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LABOR MARKET IN THE CONTEXT OF DIGITALIZATION

Abstract

Nowadays, pace of digitalization, speed of its tools' modernization, emergence of new innovative products in the field of information and communication technologies used in all spheres of human and society life are very high. Technologies are becoming the engine for development of new industries, acquiring important social roles, solving problems of society. Current global trends are relevant for Kazakhstan as well, since with the development of scientific, technical, technological and informational progress, the role of labor market is increasing. It is essential to realize global trends, their impact on economy and labor market, draw practical conclusions to propose effective measures. As a result of the development of technologies, "professions of the future" will become more complex, which will require new approaches to the training of qualified specialists. Today, in an effort to enter the top 30 most developed countries in the world, Kazakhstan needs to take into account current challenges and adapt state policy to prevent negative consequences from the ongoing changes. The article reveals the main aspects of formation of conditions to search new forms of employment for the country's economy under influence of new global challenges. The article presents results of analysis of the development of the Kazakhstani labor market in comparison with foreign countries, considers the issues of the system of state regulation of the labor market. It is concluded that changes in the context of digitalization and automation will lead to search for new ways and forms of employment in the labor market of Kazakhstan.

Key words: economy, labor market, modernization, skills, workforce, digitalization.

Introduction

Currently, the world is undergoing changes under the impact of global trends of a social, technological, economic, environmental and political nature, including those affecting the development of the world labor market. The unprecedented crisis caused by COVID-19 pandemic accelerated ongoing processes, gave impetus to formation of new values and forms of labor relations. Significant transformations in the structure of labor resources (aging of the population, declining birth rates, changing generations of labor force and their values, lack of talent in the labor market and emergence of a "lockdown generation") pose the risk of a decrease in labor productivity and stunted economic growth, which leads to the need for a constant improvement of workforce quality.

The development of digitalization is irreversible, so it must be taken for granted. The challenges of digitalization directly affect the labor market, as new digital technologies replace a person in production, change the nature and organization of work, and distribute working time in a different way.

It is important to recognize this new reality, make appropriate management decisions and neutralize its negative impact.

Flexible forms of employment and digital labor platforms have become widespread nowadays, enabling previously discriminated persons in labor to work from home or convenient location. This should ultimately result in development of a diverse and inclusive work environment that provides equal rights for everyone in the labor market. For such new forms of employment, it is necessary to prepare relevant legal basis in order to protect labor rights of citizens and ensure their social protection.

Materials and methods

Methods of comparative analysis and synthesis are applied in this work, the main global trends in the labor market, caused by digitalization of economy and widespread introduction of information and computer technologies are systematized. The materials of official statistics, national reports, publications of the World Bank, International Labor Organization, OECD are used, which have enabled to assess the ongoing processes in economy and the labor market. Taking into account the historical chronology, the measures of state regulation of the labor market in the context of digitalization are analyzed using the SWOT and PEST methods of analyzing strategic and policy documents of the Republic of Kazakhstan, not only in the field of digitalization, but also in areas directly related to the labor market: labor relations, employment, education and etc. Taking into account a large number of such documents, we have built an analysis within the framework of the Strategic Development Plan of the Republic of Kazakhstan until 2025, which combines the trends in the impact of digitalization on state regulation of the labor market, reflected in earlier strategic and policy documents.

Main provisions

The purpose of the research is to analyze the impact of global trends on all participants in the labor market (employers, citizens, government) from the perspective of job creation, security and professional structure of work force.

Implementation of strategies for innovative development of the country is a priority task to ensure competitiveness, economic stability and improve the quality of life of the population of Kazakhstan. Overcoming the identified systemic problems, successful solution and choice of the right path of development in domestic innovation will predetermine the course of development of the country as a whole. The research results can be applied to work out solutions for development of the labor market under new conditions.

Literature review

The works of Kazakhstani scientists as Berdibekov A.B., Bordiyanu I.V., Kaigorodtsev A.A. [1], Borisova V.V., Panfilova E.E., Raza H. [2], Afonasova M.A., Panfilova E.E., Galichkina M.A., Slusarczyk B. [3], as well as of foreign economists as Graham M., Hjorth I., Lehdonvirta V. [4], Dudina M.N., Prodchenko I.A., Shkodinsky S.V. [5] and others are devoted to modern trends in the development of the world labor market under influence of new global challenges. In the research process, the authors determined that effective employment should be ensured by increasing competitiveness, professional mobility and efficiency in the use of work force [1–2], and new trends in the labor market will be a cause of increased requirements for applicants for vacant jobs in a number of sectors of economy in terms of possessing digital competencies, learning and self-development abilities [5]. Particular attention is paid to the search for optimal tools for the interaction of business and public authorities in the preparation of university graduates in demand for various sectors of the economy [4].

Results and discussion

Digital technology has significantly changed the speed of operation in the economy. The Internet and digital devices are a driver of economic growth [3]. As ever more policy-makers, governments and organisations turn to the gig economy and digital labour as an economic development strategy

to bring jobs to places that need them, it becomes important to understand better how this might influence the livelihoods of workers [4].

In a rapidly changing world, technologies are constantly being improved, release intensity of which is constantly increasing. Only in computer technologies, 533 thousand patents have been issued worldwide since 1990–2009, and for 2010–2020, 989 thousand patents have been already issued [6].

Scientists have not yet come to a unified answer to the question – does digitalization cause deterioration or improvement of the structural problems of the labor market? Current and future performance of the labor market depends on various factors. The competitiveness of the country's economy, its sovereignty are of paramount importance. Various long-term trends affect labor market indicators that need to be taken into account (Figure 1).

The rapid development of digital technologies in recent years is actively modifying human activity in many areas. These changes led to the formation of a new quality of life. People have changed priorities, needs for intellectual development and self-realization by raising the educational level and qualifications. Scientific knowledge and information have become the real productive force of society. Scientific and technological progress expands human capabilities, reducing production time, developing new activities, freeing up labor force, redistributing it between sectors of the economy. All these processes have a huge impact on the national labor market.

Kazakhstan, compared to other countries, lags behind in the use of digital technologies, and digitalization brings changes not only positive, but also negative, creating additional problems.

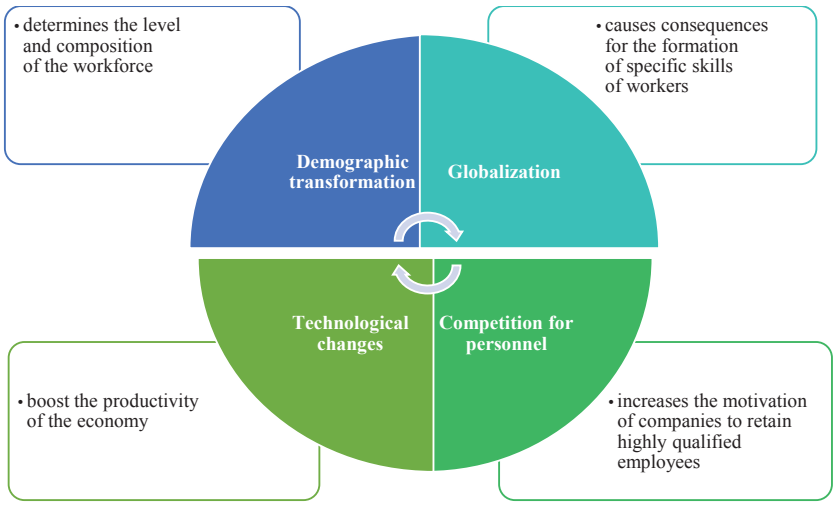

Figure 1 – Key trends affecting labor markets

Note: Compiled by the authors.

Development of the course for digitalization in Kazakhstan was given by the state programs for formation and development of "electronic government", "Informational Kazakhstan–2020". Today, the digitalization driver in the country is the "Digital Kazakhstan" State Program, with a deadline of implementation until 2022.

Currently, in Kazakhstan, 99% of the population is covered by the Internet, more than 90% of public services are available online, the share of large and medium-sized enterprises using elements of Industry 4.0 is 5%, the infocommunication infrastructure has been expanded, 5G mobile communications are being tested, the share of e-commerce has increased from 2.7% to 9.7% in 2020, digital farms for processing cryptocurrencies have been created, work continues on the creation of model factories and intellectual deposits.

According to the UN ranking – 2020, Kazakhstan is in 51st place, the Human Capital Index of Kazakhstan is 0.825 out of 1. Currently, the level of digital literacy (basic) in Kazakhstan is more than 80%.

The telecommunications infrastructure index in Kazakhstan is 0.5668 out of 1 and indicates the need for its further development. According to the Speedtest Global Index, Kazakhstan ranks 95th among 138 countries in terms of mobile Internet speed, and as well as continues to rank 65th among 174 countries in terms of fixed broadband Internet speed.

According to the Global Cyber Security Index (GCIv4) report, Kazakhstan ranked 31st in 2021. Among the CIS countries, Kazakhstan took the second place after Russia. Nevertheless, it is necessary to continue to improve this indicator and strengthen measures for the protection of personal data by raising information security standards in both the state and private spheres.

An equally important indicator in the development of an effective digital government is the level of business development, expressed in the Doing Business ranking, where Kazakhstan ranks 25th among 190 countries.

Moreover, a number of elements of innovation ecosystem have been created: the Innovation Cluster "Park of Innovative Technologies", AEO "Nazarbayev University" is functioning, the International Technopark of IT Startups "AstanaHub" has been launched.

According to official statistics, the volume of ICT market in 2021 increased to 2,383 billion tenge, the costs of organizations on ICT to 443 billion tenge, the share of production and sale of goods (services) of ICT market in the country's total GDP is 4.3% (Table 1, Figure 2).

Table 1 – Key performance indicators of organizations in the ICT industry, 2017–2021

	2017	2018	2019	2020	2021
Number of organizations in the ICT industry, units	9 334	10 192	10 958	11 830	12 856
Share of production and sales of goods (services) of the ICT industry in total GDP, %	3,4	3,3	3,4	4,8	4,3
Share of the ICT industry in the total number of employees	1,5	1,5	1,5	1,4	1,6
Index of the physical volume of investments in fixed capital of the ICT industry	127,0	122,2	96,4	162,6	88,0
The level of profitability of organizations in the ICT industry	10,0	18,2	18,0	19,8	27,7
Production volume of the ICT industry, mln tenge	21244,5	22509,3	30273,8	26081,8	23955,1
Note: Compiled by the source: https://www.stat.gov.kz/					

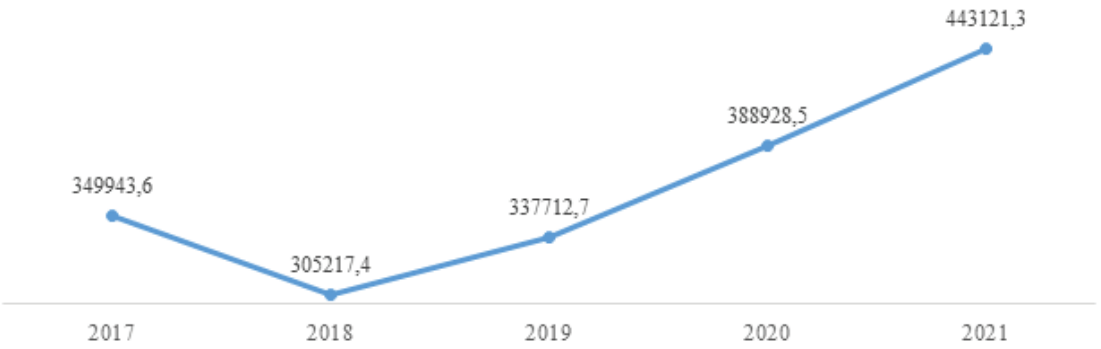

Figure 2 – Costs of organizations of Kazakhstan on ICT, 2017–2021, million tenge

Note: Compiled by the source: https://www.stat.gov.kz/

The development of digitalization in today's world is changing all the previously established mechanisms and principles of functioning of spheres of economy, public administration and public life.

Today, Kazakhstan sets itself the task of diversifying the economy, moving away from raw material dependence and directing all its efforts to the creation and promotion of new, promising industries.

Currently, there are about 60 enterprises in the electronics industry in Kazakhstan. Final types of products have been mastered as: printed circuit boards, telecommunication equipment, electronic

meters for water, heat and electricity and modules for wireless data transmission; assembly of computer equipment and video cameras, radio stations, medical equipment, etc. In 2020, during the pandemic, by providing an opportunity for domestic manufacturers to supply their products to schools, the volume of industrial assembly production of computer equipment was increased by 2.5 times.

Challenges and global trends have shown that it is necessary to improve the digital infrastructure and architecture of information systems of state agencies, improve the quality of communications and the Internet. There is a growing need to build digital services based on real needs of citizens and businesses, which requires a complete rethinking of processes and approaches of interaction between citizens and the state.

It is clear that in order to gain a leading position in the digital world, Kazakhstan still needs to do a lot.

It is generally accepted that digitalization makes it possible, by increasing labor efficiency, to mitigate the consequences of negative demographic trends and shortages of personnel [4]. However, there is an opinion that robotization and introduction of artificial intelligence will lead not so much to an increase in efficiency of human work, but to its gradual displacement from digitized processes. In Kazakhstan, the issue of state of the labor market in the era of "digitalization" is already acute.

Support and further improvement of complex automated systems will require even more professionals and specific narrow specialists. It turns out that in the process of digitalization, economy gets rid of people employed in simple labor, while, however, the problem of demand for qualified personnel remains unresolved. According to some sociologists, a new social layer is emerging – the cognitariat. A fundamentally new type of employee is emerging, who is focused on creative practical activity and possesses intellectual capital [3].

Specialists from leading expert agencies indicate that in the coming years, 47% of jobs will be "digitized", and people will be replaced by computer programs or robots. For example, the McKinsey Global Institute estimates that approximately 140 million full-time knowledge workers worldwide will be replaced by digital devices. With the help of already existing technologies, it is possible to automate human labor worth $ 2 trillion. Experts predict that in the next 5 years alone, developed countries will lose up to 5 million workplaces due to digital technologies and robotics, and then their number will increase. According to experts, robotization will begin to massively eliminate workplaces in Kazakhstan in the next 3–5 years.

The reasons for the massive increase in unemployment are as follows.

1. The digital environment multiplies the speed of diffusion of innovations. Digital technologies compress not only time, but as well as space. Workplaces are no longer stationary, they are cyberplaces. Instead of moving physically, people are starting to move their ideas and thoughts through cyberspace, and also use this space to store knowledge. For instance, the collections of "Amazon" and "Google" are much larger than the collections of most real-life libraries known throughout the world.

2. Digital technologies appear simultaneously in many areas and sectors of economy (robotic cash registers, cars with autopilots, etc.)

3. Digital technologies create fewer jobs than disappear as a result of their implementation.

In addition, information technology has the property of fast and easy scaling. A cashier in an average supermarket can serve about 250 people per shift, and a programmer will write a program that will be used by 20 million people daily. Therefore, it makes no sense to teach programming to all the unemployed, such a number is simply not required.

As a result, unemployment in a number of industries and professions will increase in the labor market. There will also be an imbalance between supply and demand.

Advanced technologies are gradually transforming the global economy, including production automation, and COVID-19 has given additional impetus and accelerated the speed of these changes. Thus, in just 5–8 months of 2020, companies around the world digitized the processes of interaction with customers and supply chains, as well as internal operations, which would take them 3–4 years before the pandemic [7].

The corona crisis has accelerated the transition to the digital economy in almost all sectors – schools, hospitals, and many services are no longer imaginable only in the physical world. The pandemic forced companies to plunge into the digital environment and changed the face of business processes. Currently, it is impossible to conduct a successful business without involvement of Internet

technologies, which provide the basis for the emergence of cyber-physical reality at the interface of online and offline fusion. The priorities of business leaders are focused on development of technologies related to cloud computing, Big Data, e-commerce and artificial intelligence (AI). This trend entails an increase in demand for both medium and highly qualified professions in the field of IT (specialists in AI, machine learning, Internet of things, etc.), and in related fields – product development, engineering, etc. (Table 2).

Table 2 – In-demand professions of the future

In-demand professions of the future	
Cloud computing • Facility Reliability Engineer • Platform Engineer, Cloud Engineer • Application Lifecycle Automation Engineer • Cloud Consultant • Application Lifecycle Automation Manager	People and culture • Information Technology Recruiter • Business partner in the field of human resources • Specialist in recruiting, talent acquisition • Business partner
Engineering • Python developer, Server developer • Javascript developer • Back End developer • Interface engineer • Dotnet software developer • Development Specialist • Technical analyst	Marketing • Growth hackers (internet marketers) • Marketing Manager • Commerce Manager • Specialist in e-commerce, digital technologies • Digital Marketing Specialist
Product development • Product owner • Quality assurance tester • Agile trainer, Scrum Master • Software Engineer • Product Analyst • Quality Assurance Engineer • Digital Product Manager	Data and AI • AI specialist • Data Engineer • Data processing specialist • Big data developer • Analyst Specialist • Data Consultant • Business Intelligence Developer • Analyst consultant
Note: Compiled by the source [8].	

It is known that cloud technologies, artificial intelligence, robotics have become an integral part of our lives. As a result, new professions appear on the labor market. According to estimates, in Kazakhstan, in the next 5–10 years, 239 new professions are expected to appear in 9 sectors of economy, and 95 professions are being transformed. At the same time, 52% of jobs in the country are at high risk of automation. Every 2nd employee will be forced to retrain. Acquiring new skills is the key to a successful career. Therefore, it is important to provide conditions for rapid and flexible personnel training [9].

In the near future, Kazakhstan is expected to change the qualitative structure of labor force and increase the influx of able-bodied young people, which will cause an additional burden on labor market.

By 2030, 37% of the workforce in Kazakhstan will represent Generation "Z". A change of generations will also accompany a change in the views of young people on work. This is the generation that is ready to make financial concessions for the sake of a flexible work schedule, the balance between professional and personal life is essential for them. Therefore, it will be important for employers to adapt to new requirements in order to retain talents.

At the same time, in our opinion, there is no direct correlation between release of workers from certain areas and sectors of economy and growth in the number of unemployed. This has its own explanations.

The fact is that along with changes in supply and demand in the labor market, there is a transformation of the jobs themselves.

So, for some professions, office jobs will be transformed into "home offices", interconnected via the Internet. This will allow entrepreneurs to save costs on the purchase or rental of premises,

equipment, payment for various services related to the maintenance of offices, etc. Former employees will turn into "remote" employees who independently plan their costs, work schedule, etc.

According to experts, the number of mobile workplaces will increase in the world, today the owners of tablets and netbooks connected to the global network can perform their service functions anywhere, and this does not require stationary computers and other bulky devices. All this leads to the transformation of quality of work, quality of life of people.

Currently, the very concept of working day is being transformed, since now an employee is able to stay in touch around the clock, performing his work duties at any time convenient for him. All this leads to the fact that flow of people from the outskirts of cities to the center will stop, they will be replaced by home work and outsourcing. The face of modern city will also change.

Indeed, serious changes that occur as a result of introduction of information technologies require not only new forms of management and organization of production, but also changes in state policy in the labor market. This primarily applies to work of employment services, the system of personnel education and training, whose proactive measures will help mitigate the acuteness of unemployment.

Increasingly, the question arises of the need to introduce an "unconditional basic income", which will redistribute the "quasi-rent" received by the state and entrepreneurs as a result of mass digitalization. Such income is guaranteed by the state and is provided to all citizens of the country without any conditions. Currently, such experiments are being carried out in Utrecht (Netherlands), the Canadian province of Ontario, Finland, Germany and the United Arab Emirates (UAE). This income is aimed at maintaining employment in those industries where work is not prestigious and remains important for society. However, the question of an "unconditional basic income" is debatable and provokes a lot of controversy about dependency and professional degradation of the population.

Digitalization of economic sectors also leads to the fact that professional knowledge quickly becomes obsolete. Therefore, the labor market regulation policy should be based on constant monitoring, forecasting and analysis of the labor market, as well as advancing provision of economy's needs for qualified personnel based on the available labor resources. To do this, it is necessary to increase the efficiency of work of state employment service and recruitment agencies in the formation and distribution of workforce, to promote employment, including certain categories of population. Employment promotion programs should take into account not only the number of newly created jobs in the short term, but as well as long-term structural changes taking place in the economic system with the aim of advanced training and retraining of personnel.

The education system is faced with the task of training personnel for the digital economy, defining a cluster of professions in demand for the next 15–20 years, developing effective forms of retraining of personnel and implementation in the activities of training centers. That is, it is necessary to organize the work of all structures of education system in the interests of deploying the digital economy in the country. Education should be in demand, flexible, knowledge-intensive and quickly adapt to the labor market. Interdisciplinary educational programs related to "robotic communication", interaction of human mind with "intelligence" of robot will be required. We believe that Kazakhstan has a high potential for disclosure of human intellectual, labor and creative resources.

Digitalization has a positive impact on labor productivity by reducing the labor input of human resources to complete tasks that computers or algorithms are now responsible for. This, due to the introduction of AI, in the next 15 years, productivity of work force is expected to grow up to 40% in developed countries [8], which will result in reduction in enterprise costs, an expansion of production, and creation of new jobs. Online shopping has been already widely used, and a new class of retailers has emerged, operating in value chains without the need for inventory or storage. Population growth and life expectancy will create jobs in healthcare, education and social services, which are dominated by social and language skills that are difficult to automate.

However, rapid advances in technology not only opened up prospects for the economy, but also led to an emergence of new challenges in the world of work. Thus, in the near future, more than 85 million jobs can be squeezed out of the labor market, while 97 million new jobs will be created, more adapted to labor division between people, machines and algorithms [8]. By 2030, about 100 million employees, or approximately one in 16, will have to change their occupation [10]. In the next 15–20 years, 14% of existing jobs may disappear as a result of automation, and another 32% may change with individual tasks automation [11]. That is, due to changes in preferences, business models and

types of contracts, people will be forced to change not only their jobs, but as well as their occupation, and many will have to modernize their professional competencies.

In Kazakhstan, more than half of jobs (52%) are subject to a significant risk of automation, which is higher than the average for the OECD and the Russian Federation (47%) [12]. This is partly due to the low level of workforce competencies development, since workers in Kazakhstan are much less involved in work that requires the ability to solve challenging tasks, 12.6% of Kazakhstani workers have never been involved in activities that include complex tasks [13].

The highest risk of extinction is in the predictable and routine occupations, which employ the largest number of semi-skilled workers. The areas amenable to automation include banking, manufacturing, transportation and storage. Use of robots in manufacturing industry will lead to the loss of up to 20 million jobs [14].

Along with the disappearance of old and the emergence of new jobs, the requirements for the level of training of work force are changing. Today, the skill set required in many new professions apart from technical skills includes specialized ones in business and management, food and digital marketing, advertising, retail and others.

In addition, in the context of formation of ‘’knowledge economy’’ the value of creativity and ‘’soft’’ skills is also growing.

As demonstrated in Table 3, Artificial intelligence is finding the most broad adaptation among the Digital Information and Communications, Financial Services, Healthcare, and Transportation industries. Big data, the Internet of Things and Non-Humanoid Robotics are seeing strong adoption in Mining and Metals, while the Government and the Public Sector industry shows a distinctive focus on encryption.

Table 3 – Technologies likely to be adopted by 2025, by share of companies surveyed, selected sectors, %

Technology/Sector	Agriculture, Food and Beverage	Automotive	Consumer	Digital Communications and Information Technology	Education	Energy Utilities & Technologies	Financial Services	Government and Public Sector	Health and Healthcare	Manufacturing	Mining and Metals	Oil and Gas	Professional Services	Transportation and Storage
Artificial intelligence	62	76	73	95	76	81	90	65	89	71	76	71	76	88
Big data analytics	86	88	91	95	95	76	91	85	89	81	90	86	86	94
Cloud computing	75	80	82	95	95	88	98	95	84	92	87	86	88	94
Encryption and cyber security	47	88	85	95	86	88	95	95	84	72	83	71	78	75
Internet of things and connected devices	88	82	94	92	62	94	88	79	95	84	90	93	74	76
Robots, nonhumanoid	54	60	52	61	59	65	53	50	56	79	90	79	35	69
Text, image and voice processing	50	59	82	90	89	88	88	89	88	64	76	87	79	65
Note: Compiled by the source [15].														

According to the Global Skills Report 2021 [10], Kazakhstan ranks 81st among 108 countries in terms of business skills in technology and science (Table 4, p. 138).

The leaders in terms of technological competencies such as computer programming, web development, software engineering are Belarus, Czech Republic and Russia, while Luxembourg and Switzerland are recognized as countries with a high level of business skills in the world.

Table 4 – Global Skills Report 2021: Regional Results

Global rank	Country	Business	Technology	Data Science
1	Switzerland	98	84	96
2	Luxembourg	100	62	85
4	Japan	70	100	88
9	Russian Federation	79	92	97
12	Belarus	54	99	91
13	Czech Republic	62	97	90
81	Kazakhstan	34	36	20
Note: Compiled by the source [10].				

A stark contrast remains between developing and developed nations' skills performance at a time when 81 million jobs were lost due to the pandemic. East Asian countries such as Japan, China demonstrate high proficiency across the three skill domains, whereas Central Asian countries rank near the bottom of the global rankings. This analysis enables leaders in government and business to transform the current and future workforce for sustainable economic growth.

Technological advances give an advantage to highly skilled workers, while workers with outdated skills face new challenges. Rapid economic and technological development leads to an increase in the amount of human knowledge. At the same time, technical knowledge and skills become obsolete every 5 years, and to maintain the up-to-date level of qualifications, it is necessary to devote about 20 hours a week to training. But it should be taken into account that many workers do not have retraining opportunities due to lack of funds or time. Thus, in Kazakhstan, 26% of the adult population aged 25-64 point out that they are too busy at work to undergo training, 25% of citizens cannot afford additional education [8]. In the OECD, low-skilled workers are less likely to receive vocational training than high-skilled specialists. In response to these challenges, the world is already taking steps to reskilling.

Moreover, it is essential not only to create conditions for learning, but also to instill the importance of continuing education. According to the Programme for the International Assessment of Adult Competence (PIAAC), 95% of adults in Kazakhstan unwilling to participate in training [16]. Meanwhile, the share of Kazakhstani enterprises offering training to their employees decreased from 51% to 42% during period of 2009–2019. In OECD countries, 16.3% of the adult population does not have computer skills, in Kazakhstan – 19.7%, in Russia – 20.8% [17], which already creates additional difficulties for them in their current activities. As a result, annually only 4–5% of the employed population of Kazakhstan undergo vocational training or training in general developmental courses.

An increasing need for an inclusive and diversified workforce, as well as development of new business models related to diffusion of technology, are leading to an emergence of new values and forms of labor relations. This way, after the end of the pandemic, 20–25% of workers in developed (France, Germany, Japan, Spain, Great Britain and the United States) and 10% in developing countries (China, India) will be able to continue working from home from 3 to 5 days a week. The share of remote workers in the digital and knowledge-based sectors in Kazakhstan before COVID-19 amounted 41%, and during the pandemic it reached 50% [18].

Currently, there is an increase in non-standard forms of employment – in 10 years, the number of digital labor platforms in the world has increased 5 times. Platform employment is becoming a real way of earning and professional development for more and more people.

It becomes possible to search for narrow specialists to solve specific problems, so 40% of global companies plan to increase the number of freelancers in their work. Today, about 300,000 freelancers work in Kazakhstan.

According to PwC forecasts, average annual growth rate of global freelance market will be 16% until 2025, and the market will grow from 6.54 trillion USD to 13.84 trillion USD. This has led to proliferation of digital labor platforms around the world that mediate between employer and employee and enable to protect the interests of everyone. On these sites, workers can perform work and tasks online and / or distantly. In Kazakhstan, it is also planned to launch a job search service for freelancers at the Electronic Labor Exchange (enbek.kz) in order to expand their opportunities for earnings.

The Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan has currently prepared a number of new strategic initiatives, which are formed taking into account the above challenges. They are expected to help meet the challenges of promoting productive employment and increasing household incomes by 27% by 2025.

The country is currently working on improving the National Qualifications System, developing professional standards and certifying skills through centers for recognizing qualifications. In addition, work is underway to develop a law "On Professional Qualifications" and create a National Qualifications Authority.

On the basis of the Electronic Labor Exchange, a single digital ecosystem of employment, an "online supermarket of employment services for the population", has been introduced. This ecosystem will accompany citizens on their professional path: from choosing a career to formalizing an employment relationship.

The ecosystem will consist of several elements: a single digital platform for employment Enbek.kz, an online learning platform Skills Enbek, the implementation of which will make the idea of lifelong learning come true, the Business Enbek and HR Enbek platforms, as well as the planned Digital Guide to Professions. As well as in Kazakhstan, the project "Digital family map" is being implemented.

All of the above initiatives are reflected in the main strategic documents and enshrined at the legislative level – in the Program for Increasing the Income of the Population until 2025, the National Project for the Development of Entrepreneurship for 2021-2025, in the law "On Professional Qualifications" being developed and the Social Code.

Let's analyze the measures of state regulation of the labor market in the context of digitalization through SWOT analysis (Table 5).

In general, the initiatives are aimed at the implementation of 4 areas:

- improving the quality of the workforce through training and retraining;
- liberalization of the labor market through legislative regulation and provision of social protection for flexible employment workers;
- development of labor market infrastructure to improve the quality of services provided to the population;
- large-scale digitalization of services through the creation of a digital ecosystem of the labor market.

Table 5 – SWOT analysis of measures of state regulation of the labor market in the context of digitalization

Strengths	Weaknesses
◆ the interest of the state in the development of the labor market and readiness for the challenges of the 4th industrial revolution, ◆ functioning of the electronic labor exchange, ◆ implementation of projects on data digitization, creation of information systems and mobile applications in the field of education and the labor market, ◆ best practices in school education, educational grants, international scholarships. ◆ introduction of the national system of qualifications and forecasting the need for labor resources.	◆ the absence of a single body responsible for the overall strategy and regulation of the labor market, ◆ low level of involvement of educational institutions and the private sector in the development of the labor market, ◆ there is no single concept of lifelong learning and the continuity of educational programs from preschool to postgraduate education, ◆ low level of human capital development, ◆ an excess of unclaimed personnel, ◆ lack of necessary specialists, ◆ «talent drain» abroad.
Opportunities	Treats
◆ entry into 30 developed countries, ◆ creation of an innovative economy, ◆ high performance in international rankings, ◆ building up human capital, ◆ mobility and demand for labor resources, promotion of productive employment, ◆ use of digitalization for the development of new types of distance employment.	◆ reduction of the country's economic potential, entrepreneurial activity and human capital, ◆ threat to information security, ◆ imbalance of labor resources, ◆ low competitiveness in international labor markets, ◆ low-skilled labor force in the country, ◆ growth of unemployment, unproductive self-employment and informal employment.

Conclusion

The challenges of digitalization relate primarily to the labor market, since new digital technologies replace a person in production, change the nature of his work and leisure, organization of work, distribute working time in a different way, and take him out of his usual comfort zone. It is important to realize this new reality in time and, having made appropriate management decisions, to neutralize its negative impact.

Higher demand for high qualifications and rapid obsolescence of skills, require radical changes in education: focus on ‘’soft’’ skills, individualized lifelong learning and retraining throughout the career, and the development of a practical component in education. Technological changes will lead to faster growth in productivity than income, which will require mapping out solutions to prevent declining income by developing training programs and making the labor market more inclusive.

In this regard, it is necessary to create employment opportunities for the replacement workforce through automation by stimulating job creation, developing career guidance systems and promoting employment, creation of a unified institutional mechanism for effective state regulation of the labor market with the active involvement of state bodies influencing the development of the labor market, to strengthen the expansion of the legal regulation of remote work in the context of digitalization and global challenges.

A properly structured policy for the development of the labor market and its institutions will lead to accelerated economic growth and achievement of all established goals.

REFERENCES

1 Berdibekov A.B., Kaigorodtsev A.A., Bordiyanu I.V., Brauweiler C. The labor market of the Republic of Kazakhstan in the context of global challenges // Bulletin of the Karaganda University, 2020, no. 4(100), pp. 15–23. URL: https://economy-vestnik.ksu.kz/apart/2020-100-4/2.pdf (accessed: July 29, 2022)

2 Borisova V.V., Panfilova E.E., Raza H. Labor Market Transformation in the Context of the Digitalization of the Economy / Ashmarina S.I., Mantulenko V.V. (eds) Digital Economy and the New Labor Market: Jobs, Competences and Innovative HR Technologies. IPM 2020 // Lecture Notes in Networks and Systems, 2021, vol. 161. Springer, Cham. URL: https://doi.org/10.1007/978-3-030-60926-9_34 (accessed: August 2, 2022)

3 Afonasova M.A., Panfilova E.E., Galichkina M.A., Slusarczyk B. Digitalization in economy and innovation: the effect on social and economic processes // Polish Journal of Management Studies, 2019, vol. 19(2), pp. 22–32. DOI: 10.17512/pjms.2019.19.2.02 (accessed: July 29, 2022)

4 Graham M., Hjorth I., Lehdonvirta V. Digital labour and development: impacts of global digital labour platforms and the gig economy on worker livelihoods // European review of labour and research, 2017, vol. 23, iss. 2, pp. 135–162. URL: https://doi.org/10.1177/1024258916687250 (accessed:July 29, 2022)

5 Dudin M.N., Shkodinskij S.V., Prodchenko I.A. Digitalization of the economy and global trends in the labor market as factors of the country’s economic sovereignty // Labor economics, 2021, vol. 8(7), pp. 663–682. URL: https:// doi: 10.18334/et.8.7.112347. (accessed: July 28, 2022)

6 WIPO. URL: https://www.wipo. int/portal/en/index.html (accessed: July 31, 2022)

7 McKinsey Global Institute. The future of work after COVID-19. URL: https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19 (accessed: July 31, 2022)

8 WEF. These are the countries where AI is aiding productivity the most. URL: https://www.weforum.org/agenda/2020/12/ai-productivity-automation-artificial-intelligence-countries/ (accessed: July 24, 2022)

9 OECD iLibrary. URL: https://forbes.kz/news/2022/05/25/newsid_276543 (accessed: July 24, 2022)

10 Coursera. Global Skills Report 2021. URL: https://www.coursera.org/skills-reports/global (accessed: July 31, 2022)

11 OECD Employment Outlook 2019. The future of work. URL: https://www. oecd-ilibrary.org/employment/oecd-employment-outlook-2019_9ee00155-en (accessed: July 24, 2022)

12 OECD. URL: https://www.oecd.org/countries/kazakhstan/OECD-Skills-Strategy-Kazakhstan _Russian.pdf (accessed: July 31, 2022)

13 OECD Skills Studies. Skills Matter: Additional Results from the Survey of Adult Skills. URL: https://www.oecd.org/skills/piaac/publications/Skills_Matter_Additonal_Results_from_the_Survey_of_Adult_Skills_ENG.pdf (accessed: July 30, 2022)

14 Oxford Economics. How robots change the world. URL: https://www.oxfordeconomics.com/recent-releases/how-robots-change-the-world (accessed: August 4, 2022)

15 The Future of Jobs Report 2020. URL: https://www3.weforum. org/docs/WEF_Future_of_Jobs_2020.pdf (accessed: July 30, 2022)

16 Program for the International Assessment of Adult Competencies (PIAAC). URL: https://www.oecd.org/skills/piaac/ (accessed: July 31, 2022)

17 National report "Labor Market of Kazakhstan: Development in the New Reality". URL: https://iac.enbek.kz/ru/node/1179 (accessed: August 5, 2022)

18 Decoding Global Ways of Working. URL: https://www.bcg.com/ publications/2021/advantages-of-remote-work-flexibility (accessed: 5.08.2022)

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ЦИФРЛАНДЫРУ ЖАҒДАЙЫНДАҒЫ ЕҢБЕК НАРЫҒЫ

Аңдатпа

Қазіргі уақытта цифрландыру қарқыны, оның құралдарын жаңғырту жылдамдығы, адам мен қоғам өмірінің барлық салаларында қолданылатын ақпараттық-коммуникациялық технологиялар аясында жаңа инновациялық өнімдердің пайда болу деңгейі өте жоғары. Технологиялар жаңа салаларды дамытудың қозғаушы күшіне айналып, қоғам мәселелерін шешуші маңызды әлеуметтік рөлдерге ие болуда. Ағымдағы жаһандық трендтер Қазақстан үшін де өзекті, өйткені ғылыми-техникалық, технологиялық және ақпараттық прогрестің дамуымен еңбек нарығының рөлі де артуда. Жаһандық трендтерді, олардың экономика мен еңбек нарығына әсерін түсіну, тиімді шаралар әзірлеу үшін практикалық қорытындылар жасау маңызды. Технологиялардың дамуы нәтижесінде «болашақ кәсіптер» күрделірек болып, білікті мамандарды даярлауда жаңа тәсілдерді қолдануды талап етеді. Бүгінгі таңда Қазақстан әлемнің ең дамыған отыз мемлекетінің қатарына кіруге деген ұмтылысында ағымдағы сын-қатерлерді ескеріп, болып жатқан өзгерістер нәтижесінде пайда болатын жағымсыз салдардың алдын алу үшін мемлекеттік саясатын бейімдеуі қажет.Мақала жаңа жаһандық сын-қатерлердің ықпалымен ел экономикасы аясында жұмыспен қамтудың жаңа нысандарын іздестіру жағдайын қалыптастырудың негізгі аспектілерін ашады. Шет елдермен салыстырғандағы қазақстандық еңбек нарығының дамуын талдау нәтижелері көрсетіліп, еңбек нарығын мемлекеттік реттеу жүйесінің мәселелері қарастырылды. Цифрландыру мен автоматтандыру жағдайындағы өзгерістер Қазақстанның еңбек нарығында жұмыспен қамтудың жаңа жолдары мен нысандарын іздеуге алып келеді деген қорытынды жасалды.

Тірек сөздер: экономика, еңбек нарығы, жаңғырту, дағдылар, жұмыс күші, цифрландыру.

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РЫНОК ТРУДА В УСЛОВИЯХ ЦИФРОВИЗАЦИИ

Аннотация

В настоящее время темпы цифровизации, скорость модернизации ее инструментов, зарождение новых инновационных продуктов в сфере информационно-коммуникационных технологий, применяемых во всех сферах жизнедеятельности человека и общества, очень высоки. Технологии становятся двигателем развития новых отраслей, обретают важные социальные роли, решая проблемы общества. Текущие глобальные тренды актуальны и для Казахстана, так как с развитием научно-технической, технологической и информационной сфер роль рынка труда возрастает. Важно понимать глобальные тренды, их влияние на экономику и рынок труда, делать практические выводы для выработки эффективных мер. В результате развития технологий «профессии будущего» станут более сложными, что потребует новых подходов в подготовке квалифицированных специалистов. Сегодня в стремлении войти в тридцатку самых развитых государств мира Казахстану необходимо учитывать текущие вызовы и адаптировать государственную политику для предупреждения негативных последствий от происходящих изменений. Статья раскрывает основные аспекты формирования условий для поиска новых форм занятости в рамках экономики страны под влиянием новых глобальных вызовов. Приведены результаты анализа развития казахстанского рынка труда в сравнении с зарубежными странами, рассмотрены вопросы системы государственного регулирования рынка труда. Сделан вывод, что изменения в условиях цифровизации и автоматизации приведут к поиску новых путей и форм занятости на рынке труда Казахстана.

Ключевые слова: экономика, рынок труда, модернизация, навыки, рабочая сила, цифровизация.