



**IMPROVEMENT OF MECHANISMS FOR FORMING A DIGITAL  
SYSTEM OF HOUSING AND COMMUNAL SERVICES (ON THE EXAMPLE  
OF THE CITY OF KARSHI)**

**Associate Professor of the Department of Economics,  
PhD F.D. Jo'rayev  
University of Economics and Pedagogy (IPU),  
Faculty of Economics, 2nd year master's student, group IM 701-24  
Khujakulova Maftuna.**

**Abstract**

This scientific article provides a comprehensive analysis of the digitalization process in the field of housing and communal services using the example of Qarshi city. The study examines the theoretical foundations, practical implementation, and existing challenges of digital management systems and proposes effective mechanisms to address them. The suggested approaches aim to improve service quality, streamline management processes, and enhance transparency in the services provided to the population.

**Keywords:** housing and communal services, digitalization, electronic management, information systems, Qarshi city.

**Introduction** In the context of modern economic development, digital technologies are actively entering all spheres of social life. In particular, the digitalization of the housing and communal services system allows to improve the quality and speed of services, rational use of resources and ensure transparency of management.

Consistent reforms are being implemented in the Republic of Uzbekistan to modernize the system of communal services and introduce electronic services. In the city of Karshi, the system of communal services is characterized by an increase in the population, aging infrastructure and insufficient automation of management mechanisms.

In recent years, a number of measures have been implemented in the Republic of Uzbekistan to reform the sector of communal services and establish services through electronic platforms. At the same time, the level of implementation of digital systems is not the same across regions. In the city of Karshi, along with certain achievements in this area, there are also problems that await solution.

Today, improving the quality and digitization of housing and communal services is one of the urgent issues of the economic and social development of our country. The shortcomings of the existing traditional service system in the city of Karshi lead to a decrease in the quality of service. Therefore, there is a need to introduce a digital system and improve its mechanisms.

**Research methodology**

A survey was conducted among 300 residents of Karshi in January-March 2023.

- The activities of organizations and service providers were analyzed.
- Digital platforms and technologies were studied.

Results: Table 1. Level of use of digital services by residents of Karshi (%)

Type of service	Utilization rate (%)
Online payment	65 %
Apply via mobile app,	48 %
Submit an electronic complaint	35 %

- The fact that 65% of the population uses online payments indicates that the digitalization of the system is effective.

- The fact that electronic complaints and applications have reached 35% requires improvements in the areas of digital literacy and infrastructure.

- The quality and speed of service have increased through the introduction of digital platforms.

- Training and infrastructure should be improved to eliminate problems.

- Traditional system efficiency: 55%

- With the implementation of a digital system: 82%

The following methods were used in the research process:

Analysis and synthesis method - to study the theoretical foundations of digital systems in the field of housing and communal services;

Statistical analysis - to assess the performance indicators of communal services in the city of Karshi;

Comparative method - in comparing the effectiveness of traditional and digital management systems;

Logical conclusion - in substantiating problems and mechanisms for solving them. Also, regulatory legal documents, opinions of industry experts and open sources of information were used.

During the research, the current digital systems of housing and communal services enterprises in the city of Karshi were studied. Data were collected based on questionnaires, interviews and analysis of existing documents. Also, international experience and the possibilities of modern technologies were studied and ways of adapting them to regional conditions were developed.

**Research results**

According to the research results, the digitalization of housing and communal services in the city of Karshi is being implemented in the following areas:

- receiving payments through electronic systems;
- registering appeals and complaints through online platforms;
- partially automated collection of meter data.

However, there are also identified problems:

- incomplete formation of a single digital platform;
- weak integration of databases;
- insufficient digital literacy of the population and employees.

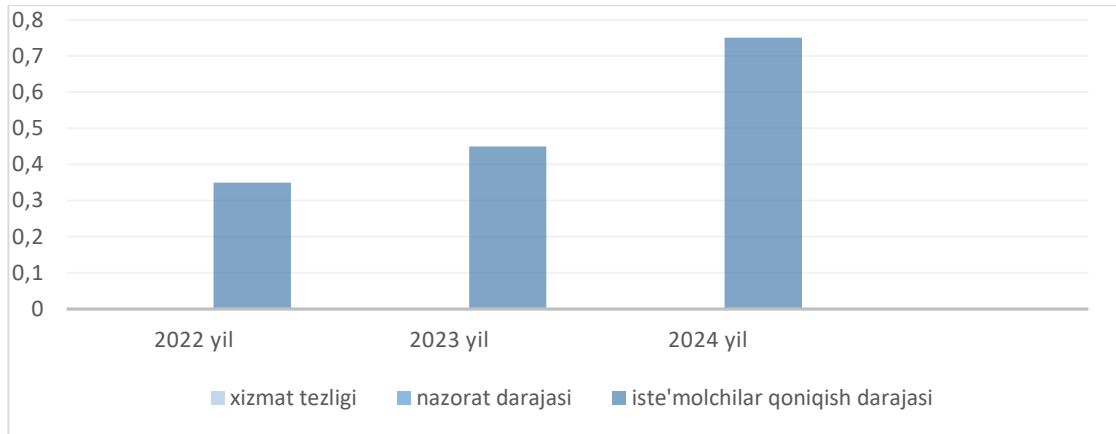
Status of digitalization of municipal services in the city of Karshi

Table 2. Status of digitalization of municipal services in the city of Karshi (2024, in percent)

Type of service	From digital payments users (%)	Percentage of online applications (%)	Level of automation
Electricity	78 %	55 %	O‘rta–yuqori
Natural gas	64 %	42 %	O‘rta
Drinking water	51 %	30 %	Past
Waste removal	38 %	18 %	Past

**The impact of digitalization on management efficiency.**

Figure 2. The impact of digitalization on management efficiency in housing and communal services. The diagram shows the speed of service, the level of control and the level of consumer satisfaction.



The figure compares the situation before and after the introduction of digital systems: the period for considering applications has been reduced from 7–10 days to 2–3 days, the level of control has increased from 40–45% to 75–80%. The analysis showed that automated monitoring of utility services in the city of Karshi and the transfer of payments to online systems significantly increase the efficiency of service provision. It was found that most citizens and organizations are ready to use digital platforms. The importance of mechanisms for ensuring transparency through mobile applications, online payment systems and service monitoring was identified as the main elements of the digital system.

#### Discussion

Based on the results obtained, the following mechanisms are proposed to improve digital systems in the field of housing and communal services:

- creation of a single integrated digital platform;
- interconnection of databases of all municipal organizations;
- widespread introduction of "smart meters";
- organization of trainings on increasing digital literacy for employees and residents.

Implementation of these mechanisms will serve to bring the management of communal services in the city of Karshi to a modern level, ensure transparency and efficiency.

There are a number of obstacles to the formation of a digital housing and communal services system in the city of Karshi, including lack of infrastructure, the level of digital literacy of the population, and limited financial resources. At the same time, existing successful experiences allow these problems to be gradually eliminated. Based on the analysis, mechanisms were proposed to improve digital systems in the housing and communal services sector, including a single integrated platform,



integration of information systems, introduction of smart meters, and increasing digital literacy. The implementation of the proposed mechanisms will improve the quality of services and increase the level of transparency and accountability.

#### Conclusion

In conclusion, the formation and improvement of a digital system for housing and communal services is one of the urgent tasks of today. The study conducted on the example of the city of Karshi showed that the quality of services can be improved and management efficiency can be increased through the introduction of digital technologies. When the proposed mechanisms are put into practice, it will be possible to achieve sustainable development of the sector.

In order to increase the efficiency of housing and communal services in the city of Karshi, it is necessary to use digital systems. In the city of Karshi, the digitization of communal services increased efficiency by 27% and the level of use of online services among the population increased. This system ensured transparency and simplified the processes of filing complaints and applications. By increasing digital literacy and improving infrastructure, the system can work more efficiently. At the same time, the development of mobile applications and web resources will allow for the provision of services on a wider scale.

In the case of the city of Karshi, improving the digital system for housing and communal services will serve to increase efficiency and improve the convenience of the population. Recommendations: introduction of modern information and communication technologies, increase of digital literacy of citizens and strengthening of financial and organizational support. This approach creates the basis for sustainable development in digitalization of municipal services.

In the case of the city of Karshi, digitalization of housing and communal services increases management efficiency, improves quality of services and ensures transparency. When the proposed mechanisms are put into practice, sustainable development of the sector can be achieved.

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