules on transfer of technologies created by universities to industrial enterprises. As a result, the research institutes received an opportunity to master their inventions, the cycle from an idea appearance to its commercial application in new products, technologies, and manufacture processes became shorter. At the same time, Norway continues to increase the national financing of R&D – the industrial enterprises are able to create new methods and breakthrough technologies only in the case of long-term obligations of the State in the field of researches [12].

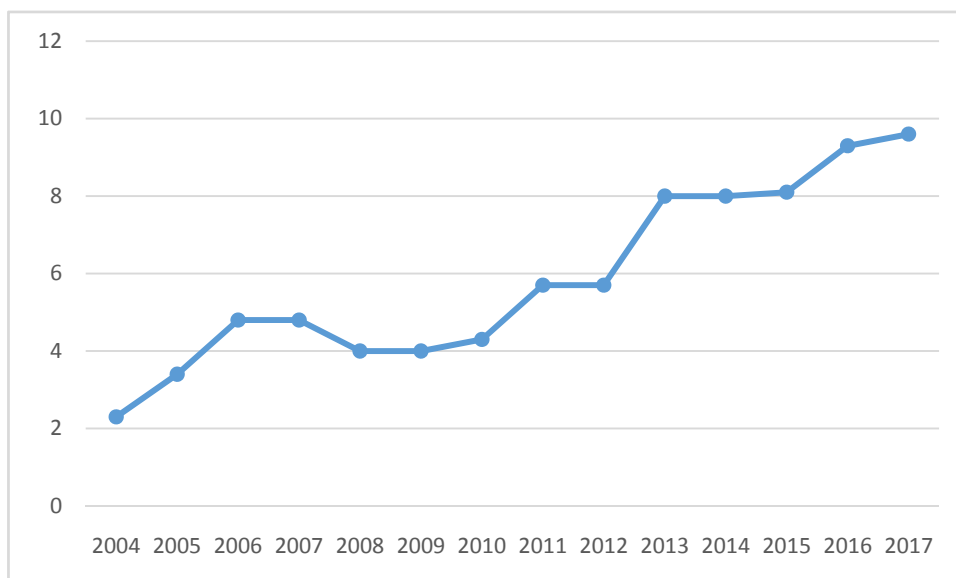
In Kazakhstan, the Law “On commercialization of results of scientific and (or) scientific-technical activity” initially had an issue on 5-years tax benefits for new companies, but after discussions it was excluded from the document. As a stimulating measure the start-up companies were given an opportunity to participate in a competition for grant financing of scientific and technological activity results where they compete with already successful national and “quasi-public” scientific and educational structures. In this situation, these companies are not already aimed at the search of a private investor, and they are not interesting for investors. For example, in 2015 the private enterprise “National Laboratory Astana” under Nazarbayev University conducted research and development works on 107 research projects, among them [13]:

- 63 projects within the program designated financing of CS MES RK for 2014–2018 under the budget program 055 “Scientific and (or) scientific and technological activity”.
- 38 projects within grant financing of research investigations of CS MES RK;
- 6 projects within different outside sources of financing (NSTH JSC).

The world practice shows that tax benefits are efficient instrument on the way of establishment and development of new innovative companies. For example, the Great Britain deduces from the taxes the expenditures on R&D for more than 2 years for start-up companies, and a part of these expenditures is reimbursed by the State. The similar scheme is in Ireland. In Singapore, the innovators are exempted from taxes for the first \$150-300 thousands of profit, and in Chili, in addition to the tax benefits the foreign start-up companies receive \$40 thousands from the State and are given an office for the period of 6 months [14].

In whole, Kazakhstan experiences active process of forming of legal constituent and infrastructure of the intellectual activity results commercialization allowing creating an invisible strong connection between the education, science, manufacture, and end user of the created product. The effective functioning of these infrastructure elements allows decreasing significantly the expenses and risks of activity, and increase the profit and returns. The commercialization provides more advantageous disposal of property right on the results of intellectual activity and opportunity to receive profit by every participant of this process. However, the results on commercialization activity in Kazakhstan for the past 5 years do not show large growth of commercialized products.

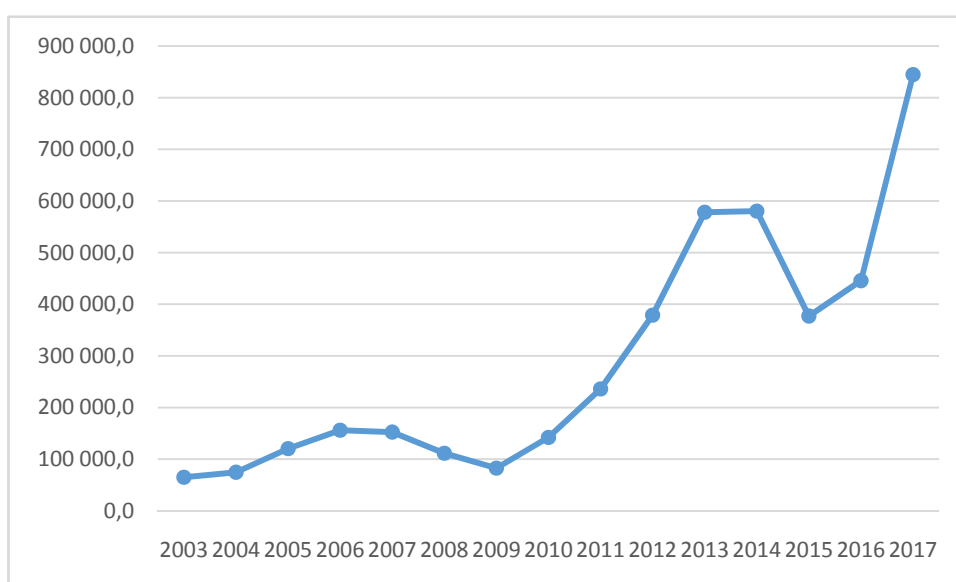
By data of the Committee on Statistics, the innovation activity in Kazakhstan increases (figure 3).



Source. <http://stat.gov.kz/getImg?id=ESTAT098608>

Figure 3 – The level of innovative activity of enterprises and organizations by all types of innovations

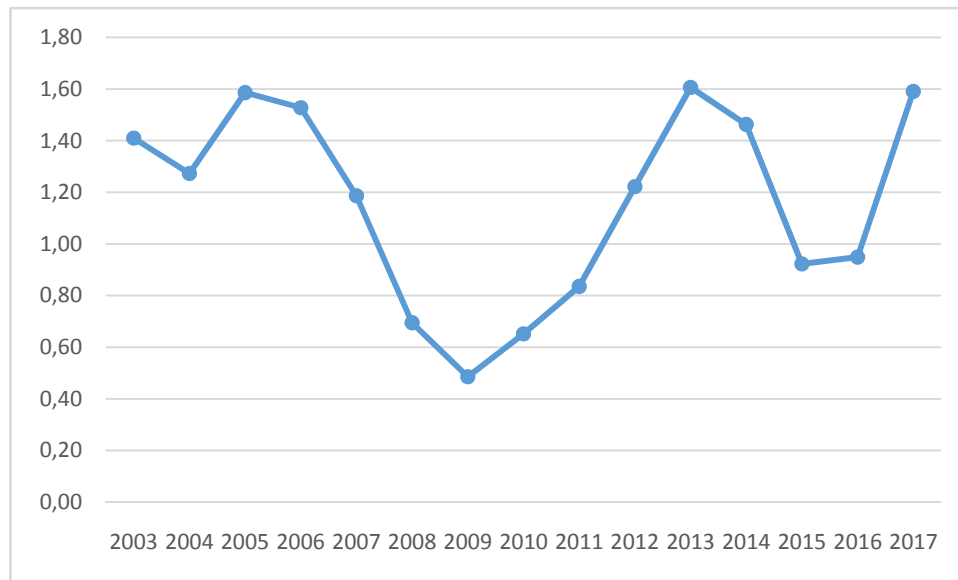
In 2017, its level in comparison to 2004 increased by more than 4 times. Small stagnation was observed from 2013 to 2015 due to elaboration and adoption of key programs on the innovative development of the country in this period. The growth during almost the whole considered period testifies the progressive and correct course of the innovative development of the country. The improvement of legislation and application of a wide range of instruments on innovative activity stimulation already shows its results in the form of intermittent growth for the recent year (figure 4). Despite the decrease of the produced innovative products volume by 2 times in 2016 comparing to 2013 (figure 4), this indicator increased almost twice by 2017 in comparison to 2016. Probably, the innovative field in RK is in its transition period, it is necessary to make analysis for 2018 and further.



Source. <http://stat.gov.kz/getImg?id=ESTAT098609>

Figure 4 – Volume of produced innovative products

In the GDP structure, the volume of the manufactured innovation products shows volatility – from 2005 to 2009 its share decreased significantly, from 2009 to 2013 there was growth to maximum value for the observation period, from 2013 to 2015 the indicator fell. In 2017 it increased again and was about 1.59% (figure 5). The definite interconnection between the GDP change and volumes of the manufactured innovative activity testifies strong dependence of the national innovatively-active manufacturers on the situation in the world markets.



Note. calculated basing on sources: <http://stat.gov.kz/getImg?id=ESTAT104924>
<http://stat.gov.kz/getImg?id=ESTAT098609>

Figure 5 – The share of the manufactures innovative products in GDP, %

Venture funds search and attract projects in prospect sectors having export potential. Its activity is aimed at developing the innovative projects having high potential for further growth and probable production of cost-efficient and popular products by investing of own and attracted funds to these projects at different stages of its development. The joint venture funds provide an opportunity to access the advanced western technologies for further transfer, opportunity to work with the leading technological companies of the world.

From the moment of its establishment, the “National Agency on Technological Development” JSC from 2004 to 2012 financed 13 venture funds to the total amount of 12.2 billion tenge; among them 5 are foreign venture funds, and 8 – national venture funds. As of January 1, 2017 there was exit and investment return from 7 venture funds to the total amount of 2.395 billion tenge. The total investment revenue from the venture funds exit was 145.5 million tenge. By the current funds’ portfolio consisting of 3 national and 3 foreign venture funds with Agency contribution 4.869 billion tenge, the total return of investments by January 1, 2017 was 1.624 billion tenge. [15].

About 42 investment funds are registered in Kazakhstan; among them are open-end, interval, closed-end, and closed-end risk investment funds. One of the famous investment financial Company in Kazakhstan is “RESMI” that has been operating in the field of professional broker services in securities trading market for more than 20 years. The distinguished type of the fund activity is investing into real estate properties and other assets approved by the legislation. The fund assets include different types of commercial real estate properties producing the investment profit in the form of leasing flows, and land properties; the corresponding equipment and financial instruments of “RESMI” enter the leaders list of the stock market owing to the innovative management, effective system of trust management, active trading operations, and investment banking.

The “RESMI” IF manages professionally the assets of the real estate investment Fund “Velikaya stena”. This investment Fund is an annuity fund of commercial real estate property. As of today, the fund assets include three business-centers: “Kyurmangazy”, “Ozturk”, and “Innova Tower” that are currently filled with tenants and are able to ensure the funds flow to future investors accessible in the form of dividends from the rent starting from the first day of investments. The shareholders of “Velikaya stena” IF receive additional advantages if the form exemption from income tax, quarter payment of dividends, and opportunity to sell its shares at KASE stock market.

By data of Investfunds.kz the total volume of Kazakhstan public UIT as of July 30, 2016 was about 3.5 billion tenge, or 0.008% of GDP of 2015 [16]. For example, in the USA, the total size of UIT assets and ETF is comparable with the GDP size and is about \$17 trillion. In Russia, the total volume of public UIT as of April 1, 2016 was 119 billion rubles, or 0.15% of the GDP in 2015 [17].

In whole, the market of venture capital in Kazakhstan is on the stage of forming and is of low capacity. And the main problems of the venture market are imperfect legislation and unformed culture of investment.

Venture funds are an integral part of the infrastructure on the intellectual activity results commercialization, and without its effective work the realization of innovative and industrial development targets in Kazakhstan is impossible. Due to objective reasons at the present stage of the country development the forming of venture funds and arrangement of their work is possible on the principles of the public-private partnership with attraction of foreign investors. It is necessary to foresee an opportunity of attraction of the pension fund means as a share of the State participation in such funds. The pension fund cannot find the profitable niches in capitals market as it is strictly constrained by a scheme of investment to highly reliable securities. And those, as known, have low return. As a result, the pension fund has quite low effectiveness of activity. Low effectiveness of the fund activity is not only the topical economic problem, but social too. It touches directly the interests of the whole population stratum – pensioners. It is reasonable to assign the Pension Savings Fund a status of non-bank financial intermediary and remove the legislative restrictions on capital investment into the venture structures. The same examples exist also in the western practice. For example, the boom of venture financing in the USA in eighties of the past century was owing to removing of restrictions from the pension funds on participating in it [18].

Availability of liquid stock market allows venture investors and entrepreneurs creating a highly technological company to decrease the transaction expenses due to conclusion of implicit contract regarding the distribution of control functions: “Potential opportunity of initial public offering in the stock market provides to an entrepreneur a chance to return (at least partially) the management over the innovation company. Therefore, hardly his behavior will be opportunistic regarding a venture capitalist as he is much interested in venture funds attracting” [19]. The motivation of a venture investor to own the innovative structures is growth of assets allowing selling his share at high cost. The time period during which the innovative structure should achieve high economic and financial results allowing the venture investor to return the invested funds with growth is, by some estimation, 5–7 years. Within this period the innovative structure experiences five consequent stages of the life cycle [20]:

- 1) Elaboration of the investment project,
- 2) Attraction of venture capital,
- 3) Development until the start of new science-intensive products manufacture,
- 4) Broadening and sustainable functioning on the base of successful selling of the issued products,
- 5) Selling of the company and return of the invested funds and revenue payment to the investor.

The selling types of the innovation structure to return the invested funds to the investor and revenue payment can be the take-over, purchase by other participants, management.

The world experience on venture financing shows the huge potential and its opportunities in developing the innovative business allowing changing the trajectory of the country development. The quality of the economic growth of Finland, India was changed owing to venture business development. In whole, the world market of venture capital exceeds \$100 billion.

It is necessary to adopt and implement the national program on venture investment development that will foresee the opportunity for the private investor to purchase a share of the State in the created venture

funds, and elaborate a clear mechanism of risk division among the participants. To decrease the investment risk the funds should apply the work arrangement methods approved by the world practice, for example, the experience of American Company “Alfa Partners”. Its financing scheme of innovative companies is based on separation of investment to five parts and its step-wise submission in exchange of a property share. The American Company “Alfa Partners” follows three principles:

- First, every other part of investment is given if the previous was managed successfully.
- Second, increases the volume of the delivered investments gradually.
- Third, gradually decreases the demand on the receiving property share.

For the innovative companies the financing scheme of American Company “Alfa Partners” is efficient as the costs, in the form of transferred property share to receive the investment, decrease at every stage.

Conclusion. In the current situation it is necessary to strengthen the work on forming the culture and psychology of commercialization along with legislative and financial methods of development. In Kazakhstan its forming can be implemented by training of entrepreneur competences at students in all levels of education: school – college – university – post-graduate education. Today, the entrepreneur education is mainly provided by “Damu” Fund, partially by training courses at business-incubators and start-up zones for the limited number of trainees. The introduction of entrepreneur education the constituent component of which is commercialization will allow broadening the opportunities on realization of the trainees’ potential aimed at creating and issuing of innovative products.

Thus, in Kazakhstan the field of intellectual activity results commercialization has just started its forming. The main prerequisites for its development on the part of the State were created: the legislation base for commercialization was formed, and the stimulating policy for commercialization is implemented. However, the effective realization of commercialization is impeded by the lack of qualitative mechanisms and instruments of commercialization forming and running of which is the next important stage on the way to realization of intellectual interests of Kazakhstan.

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ҚАЗАҚСТАННЫҢ ИНТЕЛЛЕКТУАЛДЫҚ ДАМУЫН КОММЕРЦИАЛАНДЫРУ

Аннотация. Мақала Қазақстан Республикасындағы интеллектуалдық қызмет нәтижелерін қамтамасыз етудің құқықтық және ұйымдық тетіктеріне арналған. Мақалада қолданыстағы коммерциаландыру факторларына, коммерциаландыру инфрақұрылымы мен институттарына толық талдау жүргізіліп, коммерциаландыру субъектілеріне баға берілген. Интеллектуалдық меншікті қорғау құжаттарын алуға кәсіпорындардың белсенділігі талданған. Берілген қорғау құжаттарының құрылымындағы үлесі анағұрлым көп болатын интеллектуалдық меншік түрлері көрсетілген. Инновациялармен байланысы бар лицензиялық қызмет серпініне баға берілген. Қазақстандағы кәсіпорындардың инновациялық белсенділігіне талдау жасалып, оның серпінінің негізгі үрдістері айқындалған. Зерттелген шет елдік тәжірибе негізінде Қазақстанның интеллектуалдық дамуын коммерциаландыруды ынталандыру бойынша шаралар ұсынылған. Авторлардың пайымдауынша, интеллектуалдық қызмет нәтижелерін коммерциаландыруды ынталандыру үшін анағұрлым жоғары әлеует венчурлық қаржыландыруды дамыту болып табылады. Венчурлық инвестициялауды дамытудың мемлекеттік бағдарламаларын қабылдау және жүзеге асыру жоғары тиімділікке ие, өйткені мемлекет сенімділік кепілгері ретінде бола алады. Одан басқа, авторлар дүниежүзілік тәжірибеде қолданысын тапқан венчурлық қаржыландыру әдістерін пайдалануды ұсынады, бұл әдістерді қолдану барысында тәуекелдерді төмендету үшін инвестициялар кезең-кезеңмен салынады.

Түйін сөздер: коммерциализация, интеллектуалдық қызмет, технопарк, конструкторлық бюро, стартап компаниясы, бизнес инкубатор, интеллектуалдық кластер.

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КОММЕРЦИАЛИЗАЦИЯ ИНТЕЛЛЕКТУАЛЬНОГО РАЗВИТИЯ КАЗАХСТАНА

Аннотация. Статья посвящена правовому и организационному механизму обеспечения коммерциализации результатов интеллектуальной деятельности в Республике Казахстан. Проведен подробный анализ наличия факторов коммерциализации, развития инфраструктуры и институтов коммерциализации, оценка деятельности субъектов коммерциализации. Была проанализирована активность предприятий в получении охранных документов на интеллектуальную собственность. Выявлены виды интеллектуальной собственности, занимающие наибольший вес в структуре выданных охранных документов. Дана оценка динамике лицензионной деятельности, связанной с инновациями. Проведен анализ инновационной активности предприятий в Казахстане и выявлены основные тенденции ее динамики. На основе изученного зарубежного опыта предложены меры по стимулированию коммерциализации интеллектуального развития Казахстана. Авторы предполагают, что наибольшим потенциалом для стимулирования коммерциализации результатов интеллектуальной деятельности является развитие венчурного финансирования. Наибольшую эффективность зарекомендует принятие и реализация государственной программы развития венчурного инвестирования, так как государство сможет выступать в качестве гаранта надежности. Кроме того, авторы предложили применение опробованных в мировой практике методов венчурного финансирования, при которой для снижения рисков инвестиции вкладываются поэтапно.

Ключевые слова: коммерциализация, интеллектуальная деятельность, технопарк, конструкторское бюро, стартап компания, бизнес инкубатор, интеллектуальный кластер.

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