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**INTELLECTUAL POTENTIAL OF THE COUNTRY:
CONCEPT, STRUCTURE AND ASSESSMENT METHODS¹**

Abstract. In the face of technological challenges of the 21st century, Kazakhstan needs a radical renewal of its driving forces and a transition to a fundamentally new stage of its development, which makes it imperative to modernize the national economy through the formation of a knowledge-based model of the economy. The essence of the concepts of “intellectual potential” and “assessment of intellectual potential” is disclosed in the article, the structure and importance of intellectual potential for the country's economy are also considered. Indicators are presented that make it possible to assess the intellectual potential of a region and a country by its constituent elements. And also the role of intellectual potential for the transition of the economy of the Republic of Kazakhstan to an innovative type of development is considered. The components of the intellectual potential (scientific, innovative, educational, cultural potential) are analyzed, their characteristics and calculation options for each component are given. Also in the form of a table are given methods for assessing the intellectual potential of individual organizations and scientists. Recommendations on the preservation and development of intellectual potential for the modern information state are given.

Key words: intellectual potential, innovation, science, innovative economy, education.

The development of modern society in the 21st century is gradually moving from the traditional form of economic development to the knowledge economy, where the basis is the intellectual resources of the country as a whole. In the beginning there was an economy based on physical labor and agriculture, it was replaced by an industrial economy based on the use of natural resources. Recently, scientists began talking about a new economy, a knowledge-based economy.

Promising for further development of Kazakhstan is the innovative path based on knowledge and ensuring economic growth, competitiveness, security, a decent quality of life, the solution of social problems, the development of science and education. Industrial modernization involves the formation of high-tech industries through the increase in competition and the subsequent development of innovation output of high technology spheres of production. This can be achieved by using the full intellectual potential of each region and the country as a whole.

The scientific awareness of the factors and features of the development of intellectual potential indicates the advantages and weaknesses of each of them, and in general, with an effective approach, it can accelerate the processes of creating and technological updating of high-tech industries and the economy as a whole. In developed countries, issues of intellectual potential are given great importance. They invest huge amounts of money in the development of the intellect of the nation, which are returned by new discoveries in science, new technologies in industry and an increase in the country's GDP.

In Kazakhstan, the approach to this area is not sufficiently developed; in the management of the intellectual resources of the country and regions there is no systematic and scientific justification.

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Conducting scientific research will allow to develop mechanisms and technologies for managing intellectual capital of Kazakhstan, which makes this work relevant and in demand.

The increasing role of man and information in the development of modern society actualizes issues related to the reproduction of the intellectual potential of various levels (person, enterprise, region, state). Almost all the leading schools and areas of economic thought in the second half of the 20th century pay much attention to the study of the intellectual component of economic development. A great contribution to the study of this problem was made by J. K. Galbraith, D. Bell, W. Rostow, T. Schulz, G. Becker, L. Throw, J. Wasey, M. Fisher, M. Blaug, F. Mahlup, E. Brooking, C. Swaby, L. Edvinson, M. Malone, A. Toffler, T. Stuart and others. However, questions related to the assessment of intellectual potential remain little studied. By the intellectual potential of the region we will understand the potential capabilities of the region to create, accumulate and effectively use intellectual resources to ensure a high level of its socio-economic development.

Currently, the economy lacks a unified understanding of the category of intellectual potential. In general, the intellectual potential is considered as a set of intellectual resources that can be used by the economic system to solve its tasks of conservation and development. To measure intellectual potential, two main characteristics are distinguished: science and education. The methodology for monitoring intellectual potential was developed by L.V. Tsomartova [1].

Intellectual potential and its development - a factor that determines the present and future of the country, transforming the state's resources - natural wealth, population, availability of free capital - into resources in the true sense of the word, makes it possible to use them effectively for the benefit of society.

In addition, the most important components of the intellectual potential of society (the availability of own science, a high level of education of the population, the availability of a developed infrastructure of science and education, the qualification of the workforce, etc.) are today the basis of the economic and defense power of the state, as well as the basis of the country's social stability.

Intellectual potential - the combined ability and ability of people with certain qualitative and quantitative characteristics to create unique creations in the field of science, technology, art and culture.

According to V. Petrenko, intellectual potential is the predicted integral ability of a person or group of people (personnel of an organization, enterprise, population, region, country, nation, humanity) to create new spiritual and material values [2].

T. Stewart under the intellectual potential means the amount of knowledge of all employees of the company, ensuring its competitiveness, without taking into account the organizational processes of managing this knowledge [3].

The country's intellectual potential is an indicator of the country's scientific and technological development that describes intellectual resources (human resources, including the personnel training system), fixed assets, financing system, and the results of the scientific system [4].

Undoubtedly, it is scientific knowledge that directly determines the parameters of a country's economic growth. Thus, the share of high-tech industries and services currently accounts for more than half of the GDP of industrialized countries. These sectors are characterized by the highest growth rates of production, employment, investment, and foreign trade. Achievements of science and technology are a key factor in improving the quality of products and services, saving labor and material costs, increasing labor productivity, improving the organization of production, which determines the competitiveness of organizations and their products in the domestic and world markets.

Personnel engaged in the field of science, in our opinion, is formed from the basis of the intellectual potential of Kazakhstan. Achievements of science and technology - the result of the work of scientists - are a key factor in improving the quality of products and services, improving labor efficiency, improving the organization of production, and the development of society as a whole. And in order to maintain and increase the competitiveness of domestic science, it is necessary to effectively use the existing intellectual potential. Unfortunately, in Kazakhstan there are problems of the personnel component of the scientific potential.

In the era of a paradigm shift, there is a special need to understand in more detail the understanding of intellectual potential, its features, structure, factors affecting its effective use. From our point of view, it is necessary to more broadly and differentially approach the structure of intellectual potential. Its components can be scientific, educational, innovative and cultural potential (figure 1).

The structural approach considers the intellectual potential of the region as interconnected components in the form of a resource potential (potential of conditions, opportunities of innovative activity) and achieved potential (results of innovative activity, due to which resource potential becomes intellectual capital with a cost measurement).

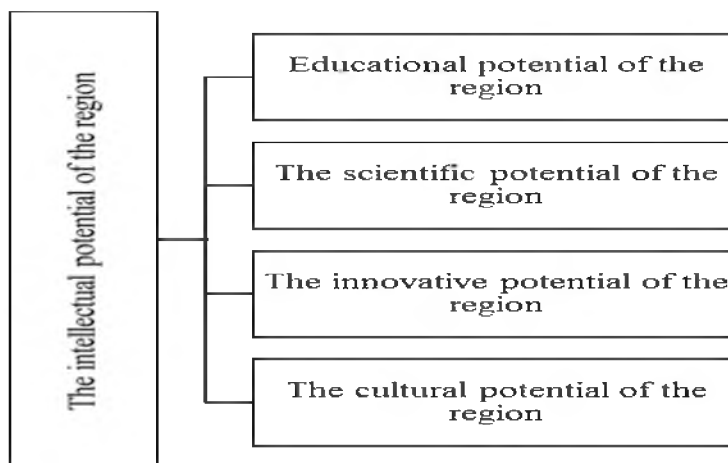


Figure 1 - The structure of the intellectual potential of the region

Note: compiled by the authors according to [5]

1. Education is a fundamental factor in the development of an economy that is based on knowledge. Thanks to education, a person receives not only specialized (scientific) knowledge, but also everyday (daily) knowledge, which contributes to the socialization of the individual. As follows from the analysis of the experience of the most successful western universities, universities should become modern entrepreneurial-type research and educational centers open to the external community, capable of training competitive specialists through the integration of educational activities with basic and applied research.

To measure the educational potential Almhimenko O.N. [6] suggests using the following formula:

$$EP = e_1 + e_2 + e_3,$$

here, e_1 is the proportion of full-time students; e_2 is the specific gravity of part-time students; e_3 - the proportion of students in retraining and advanced training courses, that is, the proportion of young people who are the reserve of replenishment of specialists in mental work in all spheres of society.

This indicator is important because it reflects the changing role of higher education in creating intellectual potential. As a basis for its calculation, you can use the number of students in higher education in terms of 10,000 people. The value of educational potential characterizes the level of professional training received by the young generation after completing higher professional education.

2. Another important factor in the development of intellectual potential is cultural potential, which is understood as the ability to meet the needs of society in order to increase its spiritual level. Cultural potential is understood as a qualitative and quantitative characteristic of the moral state of society, general and professional education. Cultural potential - activities aimed at the spiritual development of man and society. The result of this activity is new ideas, knowledge, spiritual values, which are called spiritual culture. It follows that cultural heritage is of fundamental importance and forms the basis of the spiritual and intellectual potential of the region. Thus, spiritual culture is a product of intellectual potential, and it is spiritual culture that awakens, supports and develops a person in a person.

The following formula can be used to measure cultural potential:

$$CP = c_1 + c_2 + c_3,$$

here c_1 is the number of theater viewers per 1000 people; c_2 - the number of museum visitors per 1000 people; c_3 - the number of workers in the cultural sphere per 1000 people.

This index reflects the role of culture in the calculation of intellectual potential and characterizes the level of spiritual development of the population.

In general, indicators of cultural potential have a positive trend (table 1), but for the full use and development of intellectual potential, the cultural component should be strengthened. Mostly it is advisable to do this by activating young people and stimulating visits to theaters and museums by this category of population.

Table 1 - The main indicators of the culture of the Republic of Kazakhstan

	1995	2000	2005	2010	2015	2018	2019
Number of professional theaters	45	49	51	59	64	68	65
The number of spectators of theaters, thousand people	2008,6	1376,5	1795,0	2010,6	2249,1	2833,6	2942,1
Number of museums	87	147	187	205	234	245	250
The number of visitors to museums, thousand people	2500	3181,6	3525,4	4262,7	5719,9	6716,0	6829,3
Note: compiled by the author according to [7]							

3. Scientific potential is the totality of the available resources that a country has for scientific discoveries, inventions and technical innovations, as well as for solving national and transnational problems posed by science and its applications [8]. Science is a specific area of human activity in which intellectual products are created in the form of obtaining new knowledge about the objects of the material world, knowledge of the objective laws of the development of society with a view to their use in the practical activities of people.

To calculate the scientific potential, use the following formula:

$$SP = s_1 + s_2 + s_3,$$

here, s_1 - is the number of graduate students per 10 thousand people (an indicator of targeted training of scientific personnel). From 2000 to 2019, admission to doctoral studies increased from 81 to 1775 people; output increased from 78 to 905 people; the quality of postgraduate work on this indicator can be assessed as having a tendency to improve;

s_2 - the number of people engaged in research and development per 10 thousand people (an indicator of the extent of employment in scientific research). From 2000 to 2019, there was a general trend towards an increase in scientific personnel from 14,759 to 21,843 people. Moreover, this trend is characteristic both for researchers and for technicians and support staff. If we compare over the past five years, the reverse trend from 25,793 to 21,843 is in decline.

s_3 - the share of domestic research and development costs as a percentage of the gross regional product (an indicator of the intensity of scientific research). One cannot fail to note such a factor in the development of scientific potential as the financing of research and development. So, over the past 10 years, budget expenditures on science have grown significantly (table 2). However, if we count them in dollars, we will see a decrease in funding.

Table 2 - The internal costs of research and development by industry, million tenge

	2005	2010	2015	2016	2017	2018	2019
Total	20 036,0	32 114,8	69 302,9	66 600,1	68 884,2	72 224,6	82 333,1
Including:							
Natural Sciences	4 924,3	9 546,6	25 334,2	23 496,2	22 428,3	21 083,9	20 971,3
Engineering and Technology	10 957,8	15 766,9	29 618,3	30 193,4	31 459,4	35 596,8	41 795,9
Medical sciences	1 275,5	1 724,9	2 735,4	2 277,9	3 278,3	2 207,7	2 787,4
Agricultural sciences	1 648,4	3 690,6	7 602,4	6 884,6	6 528,0	7 953,5	10 831,6
Social sciences	767,5	758,5	850,5	1 072,2	1 650,8	1 586,9	2 275,1
Humanitarian sciences	462,5	627,3	3 162,1	2 675,8	3 539,4	3 795,8	3 671,8
Note: compiled by the author according to [Ошибка! Залкадка не определена.]							

4. An important component of the region's intellectual potential is innovation potential. The innovative potential includes transformed scientific knowledge into new types of products, technologies and services; it is a qualitative characteristic of the national innovation system [9].

To calculate innovative potential, it is advisable to use the following formula:

$$InP = in_1 + in_2,$$

here in_1 - is the number of patent applications filed for inventions; in_2 - is the number of patent applications filed for utility models.

This indicator reflects the process of transforming scientific knowledge into new types of products, technologies and services, which together lead to innovation.

At present, Kazakhstan is in 44th place in terms of this indicator (table 3). Nevertheless, our country has reserves for increasing the number of applications.

Table 3 - Rating of the countries of the world by the number of patents, 2018

№	Country	Applications total	Resident Applications	Applications of non-residents
1	China	1 381 594	1 245 709	135 885
2	USA	606 956	293 904	313 052
3	Japan	318 479	260 290	58 189
4	South Korea	204 775	159 084	45 691
5 ...	European Union	166 585	78 555	88 030
8...	Russian Federation	36 883	22 777	14 106
44	Kazakhstan	1 228	1 055	173
Note: compiled by the authors according to [10]				

The role of intellectual potential in society is becoming increasingly significant. Its meaning is important for a person, society and the whole country. Intellectual potential makes it possible to engage in certain activities only if a person has the corresponding abilities and knowledge. The concept of intellectual potential includes not only the thought process, but also the completely individual world of a person: logical abilities, educational level, language abilities, general culture, moral potential and will.

A regularity is characteristic for all levels: the higher the intellectual potential of the population, the higher the effectiveness of its implementation in the form of increasing the profits of the enterprise, improving the appearance of the territory and increasing the socio-economic development of the country.

In the early years of independence, due to the huge brain drain abroad, Kazakhstan lost a significant part of the country's intellectual component. At the same time, this process continues. According to the statistics committee of the Ministry of National Economy of the Republic of Kazakhstan, over the past year, 6.6 thousand professionals of technical specialties have left the country, and only 1.3 thousand have come. Specialists of economic specialties - 3.6 thousand people and pedagogical - 2.3 thousand people also actively leave the country. Over the past four years, the number of qualified personnel wishing to leave Kazakhstan has been growing steadily. The main number of people leaving the country makes a choice in favor of the CIS countries, about 10% of labor migrants left for non-CIS countries [11].

There are not so many young high-level specialists in the country. The younger generation, aged 16 and over, is good at handling new technologies and gadgets, but many of them graduating from higher education institutions do not become super-literate, because new technologies have formed a specific world of social relations and the illusion of another world. The paradox of the digital revolution is that a tremendous increase in the volume of information, as well as opportunities for access to different knowledge on-line, did not lead to a new era of enlightenment for large sections of the population.

Thus, the outflow of qualified personnel and insufficient quality education significantly weaken the intellectual potential of the country. Therefore, positive macroeconomic indicators of the country's development are largely supported and ensured thanks to increasing volumes of sales of natural resources. For the state, which aims to become one of the thirty developed countries of the world, this path of economic development is unacceptable.

Intellectual potential is a complex concept that is difficult to define and, especially, evaluate. The difficulty lies in the fact that this concept in itself implies the presence of two components - revealed and not revealed (hidden) parts and covers a wide range of abstract concepts, such as knowledge (theoretical, applied, experimental), abilities (mental, creative), intuition, and also dynamically changes in time under the influence of many factors.

However, the issue of its assessment is very important. Currently, among scientists there is no single approach to solving this problem. There are various methods for assessing intellectual potential, the main ones are given in the table.

Assessment of intellectual potential is the most important tool for the effective management of its quality in the interests of the development of socio-economic systems.

Table 4 - Analysis of existing methods for assessing intellectual potential

Authors	Key parameters for evaluation
UNDP experts	They use the Human Development Index (HDI) to measure 1. Life expectancy at birth 2. Level of education achieved 3. GDP per capita at purchasing power parity (PPP) in US dollars
UNDP experts	According to this method, an indicator is used - the index of development of intellectual potential (IRIP) 1. The average duration of training of the employed population; 2. The completeness of coverage of primary, secondary and higher education; 3. The number of graduate students per 100,000 employees; 4. The number of people employed in research and development per 100,000 employees; 5. The share of internal research and development costs as a percentage of GRP
World Bank Group in the framework of the special program "Knowledge for Development" (Knowledge for Development - K4D)	The knowledge economy index (EEZ) and the Knowledge Index (IZ) are used. 1. Index of institutional and economic regime: - tariff and non-tariff barriers; - the level of competition and the quality of regulation of the economy; - development of the legislative framework 2. Education Index: - percentage of adult literacy; - percentage of the population with secondary education; - percentage of population with higher education 3. Innovation Index: - income from the sale of patents, licenses, etc. ; - the number of applications for patents and trademarks; - the number of scientific and technical articles in specialized journals 4. Information and communications technology index: - the number of telephones per 1000 people; - the number of computers per 1000 people; - the number of active Internet users per 1000 people.
European Commission	The European Commission considers the following indicators as a methodology for assessing intellectual potential: -Number of patents, publications; -The presence of community projects and license and patent income from abroad; - Expenditures on innovations not related to R&D.
OECD	- The availability of skilled labor; - The level of education of employees; - Literacy Rate; - Level of admission to higher educational institutions; - Government spending on science and education, etc.
M.N. Rutkevich, VC. Levashov	The Index of development of intellectual potential is used. These include the following: 1. Educational potential: - the level of general education of the adult population; - the proportion in the student population; - share of education spending in GDP 2. The potential of science: - the proportion of personnel employed in the field of science and scientific services in the total employed (economically active) population; - the proportion of the cost of science as a percentage of GNP
Branko	There are many methods for measuring intellectual capital, which can be divided into four main approaches called (ABBA - Asset, Benefits, Baseline and Action). The indicators are divided into the following groups: market capital, human capital, organizational capital, renewal and development.
Lin Yeh-Yun and Edvinsson	The intellectual potential of the region consists of five components: human capital, market capital, organizational and technological capital, material capital and financial capital.
Note: compiled by the authors according to [12, 13, 14, 15]	

Under the assessment of intellectual potential, we understand one of the knowledge management processes, which is based on the determination and analysis of quantitative and qualitative characteristics of the region's intellectual potential, and creates the basis for investment decisions. In our opinion, the assessment of the region's intellectual potential is multidimensional and covers the assessment of the state of its resource component (resource approach), a comparative assessment with other regions (comparative approach) and assessment of the result of its use (resultant approach). Each structural component of the region's intellectual potential must be evaluated in the context of these approaches.

To assess the intellectual potential of the region for its structural components according to the resource, comparative and outcome approaches, we use a number of statistical indicators.

The development of intellectual potential is a complex and lengthy process, which begins with the selection and preparation of gifted children, creating conditions for their support, forming motivation for the implementation of abilities in their native country, region, and city. Future inventors must be prepared at school, in the system of additional education. The problem of supporting talented children is constantly in the center of attention of the state and the public.

Thus, our analysis indicates that the scientific potential of Kazakhstan, despite the absolute decrease in the quantitative indicators of those employed in the field of research and development, is huge, but it must be used correctly. The biggest problem is that scientific potential is being used inefficiently. The number of patent applications and inventions has increased slightly so far, with an increase in funding aimed at enhancing innovative activity, especially in comparison with other countries. Speaking about educational potential, we note that, fortunately, at the moment the number of students is increasing. The cultural potential also requires more efficient use, mainly due to the involvement of young people in this area. In addition, by analyzing and exploring the structure and features of the components of intellectual potential, we can draw conclusions about such an important index that reflects the country's economic and social development as the HDI. In general, it can be argued that knowledge will be an important factor in the development of the economy and society.

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**ИНТЕЛЛЕКТУАЛЬНЫЙ ПОТЕНЦИАЛ СТРАНЫ:
КОНЦЕПЦИЯ, СТРУКТУРА И МЕТОДЫ ОЦЕНКИ**

Аннотация. В современных условиях, при доминировании сверхвысоких темпов развития и внедрения новых технологий в мире, особое значение для конкурентоспособности Казахстана приобретает интеллектуальный потенциал как на уровне регионов, так и страны в целом. Только реально оценив накопленный интеллектуальный потенциал страны и современные тренды интеллектуализации экономики в мире можно выбрать правильное стратегическое решение, способное обеспечить успешное экономическое развитие страны.

Важность формирования и капитализации интеллектуального потенциала сегодня признана фактором, влияющим на конкурентоспособность на разных экономических уровнях. Уверая различные интерпретации интеллектуального потенциала (например, талант, знания, сотрудники, интеллектуальные продукты, воплощенные в технологии и т.д.), Исследователи продолжают ставить вопрос о взаимосвязи между интеллектуальным потенциалом и устойчивым экономическим развитием и, следовательно, достижением социального благополучия в основе современных исследований экономического развития. В конце концов, наиболее значимым фактором, влияющим на формирование интеллектуального потенциала, является система высшего образования и научных исследований, которая существует внутри страны, на которую в той или иной степени влияет государственное финансирование. Влияние таких инвестиций должно быть положительным в контексте полученных экономических результатов и их влияния на будущее развитие.

Научное осознание факторов и особенностей развития интеллектуального потенциала в регионах указывает на преимущества и слабости каждого из них, а в целом при эффективном подходе – способно ускорить процессы создания и технологического обновления наукоемких отраслей и экономики в целом. В развитых странах вопросам интеллектуального потенциала уделяется огромное значение. В развитие интеллекта нации они вкладывают огромные средства, которые возвращаются новыми открытиями в науке, новыми технологиями в промышленности и увеличением ВВП страны.

В статье раскрыта сущность понятий «интеллектуальный потенциал» и «оценка интеллектуального потенциала», также рассмотрена структура и важность интеллектуального потенциала для экономики страны. Представлены показатели, которые позволяют оценить интеллектуальный потенциал региона и страны по его составным элементам. А также рассмотрена роль интеллектуального потенциала для перехода экономики РК к инновационному типу развития. Анализируются составляющие интеллектуального потенциала (научный, инновационный, образовательный, культурный потенциал), даются их характеристики и варианты расчета каждого компонента. Также в виде таблицы даны методы оценки интеллектуального потенциала отдельных организации и ученых.

Ключевые слова: интеллектуальный потенциал, инновации, наука, инновационная экономика, образовательный потенциал, культурный потенциал.

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ЕЛДІҢ ЗИЯТКЕРЛІК ӘЛЕУЕТІ: ТҰЖЫРЫМДАМА, ҚҰРЫЛЫМ ЖӘНЕ БАҒАЛАУ ӘДІСТЕРІ

Аннотация. Қазіргі заманда әлемде жаңа технологияларды дамыту мен енгізу қарқындылығы басым болған жағдайда, интеллектуалдық әлеует аймақтар деңгейінде де, тұтастай алғанда, ел деңгейінде де Қазақстанның бәсекеге қабілеттілігі үшін маңызды болып саналады. Елдің қалыптасқан зияткерлік әлеуетін және әлемдегі экономиканы зияткерлендірудің қазіргі заманғы трендтерін нақты бағалай отырып, елдің табысты экономикалық дамуын қамтамасыз етуге қабілетті дұрыс стратегиялық шешімді таңдауға болады.

Зияткерлік әлеуетті қалыптастыру мен капиталдандырудың маңызы бүгінде түрлі экономикалық деңгейдегі бәсекеге қабілеттілікке әсер ететін фактор деп танылды. Зерттеушілер зияткерлік әлеуеттің түрлі түсіндірмесін (мысалы, талант, білім, қызметкер, технологияда іске асырылған зияткерлік өнімдер және т.б.) алға тарта отырып, зияткерлік әлеует пен тұрақты экономикалық дамудың байланысы, демек, экономикалық дамудың қазіргі заманғы зерттеулерінің негізінде әлеуметтік әл-ауқатқа қол жеткізу мәселесін талқылауды жалғастыруда. Зияткерлік әлеуетті қалыптастыруға әсер ететін ең маңызды фактор мемлекеттік қаржыландыру қандай да бір дәрежеде әсер ететін елдегі жоғары білім беру және ғылыми зерттеулер жүйесі болып саналады. Мұндай инвестициялардың әсері экономикалық нәтижелер мен оның болашаққа ықпалы мәнмәтінінде оң болуға тиіс.

Аймақтардағы зияткерлік әлеуеттің даму факторлары мен ерекшеліктерін ғылыми тұрғыдан білу олардың әрқайсысының артықшылықтары мен әлсіз жақтарын көрсетеді және тұтастай алғанда тиімді тәсілмен ғылымды көп қажет ететін салалар мен тұтастай экономиканы құру және технологиялық жанарту үдерістерін жеделдетуге қабілетті. Дамыған елдерде зияткерлік әлеует мәселелеріне үлкен мән беріледі. Ұлт интеллектінің дамуына олар ғылымдағы жаңа жаңалық, өнеркәсіптегі жаңа технология және елдің ЖІӨ-нің ұлғаюы арқылы қайтарылатын орасан зор қаражат салады.

Мақалада «зияткерлік әлеует» және «зияткерлік әлеуетті бағалау» ұғымдарының мәні ашылды, сондай-ақ ел экономикасы үшін зияткерлік әлеуеттің құрылымы мен маңызы қарастырылған. Аймақтың және елдің зияткерлік әлеуетін оның құрамдас элементтері бойынша бағалауға мүмкіндік беретін көрсеткіштер ұсынылған. Сонымен қатар, ҚР экономикасының инновациялық даму түріне көшуі үшін зияткерлік әлеуеттің рөлі қарастырылды. Зияткерлік әлеуеттің құрамдастары (ғылыми, инновациялық, білім беру, мәдени әлеует) талданды, олардың сипаттамалары мен әр компонентті есептеу нұсқалары берілді. Сонымен қатар, кесте түрінде жекелеген ұйымдар мен ғалымдардың зияткерлік әлеуетін бағалау әдістері берілген.

Түйін сөздер: зияткерлік әлеует, инновациялар, инновационды экономика, білім әлеуеті, мәдени әлеует.

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