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**Mechanisms for HR development  
in conditions of industrial-  
innovative development  
of Kazakhstan**

In this article the problems of insufficient science in the educational system and, as a result, the formation of not competitive human capital were studied. The parameters that determine the increasing of human capital competitiveness and innovative development of the region, as well as the main indicators that show expenditures on science, quantity of higher educational institutions and quantity of students, and quantity of scientific organizations were analyzed. Based on the conducted analysis, the author proposed a win-win mechanism of interactions between participants of innovative system, which on the level of higher educational institutions will contribute to formation of competitive human capital in the country and consequently will contribute to innovative development of the national economy.

**Key words:** human resources, innovation, innovational activity, competitiveness, integration of education and business, national innovation system, industrial-innovative development of Kazakhstan, education, integration, science and business.

Қоныс Ж.К.

**Қазақстанның индустриалды-  
инновациялық дамуы  
жағдайында адами ресурсты  
дамыту тетіктері**

Аталған мақалада білім бері жүйесіндегі ғылымның аздығы және оның нәтижесі ретінде бәсекеге қабілетсіз адами капиталдың қалыптасу мәселесі қарастырылған. Адами капиталдың бәсекеге қабілеттілігін жоғарылататын және аймақтың инновациялық дамуын анықтайтын параметрлер, сонымен қатар ғылымға жұмсалған шығынның көлемі, жоғары оқу орындары мен ондағы ізденушілердің саны, ғылыммен айналысатын ұйымдар саны секілді негізгі көрсеткіштер сарапталған. Өткізілген сараптама негізінде автор жоғары оқу орындарының деңгейінде бәсекеге қабілетті адами капиталды қалыптастыруға және сәйкесінше ұлттық экономиканың инновациялық дамуына оң әсер ететін инновациялық жүйе қатысушыларының арақатынасының тиімді тетігін ұсынады.

**Түйін сөздер:** адами капитал, инновация, инновациялық белсенділік, бәсекеге қабілеттілік, білім беру мен бизнестің арақатынасы, ұлттық инновациялық жүйе, Қазақстанның индустриалды-инновациялық дамуы, білім беру, интеграция, ғылым және бизнес.

Қоныс Ж.К.

**Механизмы развития  
человеческих ресурсов  
в условиях индустриально-  
инновационного развития  
Казахстана**

В данной статье рассмотрены проблемы недостаточности науки в системе образования, и как следствие, формирования неконкурентоспособного человеческого капитала. Проанализированы параметры, определяющие повышающие конкурентоспособность человеческого капитала и инновационное развитие региона, также основные показатели, показывающие объем расходов на науку, количество высших учебных заведений и учащихся, а также количество организаций, занимающихся наукой. На основе проведенного анализа автором предложен взаимовыгодный механизм взаимодействия участников инновационной системы, который на уровне высших учебных заведений будет способствовать формированию конкурентоспособного человеческого капитала в стране и соответственно инновационному развитию национальной экономики.

**Ключевые слова:** человеческий капитал, инновация, инновационная активность, конкурентоспособность, взаимодействие образования и бизнеса, национальная инновационная система, индустриально-инновационное развитие Казахстана, образование, интеграция, наука и бизнес.

**MECHANISMS FOR  
HR DEVELOPMENT  
IN CONDITIONS  
OF INDUSTRIAL-  
INNOVATIVE  
DEVELOPMENT OF  
KAZAKHSTAN****Problem setting**

At the current stage of socio-economic development of the country the strategic goal is to transition to an innovation economy, which can be implemented through the use of the economic potential of the territories. The main part of that potential is a national wealth which is the source of competitive advantages. In the structure of national wealth of all countries, the share of physical capital (accumulated tangible assets) is on average 16% of the total wealth, natural capital – 20%, human capital – 64% (in countries such as Germany, Japan, Sweden, the share of human capital reaches 80%), according to experts of the World Bank.

The concept of human capital at the macro level represents the amount of knowledge and skills of the region's population, formed by public institutions and society by creating financial, organizational, institutional environment for the accumulation and development of the educational level of the population, highly demanded due to its versatility on any territory, contributing to the growth of labor productivity, individual welfare, innovation activity of the population and at the same time to the innovative development of the territory [1; 24].

Taking into consideration the importance of the role of knowledge in the formation of competitive human capital, it becomes clear that the policy of a radical innovation and technological modernization of Kazakhstan's economy requires development of human capital with new competences and the formation of a powerful source of innovative ideas and technology in the system of higher education. This means that to increase the competitiveness of the economy it is necessary to accelerate the integration processes of science, education and industry, to start implementing the results of intellectual activity in the economy.

**Recent research and publication analysis**

Despite the numerous studies carried out in the interests of innovation development of Kazakhstan and the development of human capital, mechanisms and models of increasing human capital competitiveness remains poorly studied.

Among Russian and local scientists, this issue is reflected in the studies of Ustinova, Gubanova, Leonidova, Isabek and Mukhambetova.

*Objective of the research* is to suggest a win-win mechanism of interactions between participants of innovative system, which on the level of higher educational institutions will contribute to development of human capital in the country and consequently will contribute to innovative development of the national economy.

*Theoretical and methodological basis* of the research are fundamental works and provisions of local and foreign scientists in the area of improvement of human capital during the industrial-innovative development.

*Key research findings.* In the Development Strategy of Kazakhstan until 2050 and in other important policy documents, education is considered as a top priority. Today, the key task of educational reforms in Kazakhstan is to adapt the educational system to the new socio-economic conditions. The

program «Intelligent Nation 2020», which was adopted in 2009, envisages the creation of a network of schools for gifted children. Another important step was the adoption of the State Program, Development of Education in Kazakhstan for 2011-2020, which is focused on the development of human capital and providing opportunities for better quality education [2].

However, up to this date, as can be seen from Table 1, the share of GDP spent on education in Kazakhstan is less than Russia's and Belarus's, and the spending per student is less than the half of the limit of purchasing power parity. Recall that the purchasing power parity (PPP) is the ratio between the two or more currencies according to their purchasing power, calculated according to a specific set of goods and services. Nevertheless, the education budget in 2015 exceeded 1.479 trillion tenge with growth over the past two years, more than 1.15 times (in 2013 1.284 trillion tenge).

**Table 1** – Expenditures on education as a percentage ratio of gross domestic product and per student costs in 2015

Country	Total expenses on education as% of GDP	Total expenses per student	
		as% of GDP per person	in US dollars PPP
Kazakhstan	3,6	12,1	883
Belarus	4,0	15,4	1989
Russia	4,1	14,3	3001

The table 2 shows that in the last three years, the quantity of higher education institutions in Kazakhstan had a tendency to decrease. Today there are 127 institutions, that has 459 369 students in total.

Also it is worth mentioning that in Kazakhstan institutions the science never used to be its competitive advantage. Since the existence of USSR, the institutions mainly focused on education but not research. The research functions belonged to the government academy of science. Characteristic feature of higher institution science used to be its indirect connection with the learning process. In the 90-ies the quantity of higher institutions was rising, but faculty devoted to do the research was decreasing.

At the dawn of independence of Kazakhstan, the science still was poorly integrated with the new economy and her old goals did not always meet the needs for the development of society. Science was artificially distanced from the higher education,

which totally contradicted to the modern experience of developed countries [3; 122].

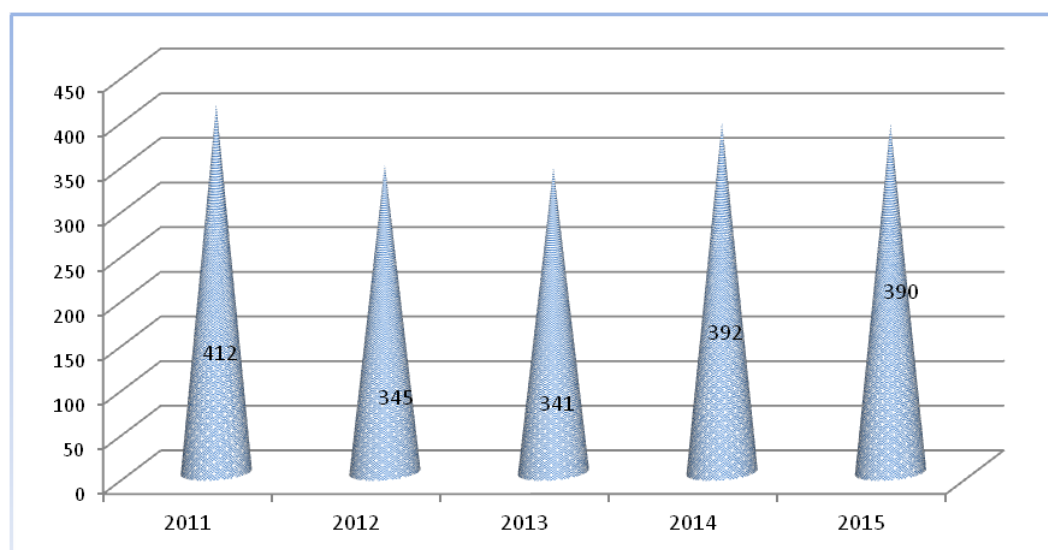
According to Figure 1, in the last five years in Kazakhstan the quantity of organizations performing scientific and research works has a tendency to decrease, falling from 421 to 345, i.e. by 18.1%.

Government considers higher education to be the most important instrument for realization of regional economic strategies and to be a supplier of new ideas and knowledge for development of economy.

It is considered that the partnership should be viewed much broader than the «client-supplier» system, where universities play the role of supplier and the companies – the role of consumer of qualified human resources. The most efficient and rewarding system of interaction should be formed according to the «university plus business, equals new business». This approach gives an opportunity for the university to create new and actually demanded products and services.

**Table 2** – Analysis of the quantity of higher education institutions and their students in Kazakhstan

Regions	Year						Deviations 2015-16/ 2013-14 in%	
	2013-14, quantity of		2014-15, quantity of		2015-16, quantity of		institutions	students
	institutions	students	institutions	students	institutions	students		
Republic of Kazakhstan	128	527 226	126	477 387	127	459 369	-1	-67 857
Akmola region	6	13 787	6	10 289	6	9 267	0	-4 520
Aktobe region	6	23 821	6	20 825	6	20 336	0	-3 485
Alma-Ata's region	3	10 701	3	9 724	3	9 051	0	-1 650
Atyrau region	3	11 347	3	10 552	3	10 014	0	-1 333
West-Kazakhstan region	3	25 517	3	28 369	3	26 856	0	1 339
Jambyl region	5	26 805	5	19 580	4	18 950	-1	-7 855
Karaganda region	10	46 449	9	41 123	9	36 976	-1	-9 473
Kostanay region	7	22 349	7	19 840	7	19 014	0	-3 335
Kyzylorda region	4	13 772	4	11 308	4	10 055	0	-3 717
Mangistau region	2	5 739	2	3 815	2	3 976	0	-1 763
South-Kazakhstan region	11	74 564	11	70 121	11	70 827	0	-3 737
Pavlodar region	4	15 257	4	13 750	4	12 703	0	-2 554
North-Kazakhstan region	2	5 846	2	4 851	2	4 560	0	-1 286
East Kazakhstan region	7	29 220	7	26 559	7	26 842	0	-2 378
Astana city	14	53 561	14	52 945	14	51 235	0	-2 326
Almaty city	41	148 491	40	133 736	42	128 707	1	-19 784

**Figure 1** – Quantity dynamics of organizations, performing scientific and research works

If to compare the general tones of business environment and university, than relatively large degree of passiveness is observed from business side. The modern companies mostly have consuming attitude, expecting certain benefits from universities

and not willing to put their own effort towards common goal.

Probably this is due to the lack of interest in partnering with universities at all. The management of local companies does not see certain and «quick»

benefits from that partnership, which they could get in near future. Management and owners of organizations often the fact of focusing on quick benefits and explain it with unpredictability of economy [4].

Unfortunately, we have to state the fact that there is no common goal which would have been attractive either side in the triad «university – science – business». It is logical to conclude that such situation is due to the specifics of the economy, and also due to the specifics of regional business environment, among which the following considered significant:

- 1) poorly highlighted innovational character of local economy, poorly developed production sector;
- 2) in many cases, nonexistence of the long term strategies of the companies, in particular related to the business development in the region;

- 3) few large companies, which could act as a serious corporate client for the university with the perspective of building up long term relationships;

- 4) absence of «city-forming» enterprises and sectors in certain regions, the development dynamics and production character of which would allow them to act as main clients of targeted training and research;

- 5) presence of certain consumer positions from the universities, which prefer to look at the business-environment not as partners, but as a sponsors.

The problem of orienting the educational programs on formation of applied skills could be solved through the participation of the company specialists in the learning process, the organization of internships for students from partner companies, and execution of design and research projects by the students for the companies.

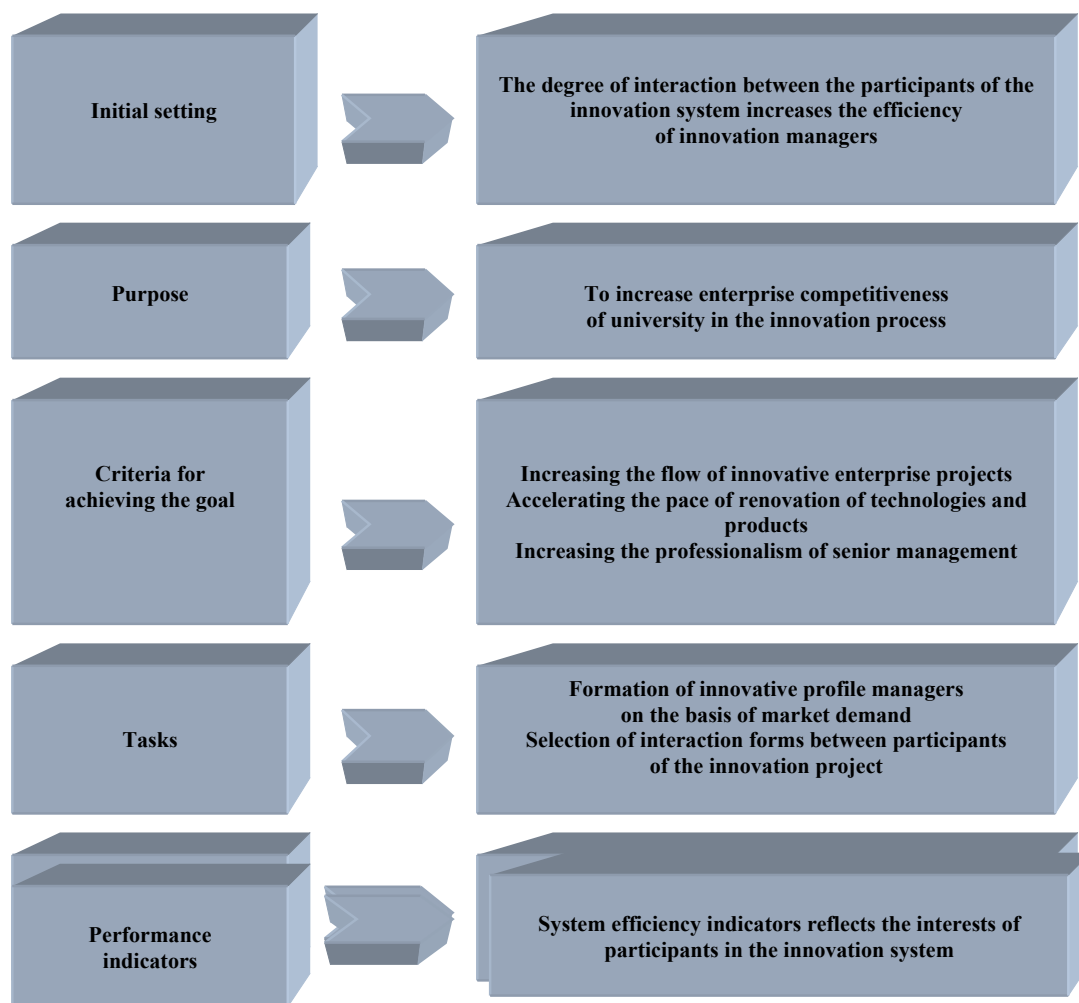


Figure 2 – Interaction mechanism of innovation system participants

The goal of inviting the representatives of business environment (line managers, specialists, entrepreneurs) is to get them involved in the learning process and to correct the purely theoretical direction to applied theory. On one side this expands the connections of the university, and on the other it boosts the reputation of the university, positively affects the employment of students and attracts students. At the same time this approach helps to the partnership between faculty and experienced specialists.

As the experience of developed countries suggests, in the circumstances of dynamic competition only professionally trained managers are capable of successfully transforming high tech developments into innovational products.

It is worth mentioning that Kazakhstan universities follow industrial model of education, which assumes that students are taught by professional instructors by the field and during their studies they study certain amounts of educational fields. In the process of such training the knowledge of students gets distorted several times and get old, which makes their application in real life actually problematic.

Besides that, the existing education system has several problematic areas:

- major programs are not consistent with the principles of effective education model;
- absence or limited application of competent approach;
- division in time of learning and research processes of education, which does not allow to realize the principle of project learning and slows down «reproduction of innovation knowledge»;
- absence of innovational infrastructure of educational process (business parks projects, business incubators, technology parks);

- lack of programs with budget base training [6].

From here it becomes obvious the need to overcome the gap between theoretical knowledge of students and their skills in organization, the need for realization of collective and individual empirical research projects in the innovation management and venture business areas. All these proves the existence of the need for change of forms, methods of instruction and management of educational systems.

Concept of interaction in the innovation system is given the figure 2.

According to Figure 2, the participants of innovation system can be: university; profile public authorities; innovation partner companies; elements of supporting innovation infrastructure (business incubators, technology parks, and others.); finance structures, including business-angels, sowing, venture capital funds.

## Conclusions

It is obvious, that interaction of participants of the model is beneficial: university gets foundation where students develop their professional skills and graduate university being better prepared; partner-company gets young qualified personnel by attracting them into the innovation projects; business-incubator – gets new ideas, projects, and potential employees for the resident companies.

Given model serves as a mechanism of formation and development of human capital through development of science, education and business, as a result of which increases the competitiveness of specialists and increases the indicator of innovation activity in the regions of the country. This result can become the key to socio-economic development of the country.

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