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ON SOME ISSUES OF ALLOCATING STATE EDUCATIONAL GRANTS AS AN ASPECT OF ENSURING THE QUALITY OF HIGHER EDUCATION IN KAZAKHSTAN

Abstract. Higher education in Kazakhstan is a relevant research topic, as it is key to developing the country's human capital. The main objective of this study is to assess the accessibility of higher education and develop recommendations for improving the funding system, taking into account labor market needs. The research focuses on the financial aspects of educational accessibility, including the state grant system and university funding mechanisms.

The scientific significance of this work lies in the analysis of the existing educational grant system in Kazakhstan and its impact on the accessibility of higher education for students from various social groups. The research methodology includes economic-statistical and abstract-logical methods for analyzing data on student financial support and state educational orders.

The study reveals both the positive aspects of the per capita funding system for universities and its limitations, such as the concentration of resources in major universities and possible declines in educational accessibility in certain regions. Study data confirm the need for more precise planning of educational grants to labor market demands.

The practical significance of the work lies in its proposals for enhancing the higher education funding system in Kazakhstan, which will ensure equal access to education and improve its quality. The study's contribution is well-founded recommendations for creating a more balanced system focused on training professionals needed under contemporary conditions.

Keywords: *administration, higher education, grant allocation, state educational order, state educational grant, human capital.*

Сәуле Искендирова, Сәуле Зейнолла, Әсел Әбен

ҚАЗАҚСТАНДА МЕМЛЕКЕТТІК БІЛІМ БЕРУ ГРАНТТАРЫН БӨЛУДЕГІ КЕЙБІР МӘСЕЛЕЛЕР ЖОҒАРЫ БІЛІМ САПАСЫН ҚАМТАМАСЫЗ ЕТУ АСПЕКТІСІ РЕТІНДЕ

Аңдатпа. Қазақстандағы жоғары білім адам капиталының дамуына үлкен үлес қосатын өзекті тақырып болып табылады. Осы зерттеудің негізгі мақсаты – жоғары білімнің қолжетімділігін бағалау және еңбек нарығының қажеттіліктерін ескере отырып, қаржыландыру жүйесін жетілдіруге арналған ұсыныстарды әзірлеу. Зерттеу білімнің қаржылық қолжетімділігіне, мемлекеттік гранттар жүйесі мен жоғары оқу орындарын қаржыландыру механизмдеріне бағытталған.

Жұмыстың ғылыми маңызы – Қазақстанда бөлінетін мемлекеттік білім гранттары жүйесін және оның әртүрлі әлеуметтік топтардағы студенттер үшін білімге қолжетімділігіне әсерін талдау. Зерттеу әдістемесі – студенттерге қаржылық қолдау көрсету және мемлекеттік білім беру тапсырысын талдауда экономикалық-статистикалық және абстрактілі-логикалық әдістерді қолдану.

Зерттеу барысында жоғары оқу орындарын жан басына қаржыландыру жүйесінің артықшылықтары мен шектеулері, атап айтқанда, ірі университеттерде ресурстардың шоғырлануы және аймақтардағы білімге қолжетімділіктің төмендеу мүмкіндігі анықталды. Зерттеу деректері гранттарды еңбек нарығының қажеттіліктеріне сәйкес жоспарлау қажеттілігін растайды.

Жұмыстың практикалық маңызы – Қазақстандағы жоғары білімді қаржыландыру жүйесін жетілдіру бойынша ұсыныстар, бұл білімге тең қолжетімділікті қамтамасыз етіп, оның сапасын арттыруға мүмкіндік береді. Зерттеу жұмысының қосқан үлесі – кадрларды даярлауға бағытталған, қазіргі заман талаптарына бейімделген теңгерімді жүйені құруға арналған негізделген ұсынымдар.

Түйін сөздер: *басқару, жоғары білім, гранттарды бөлу, мемлекеттік білім беру тапсырысы, мемлекеттік білім беру гранты, адами капитал.*

Сәуле Искендирова, Сәуле Зейнолла, Әсел Әбен

О НЕКОТОРЫХ ПРОБЛЕМАХ РАСПРЕДЕЛЕНИЯ ГОСУДАРСТВЕННЫХ ОБРАЗОВАТЕЛЬНЫХ ГРАНТОВ КАК АСПЕКТ ОБЕСПЕЧЕНИЯ КАЧЕСТВА ВЫСШЕГО ОБРАЗОВАНИЯ В КАЗАХСТАНЕ

Аннотация. Высшее образование в Казахстане является актуальной темой для исследований, поскольку оно играет ключевую роль в развитии человеческого капитала страны. Основной целью данного исследования является оценка доступности высшего образования и разработка рекомендаций по совершенствованию системы финансирования с учетом

потребностей рынка труда. Исследование фокусируется на финансовых аспектах доступности образования, включая систему государственных грантов и механизмы финансирования вузов.

Научная значимость работы заключается в анализе существующей системы образовательных грантов, выделяемых в Казахстане, и её влияния на доступность высшего образования для студентов из различных социальных групп. Методология исследования включает экономико-статистические и абстрактно-логические методы для анализа данных о финансовой поддержке студентов и государственном образовательном заказе.

В ходе исследования выявлены как положительные стороны системы подушевого финансирования вузов, так и её ограничения, такие как концентрация ресурсов в крупных университетах и возможное ухудшение доступности образования в регионах. Данные исследования подтверждают необходимость более точного планирования образовательных грантов в соответствии с потребностями рынка труда.

Практическая значимость работы заключается в предложениях по улучшению системы финансирования высшего образования в Казахстане, что позволит обеспечить равный доступ к образованию и повысить его качество. Вклад исследования – это обоснованные рекомендации для создания более сбалансированной системы, ориентированной на подготовку кадров, востребованных в современных условиях.

Ключевые слова: *управление, высшее образование, распределение грантов, государственный образовательный заказ, государственный образовательный грант, человеческий капитал*

Introduction

Higher education in Kazakhstan has become one of the most significant topics of discussion in recent years. In Kazakhstan, higher education is provided by various universities and colleges, both public and private. The educational system is based on the Bologna approach, which enables students to receive education in line with international standards, as most universities undergo the necessary accreditation.

Currently, Kazakhstan offers various levels of higher education, including bachelor's, master's, and doctoral programs. Students have the opportunity to choose a specialty and field of study that aligns with their interests and professional goals.

However, it is essential to assess higher education in Kazakhstan in terms of its accessibility to all population segments, particularly its financial accessibility. This study explores issues related to the accessibility of higher education associated with state funding in Kazakhstan.

Financial accessibility is one of the main components of educational accessibility. In Kazakhstan, the government actively provides educational grants that fully or partially cover tuition costs. The grant system includes support for students from vulnerable groups, such as students from rural areas, orphans, and

people with disabilities, among others.

Kazakhstan actively works to improve the accessibility of higher education through grants. However, several challenges require careful attention when planning state educational orders to meet labor market needs and current trends.

Review

Let us consider approaches to funding higher education that exist globally, which provide various financial mechanisms to support students, making higher education more accessible.

A review of works by T. Sedash, E. Kameneva [1], A.A. Aryn [2], D.A. Ashirbekova, and G.Zh. Nurmukhanova [3] analyzing the funding practices of higher education in various countries helps structure the existing approaches to financing education in higher education systems:

1. Free Education: In countries such as Germany, Norway, and Finland, public universities provide free education for everyone, including certain categories of international students. Governments fully cover educational expenses, with students paying only minimal administrative fees. These countries strive to make education accessible to all, regardless of financial status.

2. Grant and Scholarship System: In the USA and Canada, certain students receive grants or scholarships. The Pell Grant program in the USA provides financial aid to low-income students. In Canada, the national scholarship system, such as the Vanier Canada Graduate Scholarships, supports graduate researchers.

3. Educational Loans: In countries like the USA and the UK, students can take educational loans with deferred payment until employment. In the USA, programs such as the Federal Student Loan Program allow students to pay tuition after employment.

4. Combined System: In France and Italy, students partially pay for education, with the remainder covered by government subsidies. This model helps ensure access to education while maintaining universities' financial sustainability.

These countries actively support students by providing financial assistance and enabling opportunities to study with minimal costs.

For instance, the UK, USA, and Sweden use per capita university funding mechanisms to distribute budgetary funds among universities based on the quality and accessibility of education. Universities receive funding based on the number of students, motivating them to improve the quality of educational services.

The experience of these countries served as a model for implementing a more effective distribution of state resources for higher education in Kazakhstan.

The financing of higher education from the state budget was previously carried out through the allocation of annual direct transfers to universities, proportional to the declared number of students enrolled under the state educational order at the beginning of the period. This approach had certain drawbacks, such as the justification of the allocated funds based on the results of relevant monitoring and control, which was regulated through annual withdrawals or subsidies according to the actual number of such students. Consequently, this led to excessive financial movements across budgetary levels.

As noted by Adambekova A.A. and Amankeldi N.A. [4], when examining the level of state involvement in the education sector in Kazakhstan, the issue of significant underfunding of the higher education system had already emerged. It was observed that the training of specialists did not meet the demands and realities of the labor market, nor did it align with the requirements for economic and social development. This situation necessitated the effective redistribution of resources to enable an expansion of state funding.

One such approach was the introduction of per capita financing in the higher education system in 2023. The per capita funding system in Kazakhstan is based on the principle that university funding depends on the number of students who have received a state educational grant on a competitive basis. This creates a fairer system for budget allocation among universities and encourages them to attract more students by improving the quality of educational services.

The main principles of the per capita funding system are:

1. Funding is proportional to the number of students.
2. Budget allocation considering the demand for educational programs.
3. Encouraging competition among universities to improve quality.

This funding system has several advantages: it increases university accountability for educational outcomes, fosters competition among institutions, leads to service quality improvement, and ensures efficient use of budget funds. However, there are some drawbacks, such as the concentration of funding in large universities, which may reduce access to education in remote areas, potentially worsening the situation in sparsely populated regions where universities struggle to attract students, as most high school graduates choose metropolitan areas for higher education.

The current economic and demographic conditions in the country highlight the importance of aligning the state educational order with labor market needs. It should be noted that the topic of grant allocation remains largely underexplored despite its relevance. The main hypothesis of this research is that there is an imbalance in the quantitative formation of the state educational order with labor market requirements. This study will focus on analyzing this hypothesis.

Methodology

Various scientific methods were applied throughout this study to collect, examine, process, and analyze information. The approaches used include:

- Causal analysis to identify relationships and causes for increased performance indicators.
- Economic-statistical method for processing quantitative data.
- Abstract-logical analysis for synthesizing information and constructing theoretical conclusions.
- Comparative method to compare data and identify differences.
- Systematic analysis for a comprehensive examination of the research object.

Economic-statistical and abstract-logical methods were employed to monitor and evaluate the performance of universities, analyzing the current state of Kazakhstan's higher education system and studying its development trends.

Economic-statistical methods enabled quantitative data assessment, while the abstract-logical method was used to identify existing issues and develop recommendations for improving the planning system for the state educational order in higher education.

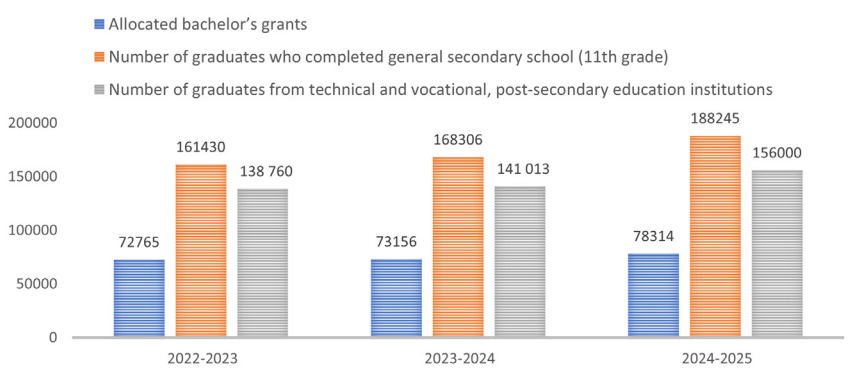
Data visualization through diagrams made it easier to perceive and track indicator dynamics presented in the study. Analyzing Kazakhstan's regulatory documents ensured that the research conclusions were well-founded and relevant.

The information base consisted of data from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, the Ministry of Science and Higher Education of Kazakhstan, as well as published works by economists, legislative, and program documents. This research seeks to address the challenges the current higher education system faces. Despite the existence of a system for forming the state educational order in higher education, there is still a need to review its effectiveness, convenience, transparency, and adaptability to new conditions.

Results and Discussion

To analyze the current situation in ensuring financial accessibility of higher education in Kazakhstan, we will begin by examining the trends in high school and technical and vocational education (TVE) graduates, who represent potential applicants for universities. According to Figure 1, in 2022, 2023, and 2024, the number of high school graduates and grants for university education in Kazakhstan continues to grow, reflecting the increasing demand for higher education.

Figure 1. Dynamics of secondary school and TVET graduates and the number of grants allocated to higher education



Note: Compiled by the authors based on [7,8,9]

In 2022, over 161,430 students graduated from high schools in Kazakhstan, along with 138,760 graduates from TVE and post-secondary institutions. In 2023, the number of high school graduates increased to 168,306, while TVE and post-secondary graduates reached 141,013. This growth is attributed to demographic factors and an increase in students completing high school. On average, around 15%

of TVE graduates pursue university education. [5] Consequently, approximately 37% of high school and TVE graduates can access university education through government-funded grants.

In 2024, the number of high school graduates continued to rise, reaching 188,245, along with about 156,000 TVE graduates. This increase, on one hand, ensures a higher quality for first-year students; on the other hand, it significantly raises competition for educational grants, underscoring the need for measures to meet the growing demand for higher education. [6]

An analysis of the dynamics of allocated educational grants in the Republic of Kazakhstan in Table 1 shows positive dynamics in general, an increase from 73,174 for undergraduate degrees (except for grants allocated for foreign citizens) in 2022 to 78,314 in 2024 [6,7]. These measures are aimed at making education accessible to more students and supporting industries that require highly qualified specialists.

Table 1. Dynamics of state orders for training specialists with higher education

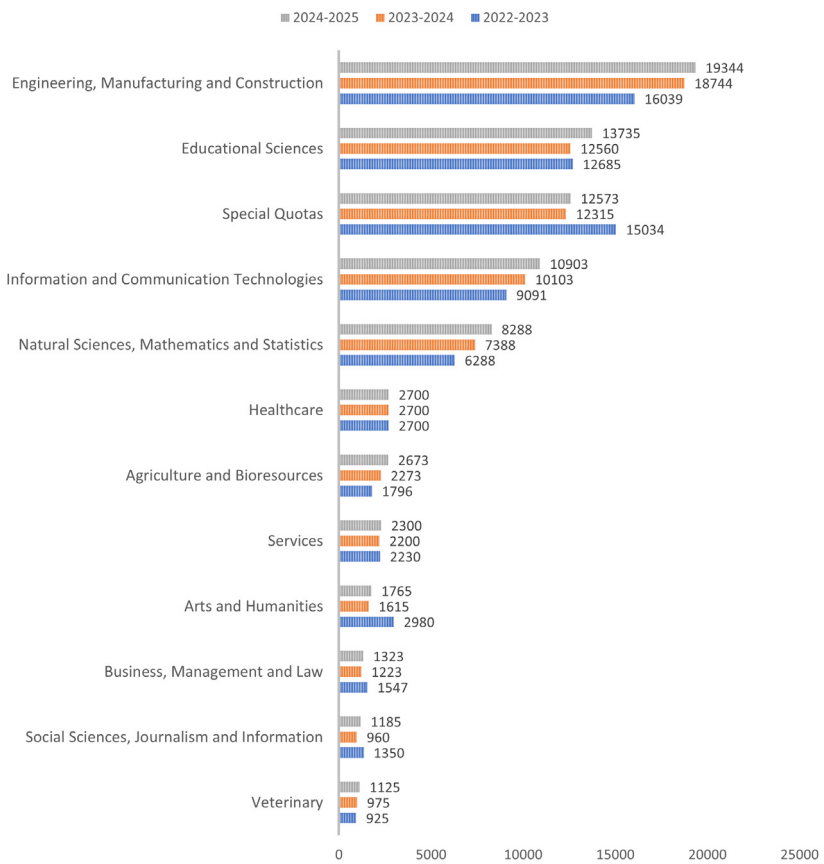
	Codes and Classification of Study Fields	State order		
		2022-2023	2023-2024	2024-2025
1	6B01 Education Sciences	12685	12560	13735
2	6B02 Arts and Humanities	2980	1615	1765
3	6B03 Social Sciences, Journalism, and Information	1350	960	1185
4	6B04 Business, Management, and Law	1547	1223	1323
5	6B05 Natural Sciences, Mathematics, and Statistics	6288	7388	8288
6	6B06 Information and Communication Technologies	9091	10103	10903
7	6B07 Engineering, Processing, and Construction Industries	16039	18744	19344
8	6B08 Agriculture and Bioresources	1796	2273	2673
9	6B09 Veterinary Science	925	975	1125
10	6B11 Services	2230	2200	2300
11	Reserve	100	100	100
12	Differentiated Grants with Partial Tuition Coverage			300
	Total MNVO *(Ministry of Science and Higher Education)*	**55430**	**58141**	**63041**
13	6B10 Healthcare	2700	2700	2700
	Total MZ *(Ministry of Health)*	**2700**	**2700**	**2700**
	Total MNVO and MZ	**58130**	**60841**	**65741**
14	For training citizens of the Republic of Kazakhstan from rural areas relocating to regions designated by the Government of Kazakhstan.	1394	3653	3903
15	For training youth from densely populated, western, and newly established regions in leading higher education institutions.	10000	5000	5000
16	For training students at Nazarbayev University.	1250	1192	1250
17	For training students in the preparatory department at Nazarbayev University.	550	600	550
18	For training students at branches of foreign universities.	340	370	620

19	For training students in higher and postgraduate educational institutions under trust management (NAO "North Kazakhstan University named after Manash Kozybayev")	1500	1500	1250
	Total Additional Categories for Kazakhstan Citizens	**15034**	**12315**	**12573**
	Total Bachelor's Degree	**73164**	**73156**	**78314**

Note: Compiled by the authors based on [7,8,9]

The analysis of the structure of the allocated grants in Figure 2 shows that annually for the last three years the largest share is in the training areas 6B07 Engineering, Manufacturing, and Construction (28-31%), 6B01 Pedagogical Sciences (18%), 6B06 Information and Communication Technologies (13-14%), which is due to the focus of the economy on the development of industry, digitalization and the growing birth rate, which will lead to a demand for teachers in different areas. Traditionally, the smallest share in the volume of allocated grants is in 6B09 Veterinary Science (1%), 6B03 Social Sciences, Journalism and Information (1-2%), 6B04 Business, Management and Law (2%).

Figure 2. Dynamics of the allocation of state educational grants of bachelor's degree in the context of training directions



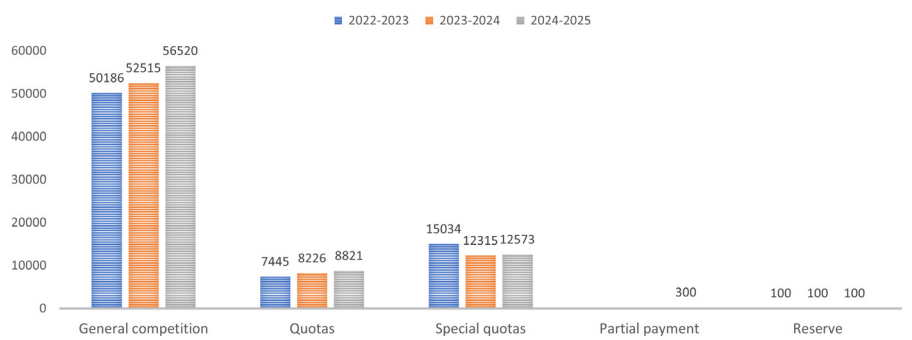
Note: Compiled by the authors based on [7,8,9]

Data dynamics shows a significant increase in grants in the training areas 6B07 Engineering, Manufacturing and Construction (increase from 16039 in 2022 to 19344 in 2024), 6B01 Educational Sciences (increase from 12685 in 2022 to 13735 in 2024), 6B06 Information and Communication Technology (increase from 9091 in 2022 to 10903 in 2024), 6B05 Natural Sciences, Mathematics and Statistics (increase from 6288 in 2022 to 8288 in 2024), 6B09 Veterinary Science (increase from 925 in 2022 to 1125 in 2024). At the same time, the number of grants allocated to the training of doctors remains unchanged - 2,700 annually and the number of grants allocated to the training areas 6B03 Social Sciences, Journalism and Information (from 1,350 in 2022 to 1,185 in 2024), 6B04 Business, Management and Law (from 1,547 in 2022 to 1,323 in 2024), 6B02 Arts and Humanities (from 2,980 in 2022 to 1,765 in 2024) has decreased.

Funding of educational grants for higher education is provided by the Ministry of Health of the RK and the Ministry of Science and Higher Education of the RK.

The main share of grants is for those allocated through general competition, which increased from 69% in 2022 (50186 grants) to 72% in 2024 (56520 grants). The quota of grants for different categories of population, such as applicants from rural areas, orphans, children from large families, and persons with disabilities is designed to ensure fairness in distribution and provide training opportunities for socially vulnerable categories of citizens. 10-11% is allocated to quotas within the training areas, the share of special quotas decreased from 21% in 2022 to 16% in 2024, an annual reserve of 100 quotas is envisaged, and in 2024, for the first time, differentiated grants with partial payment of tuition fees (300 grants) are allocated, which imply joint participation in financing the education of the student and the state (Figure 3).

Figure 3. Dynamics of distribution of state educational grants of bachelor's degree in the context of training directions



Note: Compiled by the authors based on [7,8,9]

There are also special quotas in the list of state order, presented in Figure 4 (15034 grants in 2022-2023, 12315 grants in 2023-2024, 12573 grants in 2024-2025), namely:

– For training of citizens of the Republic of Kazakhstan from among rural

youth resettling in the regions determined by the Government of the Republic of Kazakhstan (tripling from 1394 in 2022 to 3903 in 2024).

– For training in leading higher education institutions for young people from densely populated and western and newly created regions (decrease from 10,000 in 2022 to 5,000 in 2024).

– To train students at the preparatory department of Nazarbayev University (1,250 grants).

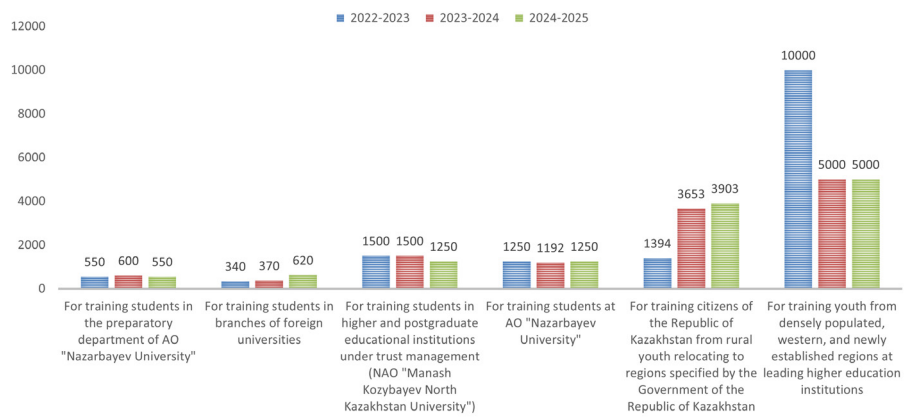
– For training students in branches of foreign universities (a 1.8-fold increase from 340 in 2022 to 640 in 2024).

– For the education of students in organizations of higher and postgraduate education, which are under trust management (NAO "North Kazakhstan University named after Manash Kozybaev") (1500-1250 grants)

– На обучение студентов в АОО «Назарбаев Университет» (550 грантов).

These indicators are associated, among other things, with the general economic situation in the regions affected by floods in the spring of 2024, an increase in the number of branches of foreign universities in Kazakhstan.

Figure 4. Dynamics of allocation of special quotas



Note: Compiled by the authors based on [7,8,9]

In addition, there is an item of expenditure on education of foreign citizens and persons of Kazakh nationality living outside Kazakhstan, which are not taken into account in this study, as they are not of interest to school and college graduates within the country.

The system of distribution of educational grants of the Ministry of Science and Higher Education of the Republic of Kazakhstan is a key mechanism that allows talented applicants to access higher education. State educational grants are provided on a competitive basis and are distributed among the most successful school leavers based on their results of the Unified National Test (UNT). The main purpose of this system is to support students with high academic performance and ensure equal access to education regardless of social and economic status.

The distribution takes into account test results as well as the chosen specialties. The distribution of grants also takes into account the prioritization of certain specialties that the state considers important for the socio-economic development of the country. As noted earlier, the largest number of grants is allocated to engineering and IT fields, while humanities and social sciences receive less funding.

Despite the positive aspects of the system, some shortcomings are criticized by the public and experts. Let us focus on the problem of the concentration of grants on certain specialties such as IT, engineering, education, and medicine, so 60% of all grants were allocated to technical and engineering specialties in 2024. While this is in the national interest, students who choose humanities and social sciences receive fewer opportunities. This leads to an imbalance in the distribution of grants, and talented students who seek to develop in other fields may face a lack of financial support.

Planning the state order for training specialists with higher education in accordance with the needs of the labor market is an important task for any country, including Kazakhstan. Effective planning makes it possible to prepare the personnel demanded in the labor market and reduce the imbalance between labor supply and demand.

To test the hypothesis we will analyze employment in the labor market of Kazakhstan. So in the sphere of wholesale and retail trade and repair of cars and motorcycles employed 1 540 743 people (or 16.76%) of all employed, in education - 1 192 500 people (or 12.98%), in industry 1 162 323 - people (or 12.65%), in agriculture, 1,061,205 persons (or 11.55%) in agriculture, forestry and fishery, 669,893 persons (or 7.29%) in transportation and warehousing, 644,678 persons (or 7.01%) in construction, and 570,494 persons (or 6.21%) in health care and social services.

At the same time, the smallest number of employed persons was in financial and insurance activities - 205,458 persons (or 2.24%), information and communication - 187,653 persons (or 2.04%), real estate operations - 156,053 persons (or 1.7%) and arts, entertainment, and recreation - 155,277 persons (or 1.69%). (See Table 2)

Table 2. Dynamics of state orders for training specialists with higher education

	Arts, Entertainment and Recreation		Including:			
			higher and postgraduate education		technical and vocational education	primary, basic, and general secondary education
	person	%	person	% of employees in the industry		
Employed Population, Total	9 190 346	100,00	3 864 185	42	4 768 724	557 437
including:						

Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	**1 540 743**	16,76	553 932	36	915 154	71 657
Education	**1 192 500**	12,98	774 378	**65**	372 762	45 360
Industry	**1 162 323**	12,65	408 754	35	717 226	36 343
Agriculture, Forestry, and Fishing	1 061 205	11,55	200 103	19	607 832	253 270
Transportation and Storage	669 893	7,29	213 230	32	444 206	12 457
Construction	644 678	7,01	187 102	29	392 717	64 859
Healthcare and Social Services	570 494	6,21	276 763	49	285 149	8 582
Public Administration and Defense; Mandatory Social Security	507 705	5,52	328 242	**65**	167 820	11 643
Provision of Other Types of Services	351 052	3,82	141 035	40	194 082	15 935
Professional, Scientific, and Technical Activities	286 448	3,12	174 394	**61**	109 178	2 876
Administrative and Support Services Activities	280 768	3,06	123 506	44	146 983	10 279
Accommodation and Food Services	218 096	2,37	65 568	30	139 535	12 993
Financial and Insurance Activities	205 458	2,24	126 242	61	76 924	2 292
Information and Communication	187 653	2,04	127 536	**68**	59 122	995
Real Estate Activities	156 053	1,70	87 285	56	64 801	3 967
Arts, Entertainment, and Recreation	155 277	1,69	76 115	49	75 233	3 929

Note: Compiled by the authors based on [7,8,9]

At the same time, the structure of the employed with higher education differs, so if on average only 3 864 185 employees or 42% have higher education, the highest indicator is in the field of information and communication - 127 536 people or 68% of those employed in this field, as well as a high rate in public administration, defense, and compulsory social security (65%), education (65%), financial and insurance activities (61%), while the lowest proportion of employees with higher education in agriculture, forestry, and fisheries (19%) and construction (29%). In the sphere of industry, the number of specialists with higher education is 35%.

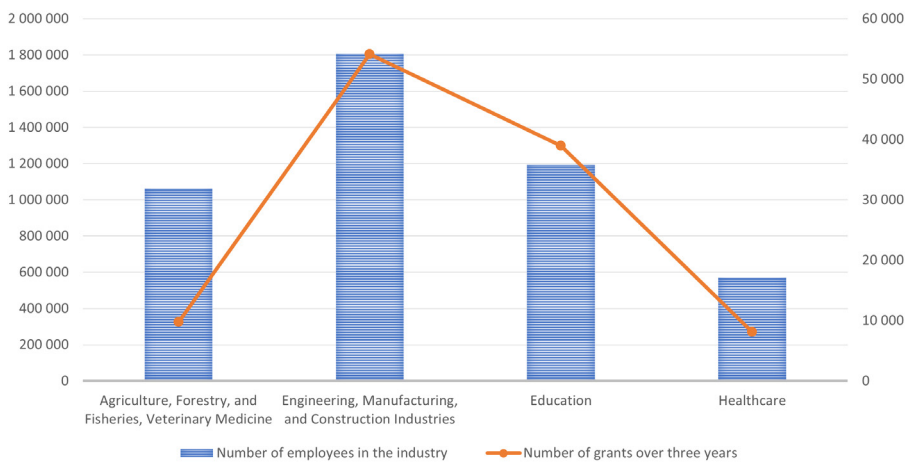
Let us compare these indicators with the number of state educational grants allocated to these spheres.

Thus, Figure 5, where we have combined some groups of the employed for a more convenient grouping for analysis, shows that the number of grants allocated over the three years for the respective field of activity ranges from 0.92% to 3.27% of the number of the employed. Thus, the lowest indicator is in the sphere

of agriculture, forestry, and fishery (0.92%), and the highest indicator is in the sphere of education (3.27%), while in the sphere of engineering, manufacturing and construction industries the number of grants allocated is 3% of the employed, and in the sphere of health care 1.42%. These data can be considered correct with a certain degree of relativity, as it is impossible to establish how many of the employed have education in this particular sphere. Analysis of the rest of the sectors causes certain difficulties because the classification of employment and areas of higher education training have differences, for example, it is difficult to determine with which area of training can be compared the indicators of the sphere "Activities in the field of administrative and educational support services", etc.

In addition, one of the conclusions can be that such several allocated grants in agriculture, forestry, and fisheries, which is only 0.92% of the number of employed, in the future may hurt the qualitative composition of labor resources in this area, as there will not be sufficient renewal of personnel with higher education over time due to the aging of the population and migration processes. This may hurt the development of the industry as a whole, as qualified personnel should ensure the effective development of agriculture, forestry, and fisheries, as agriculture in Kazakhstan is one of the most important sectors of the economy, requiring a constant inflow of qualified personnel.

Figure 5. Comparative data on some industries in terms of the number of employed persons and grants allocated for higher education in 2022-2024



Note: Compiled by the authors based on [7,8,9]

The data also show that even though the number of people employed in agriculture, forestry, and fisheries 1,061,205 people is 1.8 times less than the number of people employed in engineering, manufacturing, and construction industries (1,807,001 people, while the number of grants allocated over three years is respectively 5.5 times less (9,767 vs. 54,127 grants).

In Kazakhstan, industry plays an important role in the economy, and its successful development requires qualified engineering personnel. However, there

is a gap between the needs of the labor market and the number of engineering graduates. We consider it important to note that not all university graduates work in their chosen specialization. Even though the government of Kazakhstan has increased the number of educational grants for engineering specialties, many of the graduates do not find a job in their specialty or have to undergo additional training at workplaces.

Only education and health care are legally enshrined in the relevant sphere, so the question arises about the effectiveness of the existing system of distribution of the state educational order by areas of training, especially in areas where there is no compulsory training in the direction of training.

Conclusions and recommendations

Thus, although Kazakhstan has mechanisms for distributing educational grants based on priority sectors of the economy, which allows to orient of the education system to the needs of the market, however, the implementation of this mechanism faces challenges such as insufficient flexibility of the system and slow adaptation to changes in the market. The state needs closer cooperation with business and analysis of long-term trends to meet the current and future needs of the labor market.

There are several approaches to determining the future needs of the labor market in specialists:

– Current Trend Analysis: Assessment of current trends in the economy and the labor market (digitalization, transition to a green economy).

– Data-driven forecasting: Using big data, artificial intelligence, and econometric models to forecast demand for different professions.

– Business Surveys and Consultation: Working closely with employers to determine their workforce needs.

– Modeling demographic change: Taking into account population aging and migration processes.

Labor Market Forecasts

Based on global trends and changes in the economy and technology, labor market forecasts for the coming decades indicate an increasing demand for specialists in the following areas:

– Information Technology (IT): With the growth of digitalization and automation, there will be a high demand for specialists in programming, cybersecurity, and data analysis.

– Green Economy: Experts anticipate significant demand for environmental scientists, renewable energy engineers, and sustainability specialists.

– Healthcare: Due to an aging population, the need for healthcare professionals, including doctors, nurses, and pharmacists, is expected to rise.

– Education: The demand for educators, especially in technical and scientific disciplines, will remain high.

These data demonstrate that the Ministry of Science and Higher Education of Kazakhstan aims to encourage the training of specialists in strategically important sectors such as engineering, education, and healthcare. However, fields like

agriculture and veterinary science face less competition for grants, while high-achieving high school graduates with solid scores on the UNT (Unified National Testing) and a strong background in social sciences, humanities, law, and arts experience intense competition due to the limited number of grants allocated to these fields. Although the country also needs highly qualified economists, lawyers, and other professionals, the grant distribution remains minimal in these disciplines.

According to data from the Ministry of Labor and Social Protection of the Population of Kazakhstan, the country's industry urgently needs a high number of engineers and technical specialists to support digitalization and transition to new industrialization, particularly in sectors such as:

- Mining Industry (mining engineers, automation specialists),
- Energy (renewable energy engineers),
- Mechanical Engineering and Metallurgy (design engineers, technologists),
- Oil and Gas (petroleum engineers, equipment maintenance specialists).

However, as practice shows, there remains a substantial gap between labor market needs and the level of specialist training provided by universities, often failing to ensure quality employment in chosen fields. This calls into question the efficiency of budget funds allocated for training higher education specialists.

The educational grant distribution system in Kazakhstan plays a crucial role in ensuring access to higher education. However, to enhance its effectiveness, it is necessary to address existing challenges, particularly in improving collaboration between the Ministry of Science and Higher Education and the Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan to determine the actual demand for specialists in the labor market. This includes:

- a more balanced distribution of grants across specialties, considering modern Big Data analysis capabilities, which aggregate data from various government and business databases;
- the use of artificial intelligence for multi-year forecasting, taking into account labor market trends and demographic processes.

Moreover, the system's quality must be supported by ensuring high-quality education at universities and developing new approaches to the employment of graduates who received state-funded education. Only by these means can the state educational order system fully achieve its mission of supporting talented students, developing human capital, and meeting the labor market's demands for skilled workers in Kazakhstan.

Acknowledgments and Conflict of Interest

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