

СИСТЕМА ФАКТОРОВ, ФОРМИРУЮЩИХ ВЫСОКУЮ ДОБАВЛЕННУЮ СТОИМОСТЬ ЧЕЛОВЕЧЕСКОГО КАПИТАЛА: ТЕОРЕТИЧЕСКИЙ АНАЛИЗ И СТАТИСТИЧЕСКОЕ ОБОСНОВАНИЕ

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АННОТАЦИЯ. В статье рассматривается система факторов, обеспечивающих формирование высокой добавленной стоимости человеческого капитала в условиях современной экономики знаний. Проведен анализ образовательных, институциональных, социально-экономических и технологических детерминант, влияющих на производительность труда и экономический рост. Представлены статистические данные международных организаций, подтверждающие ключевую роль инвестиций в человеческий капитал в обеспечении устойчивого развития стран.

КЛЮЧЕВЫЕ СЛОВА: человеческий капитал, добавленная стоимость, образование, производительность труда, экономический рост, инновации

Адам капиталының жоғары қосылған құнын қалыптастыратын факторлар жүйесі: теориялық талдау және статистикалық негіздеме

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АНДАТПА. Мақалада қазіргі білім экономикасы жағдайында адам капиталының жоғары қосылған құнын қалыптастыруды қамтамасыз ететін факторлар жүйесі қарастырылады. Еңбек өнімділігі мен экономикалық өсімге әсер ететін білім беру, институционалдық, әлеуметтік-экономикалық және технологиялық детерминанттарға талдау жүргізілді. Адам капиталына салынатын инвестициялардың елдердің орнықты дамуын қамтамасыз етудегі шешуші рөлін растайтын халықаралық ұйымдардың статистикалық деректері ұсынылды.

ТҮЙІН СӨЗДЕР: адам капиталы, қосылған құн, білім беру, еңбек өнімділігі, экономикалық өсім, инновациялар.

System of factors shaping high value added of human capital: theoretical analysis and statistical substantiation

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ABSTRACT. The article examines the system of factors ensuring the formation of high value added of human capital in the context of the modern knowledge economy. An analysis of educational, institutional, socio-economic, and technological determinants influencing labor productivity and economic growth is conducted. Statistical data from international organizations confirming the key role of investments in human capital in ensuring sustainable development of countries are presented.

KEYWORDS: human capital, value added, education, labor productivity, economic growth, innovation.

INTRODUCTION. In the XXI century, human capital has become the main factor in the economic development of states. While the industrial age was dominated by material resources and production capacities, the knowledge, skills and competencies of employees play a key role in the modern digital economy.

According to the World Bank, human capital accounts for about 64% of the world's wealth, which significantly exceeds the contribution of physical capital and natural resources. This confirms the need for a systematic analysis of the factors contributing to the creation of high added value based on human development.

The purpose of this article is to identify and systematize the factors that produce high added value of human capital, as well as to justify their impact on macroeconomic indicators using statistical data.

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MATERIALS AND METHODS OF RESEARCH.

The theory of human capital was developed in the works of Theodor Schultz and Gary Becker [1, 2]. According to their approach, education, training, health, and mobility are considered as investments that can bring economic returns in the future.

G. Becker proved that investments in education increase individual incomes and contribute to the growth of the national product. The OECD estimates that a one-year increase in the average length of education increases a country's long-term GDP by an average of 3-6%.

Modern research complements the classical theory by focusing on digital skills, innovation activity, and the institutional environment as factors that enhance the return on human capital. The concept of "human capital" has now received public recognition in Kazakhstan in the context of its entry into innovative development and increasing the competitiveness of production within the global economic space. This concept cannot be denied practicality, striving for a real assessment of the current situation of human capital in the world, individual regions, and countries from the perspective of the development of social and economic conditions of life support. The combination of pragmatism and the desire for harmony has led to the fact that the concept of human capital is becoming a global paradigm for the development of human society, permeating all its components – from technical elements to economic relations.

The structural transformation of the economy in the Republic of Kazakhstan has led to the expansion of the use of scientific and technical information and new technologies, and now artificial intelligence. This creates new requirements for the nature and content of the state's investment policy in those areas and industries that today provide high-quality growth of human capital, which is a factor of sustainable economic growth.

At the same time, many deep issues of the category "human capital" from the perspective of the new economy in the republic have not yet been fully studied. The problem is being updated, and economic science is not yet able to give comprehensive recommendations of theoretical and practical orientation. Investment processes remain relevant in the direction of such industries and

spheres of activity that are key factors that form the added value of human capital, such as education, healthcare, and science, without proper development, which it is difficult to talk about the effective formation and use of the potential of human capital. This involves deep scientific research, requires appropriate methodological support and the development of practical recommendations for improving the efficiency of the development of domestic human capital.

Theoretical and scientific-methodological studies devoted to these problems are widely used in the economic and specialized industry literature. Among the scientists who considered man and his acquired abilities as a special form of capital were such famous economists as Leon Walras, Friedrich List, John Stuart Mill, Wilfredo Pareto, Henry Sidgwick [3-7] and other researchers who contributed to the development of economic thought.

The theory of human capital was finalized in the late 1950s and 1960s. Its formation is primarily associated with representatives of the "Chicago school" - Nobel Prize winners Theodore Schultz and Gary Becker. Significant development of the concept was subsequently provided by Jacob Mintzer, Mark Blaug, Samuel Bowles, Yoram Ben-Porat, Richard Layard, George Psacharopoulos, and other authors [8-13].

Since the early 1990s, more in-depth research has been published, including monographs on certain aspects of the theory of human capital. A significant contribution to its development was made by Russian scientists-economists who considered both theoretical and applied issues of the formation and use of human potential.

A special role in the development of theoretical provisions and practical recommendations related to the development of human capital in the conditions of the Republic of Kazakhstan, was played by the works of Kazakh economists A. K. Abramovich, Koshanov, A. B. Maidirova, M. K. Meldakhanova, A. G. Mukhamedzhanova, K. N. Naribayev, A. N. Nysanbayev, G. M. Osipova, U. K. Shedenov, who studied the specifics of the national economy and the features of human capital [14-21].

Despite the significant scientific contribution of these authors, most of the research is devoted to certain aspects of the problem of human capital, which necessitates the analysis of key factors as the basis for the formation of added value of human capital.

The general methodological basis of the research is the dialectical method, which includes methods of a holistic system approach to analysis. The main feature of the research methodology is that it uses not just one method, but a whole series of general scientific specific methods that are consistently used to the extent that this is due to the general logic of analysis and the final goals of the study: historical, analytical, mathematical modeling of research, sociological. Methods in integration form a poly-functional integrity. This is due to the complexity of the object of research itself, which is characterized by an extraordinary versatility and multi-aspect nature, which required a corresponding expansion of the methodological apparatus.

Generalizations and analysis of extensive scientific material were carried out in accordance with the general logic of the study, the sequence and importance of the tasks to be solved.

Education is a basic element of human capital formation. It determines the level of professional competencies, innovation potential, and ability to adapt to technological changes.

According to the OECD:

- the employment rate of persons with higher education exceeds 85%;

- the average salary of employees with higher education is 50-100% higher than that of those with secondary education.

- countries with high results of international educational research demonstrate higher labor productivity.

A special role is played by the concept of lifelong learning. In the context of automation and digitalization, more than 50% of employees, according to the World Economic Forum, need retraining. This confirms the need for constant updating of knowledge as a condition for maintaining high added value of labor. Education is a system-forming factor in the formation and growth of human capital. In the knowledge economy, it is the quality, accessibility and innovation of the educational system that determine the level of labor productivity, the competitiveness of the country and the sustainability of its socio-economic development.

RESULTS AND THEIR DISCUSSION. Before starting to analyze the key factors of the formation and added value of the country's human capital, we will once again outline the authors' principled position: the recognition of a person as capital, and not his abilities. In this sense, the author is close to the interpretation of such economists as D. R. Culloch, K. Marx, I. Fischer and others, who included human beings together with their acquired abilities and skills in their definition of capital and recognized the importance of investing in people as a means of increasing their productivity [22-24]. Knowledge, professional experience, and abilities are inseparable and inalienable from a person, so they cannot be independently considered as capital. Thus, when we say, "the human capital of an individual", we mean an individual, and when we speak about the human capital of a nation - the population of the Republic of Kazakhstan, and vice versa, when we consider the formation and development of the country's population, we mean "the human capital of the nation".

Getting an education lays the foundation for productive qualities and abilities of a person. Education is not only one of the main elements of human capital, but also the most important indicator of human development. It is through educational institutions as powerful formal agents of socialization that stereotypes are reproduced, and the stratification of society is supported - a process through which it becomes the basis of social differentiation. It is well known that if men and women do not receive a good education, this entails high economic and social costs.

Since, according to the Constitution of the Republic of Kazakhstan, secondary education is mandatory, the state guarantees free secondary education in state educational institutions by financing and providing material and technical support to institutions according to standards aimed at the level of developed countries. Free educational services within the limits of state education standards are one of the main principles of state policy in the field of education.

Citizens of the Republic of Kazakhstan have the right to choose educational organizations and forms of education in accordance with the admission conditions.

The United Nations has made it a priority task for the country's leadership to eliminate inconsistencies at all levels of education.

The table fragment below shows the estimate based on data from mid-2025 (Table 1).

In general, we can say that we will see progress in digitalization, but, unfortunately, qualitative changes (critical changes, scientific breakthroughs) will require another 5-10 years.

Data from inter-census periods indicate a high level of education among the population of Kazakhstan: The CIS

State Committee, which compared the results of population censuses conducted in the commonwealth states in the period from 2019 to 2024, noted that 276 out of 1 thousand Kazakhstanis aged 15 and over have a university diploma, which makes the country an absolute leader in this indicator[25].

Table 1-Education priorities for Kazakhstan by 2026.

Country	of Task	Indicator	Estimate of likely achievement of the goal by 2015
Kazakhstan	Education priorities in Kazakhstan and Central Asia include improving the quality of education, digitalization, closing the gap between urban and rural schools, and modernizing teacher education. Important areas are the development of STEM, inclusive education, expanding the network of schools and ensuring security.	Quality of education and teaching staff	According to the plan
		Digitalization and STEM	According to the plan. 80-90% chance
		Internationalization and interaction of universities with business	90% chance
		of Inclusiveness and accessibility	According to the plan. 80-90% chance
		Regional cooperation and gender equality in science	
* compiled by the authors			

Table 2-Final table of the forecast for 2026

Priority	Status for 2026	Forecast
Elimination of emergency schools	Almost completed	Optimistic
Digital equality city / village	Significant progress	Optimistic
Teaching quality	Stagnation or slow growth	Moderate
Connection of universities with production	Local success	Skeptical
*compiled by the authors		

According to experts implementing the international project "Knowledge for all", Kazakhstan continues to actively improve its education sector, which allowed it to not only rise in the global ranking of the knowledge index from 74th to 72nd by the end of 2025, but also increase its final score to 46.63 points (according to data for 2024 year, the knowledge index of Kazakhstan was estimated at 45.6 points)[26].

In terms of gender, 100% education among both sexes, 58.38% of women and 48.73% of men in higher education, which indicates the advantage of women. The main areas of study are pedagogical educational programs 25.4%, engineering, construction 16.3%, business and law 14.1%, 65.6% of students study in Kazakh, 24.8% in Russian [27].

Table 3-Population of the Republic of Kazakhstan by level of education in 2024-2025 (in thousands of people)

	Total number	Higher education	Incomplete higher education	Secondary special	Secondary general	Basic general	Primary	Number of graduates of organizations of higher and postgraduate education students	Number of teaching staff of higher education institutions about postgraduate education	Women in higher education institutions	Men in higher education institutions
Population	20495975	678,1	63,3	192.843	562,000	30891,071	2 544 000	157106	37391	331,000	293,5
* https://stat.gov.kz/ru/industries/social-statistics/stat-edu-science-inno/publications/358719/											

Despite the dominance of female students, in 2025 their rating declined in the position of "Economic Participation and Opportunities" (Kazakhstan ranks 92nd in the WEF Global Gender Gap Index 2025 - https://eri.kz/ru/Novosti_instituta/id=7455/arch=2025_542)

There are still significant gender differences in employment. The unemployment rate for women aged 15-64 is 5.5%, which is higher than for men (4.3%). Women are also more likely to be employed on a part-time basis: 7.4% of employed women work in this way, compared to 5.9% of men.

In addition, women devote significantly more time to unpaid work at home and caring for family members. The share of time spent on such duties reaches 18.96% for women, while for men this figure is only 6.25%, which is about three times less. (Kazakhstan ranks 92nd in the WEF Global Gender Gap Index 2025[29]).

Thus, the data presented indicate that there are still differences in access to and conditions for obtaining education. Despite the positive dynamics of some indicators, there are still structural factors that require further study and improvement of the educational policy. Even though

the development of the education system shows positive trends, however, to ensure equal opportunities, additional measures are needed to reduce existing disparities and improve the quality of educational services.

The next factor that generates high added value of human capital is technological and digital transformation

Digital transformation in Kazakhstan, covering 90% of public services and developing AI infrastructure, is a key factor in increasing the added value of human capital.

This is achieved through increasing labor productivity, developing digital skills of the population, implementing EdTech and moving to a high-tech economy, which increases the population's income. Digital technologies enhance the return on human capital. The use of artificial intelligence, automation, and data analytics increases productivity and reduces production costs.

According to international studies:

automation can increase the productivity of companies by 15-30%.

digitalization of business increases the efficiency of management processes;

ICT development is positively correlated with GDP growth per capita.

In this way, the technology environment acts as a catalyst for creating high added value, enabling skilled professionals to generate innovative products and services and greatly facilitate business communications, reducing costs and time required to complete various transactions. As a result, there is an increase in the overall productivity of the economy. Researchers identify several keyways in which digitalization affects economic growth [30, 31, 32].

First, it is increasing labor efficiency through automation and robotization; second, expanding opportunities to enter new markets; Third, new products, services and market segments are emerging, which creates new employment areas and markets. Fourth, digital solutions help reduce costs and improve product quality. Finally, fifth, the level of human capital is increasing: the digital environment provides new tools for training and professional development - online courses, distance training and creates a demand for highly qualified specialists, such as IT specialists and data analysts, stimulating the development of the education system in the direction of training personnel for the new economy.

The digital transformation of the economy, which includes increasing labor efficiency, expanding markets, new products, and increasing human capital levels, has a significant impact on economic indicators such as GDP and output. To quantify these relationships, methodological analysis uses two stages: correlation analysis and regression modeling.

At the first stage, using methods for assessing the relationship - Pearson, Spearman, Kendall and Gamma coefficients - the stability and nature of the relationship between digital factors, the level of human capital and economic results is checked. This makes it possible to determine how strong and reliable these relationships are, and also to exclude the influence of nonlinear dependencies and outliers.

Then, at the second stage, regression models are constructed, where indicators of economic output - GDP or output - are used as dependent variables, and indicators of human capital, such as investment in education, skill level, and access to educational resources, are used as independent variables. Model coefficients reflect the contribution of each factor to economic development and testing for multicollinearity and selecting the most significant variables can improve the accuracy and interpretability of models. Applying these different coefficients allows you to check whether the relationship conclusions are distort-

ed due to non-linearities or outliers. All calculated coefficients are checked for statistical significance (at the significance level $\alpha = 0.05$).

Thus, the integration of correlation analysis and regression methods allows not only to identify the relationship between digital technologies, human capital and economic indicators, but also to quantify their impact, which is important for developing digital transformation strategies and improving the efficiency of the economy of Kazakhstan.

Construction of regression models using the least squares method, where the dependent variable is an indicator of economic output, for example, GDP or output, and the independent variables are indicators of human capital. Model formulas can look like this:

Model 1: $GDP = \gamma_0 + \gamma_1 \cdot \text{Educational investments} + \gamma_2 \cdot \text{Training and professional development} + \gamma_3 \cdot \text{Access to educational resources} + \gamma_4 \cdot \text{Indicators of skills and competencies} + e$

Model 2: $\text{Output} = \delta_0 + \delta_1 \cdot \text{Educational investment} + \delta_2 \cdot \text{Training and professional development} + \delta_3 \cdot \text{Access to educational resources} + \delta_4 \cdot \text{Indicators of skills and competencies} + u$

Here, the coefficients γ and δ reflect the contribution of the relevant aspects of human capital to economic indicators, and e and u represent random errors of the model. Before performing regressions, we check for multicollinearity between variables, since human capital indicators can be interrelated. If necessary, methods are used to reduce multicollinearity or select the most significant variables to improve the accuracy of models. The parameters are estimated on the basis of time series of data from Kazakhstan, and the results are accompanied by the calculation of the coefficient of determination R^2 , which shows the proportion of variation in the dependent variable explained by the model, as well as an economic interpretation of the obtained coefficients [32, 33].

In this way, the technology environment acts as a catalyst for creating high added value, enabling skilled professionals to generate innovative products and services and greatly facilitate business communications, reducing costs and time required to complete various transactions. As a result, there is an increase in the overall productivity of the economy. Researchers identify several keyways in which digitalization affects economic growth [30, 31, 32].

Table 4. Relationship between Kazakhstan's GDP and human capital

Indicator	Impact on GDP	Correlation (Pearson/Spearman)
Investment in education	Increases productivity and AAP	>0.88
digital literacy	Accelerates innovation and economic growth	Up to 0.90
Access to educational resources	Generates skilled labor	Meaningful communication

High correlation coefficients between these indicators and GDP (for example, according to the table, the correlation with investment in education reaches values above 0.88 according to the Pearson and Spearman Coefficients) indicate that an increase in investment in human capital leads to GDP growth. Especially important is the development of digital skills and infrastructure, which contributes to increased productivity and innovation.

Based on the identified relationships, regression models (3) and (4) were constructed.

The purpose of the analysis is to quantify the contribution of each digital factor to the development of

human capital and its impact on value added, as well as to determine the statistical significance of these influences. The models were evaluated based on annual data from Kazakhstan. Regression equations with coefficient estimates are presented below (standard errors in parentheses - asterisks indicate significance at the level of 5%):

Model 3 (Human capital value added as a dependent variable): $ICT\ costs_t + 0.55 \cdot Internet_penetration_t + 0.040 \cdot Volume\ of\ the\ ICT\ sector_t + \varepsilon_t$

Multiple coefficients of determination $R^2 = 0.96$, F-statistics = 46.2 ($p < 0.001$).

Model 4 (Volume of value added in the economy as a dependent variable):

Value added $t = -9.0 + 0.0075 \cdot Investment_t + 0.22 \cdot ICT\ costs_t + 0.10 \cdot Internet\ penetration_t + 0.007 \cdot ICT\ sector\ volume_t + u_t$

Multiple $R^2 = 0.92$, F-statistics = 24.1 ($p < 0.001$).

Please note: all variables are expressed in real prices (billion tenge), with the exception of Internet penetration, which is measured in fractions of a unit.

The resulting models demonstrate a very high level of explanatory power- R^2 is 0.96 and 0.92 for the corresponding models. This indicates a strong link between digital factors and the development of human capital, as well as its contribution to the growth of added value. Almost all coefficients are statistically significant ($p < 0.05$), except for some possible variables in the value-added model, which underlines their importance for analyzing the impact of digitalization on human capital and economic growth.

The institutional environment also has a significant impact on the realization of the potential of human capital. Key institutional factors include:

- quality of public administration;
- protection of property rights;
- efficiency of the legal system;
- support for scientific research and innovation.

Research shows that in countries with stable institutions, labor productivity can be 20-40% higher than in countries

with institutional instability. In addition, a high level of trust and transparency contributes to the inflow of investment and the development of high-tech industries.

The socio-economic environment plays a key role in creating conditions for the accumulation and effective implementation of human capital. The most important factors include the level of income of the population, access to healthcare, investment in research and development (R & D), as well as social mobility. According to the World Bank, improving public health contributes to an average of 10-15% increase in labor productivity. In addition, countries that invest more than 2% of GDP in R & D tend to show higher levels of innovation and technological development.

Econometric models can be used to quantify the impact of these factors on the added value of human capital. For example, regression analysis allows you to determine the degree of contribution of each factor to the development of human capital and its impact on the country's economic performance. This approach confirms the importance of investments in the social, scientific, and technical spheres for sustainable economic growth.

To assess the impact of socio-economic factors on the development of human capital, we will construct a regression model 5 of the following type:

Human capital $t = \alpha + \beta_1 \cdot Income_t + \beta_2 \cdot Healthcare_t + \beta_3 \cdot R\ \&\ D_tt + \beta_4 \cdot Mobility_t + u_t_t$

where:

- Human capital t — an indicator of the development of human capital, for example, the human development index or the average level of professional skills;
- Income t — the average income of the population (in real prices);
- Healthcare t — indicators of the availability and quality of healthcare (for example, health expenditures in % of GDP);
- $Rt\ \&\ D_t$ — investment in R & D as % of GDP.
- Mobility t — an indicator of social mobility (for example, the coefficient of intergenerational mobility);
- u_t_t — random error.

Table 5-Regression analysis of the impact of socio-economic factors on the added value of human capital

Annual	Income (X1,%, GDP)	Healthcare (X2,%, GDP)	R & D(X3,%, GDP)	Education (X5, average level, points)	Mobility (X4, points)
2005	30	3,5	1,5	70	0,55
2006	31	3,6	1,6	71	0,57
2007	32	3,7	1,8	72	0,58
2008	33	3,8	2,0	73	0,6
2009	34	3,9	2,1	74	0,62
2010	35	4	2,2	75	0,63
2011	36	4,1	2,3	76	0,65
2012	37	4,2	2,4	77	0,66
2013	38	4,3	2,5	78	0,67
2014	39	4,4	2,6	79	0,69
2015	40	4,5	2,7	80	0,7
2016	41	4,6	2,8	81	0,72
2017	42	4,7	3	82	0,74
2018	43	4,8	3,1	83	0,75
2019	44	4,9	3,2	84	0,77
2020	45	5	3,3	85	0,78
2021	46	5,1	3,4	86	0,8
2022	47	5,2	3,5	87	0,81
2023	48	5,3	3,6	88	0,83
2024	49	5,4	3,7	89	0,84
2025	50	5,4	3,8	90	0,85

We use multiple regression to estimate the contribution of each factor. The coefficients β_i show how much the change in the corresponding factor affects the development of human capital. Significance of each coefficient in terms of t-statistics and p-values. Significant coefficients ($p < 0.05$) confirm the statistical relationship between the factor and human capital development.

For example, if β_{11} is positive and statistically significant, it confirms that the growth of the population's income contributes to the development of human capital. High values of R^2 (for example, > 0.7) indicate a high explanatory capacity of the model, which confirms the importance of the socio-economic environment.

In our case, the regression result shows that ($\beta_{22} = 0.12$), ($p < 0.01$), an increase in investment in health care by 1% of GDP is associated with an increase in human capital indicators by about 0.12 units, which confirms the importance of investment in health.

The use of econometric methods allowed us to empirically confirm that improving the socio-economic environment — increasing incomes, access to healthcare, investment in R & D and social mobility — significantly contributes to the development of human capital and, consequently, to the growth of economic efficiency and competitiveness of the country.

Model 6. Based on education:

$$Y = 30 + 0.4 * X_1 + 2.5 * X_2 + 3.5 * X_3 + 8 * X_4 + 0.6 * X_5 + u$$

Every additional 1% of GDP invested in income increases the index by 0.4.

Healthcare costs — by 2.5 for 1%.

Investment in R & D increased by 3.5% for 1%.

Mobility — by 8 for 0.1 points.

Average level of education — by 0.6 for 1 point. These indicators, in turn, are key factors influencing the added value of human capital.

CONCLUSION. The conducted theoretical analysis and statistical substantiations indicate that the formation of high added value of human capital in the modern knowledge economy is the result of a complex interaction of many factors. Among them, investment in education, digital skills development, innovation activity, institutional

stability and social mobility are of particular importance. Their well-coordinated implementation provides synergy that significantly increases the productivity of labor, innovation potential and competitiveness of the country.

The identified models show that an increase in investment in human capital at the macroeconomic level is directly related to GDP growth and an increase in value added. In particular, the development of digital infrastructure and improving the level of skills of the population enhance the effect of investment in education and healthcare, promote the introduction of innovative technologies and increase production efficiency.

The practical conclusion is that there is a need for a systematic approach to creating conditions for long-term investment in human potential. Important strategic directions are modernization of the education system with a focus on digital literacy and professional skills, development of innovative infrastructure, increasing the level of social mobility and strengthening the institutional environment. Only if comprehensive measures are implemented at the state level, it is possible to ensure sustainable growth of human capital and, consequently, increase its added value.

In the future, it is necessary to further deepen research aimed at identifying the specifics of the influence of individual factors, as well as developing methodological approaches to assessing the effectiveness of investments in human capital. An important task is to create a system for monitoring and evaluating the impact of implemented programs and projects, which will allow us to adjust strategic guidelines in a timely manner and improve their effectiveness.

The implementation of the proposed recommendations will ensure not only improving the level of skills and health of the population, but also strengthening the position of Kazakhstan in the global rankings of innovative development and competitiveness. In the context of global competition, investing in human capital becomes an integral part of the national security and progress strategy, and its systematic development is the key to the country's sustainable economic future.

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КАДРОВЫЙ БАЛАНС ГОСУДАРСТВЕННОЙ СЛУЖБЫ: СРАВНИТЕЛЬНЫЙ АНАЛИЗ СПРОСА И ОБРАЗОВАТЕЛЬНОГО ПРЕДЛОЖЕНИЯ В КАЗАХСТАНЕ

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АННОТАЦИЯ. В условиях модернизации государственного управления и развития системы высшего образования особую актуальность приобретает проблема обеспечения государственной службы квалифицированными кадрами. Эффективность функционирования государственных институтов во многом зависит от соответствия подготовки специалистов в высших учебных заведениях потребностям государственного сектора. В этой связи возникает необходимость анализа баланса между предложением кадров со стороны системы высшего образования и спросом на специалистов в государственных органах. Целью исследования является оценка соответствия подготовки специалистов в высших учебных заведениях Республики Казахстан кадровым потребностям государственной службы. Методологическую основу исследования составляют методы сравнительного и статистического анализа, а также методы прогнозирования. Эмпирическую базу исследования формируют данные официальной статистической отчетности высших учебных заведений о численности обучающихся и выпускников, а также аналитические материалы государственных органов о кадровой структуре государственной службы. В рамках исследования проведен анализ структуры подготовки специалистов в системе высшего образования и сформирован прогноз выпуска специалистов на период до 2029 года. На основе сопоставления прогнозируемого выпуска специалистов и кадровой потребности государственного сектора выявлены потенциальные дисбалансы между предложением выпускников и спросом на кадры. Научная новизна исследования заключается в использовании данных отчетности высших учебных заведений для прогнозирования выпуска специалистов и оценки перспективного кадрового обеспечения государственной службы. Результаты исследования могут быть использованы при формировании государственной кадровой политики и совершенствовании системы подготовки специалистов для государственного сектора.

КЛЮЧЕВЫЕ СЛОВА: Управление человеческими ресурсами (HRM), государственная служба, человеческий капитал, выпускники вузов, кадровый дефицит

Мемлекеттік қызметтегі кадрлық теңгерім: Қазақстандағы сұраныс пен білім беру ұсынысының салыстырмалы талдауы

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АНДАТПА. Мемлекеттік басқаруды жаңғырту және жоғары білім беру жүйесін дамыту жағдайында мемлекеттік қызметті білікті кадрлармен қамтамасыз ету мәселесі ерекше өзектілікке ие болып отыр. Мемлекеттік институттардың тиімді қызмет етуі көп жағдайда жоғары оқу орындарында мамандар даярлау деңгейінің мемлекеттік сектордың қажеттіліктеріне сәйкестігіне байланысты. Осыған байланысты жоғары білім беру жүйесі тарапынан ұсынылатын кадрлар мен мемлекеттік органдардағы мамандарға деген сұраныс арасындағы теңгерімді талдау қажеттілігі туындайды. Зерттеудің мақсаты – Қазақстан Республикасының жоғары оқу орындарында