



FORMATION OF EMPLOYMENT IN THE ICT SECTOR IN UZBEKISTAN IN THE CONTEXT OF THE DIGITAL ECONOMY

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Abstract: *This study analyzes the development trends of employment in the ICT sector of the Republic of Uzbekistan, regional differences, and factors affecting the sector. During the study, the change in the number of employees working in the ICT sector between 2020 and 2023 was studied based on statistical data and regional differences were assessed. The results show that, despite the positive overall growth in the sector, a decrease in employment in the ICT sector was observed in some regions. The analysis also considered the impact of ICT infrastructure, education quality, and state policy on the labor market. International experience was also analyzed and effective strategies for developing the ICT sector in the conditions of Uzbekistan were put forward.*

Keywords: *Information and communication technologies, labor market, employment, economic development, ICT infrastructure, regional disparities, digital economy, innovation, public policy, strategic development.*

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Employment and labor market in the ICT sector in Uzbekistan The Strategy of the President of the Republic of Uzbekistan “Digital Uzbekistan – 2030” No. PF-6079 dated October 5, 2020, sets out a number of measures to develop the ICT sector and expand jobs in the sector. Based on this strategy, the development of IT parks, startups, and innovative ecosystems is being encouraged, which leads to an increase in demand for ICT specialists in the labor market.

Digital technologies are developing at an important professional level in the modern economy. The main part of the economic transformation is the need to hide and place new jobs in the economic stage. The flowers of the flower are desirable:

with the emergence of artificial intelligence, automation and digital services, the demand for regionally-based professions has increased. This has reduced the demand for new professions that occupy places in the traditional professional ranks and the unemployment rate has changed overnight. Also, new professions are emerging due to new technologies, so that the labor market is ready to accept specialists in digital transformation.

In the history of the Republic of Uzbekistan, the economic boundaries of the digital sphere resonate with the countries of the world in the process of mutual integration. The challenges of digital transformation, whether they are widespread in climatic conditions or the adjustment of service actions, create significant problems for businesses. On the one hand, traditional professions are emerging among the digital revolutions due to the lack of work, and on the other hand, the conditions are increasing, creating the problem of unemployment in the circle of conditions. In these conditions, specialization, if necessary, justifies the need to formulate a state policy to create new jobs and improve the digital skills of the workforce.

This article analyzes the emergence, requirements, and consequences of digital unemployment in the context of the digital economy. Within the framework of such current issues, international experiences and research on preventing digital unemployment in Uzbekistan, as well as national-level strategies, are presented.

Literature review

Research on ICT employment, the digital economy, and regional disparities shows that the development of the digital economy is having a significant impact on the composition of the labor market. In this context, this section reviews research, legislative documents, and scientific and analytical sources in the field, both in Uzbekistan and internationally.

The development of the digital economy is causing a change in the structure of the labor market in global economic processes. In particular, Dasgupta and Singh

say in their research “In their research, they emphasize that digital technologies can increase automation in the labor market and lead to a reduction in traditional jobs ¹.”

At the same time, the emergence of new professions and jobs in the digital economy helps to prevent employment problems. Hendrickx, Frank’s study noted that digital transformation serves to increase the flexibility of the labor market. “According to them, the development of the ICT sector increases the opportunities for remote and freelance work for workers, as a result of which the employment level can be stable ².” In the context of the Uzbek economy, studies on the development of the ICT sector also show that the widespread introduction of digital technologies allows for the creation of new forms of employment. However, in this process, it is necessary to expand the ICT infrastructure and train qualified personnel to reduce regional disparities.

Regional disparities in the ICT sector are associated with the level of development, the state of infrastructure and the lack of qualified personnel. International studies show that . In order for the development of the digital economy to have a positive impact on the territorial balance of employment, it is necessary to develop local infrastructure. In the conditions of Uzbekistan, this process is taking place intensively in the city of Tashkent and some developed regions, but in some regions, employment in the ICT sector is developing slowly.

In conclusion, the literature review shows that the digital economy and the ICT sector are becoming an important component of the labor market. Although employment in the ICT sector is growing in the context of Uzbekistan, there are regional differences. To develop the labor market in the ICT sector, it is necessary to improve the ICT infrastructure, train qualified personnel, and use international experience.

¹Dasgupta, S. and A. Singh. 2006. "Manufacturing, Services and Premature Deindustrialization in Developing Countries: A Caldorian Analysis."

²Hendrickx, Frank. 2019. "Privacy 4.0 at Work: Regulating Employment, Technology and Automation Automation, Artificial Intelligence, & Labor Law."

In the future, it is important to further improve state policy to increase employment in the ICT sector and reduce regional disparities, introduce innovative approaches to the sector, and strengthen local and international cooperation.

Research methodology

In the process of conducting this research, the methods of systematic analysis of scientific knowledge, monographic observation, statistical abstraction, logical analysis, and prospective forecasting were widely used. Also, the methods of analysis and synthesis were effectively used during the scientific research.

Analysis and discussion of results

This table reflects the changes in employment in the ICT sector over time. It analyzes the growth rates of the number of employees, the dynamics by region, and the development trends of the ICT sector. While some regions have seen a significant increase in the number of employees, there is a tendency to decrease in some regions. These changes are presented in Table 1.

Table 1: Number of employees working in legal entities operating in the ICT sector

Classifier	2020	2021	2022	2023	Change (between 2020 and 2023)
Republic of Karakalpakstan	1302	1222	1124	1394	+7.07%
Andijan region	1702	1441	1708	1582	-7.05%
Bukhara region	1770	1801	1979	1826	+3.16%
Jizzakh region	1113	832	597	672	-39.62%
Kashkadarya region	1052	1243	1248	1407	+33.75%
Navoi region	1328	1247	1040	1031	-22.36%
Namangan region	1491	1538	1511	1458	-2.21%
Samarkand region	1871	1973	1973	2538	+35.65%

Surkhandarya region	1031	1007	1073	1067	+3.49%
Syrdarya region	776	666	718	934	+20.36%
Tashkent region	2713	2727	2793	3048	+12.35%
Fergana region	2661	2212	2430	2605	-2.10%
Khorezm region	1205	1186	1304	1469	+21.91%
Tashkent city	30142	34687	40964	50596	+67.86%
Republic of Uzbekistan	50157	53782	60462	71627	+42.81%

Source: “This information was compiled based on the official website of the Main Directorate of Statistics under the President of the Republic of Uzbekistan. <https://www.stat.uz>”³

The number of employees working in legal entities operating in the ICT sector in the Republic of Uzbekistan increased significantly between 2020 and 2023, with an overall increase of 42.81%. However, this increase was not uniform in all regions, with some regions experiencing an increase in the number of employees, while others experienced a decrease. These trends are analyzed in detail below.

Overall growth and expansion of the ICT sector: As can be seen from the table, the number of employees employed in the ICT sector from 2020 to 2023 increased from 50,157 to 71,627, an increase of 21,470 people. This indicates the rapid development of the digital economy. The largest growth by region was observed in Tashkent, where the number of employees increased by 67.86%. Samarkand region (+35.65%) and Kashkadarya region (+33.75%) also recorded high growth rates.

The highest growth rates: Tashkent city (+67.86%) and Samarkand region (+35.65%) were the regions with the largest job creation in the ICT sector. These

³ <https://www.stat.uz>

regions are experiencing new job openings as a result of the development of IT parks, startup ecosystems, and infrastructure.

Steady growth: Syrdarya (+20.36%), Khorezm (+21.91%), and Tashkent (+12.35%) regions also recorded significant growth. Although the development of the ICT sector has been reflected to some extent in these regions, the pace of development is slower than in the capital and large cities.

Job losses: The number of employees employed in the ICT sector decreased in Jizzakh (-39.62%), Navoi (-22.36%), Andijan (-7.05%), and Fergana (-2.10%) regions. This indicates that the ICT infrastructure and human resources in these regions are not sufficiently developed. The 39.62% decrease in Jizzakh region is particularly worrying, and requires further analysis and development strategies in this area.

The following factors influenced the change in employment in the ICT sector by region: Digital economy and government programs: Government programs to support the ICT sector, including the “Digital Uzbekistan – 2030” strategy, have increased demand for the sector. IT parks and startup ecosystem: The active development of IT parks in Tashkent, Samarkand and Tashkent regions has contributed to the increase in jobs.

Regional differences: In some regions, employment has decreased due to the slow development of the ICT sector, lack of infrastructure, and a shortage of qualified personnel. Post-pandemic changes: The development of remote work formats after 2020 may have led to a decrease in ICT employment in some regions.

Conclusion and suggestions

The increase in employment in the ICT sector clearly reflects Uzbekistan's drive towards a digital economy. Although jobs in this sector increased significantly over the period 2020–2023, there are regional disparities. Therefore, in the future, one of the main priorities should be to evenly develop ICT infrastructure across regions,

strengthen the system of training qualified personnel, and create a favorable investment environment for IT companies.

In the context of a digital economy, it is necessary to implement the recommended strategies to ensure sustainable development of the ICT sector, create new jobs, and reduce disparities between regions. This will not only serve to develop the digital sector of the Uzbek economy, but also to strengthen the country's position in the global digital market.

- ❖ Development of regional ICT infrastructure: Establishment of IT parks, technoparks and innovation centers in Jizzakh, Navoi, Andijan and Fergana regions, where the development of the ICT sector is slow. Increasing the level of provision of fiber-optic communication and high-speed Internet to improve the quality of the Internet and the availability of digital services.
- ❖ Strengthen the system of training qualified ICT personnel: Expand specialized educational programs in the ICT sector in schools and higher education institutions. Introduce training programs in the regions for specialists with international certificates in the IT sector. Expand courses in the development of specialties necessary for the digital economy, in particular, software development, artificial intelligence, cyber security, and data engineering.
- ❖ Increase employment and job creation in the ICT sector: Create new jobs in the regions by introducing tax incentives and subsidies for local IT companies and international technology companies. Support startups operating in the ICT sector, establish digital incubators and accelerators. Expand preferential loans and subsidy programs aimed at developing entrepreneurship in the ICT sector.

Strengthening public-private sector cooperation: Establishing regional IT training centers and startup incubators in collaboration with large ICT companies. Expanding international cooperation to introduce advanced technologies in the ICT sector, including implementing joint projects with foreign IT companies and

universities. Creating a favorable environment for attracting investments in the ICT sector, in particular, establishing special economic zones for foreign IT companies.

Reduce regional disparities and implement an inclusive ICT strategy: Launch special programs for ICT specialists in regions lagging behind in the development of the digital economy. Launch free digital technology training courses and law programs to increase interest in the ICT sector among women and young people. Implement mass IT education programs to improve the digital skills of the adult population.

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