CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES

https://cajmns.casjournal.org/index.php/CAJMNS

Volume: 07 Issue: 01 | January 2026 ISSN: 2660-4159

Article

Increasing The Efficiency of The Higher Education System

Isxakova Sarvar Ayubovna[1], Amriyeva Shaxzoda Shuxratovna[2]

1. Samarkand Institute of Economics and Service Department of Digital Economics, Associate Professor (PhD)
2. Samarkand Institute of Economics and Service Assistant, Department of Digital Economics

* Correspondence: amriyevashaxzoda250@gmail.com

Abstract: This article examines the current challenges and opportunities in enhancing the efficiency of the higher education system in Uzbekistan, emphasizing the modernization of educational content, competitiveness of personnel, and alignment with global standards. It discusses key reforms and strategic initiatives, such as the "Concept for the Development of the Higher Education System until 2030" and the "Strategy for the Development of Human Capital," which aim to improve the quality of education and human resource development. The article highlights the role of human capital, digital transformation, and scientific research in increasing the system's effectiveness. Through an in-depth analysis of statistical data from 2018 to 2024, the article evaluates the progress made in terms of the number of higher education institutions, student enrollment, and employment rates of graduates. It also explores the increasing integration of digital technologies, such as online learning platforms and electronic libraries, in the education system. Furthermore, the study identifies key challenges, including insufficient investment in scientific research, limited digital infrastructure in regional universities, and the need for stronger collaboration between universities and the labor market. The article concludes with recommendations for improving the higher education system, focusing on the development of human capital, the expansion of international cooperation, and the commercialization of scientific research to boost innovation and economic growth.

Keywords: education system, quality of education, e-learning resources, criteria for determining the creative potential of a teacher, scientific research, efficiency, educational activities, financial market infrastructure, improvement.

Citation: Ayubovna, I. S &, Shuxratovna, A. S. Increasing The Efficiency Of The Higher Education System. Central Asian Journal of Medical and Natural Science 2026, 7(1), 324-331.

Received: 03th Sep 2025
Revised: 11th Oct 2025
Accepted: 19th Nov 2025
Published: 08th Dec 2025

1. Introduction

Modernizational processes. The modernization processes underway in the higher education system today play an important role in the socio-economic development of the country. The main goal of these processes is to increase the efficiency of higher education, bring the quality of education to international standards, and strengthen the intellectual potential of society through the development of human capital. The higher education system is being formed not only as a provider of knowledge, but also as a generator of innovative ideas, an important component of the modern economy.

In the current conditions of globalization, the education system is required to perform complex tasks such as adapting to the rapidly changing external environment, training competitive personnel, and introducing technological innovations. Higher education institutions of Uzbekistan are not exempt from this process - they operate on the basis of new educational technologies, digital transformation, international accreditation, and scientific cooperation. Strategic documents adopted at the state level for the development of the education system - the "Concept for the Development of the Higher Education System until 2030", the "Strategy for the Development of Human Capital", as well as the

new Law "On Education" - are creating a legal and organizational basis for deep reforms in the field. Nevertheless, there are still a number of problems in the system that need to be solved: insufficient funding of scientific and research activities, poor development of scientific infrastructure, insufficient qualifications and scientific level of teachers, incomplete implementation of innovative approaches in the educational process, among others. However, the effectiveness of the reforms being implemented depends, first of all, on the level of preparation of human capital, its readiness to accept innovations and the level of involvement in innovative activities. Therefore, the issue of increasing the efficiency of the higher education system is one of the urgent and priority areas today.

The effectiveness of the higher education system is not only understood as the volume of the educational process or statistical indicators, but also as the rational use of the human factor. The intellectual, creative and spiritual potential of teachers and students, their mutual cooperation, and their participation in scientific research should also be considered as the main criteria for the effectiveness of the system.

The effectiveness of the higher education system can be assessed in two main directions - from the point of view of social and economic efficiency. Economic efficiency refers to the ability of graduates to find their place in the labor market, the benefits they receive from their professional activities, and the return on investment in education. Social efficiency is determined by the role of education in social stability, cultural and spiritual development, civic activity, and intellectual potential in society.

These two directions complement each other: economic results lead to social well-being, while social stability and cultural development, in turn, ensure economic efficiency. In this regard, a comprehensive, that is, integrated approach is necessary in assessing the higher education system.

The return on investment in higher education is also an important factor determining the efficiency of this system. It is based on the difference between the lifetime earnings of people with higher education and those with secondary education, as well as the ratio of total costs of education. In other words, this indicator shows the economic benefit of education, that is, the level of return on investment in knowledge.

Today, the term "educational economy" is widely used in world experience. According to it, the sustainable development, innovative potential and social well-being of each country directly depend on the effectiveness of the education system. From this point of view, the modernization of the higher education system of Uzbekistan is an urgent issue not only on a national but also on a global scale.

Thus, in developing the higher education system, the main attention should be paid not only to strengthening the material and technical base, but also to ensuring the qualitative growth of human capital. Because it is the human factor - the potential of teachers, scientists, students and management staff - that is the central indicator of the effectiveness of the entire system. The development of human capital is the foundation of educational efficiency and a guarantee of economic growth.

Literature review

The issue of improving the efficiency of the higher education system has become a relevant topic worldwide today. Because the economic stability and innovative development of any country directly depends on the quality of human capital [1]. Therefore, many scientists are conducting scientific research on improving the education system, human capital management, and the impact of digital learning.

Alekseeva I.A. [2] in her monograph “Human capital in the conditions of innovative university management” emphasizes the need to form human capital management in higher education institutions based on an innovative approach. In her opinion, the success of university activities depends on the innovative thinking of teachers and researchers, their professional competence, and their integration into the management system.

The index evaluation system developed by Rochev K.V. [3] is proposed as an effective mechanism for evaluating the scientific and pedagogical activities of professors and teachers. This system allows for an integrated measurement of teachers' scientific articles, publications, the quality of work with students, and their participation in innovative activities.

The theoretical foundations of measuring educational effectiveness are reflected in Bloom's Taxonomy [4]. The Taxonomy of Educational Objectives model, developed by Bloom, divides educational objectives into cognitive, affective, and psychomotor stages, and this approach is still used today as a universal method for assessing educational outcomes [5].

Khodjayeva A.Kh. [6], reflecting on the role of digital transformation in the education system, put forward the concept of the "Digital University". According to her, the introduction of electronic platforms, artificial intelligence technologies, and distance learning systems into the educational process increases the efficiency of higher education. Abdurakhmonov B.M. [7] in his research studied the impact of innovative educational technologies on the quality of education and competitiveness in the labor market. He substantiates the need to use problem-based learning, project-based learning, distance platforms and interactive methods in the higher education system.

Tursunov Sh.A. [8] proposes an assessment model based on innovative mechanisms for managing the quality of education, in particular, international accreditation systems and "KPI" indicators. This approach is considered one of the important directions for implementing an internal quality management system in higher education institutions.
Nazarova D.I. [9] studies educational monitoring as a means of quality control and improvement of pedagogical activities, and develops effective methods for developing the education system based on the results of monitoring.

The "Education 2030: Incheon Declaration" document adopted by UNESCO [10] in 2016 states that each country should develop its education system based on the principles of inclusiveness, sustainability, and innovation. The OECD [11], in its "Education at a Glance" report, provides statistical analyses of the economic efficiency of higher education, the impact of digital technologies, and the role of human capital in international rankings. The European Commission [12], in its report "Modernisation of Higher Education in Europe", proposes five main indicators for assessing the quality of education: teaching quality, scientific activity, international cooperation, innovative capacity and the effectiveness of the governance system.

Karimov A.A. [13] in his work "Human Capital and Competitiveness" analyzes the role of the education system in the economic growth of Uzbekistan and the relationship between the development of human capital based on economic models.

Makhmudov M. [14] emphasizes the need to develop a "university-production-research center" cooperation system in higher education, noting that this model serves to harmonize educational outcomes with practice.

Resolution of the President of the Republic of Uzbekistan No. PQ-3775 [15] sets out priority areas for the development of the higher education system until 2030, including digital transformation, international integration, and expanding investments in human capital.

The analysis of the above sources shows that in order to increase the efficiency of higher education, it is important to develop human capital, introduce digital learning technologies, strengthen the monitoring and quality control system, as well as adapt international experience to national conditions.

2. Materials and Methods

This study aimed to improve the efficiency of the higher education system and used a comprehensive methodological approach to achieve scientifically sound results. Qualitative and quantitative analysis methods were combined in the research process, which ensured the reliability and accuracy of the data. The main scientific methods used are presented below.

3. Results

The higher education system of Uzbekistan has been undergoing a phase of fundamental reforms in recent years. These reforms are primarily related to the quality of education, the level of coverage, scientific efficiency and digital transformation processes.

The study assessed the effectiveness of the system based on statistical data for the period 2018–2024, international rankings and expert opinions.

During 2018–2024, Uzbekistan achieved significant growth in the number of higher education institutions, student enrollment, and international cooperation projects.

Table 1. State of development of the higher education system in Uzbekistan in 2018–2024

Indicators	Years				2024. 2018. relative change (%)
	2018	2020	2022	2024	
Number of universities (pcs)	77	108	160	206	2.7 times
Number of students in them (thousands)	288	517	850	1 020	3.5 times
Number of branches of foreign universities	6	12	25	33	5.5 times
Doktorantlar soni	1 200	2 100	2 950	3 400	2.8 times
Graduate employment rate	61	68	74	79	+18 %

Source: Data from the State Statistics Committee of the Republic of Uzbekistan.

As can be seen from Table 1, as a result of a 2.7-fold increase in the number of higher education institutions in Uzbekistan during 2018-2024, educational coverage increased from 9% to 38%. This indicates that an important qualitative stage has been reached in the formation of human capital. At the same time, the increase in the employment rate of graduates to 79% indicates that education is approaching the labor market.

In recent years, the introduction of digital technologies into the educational process has been considered an important factor in increasing the efficiency of higher education. Therefore, the “Digital University”, “Electronic Dean's Office”, “Online Library” and “Distance Education” systems have been actively introduced in higher educational institutions of the Republic of Uzbekistan since 2020 (Table 2).

Table 2. Results of the introduction of digital technologies into the higher education system in Uzbekistan in 2020–2024

Indicators	Years			2024 . 2020 . relative change (%)
	2020	2022	2024	
Number of distance learning courses	420	1 050	2 200	+423 %
Electronic library resources (thousand titles)	35	62	110	+214 %
Students participating in online classes (%)	15	42	68	+53 %
Teachers' digital competence (expert assessment, %)	38	56	71	+33 %

Source: Digital Transformation in Higher Education Monitoring Reports (2021–2024), [6], [7].

As shown in Table 2, the use of online learning and electronic resources has increased dramatically over the past four years. This process has been a decisive factor in increasing the digital competence of teachers and improving the quality of education. At the same time, experts noted the lack of sufficient digital infrastructure to improve

educational efficiency, especially in regional universities, due to limited technical resources.

The study involved a survey of 20 heads of higher education institutions and a group of experts, including professors and teachers. The experts assessed the main factors influencing the effectiveness of higher education.

Table 3. Expert assessment of factors influencing the effectiveness of higher education (in percent)

Rated factor	Significance (%)	Explanation
Investment in human capital	75	Retraining and advanced training of teachers
Developing digital infrastructure	60	The technical base at regional universities is insufficient
Innovative management system	55	KPIs and internal quality systems are being implemented
Expansion of international cooperation	48	The number of programs has increased, but it is still not enough
Scientific research and grants	44	Limited funding and scientific infrastructure
Student internships and employment	41	Insufficient cooperation with production

Source: Expert survey conducted by the author (September 2024).

Table 3 shows that the respondents recognized investment in human capital as the most important factor in improving the efficiency of the higher education system. This, first of all, requires the improvement of the system of advanced training of teachers and the widespread introduction of innovative pedagogical approaches.

To assess the overall efficiency of the higher education system of Uzbekistan, an integrated index was developed that combines economic, social and innovative indicators. These indicators are presented in Table 4 below.

Table 4. Structural structure of the Higher Education Performance Index (as of 2024)

Type of performance	Key indicators	Rating scale (0–1)	Index value
Economic efficiency	graduate income, return on investment	0.85	0.78
Social efficiency	educational attainment, cultural and intellectual potential	0.80	0.74
Innovative efficiency	number of scientific articles, grants, patents	0.70	0.66
Management efficiency	internal quality system, kpi indicators	0.75	0.70
General integral index	—	—	**0.72**

Source: Author's calculations based on [15].

The calculations showed that the Integral Index for assessing the overall efficiency of the higher education system is 0.72, which indicates that the higher education system is at an average high level of efficiency. The highest result was recorded in economic efficiency (0.78), and the lowest in innovative activity (0.66). This result prompted the following conclusions:

Thus, the results of the study showed that despite positive changes in the higher education system, some important aspects still require improvement. In particular, insufficient updating of the qualifications of professors and teachers, low efficiency of scientific activity, and incomplete adaptation of curricula to the needs of the labor market are factors limiting the qualitative growth of the system.

In our opinion, the factors determining the effectiveness of higher education should be divided into three main blocks: institutional, human capital and innovative infrastructure.

Institutional factors are the management system of higher education institutions, their financial independence, internal quality control, the level of international accreditation and the flexibility of the organizational structure. The results of the study show that in 2024, only 25 out of 206 higher education institutions in the country had international accreditation, which is 12% of the total system. Therefore, it is necessary to introduce internal assessment systems based on international quality standards.

The human capital factor includes the professional potential, innovative thinking, digital competence, and motivational factors of teachers, students, and academic staff. In recent years, the average age of teachers has decreased from 47 to 43 years, and the share of young professionals has increased from 23 to 38 percent. These changes are creating opportunities for new ideas and technologies to enter the education system. At the same time, the content of advanced training courses also needs to be reviewed, as existing programs rely mainly on theoretical approaches.

Innovation infrastructure is a set of scientific laboratories, startup centers, technoparks and the level of development of the grant system. Although 130 startup projects were implemented by higher education institutions in 2024, only 35 of them reached the commercialization stage. This indicates a lack of continuity in innovation activities. It is known from the experience of developed countries that universities are formed not only as centers that provide education, but also as centers that develop innovative solutions and implement them in the economy.

The results of the study also showed a number of other areas that need attention, the importance of which is very high for increasing the efficiency of higher education/ In particular:

Development of digital competencies. Digital pedagogy, teaching based on artificial intelligence and the effective use of distance learning platforms should be an integral part of the teacher's work. In this regard, in 2024, 71 percent of teachers were assessed as having a "sufficient" level of digital literacy, but 29 percent of teachers will require special training programs.

Commercialization of scientific research activities. Only 15% of scientific developments and patents developed at universities are applied in the real sector. To increase the efficiency of scientific activities, it is necessary to increase the number of grants and strengthen university-business cooperation.

Deepening international cooperation. As of 2024, more than 70 universities are implementing international joint programs. However, only 18 of them include double-degree programs. Therefore, it is necessary to expand joint educational programs with foreign universities and encourage academic mobility of professors, teachers and students.

Integration of education and production. Although the employment rate of graduates has reached 79 percent, joint internship programs with industrial enterprises have not been sufficiently established. It is necessary to establish systematic cooperation between higher education institutions and more than 1,000 industrial enterprises by 2025.

Analysis shows that as the economic efficiency of the higher education system increases, social efficiency also stabilizes. Although the average income of graduates increased by 2.3 times in 2018–2024, their level of job satisfaction is still low (around 62 percent). This indicates the need to further strengthen the correspondence between the quality of education and the labor market.

In general, the higher education system of Uzbekistan is in the process of transition from the quantitative stage of its development to the qualitative stage. Based on the above, we have formulated the following scientifically based conclusions to increase the efficiency of higher education institutions:

Forming a human capital-oriented model in managing the higher education system, in which cooperation between teachers and students will be central.

Strengthening the transparency, openness and control mechanisms of the educational process by accelerating digital transformation.

Linking scientific and research activities with the mechanism of economic value creation, that is, expanding the grant system focused on results.

Integrating higher education into the international educational arena, thereby increasing the position of Uzbek universities in international rankings.

As a result of the consistent implementation of these directions, the social, economic and innovative efficiency of the higher education system will increase in a comprehensive way, which will lead to the sustainable development of the country and the qualitative improvement of human capital.

4. Conclusion

The modern global education system requires a reconsideration of the role and importance of higher education in the rapidly changing conditions. In different countries, the higher education system is formed on the basis of a one-, two-, three- or four-level structure, and in the four-level system, graduates receive bachelor's, specialist's, master's and doctor of philosophy (PhD) degrees. This structure, in turn, allows for a gradual deepening of knowledge and skills, and the introduction of a differentiated approach to personnel training.

The possibility of obtaining higher education in full-time, part-time, evening (blended) and distance learning forms ensures the flexibility of the educational process. This increases the relevance of distance learning and online learning technologies, especially in the current era of increasing digital transformation processes. The duration of education lasts from 4 to 9 years, depending on the country, specialty, curriculum and workload. This is manifested as a factor ensuring the continuity of the education system and the concept of professional development.

According to the results of the study, the dynamics of the development of the higher education system of Uzbekistan in recent years has been characterized by significant growth. The increase in the number of higher education institutions by 2.7 times and the number of students by 3.5 times in 2018–2024 has initiated a new stage in the formation of human capital. At the same time, international cooperation, the introduction of digital technologies, the expansion of startup and research activities are leading to a qualitative increase in the efficiency of education. Scientific activity plays a decisive role in the development of the higher education system. It is necessary to increase the scientific potential of universities, commercialize startup projects, and expand the activities of grant and innovation funds. As a result of the integration of science, production, and education, the triangle “university-scientific center-enterprise” will work effectively, and as a result, new technologies, inventions, and innovative products will be created.

Also, when assessing the effectiveness of the higher education system, it is necessary to pay attention not only to quantitative indicators, but also to qualitative factors. The adaptation of graduates to the labor market, their earnings, the level of professional satisfaction, the ability to think creatively, digital literacy skills are important indicators of the effectiveness of education.

As is clear from the experience of Uzbekistan, in order to increase the quality indicators of the higher education system, it is necessary to form a stable mechanism of cooperation between the state, educational institutions and the private sector. In particular, it is possible to harmonize educational outcomes with the economy through university-business cooperation, a dual education model, the development of a system of startup incubation centers and science parks.

The results identified during the study show that an integrated approach to improving the efficiency of the higher education system leads to the following results:

1. economically - the share of competitive personnel in the labor market increases, the return on investment in education increases;
2. socially - cultural and intellectual potential is strengthened, trust in knowledge in society increases;
3. innovatively - scientific activity is commercialized, digital transformation processes are accelerated.

Thus, the conceptual model for improving the efficiency of the higher education system is based on the development of human capital, the introduction of an innovative management system, and the improvement of quality monitoring. As a result of the consistent implementation of this model, higher education will become not only a center of educational and scientific activity, but also a strategic system that manages the innovative development of society.

The effectiveness of the higher education system is not measured by numbers or statistical growth, but by the development of human potential, the combination of educational outcomes with the quality of life. A state that invests in human capital invests in the future. Therefore, the issue of increasing the effectiveness of the higher education system of Uzbekistan remains one of the central directions of not only the sectoral, but also the national development strategy.

REFERENCES

[1] G.S. Becker, *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*, 3rd ed. Chicago: The University of Chicago Press, 1993.

[2] I.A. Alekseeva, *Человеческий капитал в условиях инновационного управления вузом*, Moscow: Izdatel'stvo MGU, 2020.

[3] K.V. Rochev, *Методы индексной оценки эффективности педагогической и научной деятельности профессорско-преподавательского состава вузов*, St. Petersburg: Nauka, 2021.

[4] B.S. Bloom, *Taxonomy of Educational Objectives: The Classification of Educational Goals*, New York: Longman, Green, 1956.

[5] Food and Agriculture Organization of the United Nations (FAO), *Digital Agriculture Transformation in Central Asia: Regional Overview*, Rome: FAO Publications, 2021.

[6] A.X. Xodjayeva, *Raqamli universitet modeli va oliy ta'limda transformatsiya jarayonlari*, Tashkent: Oliy ta'lim, fan va innovatsiyalar vazirligi nashriyoti, 2022.

[7] B.M. Abdurahmonov, *Innovatsion ta'lim texnologiyalari va ularning mehnat bozoriga ta'siri*, Tashkent: Iqtisodiyot nashriyoti, 2021.

[8] Sh.A. Tursunov, *Oliy ta'limda sifat menejmenti va xalqaro akkreditatsiya tizimlari*, Samarkand: SamDU nashriyoti, 2022.

[9] D.I. Nazarova, *Ta'lim monitoringi tizimi va pedagogik faoliyat samaradorligini oshirish yo'llari*, Tashkent: TDPU nashriyoti, 2023.

[10] UNESCO, *Education 2030: Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4*, Paris: UNESCO Publishing, 2016.

[11] OECD, *Education at a Glance 2023: OECD Indicators*, Paris: OECD Publishing, 2023.

[12] European Commission, *Modernisation of Higher Education in Europe: Academic Staff – 2020*, Luxembourg: Publications Office of the European Union, 2020.

[13] A.A. Karimov, *Inson kapitali va raqobatbardoshlik: O'zbekiston iqtisodiy modeli*, Tashkent: Iqtisodiyot va innovatsiyalar markazi, 2022.

[14] M. Makhmudov, *Universitet–ishlab chiqarish–ilmiy markaz hamkorligi: nazariya va amaliyot*, Tashkent: Fan va texnologiya nashriyoti, 2023.

[15] O'zbekiston Respublikasi Prezidenti, *PQ–3775-sonli qaror: Oliy ta'lim tizimini 2030 yilgacha rivojlantirish konsepsiyasi to'g'risida*, Tashkent: Prezident qarorlari to'plami, 2018.