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TRENDS IN THE DEVELOPMENT OF KAZAKHSTAN'S HIGHER EDUCATION SYSTEM

Abstract: This work describes, systematizes and summarizes the problems of quality assurance, efficiency and effectiveness, in the context of the global competitiveness of the higher education system, which has been and remains one of the most acute problems of the development of modern society in the Republic of Kazakhstan. The persistence of challenges and gaps, despite the measures taken, is associated with the demographic growth of young people and the aging of teachers. Ensuring access to education, its quality, and the transformation of higher education to meet the needs of the labor market are becoming the primary goal for ensuring economic growth. The authors have identified the relationship and mutual influence of higher education trends with economic development trends, and provided recommendations for the development of the higher education ecosystem.

Keywords: higher education, educational development trends, competitiveness, education ecosystem, advanced training system, global competitiveness.

Introduction

Technological changes are inextricably linked to changes in the education system. The emergence of speech has enabled people to share their experiences and led to the formation of an oral culture. Education was pragmatic in nature. Education was carried out using the sales analogy based on the Educator to Student model (E2St). Writing made it possible to separate experience and knowledge from the subject, preserving them, thereby forming a modern understanding of education as a process of transition from the culture of society to the education of the teacher, while the education process itself became elitist, accessible to a select few and limited by the capabilities of teachers.

The invention of printing in the 14th century made it possible to ensure the availability of knowledge and expand an alternative channel for obtaining knowledge. Book printing has made it possible to create alternative information flows of knowledge, which have reduced the direct communication time of each teacher with each student. The spread of knowledge and its accessibility made education more and more attractive, which led to the creation of a classroom system in the 16th century by Jan Amos Kamensky. At that time, the model of a School (any educational organization) for a student (School to student - S2St) or a university for a student (U2St) began to be implemented.

The advent of electricity increased the length of daylight hours, reduced the time used by people for routine household work, which allowed people to devote more time to research and education, and facilitated the dissemination of information through film and television. The invention of computers and the Internet has led to an exponential growth of available information and its dissemination. Education has become understood as a universal good that satisfies the needs of the state and society. Educational systems have transformed into ecosystems, as the labor market's demand for educated personnel and research results has increased. Universities have expanded the range of business processes and training and

research, commercialization and interaction with the labor market have been added. Educational systems began to have stable links with society and industry, with potential employers. This interaction has received a new name – the ecosystem of education. Education has become possible to describe with the model School for Society (S2So) or University for the Labor Market (U2L).

Digital technologies, including artificial intelligence, have created unique opportunities for generating new information outside the human brain and have increased human responsibility for its adequacy and reliability. Technological changes are one of the triggers for the development and transformation of education itself as a process and as a system. Education has become asynchronous, barrier-free, and access to information has expanded. The reliability of the information has ceased to be unambiguous. Virtual and mixed realities have transformed the process of learning and access to knowledge. Digital generative technologies provide personalization of the learning process, and at the same time begin to replace employees. The current practice can be described as two competing models: Digital Technology and Artificial Intelligence for the student (DT&AI2 St) and Digital Technology and Robotics for the labor market (DT&AI 2 L). In addition to technological challenges, the state of the education ecosystem is influenced by the historical context, traditions and stereotypes. Together with trends and "black swans", it forms a complex of cause-and-effect relationships that reflect the development of the ecosystem of education, including Kazakhstan.

Materials and methods

In this study, we applied a comprehensive approach to analyzing statistical data on the education system in Kazakhstan in order to identify key trends and problems affecting the country's educational ecosystem. The research consists of several stages, each of which is aimed at a deep understanding of the current state and dynamics of the educational system. At the first stage, a preliminary assessment of the existing data and literature on the topic was carried out. At the second stage, statistical information was collected and processed. The third stage included data analysis and formulation of conclusions. Finally, at the last stage, recommendations were developed to improve the educational system based on the results obtained.

We used secondary data obtained from official sources such as the Ministry of Education and Science of the Republic of Kazakhstan, the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, as well as national reports on the state of science and higher education, data from the World Bank and UNESCO on education in Kazakhstan. In order to identify common patterns, an analysis of existing research on the development and transformation of education and educational systems, as well as an analysis of documents related to educational reforms and a SWOT analysis were conducted. In addition, an analysis of articles and reviews on the research topic was carried out.

We used both quantitative and qualitative methods to analyze the collected data. Quantitative analysis included the use of statistical methods such as regression analysis and correlation analysis to identify the relationships between different variables). The qualitative analysis was conducted using content analysis to interpret data on education policies and strategies.

During the research process, we followed ethical standards, ensuring the confidentiality of data and respecting the rights of all participants in the study. All data was anonymized, and only aggregated metrics were used for analysis.

Thus, this study is a systematic analysis of the state of education in Kazakhstan, aimed at identifying key factors affecting its development and quality. The results of the study can serve as a basis for further research and development of strategies to improve the country's educational ecosystem.

The results of the study and discussions
Key trends in the transformation of educational systems
Analyzing publications in the field of education, we can identify seven key trends that determine the development of educational systems at the global level:

1. Digitalization as a trend affects both the field of human activity and the educational process itself. Digitalization of education involves the integration of technology into the learning process, which allows access to educational resources anytime, anywhere. Online learning platforms - MOOCs (Massive Open Online Courses), contribute to the democratization of education by providing the opportunity to gain knowledge to a wide audience. Digitalization of education makes it possible to spread information without barriers, scaling it up and delivering it to any place at any time. Kazakhstani universities have nationwide access to educational platforms, recognizing learning outcomes and integrating them into educational programs. Flexible learning in a broad sense, which allows you to combine different ways and models of building the learning process, including online, offline, internship and work. Hybrid learning models combine traditional teaching methods with online formats, which allows for more flexible and adaptive learning environments. (Müller, C., & Mildenberger, T., 2021) These models provide a balance between personal interaction and the use of technology, which promotes deeper learning and increases the availability of education. In March 2024, changes were made to the Kazakh rules, regulating the possibility of recognizing learning outcomes obtained within the framework of continuing education, which makes it possible to optimize educational trajectories (Republic of Kazakhstan, 2023).

2. Personalized learning involves adapting educational programs to the individual needs and learning styles of students (Burbules, N.C. 2020). Tracking the educational trajectory and monitoring the development of learning outcomes provide sufficient data to artificial intelligence. Predicting academic performance, recommending resources, evaluating knowledge, improving the educational process, image analysis, content analysis, and determining the zone of immediate development (Crompton, H., & Burke, D., 2023) are the main areas of use of AI in higher education. In modern universities, AI is used to identify students, digital analytics, predict educational prospects, create personal assignments and recommendations, form individual curricula, increasing the effectiveness of learning and engagement of a particular student, taking into account his level of knowledge, character traits and personality traits. Generative AI systems allow you to create individual assignments for each student and become an AI assistant and mentor. This year, every lecturer at a Kazakh university is required to take advanced training courses in AI. The AI-SANA project has been created to teach AI students, which ensures the integration of Both into the content of education (Ministry of Science and Higher Education of the Republic of Kazakhstan, 2023).

3. Modern challenges require educational programs to integrate knowledge from various disciplines. The post-industrial economy is based on knowledge and needs people who are able to identify and solve problems using tools and methods. The rapid development of technology has already led to the fact that modern students cannot even imagine which jobs they will apply for (Akour, M. & Alenezi, M., 2022) and what set of competencies they need.

An interdisciplinary approach promotes the development of critical thinking and creativity, which is essential for solving complex problems in a rapidly changing world (James Jacob, W., 2015). Interdisciplinarity, cross-culturality and integration have already been demonstrated in Kazakhstan's sectoral and regional Atlases of new professions and competencies. Based on descriptions of the requirements for the professions of the future, Kazakhstani universities are developing innovative educational programs.

4. Globalization promotes knowledge exchange and cultural interactions between countries. International exchange programs, joint research and transnational universities create conditions for the formation of a global educational community, which expands the horizons

of students and promotes the development of intercultural competence (De Wit, H., & Altbach, P.G., 2021). Education has become a successful segment of the economy, attracting financial flows to the countries providing educational services. There is a stratification between countries and cities in one country in terms of the demand and attractiveness of education. These factors are well observed in Kazakhstan, creating poles of attraction for visiting students in Almaty and Astana. Academic mobility and the development of joint educational programs are an essential component of the development strategies of Kazakhstani universities. The Ministry of Science and Higher Education has initiated the creation of Centers of Academic Excellence on the basis of regional universities and the opening of branches of leading foreign universities in the regions.

5. Stakeholders pay special attention to the formation of different types of intelligence and the development of soft skills necessary for successful life and work in modern society. One of the important integrated skills is working in an interdisciplinary team (Nancarrow S.A., 2013). These skills include critical thinking, creativity, cooperation, teamwork, and digital literacy. Kazakhstani universities include soft skills in their learning outcomes, defined in relevant professional standards and in Atlases of New Professions and Competencies.

6. Sustainable development is becoming an important aspect of educational initiatives. Universities are increasingly introducing the principles of sustainable development into their programs, and they are also encouraged to do so by university ratings. by teaching students the importance of social responsibility and environmental awareness, which forms their active citizenship. Kazakhstani universities actively participate in internationally recognized rankings that contain criteria for sustainable development.

7. Education is being transformed by the needs of the labor market, which force not only to study and retrain, but also to discard non-constructive approaches, learning models and skills. Rosak-Szyrocka, J. (2024) emphasizes that modern society and the economy are moving to the 5.0 model, when emotional competencies are becoming more important, and universities are becoming fully digital organizations. Web 5.0 – becomes a sensory-emotional network in which communication is carried out both between people and between people and generative technologies. Even now, the quality of the generative response depends on the emotional context and communication style. Society 5.0 contains real and virtual components that are closely related to each other.

Each of these trends plays a key role in the transformation of educational systems, creating new opportunities for learning and development for both students and teachers.

Stages of transformation of the education system in Kazakhstan

Since 1991, Kazakhstan has gone through eight stages of development of the higher education system. In the first stage, from 1991 to 1994, work was carried out on the formation of the legislative and regulatory framework for higher education, which is typical for many countries moving to a new management system. At that time, there was a separation from the traditional Soviet education system based on administration and centralized bureaucratic process management. The first educational development programs in Kazakhstan have been developed.

The second stage, covering the period from 1995 to 1998, was devoted to the modernization of the higher education system and updating its content. During this period, as in a number of other countries, special attention was paid to developing students' practical skills and improving the quality of education. In addition, information and communication technologies were actively introduced, which contributed to the digital transformation of the educational process and was the beginning of the influence of the corresponding trend.

The third stage, from 1999 to 2000, was characterized by the decentralization of management and financing of education, which also reflects global trends towards increasing

the autonomy of educational institutions. At that time, new knowledge assessment technologies were introduced. In order to reduce corruption risks when applying to universities, a unified national Testing was introduced in 1999. At this stage, students were able to independently choose a university to master the educational program, which served as an impetus for the formation of educational hubs in Almaty and Astana, attracting students from all over the country. This stage reflects the first manifestations of the trend of globalization of education at the national level.

The period from 2001 to 2010 was the fourth stage, and was aimed at the strategic development of the higher professional education system, its recognition at the international level and the optimization of the network of universities. This corresponds to the desire of many countries to increase the international competitiveness of their educational institutions. At that time, the first attempt was made to accredit universities based on formal quantitative criteria. The year 2010 was the last year of the functioning of the Soviet classification of education levels.

By signing the Bologna Declaration on March 11, 2010 and becoming the 47th member state of the Bologna process, Kazakhstan entered the fifth stage of higher education reform. From 2010 to 2017, the principles of the Bologna process were implemented in Kazakhstan, the internationalization of higher education was expanded, and a national education quality assurance system was built. Thus, the commitment to European approaches and principles in ensuring the quality of higher education and building a European Higher Education Area was demonstrated. Since 2010, Kazakhstan has begun the transition from quality control to quality assurance, and the process of accreditation has begun according to the requirements and criteria of standards developed by accreditation bodies based on European Standards and Quality Assurance Guidelines (ESG). The fifth stage made a significant contribution to the emergence of Kazakhstan as a prominent figure in the international educational space, ensured confidence in Kazakhstani diplomas and attracted new students to the country.

From 2017 to 2020, Kazakhstan was in the sixth stage of implementing academic freedoms, expanding digitalization and transparency in university management processes, as well as modernizing quality assurance systems at universities. These steps were in line with global trends towards digitalization of education and improved management of educational institutions. In 2018, fundamental changes were made to the Law on Education, increasing the academic freedom of higher and postgraduate education organizations. Kazakhstan has begun an active movement towards standardization of content not only at the BA-MA-PhD levels of education, but also within the framework of the National Qualifications System: Industry-specific Qualifications Frameworks by industry have been developed, on the basis of which existing professional standards have been updated and new ones developed. Since 2018, the Atameken National Chamber of Entrepreneurs has begun to conduct a rating of educational programs of Kazakhstani universities, including an analysis of the demand for graduates and an analysis of educational programs. It was at this stage that the impact of labor market demands for vocational training at universities increased, which stimulated the involvement of more stakeholders in the educational process and the formation of an understanding of the national ecosystem of higher education.

The COVID-19 pandemic has become a test for education systems around the world, and Kazakhstan is no exception, having actually entered the seventh stage of education reform. In the period 2020-2022, the educational process switched to an online format, which required rapid adaptation of universities, teachers and students. Kazakhstan's higher education system has successfully passed this test, ensuring compliance with quality standards, including access to digital resources and libraries, as well as the introduction of a proctoring system during exams. A new meaning has been given to the concept of academic honesty, which began to include not only anti-plagiarism, but also ethical behavior. Transparency of decision-making

and information about educational programs has become one of the trends in Kazakh education, which has led to the integration of university LMS (education management systems) with national databases, which has been reflected in the creation of a unified national register of educational programs, access to verification of information on the authenticity of diplomas, and the posting of reports on visits by external expert commissions within the framework of accreditation on the single European resource DEQAR. At this stage, the national education ecosystem has successfully passed the exam and demonstrated a sufficient level of digitalization.

The eighth stage of the development of Kazakh education began in 2023, and one of its key trends was advanced training, which includes the development of educational programs based on an Atlas of new Professions and occupations. Thus, the results of foresight of the needs of the economy became the basis for the development of innovative educational programs. Work continues in the regions to create Centers of Academic Excellence based on universities. In addition, the trend towards academic mobility and globalization is also having a significant impact on the Kazakh education system, attracting students from India, Pakistan, China and other countries in the region to study at Kazakh universities, as well as in strategic partnerships and branches of foreign universities. The concept of higher education and science development in the Republic of Kazakhstan For the period from 2023 to 2029, it provides for expanding access to education, the transition to a broad international understanding of the concept of inclusivity, providing targeted psychological support to students, the introduction of hybrid forms of education, digitalization of education, the use of AI, the introduction of foresight methods to predict the advanced need for personnel and the development of innovative educational programs (Republic of Kazakhstan, 2023). The concentration of students entails infrastructural changes, the strengthening of regional universities and the construction of dormitories. The opening of branches of leading foreign universities, the creation of innovative educational programs, and the creation of a National portfolio of educational programs will contribute to the implementation of the idea of an educational hub. Thus, the trends of globalization and the impact of the labor market continue to stimulate changes in the higher education system and its transformation into a distributed network ecosystem, providing for the creation of Centers of Academic Excellence and Competence Centers in the regions. It should be noted that the trend of globalization manifests itself both as an opportunity and as a threat, therefore, in the ecosystem of higher education there are systemic measures for the development of education in the regions and the formation of a network distributed model of the educational ecosystem.

Increasing access to knowledge and education
Competition in education is taking place at a global level, driven by the development of digital educational platforms, video telephony, and corporate training. The national subscription has provided access to Coursera for many Kazakhstani students. The exponential growth in the number of children and youth is an incentive for both the opening of new universities and branches of foreign universities, as well as qualitative changes in the organization of the educational process.

At the beginning of the 2023-2024 academic year, 112 organizations of higher and postgraduate education operated in Kazakhstan, including 77 universities, 14 academies, 9 institutes and equivalent universities, 1 conservatory, 8 national higher education institutions and 3 national research universities. Besides them, there were 3 branches of foreign universities. Over the past 5 years, the number of universities has decreased by 9.6%. State ownership extends to 44 universities - these universities usually operate in an organizational and legal form - a non–profit joint-stock company. 67 universities have a private form of ownership. 1 university and 3 branches are foreign-owned. At the same time, systematic

actions are being taken at the EOM and university levels to open branches of foreign universities. For two years now, a branch of the National Research Nuclear University MEPhI at al-Farabi Kazakh National University has been operating, which trains specialists in the field of nuclear physics. The establishment of the branch promotes the development of nuclear technologies, which is of strategic importance for Kazakhstan's energy security. As part of the development of the energy agenda, a branch of the Uzbek University is being opened in Taraz on the basis of a new University of Water Management and Irrigation, which was dedicated this summer.

Engineering educational programs will receive a new impetus for development within the framework of the Herriot-Watt University (Scotland) branch based on K. Zhubanov Aktobe Regional University and the Kazakh-German Institute of Sustainable Engineering based on Yessenov University. These programs are aimed at sustainable development and modern technologies, which is relevant in the light of global challenges related to climate change. A branch of the Northwestern Polytechnic University (PRC) on the basis of the Al-Farabi Kazakh National University also trains masters in engineering. The strategic partnership of M. Kozybayev North Kazakhstan University with the University of Arizona (USA) also involves the development of programs in the field of biotechnology, agriculture, business and management, which is important for increasing the competitiveness of Kazakhstani companies. The branch of the University of Hong Kong on the basis of the Kazakh National Research Technical University named after K. Satpayev can offer programs in the field of digital technologies and artificial intelligence. In addition, inDriver programs are being opened on the basis of Satpayev University. The Graduate School of Artificial Intelligence and Computer Science of Seoul National University of Science and Technology on the basis of Korkyt Ata Kyzylorda University responds to global trends in the field of digitalization and artificial intelligence, which is a priority for Kazakhstan. Lu Ban Workshop (D. Serikbayev East Kazakhstan Technical University and Tianjin Professional University) It focuses on the training of technical personnel in the field of road transport, which is important for the development of the country's transport infrastructure. The Shakarim University branch of the University of Economics in Bydgoszcz (Poland) offers programs in economics and management aimed at effective resource management and business development in the modern market.

Thus, in recent years, Kazakhstan has been actively developing its educational infrastructure, providing for the opening of branches of foreign universities in various regions of the country. This is due to the new requirements of stakeholders expressed by the desire to integrate the Kazakh education system into the international space, to transform Kazakhstan into an international hub provider of educational services.

Kazakhstan actively attracts foreign universities to open branches, which allows students to obtain international diplomas without having to travel abroad, which simultaneously affects the development of potential and at the same time allows them to maintain it in the country, preventing brain drain, both at the global and national levels. Among the partners are universities from Germany, Great Britain, the USA and other countries. The Government of Kazakhstan actively supports initiatives to establish branches of foreign universities, which includes financial subsidies and tax incentives. Further expansion of the branch network is expected, which will contribute not only to improving the quality of education, but also to cultural exchange between Kazakhstan and other countries. In addition, the opening of branches of foreign universities in the regions of Kazakhstan is a strategic step towards modernizing the educational system, implementing foreign educational technologies and attracting highly qualified foreign specialists in the field of education. It will also theoretically allow attracting foreign students from the region to study at top educational programs in Kazakhstani branches.

Demographic growth, educational migration and the attraction of the two capitals

According to the Bureau of National Statistics, 592.7 thousand people studied in Kazakhstan's higher and postgraduate education institutions at the end of 2023. Of these, 171.7 thousand applicants enrolled in 2023, and 157.1 thousand people completed their studies in educational programs, thus showing a demographic trend in the number of young people. Almost 65% of students study in Kazakh, 8.5% in English.

Kazakhstan is striving to become an educational hub for the countries of the region. 11.8 thousand students (2%) from CIS countries study at Kazakh universities, 13.4 thousand (2.3%) from non-CIS countries. Most of the students come from India – almost 9 thousand students, and from Uzbekistan – 6.9 thousand, 2.5 thousand students have the status of "candace". Ministry of Science and Higher Education.

Statistics show that the attraction of the two capitals has remained: 54.3 thousand students chose to study in Almaty, followed by Astana with 23.75 thousand first-year students, and Shymkent in third place. The outflow of students from the regions to the universities of the two capitals is a distinctive characteristic of the educational migration of students. Among the regions, there is a critically small number of students in the new Ulytau region (only 451), as well as a low number of students in Zhetysu – 1449, and in the North Kazakhstan region - 1760 enrolled.

The number of students in universities is increasing every year. Currently, 97.5 thousand students are enrolled in the final year, which is 1.8 times less than the number of students enrolled in the 1st year. The annual increase in the number of students creates challenges to the university infrastructure, the availability of resources, and, most importantly, the availability of high-quality, established teachers. Currently, when admitting students, universities can set only student scores as selection criteria, but they cannot limit the number of applicants. Of the total number of students in the 4th year, 16% of students - 97.5 thousand people study, in the third 23% of students – 136.2 thousand people, in the second 28% of students - 167.7 thousand people, in the first 29% of students – 171.8 thousand people.

Almaty traditionally remains the leader in the number of universities – 37 and students – 186.6 thousand people (31.5%). Shymkent took the second place in terms of attractiveness – 83.4 thousand people (8 universities), overtaking Astana with its 14 universities (75.0 thousand people). In total, more than 58% of the total number of students study at universities in cities with more than a million people, which indicates the concentration of students in large cities. It is these cities that make the main contribution to the educational migration of students, being the center of attraction for nonresidents – 313.1 thousand people, which is 52.8%, of which 134.6 thousand people need dormitories. The additional burden on the infrastructure of large cities leads to dissatisfaction among both city residents and students with the quality of educational services and university resources. The leader in attracting students is Almaty, where 106 thousand nonresident students study, of which 57.2 thousand students need a dormitory, the shortage of places in the dormitory exceeds 21.6 thousand, the shortage of places in the dormitory in Astana is 9.6 thousand, and in Shymkent – only 1.3 thousand places.

The total area of universities is more than 6.5 million square meters, so there are 11 square meters per student. The best ratio in Mangystau is 90 square meters per student. In Astana, there are 14 sq.m. per 1 student, in Almaty – 9.2 sq.m., in Shymkent – 6.4 sq.m. A low ratio is observed in Kyzylorda – 7.4 sq.m., Almaty – 7.9 sq.m. per 1 student, Atyrau – 7.8 sq.m., West Kazakhstan – 8.2 sq.m., Pavlodar – 9.9 sq.m.M. On average, there are 16 square meters per 1 student who needs to stay in a dormitory. The total area of dormitories is 1.5 million square meters. At the same time, more than 134 thousand people still need dormitories, of which 93,478 people live in dormitories, due to the current shortage of places. More than 82,921 computers are used in the educational process, with almost 8 people per computer. In

the Zhambul region, there are 29 people per computer, and 15 people in Shymkent, which creates an obstacle to sufficient time for individual and laboratory classes. At the same time, these data do not take into account the number of personal computers and mobile digital devices that are currently used throughout the world in the learning process.

The demographic growth of young people determines the challenges at the national level related to the need to resolve the contradiction: maintaining and increasing access to education and insufficient provision of resources (including infrastructure and teachers). This contradiction can be resolved through changing the format of education: learning in mixed environments, in virtual and augmented reality, attracting external resources to improve infrastructure, attracting "external" – foreign teachers, scaling teachers and other sources of reliable information using digital technologies, as well as by reducing students' stay at universities through dual education and recognition. the results of previous non-formal and informative education, including work experience. The regulatory foundations of this process have already been laid, but in practice it has not been fully implemented, since in this case not only the terms of study, but also the incomes of universities are reduced.

Economics of higher education
At the beginning of the 2023/2024 academic year, 227.3 thousand students studied at the expense of state educational grants, 68.2 thousand of them enrolled in the 1st year. 46.7 thousand people completed their studies in 2023. The largest number of educational grants was allocated to the group of educational programs "6B07 Engineering, manufacturing and construction industries" - 62,865 grants, of which 19,853 people received, 12,675 people graduated. The second place in terms of the number of grants is occupied by the group of educational institutions "6B01 Pedagogical Sciences" - 47,095 students, 14,801 of them enrolled, 10493 graduated. The top 3 in terms of the number of grants is closed by the 6B06 Information and Communication Technologies group - 33,477 students, 11,782 of them enrolled, 6,045 graduated, i.e. the number of grants in the IT field has increased by 94.9% over the past 4 years. The OP group "6B05 Natural Sciences, Mathematics and Statistics" ranks 4th with 21,576 grants, of which 7,384 are for 1st-year students and 3,995 people have completed their studies. These trends demonstrate the state's attention to the issues of high-tech and digital training of future specialists, the orientation of higher education towards teacher training in connection with a sharp increase in the number of children and youth.

350.5 thousand students took advantage of the opportunity for paid tuition, which is almost 60% of the total number of students, 98.8 thousand people enrolled from the lower school, and 106.4 completed their studies. Thus, there is a decrease in the number of students studying for a fee due to an increase in the number of grants. There are 115,825 people in the top OP groups attracting students to paid tuition for the 6B01 Pedagogical Sciences group (which is 2.45 times more than those studying on a grant). The change in the status of the teacher led to an increase in the prestige of the teacher, which confirms the increase in the number of students.

The year 2024 was the year of the transformation of higher education financing - financing is carried out through educational loans and differentiated grants, contributions to the Unified Voluntary Funded System "Keleshek", at the expense of the funds of the National Fund for Children program.

In the 2023/2024 academic year, the OVPO provided services totaling more than 127 billion 931 million tng, of which more than 63 billion were funded from the budget. 471 million tng, population – 57 billion 993 million tng, enterprises – 6 billion 466 million tng. Of these, state organizations of higher and postgraduate education provided services in the field of higher education totaling 73 billion 185 million, at the expense of the budget 46 billion 831 million tng., at the expense of the population 25 billion 174 million tng., at the expense of enterprises

– 1 billion. 179 million tng. Private higher education organizations provided services in the field of higher education totaling 52 billion 078 million tng, of which 15 billion 545 million tng from the budget, 31 billion 537 million tng from the population, and 4 billion 996 million tng from enterprises. The volume of services in the field of higher and postgraduate education provided via the Internet is 3 billion. 470 million tng., at the expense of the budget of 2 billion 160 milliontng., at the expense of the population of 1 billion. 269 million tng., at the expense of enterprises – 40 million tng. Thus, digital services in higher education account for less than 10%, which demonstrates the lack of offers in the educational services market and the potential capacity of this market, taking into account demographic growth, while ensuring the quality of education remains one of the main issues.

The challenge of mass higher education

The Gross Enrollment Ratio (GER) is an indicator that reflects the percentage of students who study in higher education institutions (including colleges, universities, and other institutions) compared to the total number of people of this age who are enrolled. The GER is an important indicator for assessing the accessibility of higher education in a country. A higher GER usually indicates greater opportunities for higher education in a country, which may indicate a more developed education system and an increase in the level of literacy and skills of the population.

Within the framework of government statistics, this indicator characterizes both the availability of education for this category and the continuity of education – the involvement of people over the age of 22 in the educational process, and those who are unregistered as living in a given region or city. Thus, a coefficient value of more than 100% indicates the attractiveness of the region's universities and the development of postgraduate education programs for people over the age of 22, which is part of the strategy of research universities. This indicator also indicates the involvement of older people in higher education, which is a consequence of changing labor market requirements.

In general, in Kazakhstan, the gross enrollment rate of higher education in the 2023-2024 academic year was 49.88%. The maximum value of gross coverage was noted in 2019 and amounted to 66.98%. By region, the lowest gross enrollment in higher education was in Turkestan (7.74%) and Almaty (9.84%) regions, while the highest was in Almaty (115.46%), Shymkent (99.89%) and Astana (82.90%). Thus, the maximum gross coverage is typical for cities with a population of more than 1 million people, these three regions are also among the top 3 in terms of the number of students and universities. The maximum value of gross coverage in Almaty was noted in 2021 and amounted to 186.5%, the minimum in 2023. Before that, similar values (114.55%) were in 2000, in 2010 (113.84%), and in 2013 (110.34%). A decrease in gross enrollment with an increase in the number of young people indicates a decrease in the need for higher education, and may also be a characteristic of a decrease in the availability of higher education. This coefficient is one of the key factors determining the country's place in the UN Development Program's World Education Index. The latest published UN Human Development Report for 2023-2024, Breaking the Impasse. Rethinking collaboration in a Polarized World" demonstrated the movement of Kazakhstan down 11 positions in the ranking and, as a result, 67th place, according to data for 2022 (United Nations Development Programme, 2024). However, Kazakhstan still retained its place in the group of countries with a "very high level of human development." A total of 69 countries are included in this group. The leaders are Switzerland, Norway, and Iceland. Germany and Iceland share 7th place, Finland 12th, Great Britain 15th, Canada 18th, South Korea 19th, USA 20th, Estonia 31st, Latvia 37th, Russia 56th, Georgia 60th, Belarus 69th.

The Government is striving to increase the gross enrollment rate of higher education. The gross girth demonstrates the high level of economic development of the country. A high level

of education contributes to economic development, as educated people can better adapt to changing market conditions and foster innovation. Educated citizens often have more employment opportunities and a better quality of life, which contributes to social stability. Increasing the level of education in the country contributes to the development of human capital, which in turn can improve the quality of life and increase the competitiveness of the country. Ensuring equal access to higher education helps to reduce social and economic inequalities in society. Therefore, increasing the gross enrolment ratio in higher education is an important goal for many countries seeking to develop education, the economy and society as a whole.

The main contingent of students consists of young people aged 17 to 22 years, which indicates the priority of obtaining higher education immediately after school (71.7%). Quotas are provided for socially vulnerable segments of the population – 64.3 thousand people (10.8%) study under them. 45.1% of students study at public universities, 54.1% at private universities, 0.7% at foreign universities and branches operating in Kazakhstan.

Reforms in the field of secondary education and measures to improve the status of a school teacher led to an increase in the number of students enrolled in pedagogical educational programs. Engineering and technical educational programs attracted 16.5%. In recent years, there has been a change in demand for training in business, management and law educational programs to 14.5%. Digitalization as a trend in the development of all fields of activity and, consequently, the employment of graduates attracted 9.5% of students to study IT.

The availability of higher education is traditionally determined by various factors, including, first of all, financial parameters such as tuition fees, the availability of scholarships and grants, and the possibility of obtaining loans for study

Conclusions

Kazakhstan's education ecosystem is influenced by general trends in the development of education, which at the national level identify both opportunities and threats. In order to prevent the negative effects of which and ensure the global competitiveness of universities, it is possible to implement the following recommendations:

1. Establishing networking between universities, research centers, and businesses at both thenational and international levels. This will allow for the exchange of experience and resources, as well as the creation of joint projects.

2. Establishing stable partnerships with the world's leading universities for student and faculty exchange, joint research, and dual degree programs. This will not only improve the quality of education,but also create an international reputation.

3. Development of unique educational programs for advanced preparation of students for the requirements of the labor market and society, including within the framework of a network partnership that will be attractive to foreign citizens. Conducting regular labor market research to adapt curricula to the requirements of employers. Updating the Atlas of new Professions and occupations.

4. Development of programs that promote international student mobility, including scholarships and grants to study abroad. This will help students gain international experience and broaden their horizons. Integrating international topics and comparative studies into the curriculum so that students can better understand global issues and contexts.

5. Implementation of support programs for students from socially vulnerable groups, including financial assistance, mentoring programs, and customized courses. This will help ensure equal access to quality education.

6. The introduction of digital literacy courses at all levels of education, so that students can confidently use modern technologies and tools in their studies and future careers, which

will also lead to a reduction in the time spent studying digital technologies (for non-core professions) at the university.

7.   The analysis of the content of higher education and the redistribution of educational content between the school and the university, which will avoid duplication, will reduce the duration of study at the university and its cost, which will help attract international students to educational programs, as the international format of the duration of study in bachelor's degree programs will be provided.

8.   Development of flexible educational formats providing 24/7 access to education, such as evening and weekend courses, as well as distance learning courses. This will allow students to combine their studies with work or other commitments. It will also attract students and teachers from other countries, with a time gap for online learning programs.

9.   Creation of open educational resources and online platforms for access to high-quality educational materials and courses, with further recognition of learning outcomes. This will ensure access to education for a wider audience.

10. Development of high-quality online courses based on the best practices in the field of distance learning, including interactive elements, video lectures and practical tasks

11. The introduction of artificial intelligence technologies to personalize the educational process, including adaptive learning systems that can adapt to the individual needs of students.

12. The introduction of blockchain technology to ensure the safety and transparency of information about personal advancement along a continuous educational trajectory throughout life.

13. To ensure that researchers and university administrators have access to the data stored in the Epvo.kz in order to conduct comparative studies and identify trends.

14. The introduction of a "second postgraduate" education, which will provide those who wish with the necessary level of competence development, will create additional financial flows for the sustainable development of universities. As a result, access to education will be ensured, and the barrier limiting admission to graduate school will be removed.

15. Implementation of assessment systems that take into account not only academic achievements, but also skills acquired during the learning process (for example, critical thinking, teamwork and creativity), such as portfolio and project protection, etc. This will help to better prepare students for the demands of the modern labor market.

Conflict of Interest Statement

The authors declare no potential conflicts of interest regarding the research, authorship, or publication of this article.

Author Contributions

Marina Skiba: Conceptualization, Formal analysis, Writing - Original Draft, Writing - Review & Editing; Farkhad Kuanganov: Methodology, Verification; Timur Buldybaev: Conceptualization, Investigation,Writing - Review & Editing; Renata Kudaibergenova: Conceptualization, Investigation; Anuar Nurtazin: Formal Analysis.

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