



## Article

# Innovative Development A New Paradigma For Higher Educated Institutions In Uzbekistan

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**Abstract:** In the era of digitalization and global economic shifts, higher education institutions worldwide are prioritizing innovation to remain competitive. Uzbekistan has launched systemic reforms to modernize its universities, focusing on integrating science, education, and industry to build an innovative economy. Despite increasing research on higher education innovation, there is limited comprehensive analysis linking theoretical frameworks with practical implementation examples in Uzbekistan. This study aims to analyze the key directions of innovative development in Uzbek universities, identify achievements and challenges, and provide practical recommendations for strengthening their innovation capacity. The analysis revealed six core directions: development of innovative infrastructure (technology parks and transfer centers), cooperation with business through dual education and internships, digitalization with LMS platforms and AI, human resource development, increased research activities, and international cooperation via exchange and double degree programs. Funding for innovation rose significantly from 110 billion soums in 2021 to 481.9 billion soums in 2023. This article combines qualitative and quantitative methods, including document analysis, statistical review, case studies, and expert interviews to link theory with empirical evidence from Uzbekistan's higher education system. The findings suggest that further integration of applied research, expansion of dual education, enhanced digital environments, and stronger international partnerships will ensure universities' effective adaptation to modern economic demands and improve graduate preparedness for the innovative economy.

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## 1. Introduction

Modern society is rapidly changing under the influence of digital technologies, globalization and new economic challenges. To ensure sustainable development of the country and increase competitiveness in the global arena, Uzbekistan sets the task of modernizing the higher education system. In this context, innovative development of universities acts as a key paradigm aimed at integrating science, education and industry, as well as training highly qualified personnel capable of working in an innovative economy[1].

In recent years, Uzbekistan has seen active development of innovation support infrastructure: technology parks and research centers are being created, modern educational technologies are being introduced, dual education is being developed, and research activities are being stimulated. However, this process requires systemic analysis to identify successful practices, problems, and possible areas for improvement[2].

The purpose of this article is to analyze the innovative development of higher education institutions in Uzbekistan, identify key areas and problems, and offer practical recommendations for improving the effectiveness of innovative activities of universities[3].

Level of study of the research topic.

The problems of innovative development of higher education institutions are considered in the works of both foreign and domestic scientists. The issues of digitalization of education, integration of science and production, development of innovative infrastructure and dual education are widely discussed in the world scientific literature. These studies emphasize the need for systemic reforms in educational institutions to adapt to new economic realities[4].

In the context of Uzbekistan, the innovative development of universities is covered in the works of a number of domestic researchers and official documents of the Ministry of Higher and Secondary Specialized Education. The key areas are considered to be the formation of science parks and technology transfer centers, the introduction of e-learning, the development of human resources, as well as strengthening ties with business and the international community[5].

However, despite existing research, there is a lack of comprehensive analytical works that would link theoretical concepts with practical examples of innovation implementation in universities of Uzbekistan. This study aims to fill this gap by combining theoretical analysis with empirical data[6].

## 2. Research Methodology

This study is based on a comprehensive approach that includes both qualitative and quantitative methods of analysis.

1. Analysis of documents - regulatory and legal acts of the Ministry of Higher and Secondary Specialized Education of Uzbekistan, reports and strategic plans for the development of innovations in universities, as well as scientific publications and analytical materials were studied.
2. Collection of statistical data - official data from the Ministry, the Agency for Science and Innovation, as well as indicators published by the universities themselves (using the example of the Samarkand Institute of Economics and Service) were used.
3. Case study - an analysis of successful practices for the implementation of innovative technologies and projects in SamIES was conducted, which allows us to assess the effectiveness of innovative development at the regional level.
4. Expert interviews - collected opinions of teachers and administrative staff of universities on the problems and prospects of innovative development (limited within the framework of available sources).

The combination of these methods provides a comprehensive view of the processes of innovative development of higher education institutions in the context of the modern economic and social environment of Uzbekistan[7].

## 3. Analysis and Results

### 1. Main directions of innovative development

During the study, key areas of innovative development of universities in Uzbekistan were identified, which form the basis of a new educational paradigm.

Table 1 presents a comprehensive strategic framework for fostering innovation at universities in Uzbekistan, focusing on infrastructure modernization, business collaboration, digital transformation, human capital development, research advancement, and internationalization to enhance institutional performance and global standing. Let me know if you need it restructured for your upcoming academic reports or innovation strategy presentations[8].

**Table 1.** Main directions of innovative development of universities in Uzbekistan and their brief description

Direction	Brief description
Innovative infrastructure	Creation of technology parks, RECs, technology transfer centers at universities
Cooperation with business	Dual education, internships, joint applied projects
Digitalization of education	Implementation of LMS platforms, online courses, AI in training
Development of human resources	Training of engineers, economists, and innovative managers
Research activities	Growth in research volumes, integration of research into the educational process
International competitiveness	Exchange programs, English-language programs, participation in rankings

## 2. Innovative infrastructure

In Uzbekistan, there is an active creation of innovative infrastructure in higher education institutions aimed at supporting scientific and technical activities and commercialization of developments.

Table 2 highlights Uzbekistan's progress in integrating innovative infrastructure within higher education institutions, supporting national strategies for enhancing research impact, technological advancement, and economic competitiveness through university-led innovation ecosystems. Let me know if you require integration of this data into your upcoming reports on university innovation capacity analysis[9].

**Table 2.** Equipping universities of Uzbekistan with innovative infrastructure (2024)

Indicator	Meaning (%)	Source
Universities equipped with scientific and technology parks	30	Ministry of Higher Education, 2024
Universities with technology transfer centers	25	Ministry of Higher Education, 2024

The creation of such facilities promotes the development of start-ups and the introduction of innovations into the economy.

3. Digitalization of the educational process . One of the key steps was the permission for distance education in Uzbekistan from 2023 (Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 724). This became the basis for the active implementation of electronic platforms and hybrid learning formats[10].

The growth in the implementation of electronic and distance technologies in education is noticeable in the dynamics of the use of LMS and online platforms.

Table 3 highlights the steady expansion of e-learning in Uzbekistan's higher education sector, suggesting a strategic shift towards digital education to improve accessibility, flexibility, and educational quality. Let me know if you need this summarized into your policy briefs or upcoming digital education reform reports[11].

**Table 3.** Dynamics of the implementation of e-learning in universities of Uzbekistan (2020–2023)

Year	Percentage of universities using e-learning (%)
2020	20
2021	35
2022	50
2023	55

Active digital learning expands access to quality education, especially in remote areas.

#### 4. Interaction with business (example of the Samarkand Institute of Economics and Service)

Close cooperation with industry is realized through internships, trainings and support for start-ups.

Table 4 illustrates the active collaboration between the Samarkand Institute of Economics and Service and the business community, emphasizing its commitment to practical education, startup incubation, and funding facilitation for student-led innovations and entrepreneurial projects. Let me know if you need this described within your upcoming university-industry linkage reports[12].

**Table 4.** Interaction of the Samarkand Institute of Economics and Service with business and industry (2023)

Indicator	Meaning
Number of students undergoing internship	500+ annually
Number of startups supported by the incubator	50+
Startups that received funding	15

This model allows students to acquire practical skills and participate in real-life innovative projects.

#### 5. Financing of research work

The volume of funding for research and development at universities has increased significantly, which creates conditions for the development of research and innovation.

Table 5 illustrates the significant growth in government financing for innovative development in universities in Uzbekistan, particularly the more than threefold increase in 2023, which is expected to enhance research capacity, infrastructure, and educational modernization. Let me know if you need this contextualized for your upcoming policy briefs on higher education innovation financing trends[13].

**Table 5.** Volume of financing for innovative development of universities in Uzbekistan (2021–2023), billion soums

Year	Volume of financing (billion soums)
2021	110
2022	140
2023	481.9

Increased funding facilitates the formation of research teams and the implementation of scientific developments into practice.

#### 6. International cooperation

The university system of Uzbekistan is actively expanding international relations, which contributes to improving the quality and competitiveness of education[14].

Table 6 highlights the broad and growing international cooperation of Uzbek universities, enhancing global integration through partnerships, mobility programs, and joint degrees, which are key for academic quality improvement and global

competitiveness. Let me know if you need this contextualized for your upcoming internationalization strategy briefs or presentations.

**Table 6.** Key indicators of international cooperation of universities in Uzbekistan (2023–2024)

Indicator	Meaning
Number of partner universities	More than 150 universities
Joint educational programs	More than 10 (CIS and Europe)
Number of participants in exchange programs (students)	About 200 people annually
Number of participants in exchange programs (teachers)	More than 200 people annually
Double Degree Programs	Implemented in cooperation with universities in Japan, Russia, China and Turkey

Table 7 reflects a consistent upward trend in international exchange program participation among both students and teachers, supporting Uzbekistan's strategy to enhance educational quality through global exposure, knowledge exchange, and integration of international standards into teaching and research practices. Let me know if you need this synthesized for your policy brief on academic mobility targets and international cooperation progress[15].

**Table 7.** Dynamics of participation of students and teachers in international exchange programs (2020–2024)

Year	2020	2021	2022	2023	2024 (forecast)
Students	120	150	170	190	200
Teachers	100	140	180	210	220

**Note:** The table reflects a steady increase in the number of participants in international exchange programs in the system of universities in Uzbekistan.

These initiatives facilitate the exchange of experience and the introduction of international standards into the educational process.

#### 4. Conclusion and Practical Recommendations

The conducted analysis shows that innovative development is becoming a key paradigm of higher education institutions in Uzbekistan. The creation of innovative infrastructure, digitalization of the educational process, strengthening ties with business and expanding international cooperation contribute to the formation of a competitive and modern system of higher education.

At the same time, there are certain challenges, such as the need to improve the quality of scientific research, integrate scientific results into production, and expand the scale of dual education.

Based on this, the following recommendations are proposed:

1. Strengthening funding and support for research and development activities with an emphasis on applied research and commercialization of innovations.
2. Expansion of dual training and internship programs, especially in technical and engineering specialties, with the involvement of enterprises at all levels.
3. Development of a digital educational environment , including advanced training of teachers in the field of IT technologies and expanding access to electronic resources.
4. Activation of international cooperation to implement advanced educational standards and improve the international competitiveness of universities.

5. Creation of mechanisms to support start-ups and innovative projects , including mentoring, grant programs and access to venture financing.

The implementation of these measures will allow universities in Uzbekistan to effectively adapt to the challenges of modern times, improve the quality of education and ensure the training of personnel who meet the requirements of an innovative economy.

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