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**DIGITALIZATION IN THE DEVELOPMENT
OF HUMAN CAPITAL AS A CONDITION FOR COMPETITIVENESS
AND ECONOMIC GROWTH OF THE REPUBLIC OF KAZAKHSTAN**

Abstract. Currently, the economy of Kazakhstan is in the process of global changes in the economic and technological structures. The situation in the labor market and educational services calls for changes in the content of education in relation to the modern requirements. Discloses a digital transformation sector: the importance of the balance of the strategy and tactics of business and society, issues involving the human capital and society in modernizing the management of the economy in terms of globalization.

In the article the human capital is considered as the driving force behind the development of innovation-based economy, capable of responding to the challenges of the world civilization. Without the human capital development of a country can neither achieve sustainable economic growth, nor to create a contingent of workers who will be willing to take require retraining of workers of the future places or to compete effectively in the global economy.

According to the authors the important role it is necessary to take digital technologies. It is necessary to completely review the contents of all levels of education and training in the IT-industry, in the field of organization of management through the development of digital skills.

Currently, the economy of the Republic of Kazakhstan is at the stage of global changes in the economic and technological structures. The situation on the labor market and educational services necessitates changes in the content of education in relation to modern requirements. The sector of digital transformation is revealed: the importance of balancing the strategy and tactics of business and society development, the issues of involving human capital and society in managing the modernization of the economy in the context of globalization. The formation of a multicomponent information and educational environment, information and digital technologies make it possible to build completely new communications, as well as new relationships among people, the restructuring of the entire economy and society, so that our life is better and “smarter”.

The modern economy is called the economy of effective human capital, which emphasizes its main role in the development and growth of the economy. Human capital is seen as the driving force behind the development of an innovative economy that can respond to the challenges of world civilization. It makes up more than half of the national wealth of each of the developing countries and the main intensive factor in economic growth and social development. The level of skills demanded by the labor market is changing rapidly, which creates both new opportunities and new risks. Without the development of human capital, countries will not be able to achieve sustainable economic growth, nor create a contingent of workers who will be ready to occupy advanced jobs for the future, or compete effectively in the global economic arena.

Keywords: human capital, human development, economic modernization, economic efficiency, digitalization, digital technologies, digital economy, labor market, education system.

Introduction. The issues of increasing the competitiveness of national economies are relevant for each of the countries of the world economy. They are particularly acute in the context of globalization and are based on the protection of national interests. Economic efficiency is expressed primarily in the dynamics of GDP and labor productivity, competitiveness of manufactured goods and services, increasing per capita income and general quality of life.

An analysis of the world economy by these indicators gives a rather mixed picture and does not allow us to identify criteria that would allow the economy of a country to be considered effective. So, in terms of GDP per capita income, the Middle East belongs to oil-producing countries, China leads in terms of GDP growth rates, Japan and Finland in terms of environmental level, and the United

States in terms of labor productivity growth. If we consider the EU countries, they have a number of advantages over other countries that can help transform them into the most developed and competitive countries in the world. These advantages include – compact living of the population in the country with a high standard of living, the availability of modern infrastructure, a high level of development of science, technology and culture.

The Republic of Kazakhstan is a resource-mining country. Studies by UN analysts led to a pessimistic conclusion: human potential can quickly deteriorate due to sales of natural resources, extremely slow development of high-value-added industries, the decline of basic science, culture, and the inaccessibility of high-quality public health services. In this regard, it can be noted that the availability of natural resources cannot always provide a country with a competitive advantage. The economy of these countries is sensitive to changes in world prices for raw materials, which is quite justified, since scientific and technical progress and resource-saving technologies significantly affect world market prices. It all depends on how efficiently the resources are used. Countries that have achieved a competitive advantage by correctly using their natural resources, have created an organization that acts in the common interest on the example of OPEC countries, are less vulnerable to changes in the situation, moreover, they control prices themselves.

Mainpart. The Republic of Kazakhstan needs to critically rethink the organization of raw materials industries, approaches to natural resource management. As you know, today one of the most competitive and dynamically developing industrial sectors of Kazakhstan is the mining and metallurgical complex (MMC). According to the total volume of extraction of solid minerals, the republic ranks 13th in the world among 70 mining powers. In the coming years, the main task of the development of the industry should be the phased creation of new manufacturing industries in the metallurgical industry, the release of high value-added products, ensuring both the growth in the production of high-tech products and the expansion of their exports to foreign markets, as well as the satisfaction of the needs of the domestic market. Technologies such as massive data analysis, advanced sensors and sensors, integrated information systems (ERP, MES), robotic operations and others should be introduced [1].

By 2018, the Kazakhstani economy was able to overcome the dire consequences of the global economic crisis and resume strong growth rates of gross domestic product and industrial production. GDP in 2017 increased by 4 %. The main catalysts for growth were the expansion of production, increased investment activity, the restoration of consumer demand in the domestic market, the growth of the global price situation for oil and metals, as well as the improvement of the economic situation in the states – the main trade partners of Kazakhstan. The manufacturing industry showed a five-year growth maximum of 5.1 %, which was made possible thanks to the implementation of projects under the Industrialization Map. Through the State Program for Industrial-Innovative Development of the Republic of Kazakhstan, 62 projects have already been introduced in the amount of about 850 billion tenge and 5.5 thousand job places have been created [2].

Currently, the economy of the Republic of Kazakhstan is at the stage of global changes in the economic and technological structures. The situation on the labor market and educational services necessitates changes in the content of education in relation to modern requirements. The sector of digital transformation is revealed: the importance of balancing the strategy and tactics of business and society development, the issues of involving human capital and society in managing the modernization of the economy in the context of globalization. The formation of a multicomponent information and educational environment, information and digital technologies make it possible to build completely new communications, as well as new relationships among people, the restructuring of the entire economy and society, so that our life is better and “smarter”.

The modern economy is called the economy of effective human capital, which emphasizes its main role in the development and growth of the economy. Human capital is seen as the driving force behind the development of an innovative economy that can respond to the challenges of world civilization. It makes up more than half of the national wealth of each of the developing countries and the main intensive factor in economic growth and social development. The level of skills demanded by the labor market is changing rapidly, which creates both new opportunities and new risks. There is ample evidence that without the development of human capital, countries will not be able to achieve sustainable economic growth, nor create a contingent of workers who are ready to take demanding jobs of the future, or compete effectively in the global economic arena.

Investing in human capital is the most profitable investment of the state. Given the fact that Kazakhstan is preparing for more advanced technology and the digital future, the country has the opportunity to equip their young people's health, knowledge and skills that will enable them and their country, and to achieve success. Human Capital Index – this is a very useful tool to compare Kazakhstan and see what else needs to be done.

Studies from around the world suggest that progress in this area is possible. In the years 1990-2015 Poland held a series of reforms in the sphere of education and rates of improvement in PISA survey here were among the highest among OECD countries. PISA survey indicators in Vietnam recently exceeded the average for the OECD. In Malawi, in less than twenty years, it was able to reduce the proportion of child stunting by 20 percentage points. But the index shows that there is still much more to do [3].

The list of countries with the highest level of human development. This was reported in the United Nations Development Program (UNDP), Of the 189 countries, 59 were included in the group with a very high level of human development. Among them are Estonia (30th place), Poland (33rd), Lithuania (35th), Latvia (41th), Russia (49th), Belarus (53th) and Kazakhstan (58- e). Moreover, in comparison with other countries, the indicators of the republic are at a level above the average value (only for the Central Asian region, as well as in the group of countries with the same income level). Indeed, for example, for only five years between 2012 and 2017, the indicator of the HDI in the country increased from 0.63 % to 0.75 %. The leader of the table is Singapore with 0.88 [4].

However, the National Human Capital (Human Capital) essentially divided in quality and cost per capita of the population, as well as their effectiveness in different countries. The ratio of the coefficients of per capita efficiency of human capital of the population is shown in table 1.

Table 1 - Human capital efficiency ratio

Country	Type of economy	Performance ratio	Commodity Economy Index	Index of Economic Freedom	Human Capital Quality Index
USA	Knowledge	1,225	1,0	0,78	1,67
Great Britain	Innovative	0,855	1,0	0,75	0,96
Germany	Innovative	0,93	1,0	0,72	1,14
Japan	Innovative	0,93	1,0	0,73	1,13
China	Industrial raw materials	0,49	1,0	0,52	0,45
India	Industrial raw materials	0,37	1,0	0,55	0,19
Russia	Industrial raw materials	0,30	0,75	0,51	0,31
Kazakhstan	Industrial raw materials	0,29	0,56	0,62	0,32
Note: [4]					

Kazakhstan should increase investment in education. The contribution to education in the Republic of Kazakhstan is 3.6 % of GDP, which is a low figure, given that in the countries of the Organization for Economic Cooperation and Development the figure is 3-4 times higher. The post-industrial development of the economy is characterized by high technology and accelerated technological renewal in the production of an intellectual product. In the world there is a tendency for the growth of the economy to depend on the quality of human resources that they possess. Quality indicators of human capital are increasingly affecting the country's competitiveness [5].

Human capital, as well as other capital physical, financial cost has, subject to renewal, modernization and development. And in this it is necessary to take important role digital technologies. The knowledge and skills of the future are educated from an early age, increase business efficiency and speed through automation and other new technologies, and a dialogue with their citizens States is easy and open. State enterprises and organizations, people can interact more effectively with each other.

The digitalization process today affects almost all countries of the world. At the same time, each country itself determines the priorities of digital development. The leading countries in digitalizing national economies are China, Singapore, New Zealand, South Korea, and Denmark. China in its Internet Plus program integrates digital industries with traditional ones, Canada creates an ICT hub in Toronto, Singapore forms a Smart Economy, which is driven by ICT, South Korea focuses on the development of human capital, entrepreneurship and dissemination of ICT achievements, and Denmark focuses on the digitalization of the public sector [6].

The state can provide a "digital leap" in the country due to the accelerated development of specific technologies. In such cases, the State assumes the role of investor, defining the key, the most promising areas of financing, based on an assessment of long-term return on investment, competitive position, trends, and is embedded in the fundamental conditions of success, such as education and vocational training.

As for long-term economic growth in the Republic of Kazakhstan developed a state program "Digital Kazakhstan", whose purpose - the progressive development of digitalization system to achieve sustainable economic growth, improving the competitiveness of the economy and the nation, improving the quality of life.

Latest IT development in education and other sectors of the economy steadily gaining a leading position in the labor market and education, a serious challenge to outdated business models. Modern specialist requires the development of skills, providing work in complex multifactorial dynamic environments: natural, technological, social, information required for output of the national economy on a path of accelerated growth in a rapidly changing world [7].

One of the most important areas of this program is "Development of human capital", covering the creation of the so-called creative society to ensure the transition to new realities - the knowledge economy. Without the development of human capital, work within the framework of digital development programs aimed at the modernization of technological processes and the transition from industry 2.0 and 3.0 to industry 4.0 will be ineffective. The economic return from the introduction of advanced mining business solutions by large mining and metallurgical enterprises is already visible - but it can and should be even greater when intensifying work to improve staff skills and enhancing cooperation between domestic enterprises and applied domestic science and technology parks.

The digital economy requires the population to have digital skills to take advantage of it. Moreover, at present, the level of computer (digital) literacy of the population is about 80 %, and its growth is necessary in the coming years. For the successful development of human capital in Kazakhstan, it is planned to make changes to the work of the network of higher and secondary education, and it is also planned to create a network of competence centers, the work of which will be aimed at training qualified specialists in the IT sphere [8]. Thus, the subject "Information and Communication Technologies" is being taught in schools and higher educational institutions, which forms the general basic knowledge of working with modern information technologies for their effective use in school and everyday life. The number of robotics clubs expands on the general basics of programming in robotics.

At the same time, taking into account the new requirements for the younger generation matures the need to revise the content of secondary education through the development of creative thinking and technical skills. It requires the development of professional standards, which will become the main base for training of technical and professional programs of higher, postgraduate education. Students should develop basic knowledge of the use of ICT in practice, within the framework of the chosen profession.

Over 15 thousand educational grants have been allocated. Moreover, today in the country's economy there is a shortage of specialists in ICT specialties who have professional knowledge and skills in the chosen profession [9].

In addition to training specialists in the IT industry, quality training is needed in the field of management organization, i.e. in the field of systemic organization of the interaction of the ecosystem of people and machines, where routine operations will be performed by machines, and the intellectual control and regulatory function is management. Digitalization is far ahead of the existing system of production requirements for the composition of occupations in the labor market. The lack of an operational link between the labor market and the education system may lead simultaneously to the training of already demanded personnel and the release of personnel in "dying" professions [10]. It is necessary to completely review the content of all levels of education through the development of digital skills of all specialists.

There is a need for confident knowledge of modern technologies by representatives of any profession. Become an important application of digital technology in various aspects of human life, the development of the digital culture of the future experts for effective professional activity. It is necessary to create an educational environment in high school, rich with information and communication and value aspects.

The current average levels of digitalization of the economy of Kazakhstan today – not a barrier, and the opportunity to make a qualitative leap in the development, which will allow the country to reach the leading position on the world stage. For this, it is assumed that a set of measures and systematic work will

be taken in the five areas described in this Program and in the framework of the measures given in the annex to it. The list of events will be updated.

Considering the role and importance of human capital in the digital economy, it should be noted that each of the indicators that measure the degree of digitization of the economy, contains an assessment of the human capital, including in the form of digital knowledge and skills to use information and communication technologies. For example, human capital is one of the factors of electronic development of the information society as well as ICT infrastructure, economic environment, as well as access to and use of ICT.

The world's key ICT development ranking, calculated under the auspices of the UN – ICT Development Index – Kazakhstan in 2017 took 52th place out of 176, and have not changed their position since 2015 [11].

As a result of the implementation of the Program and other strategic directions, the country will rise in ranking to 30th place by 2022, 25th place by 2025 and 15th place by 2050. Kazakhstan is also a catching country in the e-intensity rating of the international consulting company The Boston Consulting Group in terms of the current level of digitalization. To overcome the catch-up status in the Program, revolutionary, breakthrough measures are required in all areas of digitalization that are on the agenda of the countries of the world [12]. These areas include the digital transformation of traditional sectors of the economy, the development of human capital, the digitalization of government agencies, the development of digital infrastructure, as well as a breakthrough in the development of the entrepreneurial ecosystem in the field of digital technologies and, as a result, changes in production models and creating added value in the real sector of the economy.

Radically changing modes of production and value added, there are new requirements for education and work skills of people. Industrial Internet of Things is shaping the future of industries, taking advantage of the flexible and intelligent production provides a revolutionary increase in productivity. Artificial intelligence is implemented, including in conservative industries such as financial services and medicine.

Global digitalization trends and international experience show that the Internet economy is growing at a rate of up to 25 % per year in developing countries, while no sector of the economy can even come close to such a pace. 90 % of all global data was created in just the last 2 years. Already 35 billion devices are connected to the Internet and exchange data - this figure is five times the total population of the world [13]. These changes are caused by the introduction in recent years of a multitude of technological innovations, "end-to-end" digital technologies, which understand the methods of processing "big data" (big data), wireless technology (including 5G), virtual and augmented reality (VR / AR) technologies, distributed registry systems (block chain), quantum technologies, new manufacturing technologies, the industrial Internet, robotics and sensor components, neurotechnologies and artificial intelligence. 3D printing technology is already contributing to the transformation of industries such as aviation, logistics, biomedicine and the automotive industry. Block chain has all the prerequisites to make a global transformation of the monetary system. Big data and the widespread availability of communications are some of the factors that underpin the "sharing economy", which is spreading globally at an accelerated pace [14]. The leading companies in the segment of "joint consumption in the absence of physical assets" in terms of capitalization exceed the cost of traditional companies with multi-billion dollar physical assets on the balance sheet. In a changed world, people will need to develop new skills to adapt to the rapidly changing labor market. To win requires a willingness to invest in ambitious projects and focus on concrete results, and flexibility as a willingness to change everything at any time, and the desire to work hard and to experiment. But before the companies that manage to become leaders in the digital economy, and people have learned to take full advantage of the opportunities of the digital world, will open virtually unlimited prospects [15].

The obtained results (conclusions). In Kazakhstan, the state plays a key role in the launch and implementation of the program. The state provides support to the regulatory framework, synchronization and cooperation with key stakeholders (regional governments, and others.), as well as providing incentives for "digitalized" industries.

These changes are radical and occur within a few years or even months, not decades, as before. But this is only the beginning, and the world has to go through the bulk of the changes. The pace of change is increasing, but still not too late to be a part of these changes.

For the growth of the digital economy, it is necessary to develop the national IT sector, stimulate the creation of innovative technologies, and collaborate for their development at the international level. It is necessary to create conditions so that young talented specialists not only stop leaving the country, but also begin to return. It is necessary to stimulate investment and entrepreneurial activity in this industry. All parts of society - the state, and the private sector, and civil society, and the IT community must participate in digital economic activity. An important component is also the information security of information and innovative technologies, which ensures public confidence in the digital economy.

А.Н. Байгелова

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ҚР ЭКОНОМИКАСЫНЫҢ ДАМУЫ МЕН БӘСЕКЕГЕ ҚАБІЛЕТТІЛІГІНІҢ ШАРТЫ РЕТІНДЕ АДАМ КАПИТАЛЫНЫҢ ДАМУЫНДАҒЫ АҚПАРАТТАНДЫРУ

Аннотация. Қазіргі уақытта Қазақстан Республикасының экономикасы экономикалық және технологиялық құрылымдардағы жаһандық өзгерістер кезеңінде. Еңбек нарығындағы және білім беру қызметтеріндегі ахуал қазіргі талаптарға сәйкес білім беру мазмұнын өзгертуді қажет етеді. Цифрлық түрлендіру секторы анықталды: бизнес пен қоғам дамуының стратегиясы мен тактикасын теңдестірудің маңыздылығы жаһандану жағдайында адами капиталды және қоғамды экономикалық модернизацияны басқаруға тарту мәселелерімен байланысты.

Мақалада адам капиталы әлемдік өркениеттің сын-қатерлеріне жауап бере алатын инновациялық экономиканы дамытудың қозғаушы күші ретінде қарастырылады. Адами капиталды дамытпай, елдер тұрақты экономикалық өсуге қол жеткізе алмайды немесе болашақ үшін алдыңғы қатарлы жұмыс орындарын алуға және әлемдік экономикалық аренада тиімді бәсекелесуге дайын жұмысшылар контингентін құра алмайды. Автордың пікірінше, цифрлық технологияларға маңызды рөл беру керек. Сандық дағдыларды дамыту арқылы IT саласындағы мамандарды даярлау мен оқытудың барлық деңгейлерінің мазмұнын толығымен қайта қарау қажет.

Қазіргі уақытта Қазақстан Республикасының экономикасы экономикалық және технологиялық құрылымдардағы жаһандық өзгерістер кезеңінде. Еңбек нарығындағы және білім беру қызметтеріндегі ахуал қазіргі заман талабына сәйкес білім беру мазмұнын өзгертуді қажет етеді. Цифрлық түрлендіру секторы анықталды: бизнес пен қоғам дамуының стратегиясы мен тактикасын теңдестірудің маңыздылығы, жаһандану жағдайында адами капиталды және қоғамды экономикалық модернизацияны басқаруға тарту мәселелері. Көп компонентті ақпараттық білім беру ортасын, ақпараттық және цифрлық технологияларды құру біздің өміріміздің жақсырақ және «ақылды» болуы үшін мүлдем жаңа коммуникацияларды, адамдар арасындағы жаңа қатынастарды, бүкіл экономика мен қоғамды қайта құруға мүмкіндік береді. Қазіргі заманғы экономика – тиімді адам капиталы экономикасы деп аталады, бұл оның экономиканың дамуы мен өсуіндегі басты рөлін атап көрсетеді. Адами капитал әлемдік өркениеттің сын-қатерлеріне жауап бере алатын инновациялық экономика дамуының қозғаушы күші ретінде қарастырылады. Бұл – әрбір дамушы елдердің ұлттық байлығының жартысынан көбін құрайды және экономикалық өсу мен әлеуметтік дамудың негізгі қарқынды факторы. Еңбек нарығында талап етілетін дағдылар деңгейі тез өзгеріп отырады, бұл жаңа мүмкіндіктер мен жаңа тәуекелдерді тудырады. Адами капиталды дамытпай, елдер орнықты экономикалық өсуге қол жеткізе алмайтынына, сондай-ақ әлемдік экономикалық аренада тиімді бәсекеге түсетін немесе болашақ үшін қажетті жұмыс орындарын алуға дайын жұмысшылар контингентін құра алмайтындығына көптеген дәлелдер бар.

Түйін сөздер: адами капитал, адамның дамуы, экономикалық модернизация, экономикалық тиімділік, цифрландыру, сандық технологиялар, цифрлық экономика, еңбек нарығы, білім беру жүйесі.

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ЦИФРОВИЗАЦИЯ В РАЗВИТИИ ЧЕЛОВЕЧЕСКОГО КАПИТАЛА КАК УСЛОВИЕ КОНКУРЕНТОСПОСОБНОСТИ И РОСТА ЭКОНОМИКИ РК

Аннотация. В настоящее время экономика РК находится в стадии глобальных изменений экономического и технологического укладов. Положение на рынке труда и образовательных услуг вызывает необходимость изменения содержания образования применительно к современным требованиям. Раскрывается сектор цифровой трансформации: важность баланса стратегии и тактики развития бизнеса и общества, вопросы вовлечения человеческого капитала и общества в управление модернизацией экономики в условиях глобализации.

В статье человеческий капитал рассматривается как движущая сила развития инновационной экономики, способной отвечать на вызовы мировой цивилизации. Без развития человеческого капитала страны не смогут ни

добиться устойчивого экономического роста, ни создать контингент работников, которые будут готовы занять требующие повышенной квалификации рабочие места будущего, ни эффективно конкурировать на мировой экономической арене.

По мнению автора в этом важную роль надо отводить цифровым технологиям. Необходимо полностью пересмотреть содержание всех уровней образования и подготовки специалистов в IT-индустрии, в области организации управления через развитие цифровых навыков.

В настоящее время экономика РК находится в стадии глобальных изменений экономического и технологического укладов. Положение на рынке труда и образовательных услуг вызывает необходимость изменения содержания образования применительно к современным требованиям. Раскрывается сектор цифровой трансформации: важность баланса стратегии и тактики развития бизнеса и общества, вопросы вовлечения человеческого капитала и общества в управление модернизацией экономики в условиях глобализации. Формирование многокомпонентной информационно-образовательной среды, информационные и цифровые технологии дают возможность выстроить совершенно новые коммуникации, а также новые отношения среди людей, перестройки всей экономики и общества, чтобы наша жизнь была лучше и «умнее».

Современную экономику называют экономикой эффективного человеческого капитала, что подчеркивает его главную роль в развитии и росте экономики. Человеческий капитал рассматривается как движущая сила развития инновационной экономики, способной отвечать на вызовы мировой цивилизации. Он составляет более половины национального богатства каждой из развивающихся стран и главным интенсивным фактором роста экономики и развития общества. Уровень востребованных на рынке труда профессиональных навыков быстро меняется, что создает как новые возможности, так и новые риски. Без развития человеческого капитала страны не смогут ни добиться устойчивого экономического роста, ни создать контингент работников, которые будут готовы занять требующие повышенной квалификации рабочие места будущего, ни эффективно конкурировать на мировой экономической арене.

Ключевые слова: человеческий капитал, человеческое развитие, модернизация экономики, эффективность экономики, цифровизация, цифровые технологии, цифровая экономика, рынок труда, система образования.

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