



INNOVATIVE ACTIVITY AND ECONOMIC GROWTH TRENDS IN BUKHARA REGION OF UZBEKISTAN REPUBLIC

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ABSTRACT

This study analyzes the trends of innovative activity and its impact on economic growth in Bukhara region. The research evaluates key components of the regional innovation system, including innovation infrastructure, human capital development, digital transformation, and R&D activities. Based on statistical data for 2020–2024, the study identifies that technological innovations dominate the structure, while organizational and marketing innovations remain limited. The findings show that although the region demonstrates relatively strong performance in terms of innovative output, its scientific and financial base is comparatively weaker. The paper concludes that strengthening R&D capacity and expanding innovation financing are crucial for ensuring sustainable, innovation-driven economic growth in Bukhara region.

Introduction

Innovative development has become a key driver of sustainable economic growth in modern economies, particularly at the regional level. In Uzbekistan, increasing attention is being given to strengthening innovation capacity across regions to enhance competitiveness, productivity, and living standards. In this context, analyzing innovative activity in Bukhara region is essential for understanding the role of regional innovation systems in economic development. This study examines the current state, structural characteristics, and key trends of innovation activity in the region, with a focus on infrastructure, human capital, digitalization, and R&D performance indicators.

Main body

Currently, in Uzbekistan, ensuring sustainable socio-economic development of regions, increasing employment and welfare of the population, and widespread implementation of innovations in the economy have become one of the priority tasks elevated to the level of state policy. From this perspective, studying the development of innovative activity is important not only at the national level but also at the level of regions and districts. In particular, identifying innovative factors that directly affect regional economic growth and living standards, assessing their current state, and determining future prospects are highly relevant.

When analyzing the current state of innovative activity in Bukhara region, it is appropriate to take into account the socio-economic characteristics of the region, its economic potential, sectoral structure, and demographic indicators. These factors directly influence the

formation of innovation processes, the pace of introducing new technologies, and the volume of innovative product production.

Bukhara region is located in the western part of the Republic of Uzbekistan, geographically situated between the Kyzylkum desert, the Amu Darya basin, and the Zarafshan valley. The total area of the region is approximately 39.4 thousand km², making it one of the largest regions in the country. It borders Navoi region to the north and west, Samarkand region to the east, and Turkmenistan to the south, which creates opportunities for the development of foreign economic relations, trade logistics, and investment processes.

Economically, industry, agriculture, oil and gas, services, and tourism are the leading sectors in Bukhara region. In recent years, there has been a growing trend in introducing information technologies, digital services, and innovative solutions, especially in the service sector. These sectors are becoming key drivers of innovative activity in the region.

The practical measures implemented to develop regional innovative activity in Bukhara region can be grouped into four main directions:

- development of innovative infrastructure
- formation of an innovative ecosystem and human capital
- implementation of innovative projects and digitalization
- statistical indicators reflecting the effectiveness of innovation activity

First, special attention is being paid to the development of the IT sector to strengthen the innovative ecosystem and human capital. In particular, in 2020, an IT Center was launched in Bukhara city, aimed at developing IT education, supporting startups, increasing the number of IT companies, and creating new jobs. In addition, in 2025, a project to establish a modern IT Park infrastructure in Bukhara region was presented, focusing on developing the digital economy, ensuring youth employment, and creating an IT environment aligned with international standards.

Second, the development of regional innovation infrastructure, particularly the establishment of technoparks, is an important direction. At the national level, it is planned to introduce the experience of the "INNO" innovative educational-production technopark in cities such as Namangan, Bukhara, Jizzakh, and Nukus during 2023–2026. Within these technoparks, business incubators, accelerators, co-working spaces, and production facilities are expected to be established, forming an important institutional basis for the development of innovative entrepreneurship.

Third, innovative projects and digitalization practices are being implemented. For example, initiatives aimed at digitalizing cultural heritage sites in Bukhara region are being carried out, contributing to increasing tourism potential and expanding the share of digital services. Additionally, meetings with IT Park residents were held in 2025 to discuss the implementation of перспективе IT projects.

Fourth, statistical indicators reflect the results of innovative activity. According to the Bukhara regional statistics department, in 2024, a total of 195 innovations were introduced in the region, including 186 technological, 4 marketing, and 5 organizational innovations. During the same period, expenditures on innovation amounted to 54.6 billion UZS. At the same time, the volume of shipped innovative goods, works, and services reached 4,292.8 billion UZS,

indicating the growing economic importance of innovation activity. The number of organizations engaged in research and development (R&D) amounted to 14.

In particular, Bukhara State University actively supports scientific research, innovation, and startup projects, facilitating the integration of research results into education and production. These scientific developments serve as an intellectual base for creating innovative products. Similarly, Bukhara Engineering-Technological Institute conducts applied R&D activities, focusing on generating innovative ideas and technological solutions through scientific competitions, startup marathons, and project selection processes. These activities are particularly evident in engineering, energy-efficient technologies, and industrial sectors.

To protect and commercialize R&D results, infrastructure elements for intellectual property and technology transfer have been developed in the region. For example, a Technology and Innovation Support Center (TISC/IP Center) operates at the Bukhara Engineering-Technological Institute, assisting in patenting, commercialization, and implementation of scientific developments.

All these efforts indicate that institutional, infrastructural, and economic foundations for developing regional innovative activity are being formed in Bukhara region.

The data show that Bukhara region holds medium to relatively high positions among regions of Uzbekistan in terms of innovation activity (table1.1). In particular, the region ranks among the top three in terms of innovative product volume, while in terms of R&D organizations, personnel, and expenditures, it ranks between 5th and 7th places.

Table 1.1
Position of Bukhara region in innovation indicators in 2024

No	Indicator name	Uzbeki stan (total)	Bukh ara regio n	Share of Bukhara, %	Bukhara's rank (ranking)	Regions ranked ahead of Bukhara
1	Number of R&D organizations	264	14	5,3	5	Tashkent city, Fergana, Tashkent region, Samarkand
2	Number of R&D personnel	37 164	2 317	6,2	5	Tashkent city, Samarkand, Andijan, Khorezm
3	R&D expenditures	1 574,1 billion sums	43,3 billion sums	2,8	6	Tashkent city, Navoi, Tashkent region, Samarkand, Fergana
4	Number of implemented innovations	521	195	3,5	7	Toshkent sh., Samarkand, Navoiy, Surkhandarya, Tashkent region, Jizzakh
5	Volume of innovative	63 604,4	4 292,8	6,7	3	Tashkent city, Andijan

	products	billion sums	billion sums			
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This indicates that while the outcomes of innovation activity in Bukhara are relatively strong, the scientific and financial base of innovation processes remains limited compared to leading regions. Therefore, strengthening R&D capacity and expanding innovation financing are essential for sustainable growth.

Table 1.2

Number of innovative products introduced in Bukhara region (2020–2024)

The number of innovative products	2020	2021	2022	2023	2024
Total:	337	288	304	787	195
Technological	336	288	283	774	186
Organizational	0	0	21	6	5
Marketing	1	0	0	7	4

According to the table 1.2 technological innovations dominate the structure while organizational and marketing innovations remain relatively low during 2020-2024 years.

Conclusion

In conclusion, the analysis shows that- innovative activity in Bukhara region has been developing dynamically, with a significant increase observed in recent years, particularly in 2023. However, the decline in 2024 indicates that innovation processes are not yet stable and require consistent support. Despite this, the high volume of innovative products demonstrates the region's strong capacity to implement innovations in practice. Overall, while the institutional and infrastructural foundations for innovation are being formed, further strengthening of R&D capacity and expansion of financial resources are essential to ensure sustainable economic growth driven by innovation.

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