ANALYSIS OF FACTORS AFFECTING THE QUALITY OF UTILITY SERVICES IN APARTMENT BUILDINGS

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ABSTRACT

this article analyses the factors influencing the quality of communal services in multi-apartment buildings under Uzbekistan's conditions. The study is based on theoretical frameworks including the SERVQUAL model, which are adapted to the communal services sector. The factors affecting service quality are systematically classified into four groups: technical-infrastructural, financial-economic, institutional-organizational, and social factors. It is established that a significant share of engineering infrastructure in multi-apartment buildings is physically and morally outdated, leading to frequent service interruptions and reduced reliability. The financial instability of service providers is largely caused by economically unjustified tariffs, where households cover only 18% of the actual cost of heat supply. The findings provide a scientific basis for developing effective organizational and economic mechanisms to address existing problems in the sector.

The quality of utility services in apartment buildings is considered one of the crucial socio-economic indicators determining the population's standard of living. The quality of these services depends not only on the technical condition of engineering and communication networks but also on many factors, such as management efficiency, financing mechanisms, tariff policy, and the communal culture of consumers. Therefore, it is necessary to approach the issue of improving the quality of public utilities not from the perspective of improving individual types of services, but through a comprehensive analysis of the system of factors forming them.

Today, the acceleration of urbanization processes, the increase in the volume of the multi-apartment housing stock, and the increasing demands of the population for service quality necessitate an in-depth study of the factors influencing the quality of public utilities. Practice shows that the obsolescence of engineering infrastructure, a lack of financial resources, shortcomings in the management system, the lack of economic justification for tariffs, and the lack of effective communication mechanisms with consumers are among the main reasons for the decline in service quality. At the same time, the introduction of digital technologies, increasing the responsibility of management entities, and expanding public

participation in management processes are emerging as important factors in improving the quality of services.

This research work analyses technical-infrastructural, financial-economic, institutional-organizational, and social factors affecting the quality of utility services in apartment buildings. The interdependence of these factors and their role in shaping the quality of utility services are evaluated based on scientific approaches, statistical data, and practical observations. This creates an important scientific basis for identifying existing problems in the field and developing effective organizational and economic mechanisms for their elimination.

To evaluate and manage service quality in a scientifically grounded manner, it is first necessary to systematically identify, classify, and measure the relative significance of the factors affecting it. In this section, factors affecting the quality of public utilities are analysed based on theoretical approaches, and their manifestation in the conditions of Uzbekistan is evaluated using statistical data.

One of the most common approaches in service quality theory is the SERVQUAL model developed by A. Parasuraman, V. Zeitaml, and L. Berry. This model defines service quality as the difference between the service that the consumer expects (expected) and the service they actually receive (perceived), proposing to evaluate quality in five dimensions: materiality, reliability, accountability, persuasiveness, and empathy. Another influential approach was proposed by A. Donabedian, in which service quality is analyzed based on the "structure-process-outcome" triad [2].

K. Gryonroos distinguishes between two dimensions of service quality: technical quality (what the consumer receives) and functional quality (how the service is provided). These theoretical approaches to the provision of utility services are naturally adapted: technical quality means the continuity and compliance of water, heat, or other resources with regulatory indicators, while functional quality means the relationship between the management entity and owners, the speed of response to inquiries, and the transparency of settlements. The five dimensions of the SERVQUAL model, adapted to utility services, are presented in Table 1.

Table 1.

Adapting the Dimensions of the SERVQUAL Model to Public Utilities

№	Measurement	Description	Utility Services Indicator
1	Tangibles	External condition of equipment, structures, and personnel	Technical condition of networks, elevators, and equipment
2	Reliability	Perform service at the promised level	Uninterrupted water and heat supply
3	Responsiveness	Readiness to provide prompt assistance to the consumer	Response to inquiries and emergencies

№	Measurement	Description	Utility Services Indicator
4	Assurance	Staff qualifications and confidence building	Qualification of personnel of the management entity
5	Empathy	Individual attention to the consumer	Communication with owners and account transparency

(Source: done by the author based on the SERVQUAL model)

As seen from the table, the quality of utility services is determined not only by the physical delivery of the resource (technical dimension), but also by the organizational aspects of the management process (functional dimension). This requires a comprehensive analysis of factors affecting quality across technical, financial, institutional, and social groups. The classification of these factors is summarized in Figure 1.

As shown in Figure 1, it is advisable to divide the factors affecting the quality of utility services into four main groups: technical and infrastructural factors (the state of networks and equipment); financial and economic factors (tariffs, subsidies, debt); institutional and organizational factors (management form, personnel qualifications); and social factors (population satisfaction, payment discipline). Below, these groups are analysed sequentially in the context of Uzbekistan.

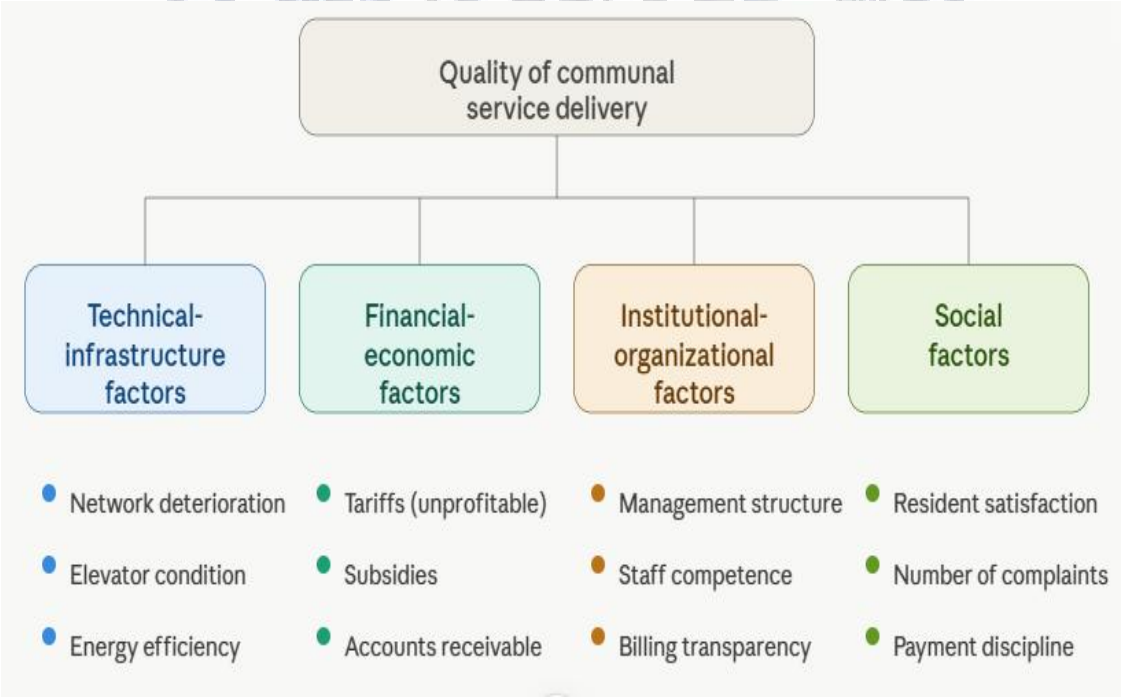

Figure 1. Classification of Factors Affecting the Quality of Public Utility Services.

The primary condition for the quality of utility services is the technical condition of the engineering infrastructure. A significant portion of apartment buildings in Uzbekistan were built during the Soviet era, and their heating networks, boiler rooms, and elevator equipment are both physically and morally obsolete. In particular, although more than 2,100 elevators were updated in the elevator farm between 2021 and 2024, many houses still use elevators installed in the 1980s that have reached the end of their service life. In recent years, $2.5

billion has been attracted from international financial organizations as part of 25 projects to modernize the water supply and sewerage sector [5]. The main indicators of technical and infrastructural factors are presented in Table 2.

The presented data confirms the negative impact of the technical and infrastructural factor on quality: obsolete networks lead to high losses, frequent interruptions, and a decrease in service reliability. Therefore, the modernization of infrastructure is a priority for improving the quality of public utilities.

Table 2.

Key indicators of technical infrastructure factors

№	Indicator	Status / value
1	Upgraded elevators in 2021-2024	over 2,100
2	Condition of heating networks and boiler houses	Mostly outdated (Soviet era)
3	Investment attracted to the water supply sector (25 projects)	2.5 billion dollars
4	Coverage of centralized heat supply	37%
5	Energy efficiency of heat supply	Low (high gas consumption)

The second important group of factors determining the quality of utility services is related to financial stability. Currently, heat supply tariffs are significantly lower than the economically justified level; according to data, the population covers only 18% of the base tariff, while the rest is financed by budget subsidies [6]. This situation exacerbates the financial situation of supplying enterprises and limits the ability to invest in updating service quality.

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