

INNOVATIVE ACTIVITY AND DIGITAL TRANSFORMATION OF ENTERPRISES IN REGIONAL ECONOMY

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Abstract: *This article analyzes the role of enterprises' innovative activity and digital transformation processes in ensuring the sustainable development of the regional economy. The impact of innovation on economic growth and the opportunities to increase production efficiency through the use of digital technologies are examined. Furthermore, the level of development of digital infrastructure, human resource potential, and government support policies are discussed as key factors determining regional competitiveness. The results of the study are aimed at identifying the priority directions of digital transformation in the formation of an innovation-driven regional economy.*

Keywords: *regional economy, innovative activity, digital transformation, competitiveness, technology, innovation policy.*

INTRODUCTION

In today's global economic environment, the sustainable development of regions largely depends on the innovative potential of enterprises operating within them and their ability to adapt to digital transformation. Innovation is not limited to the creation of new products; it also includes the implementation of advanced information and communication technologies in production, management, and service delivery processes.

In recent years, the Republic of Uzbekistan has elevated the concept of a "digital economy" to the level of state policy. This process contributes to a qualitative transformation of regional economic systems. Regional enterprises, by adopting digital technologies, are improving production efficiency, reducing costs, and gaining access to new market segments.

However, digital transformation processes do not progress at the same pace across all regions. The disparities are often caused by underdeveloped infrastructure, limited access to skilled labor, and insufficient investment environments. Therefore, developing and implementing innovation-based development strategies tailored to the specific needs of each region has become an urgent necessity.

Innovation and digital transformation are interdependent and mutually reinforcing factors. Through the implementation of innovations on digital platforms, new production models, products, and service types emerge. This enhances regional competitiveness, creates new jobs, and accelerates economic growth.

Hence, this research focuses on the scientific and theoretical analysis of improving the innovative activities of regional enterprises and deepening digital transformation processes.

The economic essence and importance of innovative activity

Innovative activity plays a decisive role in ensuring the sustainable development of regional economies. In modern conditions, innovation extends beyond technological

advancements — it also encompasses optimization of management systems, improvement of marketing strategies, and digitization of service processes.

The innovative capacity of enterprises is determined by the amount of investment allocated to research and development, the level of commercialization of new ideas, and their ability to adapt rapidly to market demands. Implementing innovation in practice leads to higher product quality, reduced production costs, job creation, and increased export potential.

At the regional level, the development of innovation depends largely on the local economic environment, infrastructure, human capital, and government support mechanisms. Regions with strong research institutions and universities tend to commercialize innovations more effectively. Therefore, strengthening the “science–industry–business” integration is of strategic importance.

Another crucial aspect of innovation activity is the protection of intellectual property. Without a robust legal framework to safeguard innovation, entrepreneurs are less motivated to engage in research and development. Hence, improving intellectual property legislation is a key factor in developing the regional innovation environment.

The process and economic efficiency of digital transformation

Digital transformation has become one of the main directions of contemporary economic progress. This process does not only involve the adoption of new technologies but also the fundamental restructuring of business models, management systems, and production chains.

The implementation of digital transformation in regional enterprises yields multiple economic benefits, including:

- more efficient resource use through automation of production processes;
- strategic decision-making based on digital data analysis;
- access to new markets through online marketing and e-commerce;
- improved customer service quality and trust through interactive digital communication.

Particularly, under the Industry 4.0 paradigm, the adoption of “smart factories,” artificial intelligence, the Internet of Things (IoT), and blockchain technologies prepares regional enterprises for global competition.

However, the success of digital transformation depends not only on technology but also on human capital. Enhancing employees’ digital competencies and their ability to work with modern software tools is essential.

In Uzbekistan, within the framework of the “Digital Economy – 2030” program, great attention is given to supporting these processes through tax incentives, financial support for innovation projects, and digital infrastructure development.

The influence of regional factors and infrastructure

The pace of digital transformation in regional economies is directly influenced by economic potential, infrastructure, communication networks, and human resources. In economically advanced regions, digital innovations are adopted more rapidly due to high internet speed, sufficient IT specialists, and better investment opportunities.

In rural or remote areas, the lack of digital infrastructure, weak internet connectivity, and cybersecurity issues hinder transformation. This leads to economic disparities among regions. Therefore, ensuring “digital equality” across territories, improving telecommunications networks, and establishing project management centers are vital.

Universities, technoparks, and startup incubators play a crucial role in shaping the innovation ecosystem. They act as intermediaries between science and industry, facilitating the commercialization of innovations. For instance, technoparks under the Ministry of Innovative Development assist regional enterprises in bringing research outcomes to market.

The role of government policy and economic reforms

The effectiveness of digital and innovative development is largely determined by government policy. State programs supporting innovation have opened new opportunities for regional economies.

Subsidizing research and development activities, granting tax incentives for innovative projects, and implementing startup grant programs are among the key measures undertaken. Moreover, under the “Digital Uzbekistan – 2030” strategy, comprehensive efforts are being made to digitize all sectors of the economy, develop e-government systems, and expand digital services for citizens.

Active government participation helps create a favorable investment climate for implementing innovative projects in regions. This, in turn, promotes international cooperation, facilitates entry into new markets, and increases exports of innovative products.

Directions for developing regional innovation ecosystems

The development of a regional innovation ecosystem should follow several strategic directions:

- Integration of scientific and industrial capacity: strengthening cooperation among universities, research institutions, and enterprises;
- Expansion of startup and venture capital markets: diversifying investment sources for commercialization of innovative ideas;
- Modernization of digital education and training systems: preparing specialists with strong IT and analytical skills;
- Creation of technoparks and co-working innovation centers: supporting local entrepreneurship and innovation projects;
- Promotion of ecological sustainability and “green innovations”: encouraging the use of energy-saving technologies and renewable energy resources.

Conclusion

The analysis of innovative activity and digital transformation processes in regional economies demonstrates that these two directions are the main drivers of growth in today’s global competitive environment. Innovation enhances production efficiency, facilitates the creation of new product types, and ensures market advantage. Digital transformation accelerates these processes and forms qualitatively new models of management and economic organization.

First, strengthening the institutional foundations of innovation is essential for regional development. Establishing research centers, technoparks, business incubators, and startup platforms within regions will enable enterprises to apply and commercialize scientific ideas effectively.

Second, deepening digital transformation is crucial for increasing competitiveness across all sectors. Implementing automated management systems, using digital data for decision-making, and developing digital marketing practices will not only raise efficiency but also reduce human error and improve accuracy in forecasting.

Third, human capital remains a decisive factor in achieving innovation and digital progress. Updating the system of training specialists in IT, engineering, innovation management, and data analysis is essential. Introducing practice-oriented educational programs and creating digital competency centers will enhance workforce readiness for the digital economy.

Fourth, the development of digital infrastructure is key to eliminating regional disparities. Establishing high-speed internet networks, reliable data protection systems, and comprehensive digital service infrastructure will expand economic opportunities and improve the quality of life for citizens.

Fifth, collaboration between government and the private sector must be strengthened to support innovation-driven economic development. This includes:

- expanding grant and subsidy mechanisms for innovation projects;
- developing venture financing systems for startups;
- supporting local enterprises in implementing digital technologies;
- adapting international best practices to local conditions.

Moreover, improving the legal framework for innovation and digitalization is vital — ensuring intellectual property protection, data security, and transparent digital markets.

Finally, promoting “green innovations”, energy-efficient technologies, and renewable energy solutions should become a key priority.

This approach ensures not only economic growth but also environmental sustainability.

In conclusion, innovation and digital transformation are interrelated strategic directions that together ensure sustainable regional economic development.

An innovation-based digital economy enhances regional competitiveness, improves living standards, and facilitates deeper integration of the national economy into the global system.

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