

## Strategic Priorities for the Development of Intellectual Potential of Developing Countries in the Context of Constructing an Innovative Economy

**Laura K. Sanaliyeva**

*S. Toraighyrov Pavlodar State University  
140008, 64 Lomov Str., Pavlodar, Republic of Kazakhstan*

**Liudmila P. Goncharenko**

*Plekhanov Russian University of Economics  
117997, 36 Stremyanny Lane, Moscow, Russian Federation*

**Saule A. Rakhimova**

*S. Toraighyrov Pavlodar State University  
140008, 64 Lomov Str., Pavlodar, Republic of Kazakhstan  
Plekhanov Russian University of Economics  
117997, 36 Stremyanny Lane, Moscow, Russian Federation*

**Alexey A. Titkov**

*S. Toraighyrov Pavlodar State University  
140008, 64 Lomov Str., Pavlodar, Republic of Kazakhstan*

**Saule K. Kunyazova**

*S. Toraighyrov Pavlodar State University  
140008, 64 Lomov Str., Pavlodar, Republic of Kazakhstan*

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**Abstract.** *The intellectual potential is considered as the fundamental basis for the innovative development of the industry and business entrepreneurship through influence factors. At the same time, there is no single clear definition of the term ‘intellectual potential’ and clearly developed organisational and economic mechanisms for its relationship with the trends of innovative development of the economic system. The purpose of the study is focused on the search for optimal and effective organisational and economic mechanisms for the development of the intellectual potential of countries with developing economies. The methodology was based on the application of the following scientific methods: analysis and synthesis, the statistical method of analysis, the method of establishing patterns and hypotheses, and the method of enlarged analytical calculation. Research and analysis of the main constituent elements and indicative data of the intellectual potential of developing countries of the world (the Republic of Kazakhstan and the Russian Federation) made it possible to identify systemic problems in this area. It can be concluded that the intellectual potential has significant reserves in the field of improvement and development, primarily in the field of human capital. As a result of the study, the authors propose ways of intensifying the development of intellectual potential on the principles of the formation of organisational and economic systems, such as creation and development of corporate-type universities; creation and development of regional and interregional competence centres; creation and development of business initiative centres.*

**Keywords:** *resource capabilities, human capital, global competitiveness, population activity.*

**Raktažodžiai:** *išteklių pajėgumai, žmogiškasis kapitalas, pasaulinis konkurencingumas, gyventojų aktyvumas*

## Introduction

In modern science and practice, the development of intellectual potential and innovative development remain relevant tasks for most of both developing and developed countries of the world. At the same time, there is no single clear definition of the term 'intellectual potential' and clearly developed organisational and economic mechanisms for its relationship with the trends of innovative development of the economic system. Intellectual potential should be understood as the totality of all resource opportunities for understanding the environment, accumulating knowledge and applying it. The intellectual potential is considered and analysed from the perspective of the following components: demographic (social, human) potential, human capital, set of organisational and economic conditions (resources) focused on the development of human capital (Thanh Nhon et al., 2020). Demographic (human) potential accumulates the quantity and quality of human resources. Human capital is the combination of knowledge and skills used to meet the diverse needs of a person and society as a whole (Goldin, 2014). Thus, an innovative economy is interpreted as an economy based on new knowledge and intellectual potential (Delgado and Mills, 2020).

Some researchers, e.g., E. Toffler (2010) and Y.-S. Lee (2020), believe that the construction of an innovative economy for developed countries ensures the global economic superiority of one country over a number of other countries. For the dynamic development of intellectual potential, it is necessary to create appropriate organisational and economic conditions (resources). The experience of leading countries with innovative economies (e.g., USA, Germany, Japan, Australia, Canada, Sweden, Finland and others) shows that the following elements act as organisational and economic foundations: the functioning of universities of research and business type; the functioning of business incubators and science and technology parks; personnel policy at enterprises, focused on the development of the quality of human resources; an effective migration policy focused on attracting high-quality human resources (Skawińska and Zalewski, 2020). In many technologically developed countries, one of the key roles in terms of forming intellectual potential belongs to research and entrepreneurial institutions of higher educational, where fundamental and applied research and entrepreneurial developments for commercialisation are concentrated (Amuda, 2020). At the same time, there are various models of managing the higher education system with a varying degree of centralisation in their management (Ushakova et al., 2016). Technological parks are an important tool for developing intellectual potential in world practice. They create a complex of conditions for conducting research and development work for business and entrepreneurship. Along with the development of the education system and scientific infrastructure, effective mechanisms for the development of intellectual potential at micro levels (e.g., enterprises, firms and companies) have been formed in the world practice. At the macroeconomic level, most developed countries with an intellectual and innovative economy develop a special migration policy aimed at attracting high-quality human resources to national economic systems (Kadysheva and Safronova, 2016).

Despite the wide range of existing mechanisms for the development of intellectual potential in theory and world practice, in the developing countries of the world, in particular, in the Republic of Kazakhstan and the Russian Federation, these mechanisms are also applied. However, they do not produce the expected positive effect. The innovative economy in Russia and Kazakhstan is still in its infancy. Its formation entails global changes in all spheres of human life. In the Republic of Kazakhstan over the past 15 years, a wide range of government programs have been implemented that focus on accelerated industrial and innovative development and the development of innovative research education (The strategy for development of the Republic of Kazakhstan, 2020). Similar programs were implemented in the Russian Federation (Government programs, 2020). Both countries have systemic and multifaceted problems in terms of the development of intellectual potential that require searching for more optimal and effective organisational and economic mechanisms in order to develop intellectual potential. Therefore, the object of the study is the Republic of Kazakhstan and the Russian Federation. The purpose of the study is focused on the search for optimal and effective organisational and economic mechanisms for developing the intellectual potential of countries with developing economies.

## Materials and Methods

The methodology was based on the application of the following scientific methods: analysis and synthesis, the statistical method of analysis, the method of establishing patterns and hypotheses, and the method of enlarged analytical calculation. The analysis of enlarged composite indicative indicators of the dynamics of the intellectual potential of the countries of the Republic of Kazakhstan and the Russian Federation is used to show that the intellectual potential has significant reserves in the field of improvement and development, primarily in the field of human capital. To identify causal factors of the state of low intellectual potential of the countries under consideration, it is important to study trends in the field of demography and economic activity of the population, the level of education of the population, the training system and its financing, and the infrastructural support of innovative business entrepreneurship.

At the present stage, in the functioning system of countries with developing economies, the following should be designated as aggregated effective indicators characterising the level of development of intellectual potential: human development index, global competitiveness index, the level of involvement of enterprises in the research process, the level of innovative activity of enterprises and the innovativeness of manufactured products. Globally, in terms of the human development index, the Republic of Kazakhstan and the Russian Federation are in the 50th and 49th places respectively (Human Development Report, 2019). According to the global competitiveness index, the Republic of Kazakhstan and Russia occupy 59 and 43 places respectively (Figure 1). Comparing the human development indices with the global competitiveness indices of Kazakhstan and Russia, it should be noted that a high index of human development does not determine an identical competitiveness index. This trend is explained by the fact that the level of human development is not always determined by the direct growth of human capital and, as a result, by the growth of competitiveness (Janshanlo et al., 2019).

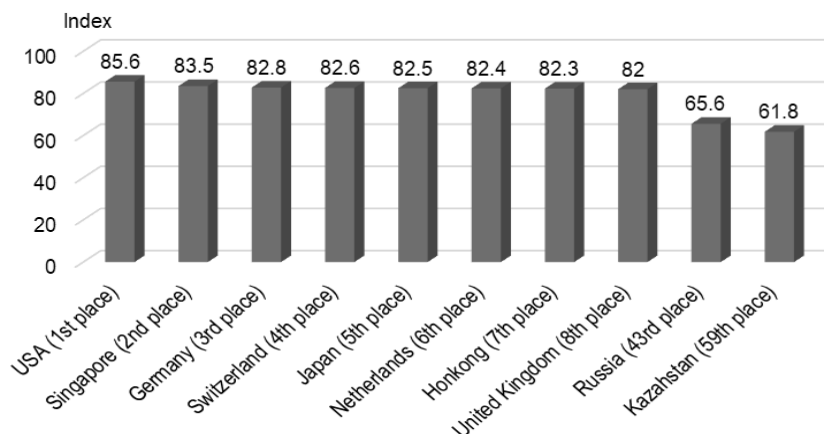


Figure 1. Global Competitiveness Index of selected countries of the world as of 2018

Source: The Global Competitiveness Report (2018).

The competitiveness of the Republic of Kazakhstan is constrained by the following factors: the level of involvement of enterprises in the research process, level of innovative activity of enterprises and innovativeness of products. From 2014 to 2018, the share of Kazakh R&D expenditures in the structure of GDP in the Republic of Kazakhstan did not exceed 0.17% (Table 1). The level of innovative activity of enterprises in the strategic period was no more than 10.6% (Table 2).

Table 1. Dynamics of scientific activity in the Republic of Kazakhstan

INDICATOR NAME	YEARS				
	2014	2015	2016	2017	2018
Financing domestic R&D expenditures, million USD	364.39	369.71	188.30	205.50	206.54

INDICATOR NAME	YEARS				
	2014	2015	2016	2017	2018
Share of domestic R&D expenditures in GDP, %	0.17	0.17	0.14	0.13	0.12
Number of organisations conducting R&D, number	392	390	383	386	384
The level of activity of enterprises for the implementation of R&D, %	1.63	1.23	1.23	1.25	1.26

Source: *Science and innovation of the Republic of Kazakhstan (2019)*.

**Table 2. Dynamics of scientific activity results (innovative activity trends)**

INDICATOR NAME	YEARS				
	2014	2015	2016	2017	2018
Number of enterprises with innovations, number of units	1 940	2 585	2 879	2 974	3 230
The level of innovative activity of enterprises, %	8.1	8.1	9.3	9.6	10.6
The share of innovative products in the structure of GDP, %	1.46	0.92	0.95	1.55	1.91

Source: *Science and innovation of the Republic of Kazakhstan (2019)*.

Likewise, low rates of the development of science and innovation are characteristic of the Russian Federation. For example, the share of R&D expenditures in the structure of GDP in Russia over the past five years has not exceeded 0.55%, and the level of innovative activity of enterprises has not exceeded 10.6% (Science, innovation and the information society, 2020). In Kazakhstan, with a comparatively small population, there are tendencies of a negative migration balance, in which 98 thousand people left the country between 2014 and 2018 (Table 3). Under conditions of low economic activity of the population and a high level of real unemployment, there are low growth trends in the share of labour resources with a degree of higher education (Table 4).

**Table 3. Dynamics of the demographic situation and economic activity of the population of the Republic of Kazakhstan**

INDICATOR NAME	YEARS				
	2014	2015	2016	2017	2018
Total population, thousand people	17415.7	17669.9	17918.2	18157.3	18395.6
The balance of migration processes, thousand people	-12.2	-13.5	-21.1	-22.1	-29.1
Labour resources, thousand people	8 887.6	8 998.8	9 027.4	9 138.6	8 887.6
Economically active (employed) population, thousand people	6 294.9	6 342.9	6 485.9	6 612.5	6 294.9
The proportion of the economically active population in the total population, %	36.1	35.9	36.2	36.4	34.2
The level of real unemployment, %	29.2	29.5	28.2	27.6	29.2

Source: *Demographic Yearbook of Kazakhstan (2019), Employment in Kazakhstan (2019)*.

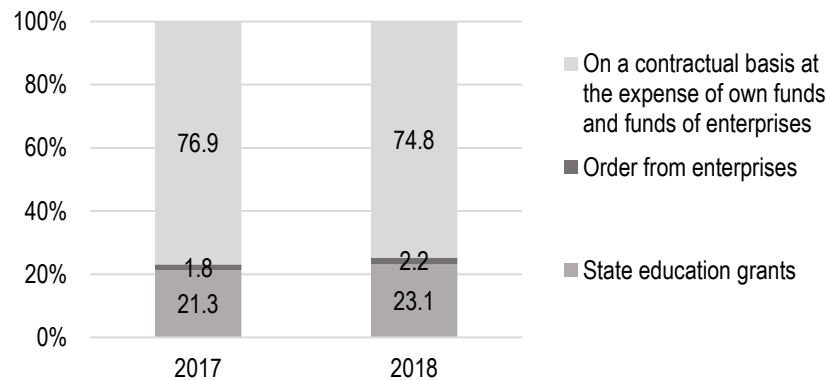
**Table 4. Dynamics of the demographic situation and economic activity of the population of the Republic of Kazakhstan**

INDICATOR NAME	YEARS				
	2014	2015	2016	2017	2018
Labour resources, thousand people	8 887.6	8 998.8	9 027.4	9 138.6	8 887.6
Labour resources with higher education, thousand people	3 093.3	3 169.3	3 205.1	3 362.2	3 487.8
The proportion of labour resources with higher education, %	34.8	35.2	35.5	36.8	39.2

Source: *Employment in Kazakhstan (2019)*.

In the Russian Federation, despite the 8.1-fold excess of the total population of the Republic of Kazakhstan, a similar situation arises in the field of economic activity and the level of education of labour resources (The population, 2020). The intellectual potential, the quality of human capital in the Republic of Kazakhstan and the Russian Federation are directly influenced by the institutional foundations, i.e., the system of higher education, the infrastructure to support innovative business entrepreneurship. At the moment, 130 universities are active in the Republic of Kazakhstan. As of the 2018-2019 academic year, 496.2 thousand

people were studying at the universities of Kazakhstan, while the maximum proportion of students was studying at their own expense (Figure 2).



**Figure 2. The dynamics of the structure of students in higher education in the Republic of Kazakhstan in the context of sources of financing for education**

*Source: Statistics of the education system of the Republic of Kazakhstan (2018), Analytical report (2018).*

In the Russian Federation, as of the 2018-2019 academic year, 724 universities were functioning. During this period, 46.5% of the students studied at the expense of the state, while 53.5% studied at their own expense. Along with universities, scientific and technological parks and business incubators support the development of intellectual potential. The Republic of Kazakhstan has five national technology parks and seven regionals (Technopark of Nazarbayev University, 2019; Regional technology parks, 2019). In the Russian Federation, there are 41 techno-parks, which are included in the rating of the best techno-parks in the country and cover 22 regions (Named the most efficient technology parks in Russia, 2019). Technology parks, both in Russia and in Kazakhstan, aim to create technological conditions for scientific research and development work in the functioning system of modern innovation-oriented enterprises, firms and companies. Business incubators in the practice of Kazakhstan and Russia operate separately or supplement the management systems of the technology parks.

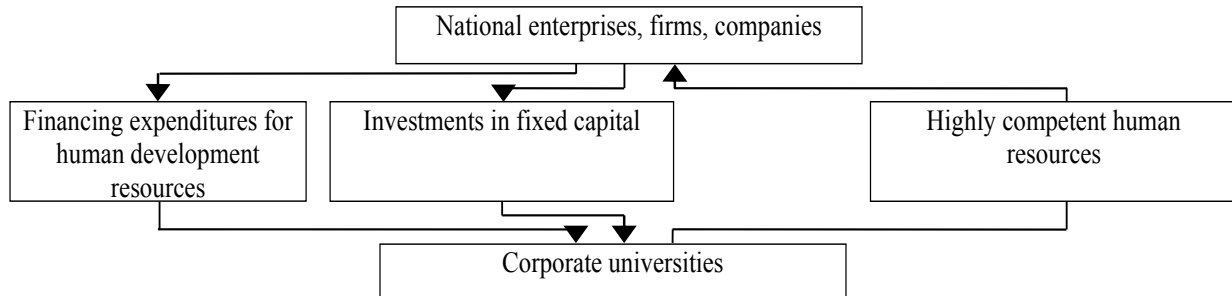
Analysis of the main constituent elements and indicative data of the intellectual potential of developing countries of the world (the Republic of Kazakhstan and the Russian Federation) made it possible to identify the following systemic problems in this area: 1) low competitiveness indices in global rankings; 2) low activity of enterprises in R&D; 3) low level of innovative activity of enterprises; 4) low share of innovative products in GDP structure; 5) the mismatch of trends in the human development index and competitiveness. Cause-effect problems: 1) low proportion of labour resources in the general population; 2) low proportion of population economic activity and high level of unemployment; 3) low proportion of labour resources with higher education; 4) low proportion of staff training in the expenses of enterprises, firms and companies; 5) low efficiency of universities, techno-parks, business-incubator functioning.

## Results and Discussions

We believe that the optimal and effective organisational and economic priorities for the development of the intellectual potential of countries with developing economies are the following mechanisms: 1) creation and development of corporate universities; 2) creation and development of regional and interregional centres of competencies; 3) creation and development of business initiative centres.

The organisational foundations of corporate universities are enterprises, firms, companies acting on the one hand as customers for training personnel (human resources) and as founders (investors) of universities on the other. The organisational and economic foundations of corporate-

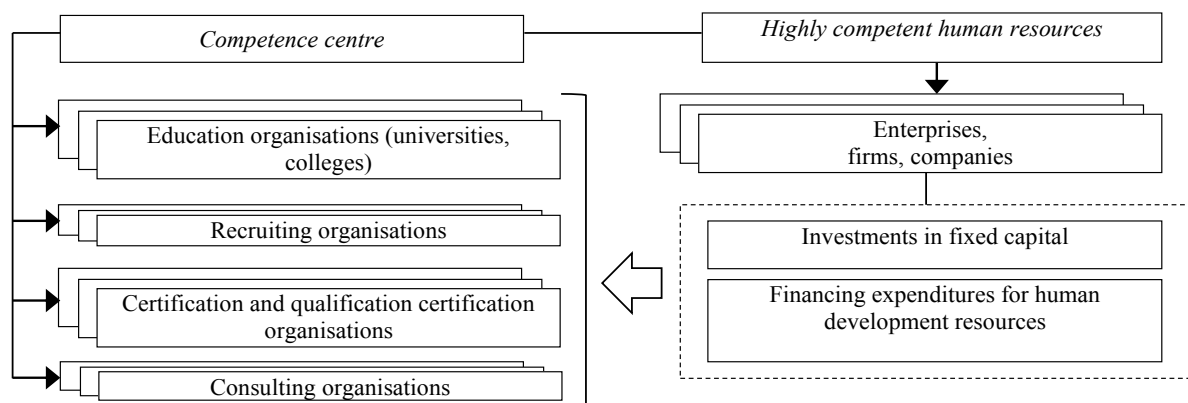
type universities are presented in Figure 3. The main advantages of corporate-type universities are: 1) direct participation of the real sector of the economy in financing the staff training and retraining system; 2) participation of enterprises, firms and companies in the formation of educational programs; 3) targeted training of highly qualified personnel for the needs of the real sector of the economy.



**Figure 3. Organisational and economic foundations of corporate universities**

*Source: Authors.*

The second priority for the development of intellectual potential is the creation and development of regional and interregional centres of competence. The competence centre is a multidisciplinary educational ‘platform’ located in the same territory, uniting many independent educational organisations that conduct separate or joint training of highly qualified personnel in accordance with international standards and at the request of the real sector of the economy. In the predicted long-term period, the competence centres, both in Kazakhstan and in Russia, will replace the principles and methodology of functioning of ordinary universities and colleges and will also become a systematic complement to other centres (e.g., business centres, scientific and technological centres). In general, the organisational and economic foundations of competence centres are presented in Figure 4.



**Figure 4. Organisational and economic foundations of competence centres**

*Source: Authors.*

The third priority for the development of intellectual potential is the creation and development of business initiatives centres. We believe that these centres should be considered as integrated structures in the ‘business incubator – techno-park’ system. Generally, the organisational and economic foundations of business initiative centres are presented in Figure 5.

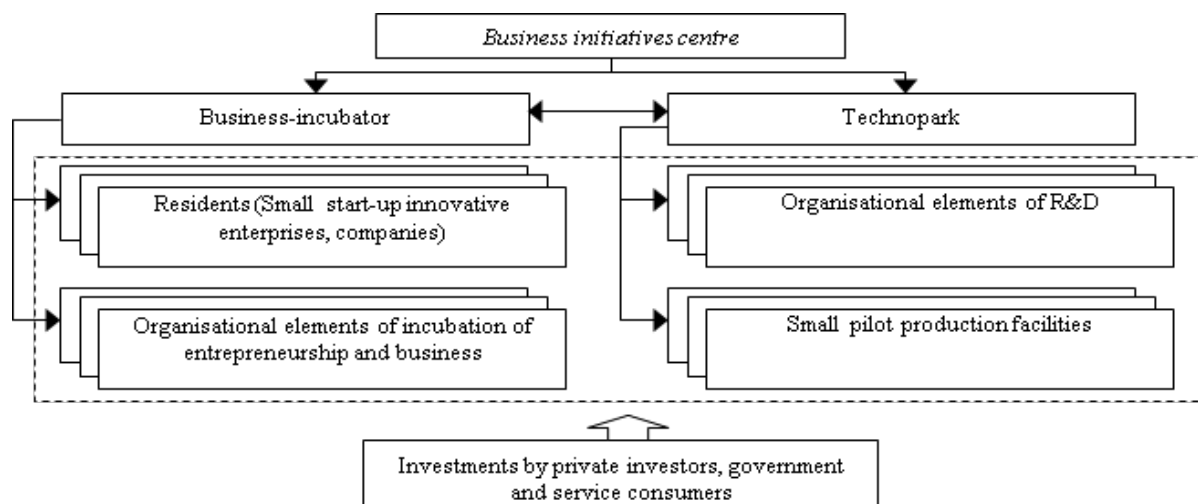


Figure 5. Organisational and economic foundations of competence centres

Source: Authors.

The resulting aspects of the above organisational and economic foundations of the development of intellectual potential will be a dynamic gradual increase in investment in education and R&D from the real sector of the economy (enterprises, firms, companies); dynamic growth of innovative small, medium and large enterprises; increase in the share of innovative products in the structure of GDP; expected improvement in human potential and competitiveness indices in global rankings.

The research results obtained do not contradict and integrate, but complement the scientific results of other studies. For example, scientists of the Ural State University of Russia, L.D. Gitelman and M.V. Kozhevnikov (2013), in their scientific works show that one option for the development of intellectual potential is to consider the concept of creating regional centres of competence, on the principles of partnership between universities, science and business. A number of other scientists, such as A.V. Schraer, E.V. Latypova (2015), consider ways to build innovative clusters and competencies clusters ('excellence' centres' as a guideline to develop intellectual potential. At present, an extensive theoretical knowledge base on the development of corporate universities and corporate education has been formed. An analysis of publications in foreign scientific journals demonstrates that corporate universities have been the subject of interest for American and European corporate training specialists for more than 30 years (Amuda, 2020; Hearn, 2009; Skawińska and Zalewski, 2020).

## Conclusion

1. The basis for a successful development of intellectual potential is the development of human potential. However, developing countries face a number of problems, among which the following can be distinguished: an insufficient level of strategic planning for human development; low level of applied technologies and tools for human development; insufficient funding for human development; imperfection of the institutional environment; poorly developed corporate culture.

2. As a result of the study, the authors propose ways of intensifying the development of intellectual potential on the principles of the formation of organisational and economic systems: creation and development of corporate-type universities; creation and development of regional and interregional competence centres; creation and development of business initiative centres. The use of organisational and economic mechanisms for the development of the intellectual potential of countries with developing economies is designed for a strategic period of at least four, five years and requires phased systematic testing in practice. Both in the Republic of Kazakhstan and the Russian Federation, the ways of developing intellectual potential we propose should become the essential tool for increasing the level of intelligence and innovativeness of economic systems in the near future.

3. The development of intellectual potential cannot be considered as an instantaneous stage of solving problems. For each version of the subsystem to develop intellectual potential, it is necessary to conduct additional research resulting not only in techno-economical investment justifications. The results of the study can be useful in making decisions on the implementation of the proposed mechanisms for the development of intellectual potential in other developing countries aiming to construct an innovative economy.

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Laura K. Sanaliyeva, Liudmila P. Goncharenko, Saule A. Rakhimova, Alexey A. Titkov,  
Saule K. Kunyazova

## **Strateginiai besivystančių šalių intelektualinio potencialo ugdymo prioritetai kuriant novatorišką ekonomiką**

### *Anotacija*

Intelektinis potencialas laikomas pagrindiniu novatoriško pramonės vystymosi pagrindu, verslo verslumu per įtakos veiksmus. Tuo pačiu metu nėra vieno aiškiai apibrėžto sąvokos „intelektinis potencialas“ apibrėžimo ir aiškiai sukurti organizaciniai bei ekonominiai mechanizmai, skirti jo santykiui su naujoviškos ekonomikos sistemos plėtros tendencijomis. Tyrimo tikslas orientuotas į optimalių ir efektyvių organizacinių ir ekonominių mechanizmų paiešką besivystančios ekonomikos šalių intelektualiam potencialui plėtoti. Metodika buvo pagrįsta šių mokslinių metodų taikymu: analizė ir sintezė, statistinis analizės metodas, modelių ir hipotezių nustatymo metodas bei išplėstinio analitinio skaičiavimo metodas. Pagrindinių sudedamųjų elementų ir orientacinių besivystančių pasaulio šalių (Kazachstano Respublikos ir Rusijos Federacijos) intelektualinio potencialo tyrimų ir analizės dėka buvo galima nustatyti sisteminės šios srities problemas. Galima daryti išvadą, kad intelektualinis potencialas turi didelių rezervų tobulinimo ir plėtros srityje, visų pirma žmogiškojo kapitalo srityje. Atlikę tyrimą, autoriai pasiūlė būdus, kaip suintensyvinti intelektualinio potencialo plėtrą, remiantis tokių organizacinių ir ekonominių sistemų formavimo principais kaip: įmonių tipo universitetų kūrimas ir plėtra; regioninių ir tarpregioninių kompetencijos centrų kūrimas ir plėtra; verslo iniciatyvų centrų kūrimas ir plėtra.

*Laura K. Sanaliyeva* – Doctoral Student, Faculty of Public Administration, Business and Law, S. Toraihyrov Pavlodar State University, Pavlodar, Republic of Kazakhstan.

E-mail: [l.sanaliyeva5529@tanu.pro](mailto:l.sanaliyeva5529@tanu.pro)

*Liudmila P. Goncharenko* – Full Doctor in Economics, Professor, Director of the Research Institute “Innovative Economics”, Plekhanov Russian University of Economics, Moscow, Russian Federation.

E-mail: [lgoncharenko@uohk.com.cn](mailto:lgoncharenko@uohk.com.cn)

*Saule A. Rakhimova* – PhD in Economics, Associate Professor at the Department of Economics, S. Toraihyrov Pavlodar State University, Pavlodar, Republic of Kazakhstan; Senior Researcher at the Research Institute “Innovative Economics”, Plekhanov Russian University of Economics, Moscow, Russian Federation.

E-mail: [saule.r@tanu.pro](mailto:saule.r@tanu.pro)

*Alexey A. Titkov* – PhD in Economics, Associate Professor at the Department of Economics, S. Toraihyrov Pavlodar State University, Pavlodar, Republic of Kazakhstan.

E-mail: [prof.titkov@uohk.com.cn](mailto:prof.titkov@uohk.com.cn)

*Saule K. Kunyazova* – PhD in Economics, Head of the Department of Economics, S. Toraighyrov Pavlodar State University, Pavlodar, Republic of Kazakhstan.  
E-mail: [sk.kunyazova@ust-hk.com.cn](mailto:sk.kunyazova@ust-hk.com.cn)

*Laura K. Sanaliyeva* – doktorantė, Viešojo administravimo, verslo ir teisės fakultetas, Valstybinis S. Toraighyrov Pavlodar universitetas, Pavlodar, Kazahstano Respublika.  
E-mail: [l.sanaliyeva5529@tanu.pro](mailto:l.sanaliyeva5529@tanu.pro)

*Liudmila P. Goncharenko* – ekonomikos mokslų daktarė, profesorė, Tyrimų instituto “Inovatyvi ekonomika” direktorė, Rusijos Plekhanov ekonomikos universitetas, Moskva, Rusijos Federacija.  
E-mail: [lgoncharenko@uohk.com.cn](mailto:lgoncharenko@uohk.com.cn)

*Saule A. Rakhimova* – ekonomikos mokslų daktarė, docentė, Ekonomikos katedra, Tyrimų instituto “Inovatyvi ekonomika” vyriausioji tyrėja, Rusijos Federacija. Valstybinis S. Toraighyrov Pavlodar universitetas, Kazahstano Respublika.  
E-mail: [saule.r@tanu.pro](mailto:saule.r@tanu.pro)

*Alexey A. Titkov* – ekonomikos mokslų daktaras, docentas, Ekonomikos katedra, Valstybinis S. Toraighyrov Pavlodar universitetas, Pavlodar, Kazahstano Respublika.  
E-mail: [prof.titkov@uohk.com.cn](mailto:prof.titkov@uohk.com.cn)

*Saule K. Kunyazova* – ekonomikos mokslų daktarė, katedros vedėja, Ekonomikos katedra, Valstybinis S. Toraighyrov Pavlodar universitetas, Pavlodar, Kazahstano Respublika.  
E-mail: [sk.kunyazova@ust-hk.com.cn](mailto:sk.kunyazova@ust-hk.com.cn)



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