

Reformation of Municipal Economy: Application of ICT to the Sphere of Housing and Communal Services in Uzbekistan

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Abstract: The article is devoted to the discussion of the recent trends and reformation of housing and communal services in Uzbekistan introducing ICT to the sphere. The object of the research is the sector of housing and communal services of the Republic of Uzbekistan. The actuality of the research consists of increasing number of scholars of several developing countries who are interested in how to use the ICT and by this to achieve economic effectiveness both in the scope of country and company. For example, regardless of the reformations and development in this sphere, a row of problems is unsolved. Nowadays population is not satisfied with the supply of communal services; hence the number of complaints on the work of service providers is increasing. In addition, the problems of expenses and debts above normal and not correctly calculated are remain open. Besides, the problems in the sphere of housing and communal services also arise from the lack of the mechanism of monthly taking measurements from the counters and absence of central database of consumers. The analysis of the main approaches determining the contribution of ICT to the housing and communal sphere, formulation of recommendations relating to the prior directions to achieve the step-by-step informatization of the sphere of housing and communal services makes up the scientific novelty of the research. The research consists of four parts. Firstly, the role of ICT in the sphere of housing and communal services is explored. Secondly, application of billing system to the sphere of housing and communal services is investigated. Thirdly, reformation of housing and communal services by introducing CRM system is examined. Lastly, introduction of ICT to the sphere of housing and communal services for integration with e-government is discussed.

Index Terms: Information and Communication Technologies (ICT), housing and communal services, Customer Relationship Management (CRM), billing, e-government, online payment, utilities, reformation, Uzbekistan, automation, informatization, debts, tariffs, management.

I. INTRODUCTION

In the process of modernization of the economy, there is an increase in attention to the social sphere. Municipal sphere, especially municipal governments have never been as complex in operation as nowadays [1-2]. Therefore, investigation of increasing complexity of municipal

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governments is vital for the local authorities [3]. Creating a comfortable environment and necessary amenities for the present and future life of the population is the main task of government agencies in any country. This goal is unattainable without creating and increasing efficiency in the housing and utilities sector. The problems that arise in the sphere of housing and communal services are among the most sensitive for the population of the Republic of Uzbekistan. According to sociological polls conducted today in Uzbekistan, despite the reforms in housing and communal services, a number of problems remain unresolved. For example, the population complains about the activities of the organization providing housing and communal services, over-norm costs and not always properly charged debts.

As it is shown in Figure 1, the amount of total debts for utilizing heating, drinking water and sanitation services has been growing up for the years 2015-2017. For instance, the amount of debts for heating services increased from 100 billion sums in 2015 to about 180 billion sums in 2017, for water services from about 118 billion sums in 2015 to more than 160 billion sums in 2017 respectively.

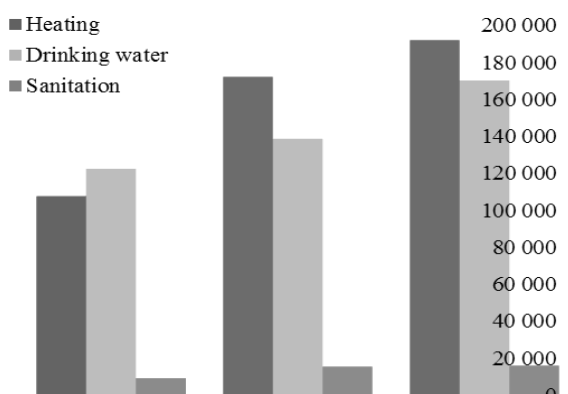


Fig. 1. Total debts for the communal services in the Republic of Uzbekistan

The other discontent of consumers is connected with the prices for housing and communal services. In fact, the principle of calculating tariffs and the reasons for constant increases in prices for housing and communal services are still unknown to the owners of houses. Often, the amount

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indicated in the accounts of monthly use of utility services, leads consumers to be perplexed.¹ Successfully solving these problems is possible only using advanced and modern information technologies. Informatization of housing and communal services is a necessary link for housing and utilities reform [4].

In current research we investigate the role of ICT in reformation of the sphere of housing and communal services based on the following hypotheses:

H1: Application of billing system has positive impact on the sphere of housing and communal services.

H2: CRM system and the sphere of housing and communal services has a positive relationship.

H3: Application of ICT in the sphere of housing and communal services aids the integration with e-government
Thus we use the hypothesis that information and communication technologies have positive impact on the sphere of housing and communal services.

Recently, scientists and specialists are discussing the range of problems that have a significant impact on the organization's activities in the housing and communal services sector. To such problems carry:

- weak interaction of organizations in the sphere of housing and communal services with executive bodies of local self-government and state authorities;
- weak development of competition in the market of management organizations;
- violation of legislation;
- non-transparency of tariff setting procedures for different types of services;
- lack of reliable information on housing and communal services in the population [5].

Basically, the current information technologies provide interaction between suppliers and consumers of housing and communal services, allow you to keep a record of energy, heat and water consumption, and monitor the status of the facilities [6-7]. As a result of the use of information technologies, it becomes possible to create a qualitatively new management system for housing and communal services, and regulated interaction with the executive state bodies. The basis should be an information system that has the following advantages in general:

- bridging the gap between law enforcement practice and the regulatory framework;
- improving the quality of decisions and social protection of the population;
- Strengthening of control over the housing and communal sphere of activity.²

The main advantages of using modern information systems are:

¹ A modern billing system for the housing and public utilities sector was created. [Electronic source] URL: <http://bars.group/press-center/news/billing/> (Accessed date: 08.01.2018)

²Karnaukhov A.M. Interaction of state authorities and housing and communal services organizations on the basis of modern information technologies. [Electronic source]. URL: http://old.ci.ru/inform08_07/ckr_2.htm (Accessed date: 16.01.2018)

- Increase the level of public services;
- Increase the investment attractiveness of the country's economy;
- Increase the capitalization of the country's economy; Increase of social security of the population due to easier access to information;
- creation of new jobs;
- creating comfort for the consumption of information by the population;
- ensuring the timely payment of housing and communal services to the supplier enterprises;
- reduction of the terms of payment and regulation of accounting of charges and payments for housing and communal services;
- Centralization of information, regulatory and technological data on housing and communal services [8].

At the enterprises because of the introduction of ICT and information management systems based on them (ISU), experts confirm that there is a improvement in almost all aspects of activity, among them:

- reduction of transport and procurement costs - on average by 60%;
- reduction of the production cycle - by 50%;
- reduction of delays in shipment of finished products - by 45%;
- reduction of the level of irreducible balances in warehouses - by 40%;
- decrease in production marriage - by 35%;
- reduction of administrative and administrative costs by 30%;
- reduction of the production cycle for basic products - by 30%;
- reduction of storage space - by 25%;
- increase in the turnover of funds in settlements - by 30%;
- increase in the turnover of inventories - by 65%;
- Increase in the number of deliveries "just in time" - by 80% [9].

Thus, it is possible to formulate a list of tasks, the solution of which will help the application of IT in the sphere of housing and communal services. The main tasks of using information systems in the sphere of housing and communal services are the following:

- remote management of housing and communal services;
- increase the efficiency of dispatching;
- accounting and calculation of payment for housing and communal services;
- processing of information on the technical condition of the housing stock of the territory;
- simulation of situations;
- information services for housing and communal services;
- improving the quality of work with the population;
- saving budget funds;



- Web-services for data exchange [10].

Online payment systems and applications are playing a crucial role in improvement of any service-based private businesses and public sectors as well.

Therefore, implementation of online payment systems in the municipal economy and public utilities is considered as major concern in Uzbekistan. According to Table 1, until now consumers are able to make online payments for utilizing gas with the help of online payment systems in Uzbekistan which are Uz-kart, M-bank, click.uz. However, online payment for utilizing cold water and sewerage, and heating and hot water services via Uz-kart, M-bank, and click.uz is not possible.

To integrate the information systems that will be created in the future with online payment systems would be a proper solution. In this case, we should note that payments via Uz-kart, M-bank, and Click.uz for consumption of cold water and sewerage, heating and hot water should be realized and integrated with the clearing system of the Central Bank of Uzbekistan (CBU).

Tab.1. Current situation of possibility of online payment by consumers

Communal services	Uz-kart	M-bank	Click.uz	Integration with clearing system of CBU
Gas	Yes	Yes	Yes	Yes
Electricity	Yes	Yes	No	Yes
Cold water and sewerage	No	No	No	No
Heating and hot water	No	No	No	No
Household waste	Yes	Yes	Yes	No

The introduction of the innovative information technologies in the activities of housing and communal services organizations will provide an opportunity to formulate prompt and reliable information on the state of housing and communal services, which will make possible the adoption of effective solutions, in particular, in regulating the cost of utility services.

It is necessary to provide assistance in the implementation of such business projects as:

1. introduction of ERP-systems (Enterprise Resource Planning System - the system of planning the stock of the enterprise);
2. introduction of CRM-systems (automated control systems of technological processes);
3. introduction of billing systems;
4. creation of automated information-measuring systems for commercial accounting of energy resources;
5. Creation of information centers for consumers, settlement and service systems, information portals, etc [11].

The field of activity and the degree of development of housing and communal services directly affect the comfort of living and the level of the well-being of the population. Therefore, the sphere of housing and communal services is under the constant attention of society and authorities. Summarizing the above, one can come to the conclusion that to solve a number of problems in the sphere of housing and communal services, including the satisfaction of different needs of consumers of housing and communal

services and participants in the production processes, an integrated approach to issues concerning the interests of participants in the sphere, organization Management, state support and the formation of a modern regulatory framework, which is based on information and communication management technologies [12].

II. BILLING SYSTEM FOR EFFICIENCY OF THE SPHERE OF HOUSING AND COMMUNAL SERVICES

One of the main factors of influence of scientific and technological progress to all spheres of humankind activities is wide use of modern information technologies. A sphere of housing and communal services takes a special place among more important and mass spheres in which information technologies play a crucial role [13].

Nowadays several important decisions are being made for modernization of the system of the communal infrastructure, enhancement of reliability and effectiveness of work of the sphere of housing and communal services, as well as improvement of quality of providing communal services to population. It is important to notice that in cooperation with the UNDP in Uzbekistan a project in creation of billing system of invoice consumers of housing and communal services such as heating, water, gas and electric power supply, and sanitation was introduced.

The main dissatisfaction of consumers relates to costs of housing and communal services. In fact, principle of tariff calculation and reasons behind steady growth of costs of housing and communal services are still unknown for homeowners. Total sum showed in bills for monthly use of housing and communal services results in consumers' perplexity.

One of the effective ways of solving these problems is implementation and change of existing billing system of housing and communal services [14]. The results of early implementations of billing system show that it is powerful efficiency improving instrument of activities of housing and communal services. As a matter of fact, minimum functionality of the communal billing system has to provide the followings:

- conducting accruals for housing and communal services and other types of services taking privileges and subsidies into account;
- receiving and accounting of payments done by population;
- splitting payments by services of suppliers for all types of services;
- conducting full mutual settlements between cash settlement centers and service suppliers, as well as between cash settlement centers and population;

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- providing all participants of the system with opportunity of receiving information about the condition of mutual settlements, and normative and reference information operatively;
- Maintenance of the necessary normative and reference information [15].

The system of billing in housing and communal Services sector creates several opportunities. For Example:

- payments for housing and communal services are calculated on daily basis;
- all changes regarding provided services, their tariffs, service accidents and personal account are automatically taken into account;
- opportunity of large recalculations including recalculations for past period is realized;
- opportunity of distributing organization's human resources economically;³
- offers modern complex of processes of servicing and calculations with all categories of consumers of the housing and communal services sector;
- Allows gathering and analyzing information about the consumption of communal services, determining their tariffication, issuing invoices to users and providing feedback to them, for instance, via SMS-messages.⁴

In many cases, in order to start receiving of payment for services in the sphere of housing and communal services online in terminals, introduction of the billing system to the sphere of housing and communal services is required. As regards the sphere of housing and communal services, the following issues of the day, which can be solved, with the employment of the billing systems:

- provision of subscriber "heterogeneous" clients and full control over relationship with them;
- providing calculation of consumption of energy and other resources used in housing and communal services with inclusion of losses;
- accumulation of data for supporting work with debtors;
- Accumulation of data for analytical reporting which enables recognize weak points in work of a company and find the points to devote efforts for increasing effectiveness of a business.⁵

Reformation of the sphere of housing and communal services turns out to be a long and complex process. Stage of transition to new business models needs enormous amount of investments and serious organizational efforts. Moreover, expenditures of the organizations for investigation and implementation of ICT to the sphere will be considerable as well. In this case, expenditures should

be optimized and systems should be used effectively. Introduction of billing system to housing and communal services gives responsible institutions a chance of successful solution to these problems [16]. In accordance with experience, the topic of billing system is urgent question for the sphere of housing and communal services that provides services of heating, water, gas, electricity and sanitation for individuals and legal entities.

III. CRM FOR THE SPHERE OF HOUSING AND COMMUNAL SERVICES

Nowadays Information Communication Technologies are penetrating in all spheres of our life. The sector of housing and communal services is no exception. Experts assert that there is a great impact of Information Communication Technologies on effectiveness of sphere of housing and communal services.

The main goal of any competent management company is to understand thoroughly the needs of each resident, be aware of his problems, wishes, and find right approach to each of them. In fact, for sphere of housing and communal services establishing a relationship with clients plays a great importance. In this case, automation of financial and economic operation of Management Company, building and loan association, Homeowners Association leads to increase in transparency level in company's operation and its accountability to consumers. Particularly, in order to maximize the effectiveness of interaction with clients of a company CRM system should be introduced.⁶

Several years ago a term like CRM sounded strange for companies in the sphere of housing and communal service: why do they need a system that helps the manage relationship with the clients where from clients only need is a receipt paid on time? Nowadays there is variety of solutions to automation of management company and homeowners association. As a matter of fact, introduction of CRM system in the sphere of housing and communal services creates several opportunities. In general, it allows receiving a range of privileges:

- improving quality of servicing clients;
- shortening time spent for fulfillment of tasks and activities regarding interaction with clients;
- shortening time spent for process and passage of information;
- accelerating provision of services to clients;
- effective control over quality and completeness of applications and appeals of clients;
- increasing percentage of paying off debts for housing and communal services;
- accurate and correct calculations on population

³ Projects of RTK "Radei". [Electronic source]. URL: www.radey.ru/html/radey-projects-print.htm (Accessed date: 02.02.2018)

⁴ Issues of implementation in Tashkent systems of municipal billing. [Electronic source]. URL: http://www.norma.uz/nashi_obzori/obsujdeny_voprosy_vnedreniya_sistemy_billinga_v_kommunalnoy_sfere (Accessed date: 30.01.2018)

⁵ Биллинговые системы ЖКХ. [Electronic source]. URL: http://www.exppay.tj/full_bank.php?id=3 (Accessed date: 30.01.2018)

⁶ CRM для ЖКХ – выход на новый уровень обслуживания клиентов. [Electronic source]. URL: www.tadviser.ru/index.php/Статья:CRM_для_ЖКХ_-_выход_на_новый_уровень_обслуживания_клиентов (Accessed date: 18.02.2018).



- and strengthening control over payments;
- and control over quality of employees' work;
- regular monitoring, analyze condition of work and quick reaction to change of a situation;
- receiving payments for communal services on 24/7 regime to the account of a management company in bank;
- additional income for company thanks to commission for using service [17].

Foreign experience shows that until implementation of CRM they kept all information about clients in Excel tables. However, in this case, risk of data loss was very high. Moreover, they had to keep open both CRM system to view basic information about a client and Billing system to view his debts. Integration of CRM and Billing systems enables managers to keep all data in single system and to achieve the main aim of cooperating with clients – reducing accounts receivable [18].

Furthermore, adoption of CRM-systems provide the best control of processing of clients' appeals, enable to reduce employees' working hours for accessing data, which is necessary for relationship with clients, simplify and accelerate procedures of service provision. As a result of these improvements management can achieve loyalty of clients, and it is in turn, volume of overdue debts will decline.⁷

A sphere of housing and communal services needs CRM system in order to manage database in which all appeals of population can be recorded. The system helps not only for processing inflow of information, but for integrating the work of this sphere with all sectors as well (e.g. phone calls, fax, email). In addition, automation of working process creates the following opportunities to employees of a management company acting in housing and communal services' sector:

- management of accounting data of clients;
- management of services (display of invoice for payment);
- management of indicators from accounting devices;
- client support;
- rapid servicing clients;
- bring conducting works to residents' notice.

Now any management company acting in housing and communal services' sector able to make his own decision: to implement CRM system in his company or not. On the other hand, for a business to prosper in this sector adoption of information technologies is necessary for their advantages from both administrative and clients' perspective. On the base there must be implemented information system which allows improving quality of decisions to be made and strengthen control over activity of management companies in the sphere of housing and communal services. Specifically, CRM system should be

employed to create a new qualitative system of management of housing and communal services' sector, mainly interaction with clients. Undoubtedly, investigating a range of advantages of CRM system we can conclude with every reason that your business in sector of housing and communal services gets succeeded starting to use CRM or you will have to leave market in near future.

IV. INTRODUCTION OF ICT TO THE SPHERE OF HOUSING AND COMMUNAL SERVICES FOR INTEGRATION WITH E-GOVERNMENT

In the process of modernization of the economy, there is an increase in attention to the social sphere. Creating a comfortable environment and necessary amenities for the present and future life of the population is the main task of overnment agencies in any country. This goal is unattainable without creating and increasing efficiency in the housing and utilities sector. Housing and communal services are one of the most important branches of the economy, which directly affects both the economy as a whole and the vital interests of the population. In general, "primary" heat, electricity, sewerage and water supply are the main products for the welfare of the country and the life of society in the modern world. We will be able to build an effective sustainable economy, creating efficiency in housing and communal services [19].

The role of information and communication technologies in the development of housing and communal services has increased in Uzbekistan. Significantly, the transition to a community-based application of IT for the reform of housing and communal services has a significant social effect. For example, even simply informing market participants about the reform of the housing and utilities sector and saving money on payments due to the use of new consumption accounting technologies can have a positive impact on the attitude of market participants towards the reform of the housing and communal services sector.⁸ The introduction of information technology carries not only social significance, but also economic and political. However, the housing and utilities sector is imperfect. Usually consumers of housing and communal services have four questions: How much do we pay? Whom we pay? What do we pay for? How does the quality of our services meet our needs? In this regard, we must send information technology to promptly obtain the necessary information about financial flows and services provided [20].

Recently, scientists and specialists are discussing the range of problems that have a significant impact on the organization's activities in the housing and communal services sector. The problems include:

⁸ ЖКХ на грани коллапса: вся надежда на ИТ. [Electronic source]. URL: http://www.balans-oil.ru/articles/71.html?SHOWALL_1=1 (Accessed date: 20.01.2018)

⁷ CRM-системы для ЖКХ – это выход на новый уровень обслуживания клиентов. [Electronic source]. URL: <http://websekretar.chizh.ua/?p=719> (Accessed date: 30.01.2018)

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- weak interaction of organizations in the sphere of housing and communal services with executive bodies of local self-government and state authorities;
- weak development of competition in the market of management organizations;
- violation of legislation;
- non-transparency of tariff setting procedures for different types of services;
- lack of reliable information on housing and communal services in the population.

The current information technologies provide interaction between suppliers and consumers of housing and communal services, allow you to keep a record of energy, heat and water consumption, and monitor the status of the facilities. Thanks to information technologies, it becomes possible to create a qualitatively new management system for housing and communal services, and regulated interaction with the executive state bodies. The basis should be an information system that has the following advantages in general:

- bridging the gap between law enforcement practice and the regulatory framework;
- improving the quality of decisions and social protection of the population;
- strengthening of control over the housing and communal sphere of activity [8].

The main advantages of using modern information systems are:

- increase the level of public services;
- increase the investment attractiveness of the country's economy;
- increase the capitalization of the country's economy;
- increase of social security of the population due to easier access to information;
- creation of new jobs;
- creating comfort for the consumption of information by the population;
- ensuring the timely payment of housing and communal services to the supplier enterprises;
- reduction of the terms of payment and regulation of accounting of charges and payments for housing and communal services;
- centralization of information, regulatory and technological data on housing and communal services [10].

In addition, the introduction of information technology in the sphere of housing and communal services allows:

- *state authorities*: to control the situation, which is necessary for planning and controlling work, accounting for payments and budgeting, developing a regulatory framework;
- *citizens - consumers* of housing and communal services: control consumed resources and minimize costs;

- *investors*: plan the necessary investments and calculate the possible return on them.

Therefore, it is possible to formulate a list of tasks, the solution of which will help the application of IT in the sphere of housing and communal services. The main tasks of using information systems in the sphere of housing and communal services are the following:

- remote management of housing and communal services;
- increase the efficiency of dispatching;
- accounting and calculation of payment for housing and communal services;
- processing of information on the technical condition of the housing stock of the territory;
- simulation of situations;
- information services for housing and communal services;
- improving the quality of work with the population;
- saving budget funds;
- web-services for data exchange.

It is stated in the decree PD-1989-numeral "About measures of development of national information communication system of the Republic of Uzbekistan" approved by the president of the Republic of Uzbekistan in 27th June, 2013 that complex of information systems "Communal" was considered as the important component of the system e-government in 2016-2020⁹. The complex is planned for providing interactive services in the sphere of housing and communal services.

As regards the development and automation of the sphere of housing and communal services for interaction of organizations providing housing and communal services with e-government system the author provides the following recommendations:

1. To develop billing systems of organizations providing housing and communal services so that they could interact with each other. The level of automation should be the same and language of programming should match among the organizations and regions so the informatization of the sphere will be achieved on the republican scope.

2. To enter an element of territorial affiliation in the process of developing billing system (e.g. coding). To differentiate the regions from each other aids to prevent waste of time. Here, Tashkent city may be denoted as 1, Samarkand – 2, Bukhara – 3 and so on. Consequently, the problem arising would be solved faster.

3. To integrate the information systems that will be created in the future with online payment systems. In this case, we should note that payments via Uz-kart, M-bank, Click.uz for consumption of cold water and sewerage, heating and hot water should be realized and integrated with the clearing system of the Central Bank of Uzbekistan (CBU).

⁹ <http://lex.uz/docs/2245993>

4. To optimize the number of inspectors meaning that introduce a single inspector for all types of housing and communal services. Currently, in each sector of housing and communal sphere there are inspectors for monitoring the condition of counters and gathering payments for the services sometimes. As we know an inspector is responsible for certain territory which may include several makhallas or a whole region. Therefore, introducing a single inspector for all types of housing and communal services for a certain territory results in time saving and decline in expenses for salary of inspectors.

5. To introduce smart counters for utility of communal resources to strengthen the battle against the defaulting consumers and economize the resources. Firstly, regular payment is must for consumers using smart counters since utility payments are done by a special card. When there is no money left in a card for utility payment, supply of certain type utility will be automatically stopped. This, in turn, prevents the debts for utility consumption. Secondly, smart counter is considered as economically adjusted as it not only meters the total amount of utilized resources, but indicates the time of consumption as well providing opportunity of differentiating tariffs for consumption depending on time and season.

6. To work out tariff plans for utilized resources (gas, electricity, water). Firstly, study found that the resource consumption varies over time interval,

7. days and purpose. With regard to water consumption, tariffs should be distinguished by the day and night. In general case, smaller amount of water is used at night compared to the day. Secondly, different tariffs should be introduced depending on the days of week. The study explored that the amount of water consumed on weekends is larger than that of the weekdays. Thirdly, depending on season tariffs should be various as because people consume more water in summer, while larger amount of electricity and gas is consumed in winter.

8. Different tariffs provide opportunity of managing resource consumption decreasing the waste of resources. Especially, tariff plans are most useful for energy saving.

9. According to the fact, a 1 kW/hour decrease in consumption of energy at the end saves up to 4-5 kW/hour of energy from the manufacturer.

10. To introduce a partnership with banks to pay for communal services via opened accounts in banks. Bank operators will be responsible for regular payments for utility consumption. Payment will be made until the funds in personal account is enough. This, in turn, leads to improvement in payment discipline and collection [21-22].

V. CONCLUSION

The sphere of housing and communal services is one of the main branches of the economy, which exerts a significant influence on all aspects of the life of society. The cost and quality of housing and communal services are the most important characteristics of ensuring stability and sustainable development of the national economy, directly affecting the level and quality of life of all its citizens.

The sphere of housing and communal services is a complex of sub-sectors that ensure the functioning of engineering infrastructure, various buildings of settlements, creating convenience and comfort of living and finding citizens in them by providing them with a wide range of housing and communal services.

However, this sphere of society's vital activity is not in well condition, historically caused by a number of circumstances: ineffective management system, high costs associated with providing housing and communal services, underdeveloped competitive environment, chronic non-payments. The management of housing and utilities (utilities) has relatively low efficiency, and the lack of adequate information does not allow the implementation in practice the basic principles of the program-targeted approach to management. The efficiently functioning information management system is developed weakly, which should facilitate the process of reforming the housing and communal services and its transition to a qualitatively new state. Among the many problems that need to be addressed during the implementation of the housing and communal reform, the reliability and availability of information that is created, used and distributed in the housing and communal services occupies a special place. First of all, these are information on the housing stock and residents, on the consumption of energy resources, on-line information on the current state of housing and communal services, and engineering communications.

Successful solution to this problem can only be based on advanced information technology. The basis should be an information system that will bridge the gap between the already relatively developed regulatory framework and law enforcement practices, and improve the quality of decisions, social protection of the population and strengthen control over the housing and communal sphere of activity [23].

In this regard, there is an objective increase in the need for structural transformations in the management of housing and communal services, based on a scientifically grounded array of information. This is necessary for making effective managerial decisions and, most importantly, for ensuring the principle of optimality of control over the activities of housing and utilities entities, which becomes a key element of management and requires complete information obtained from various sources. All communication must take place through e-government core.

Informatization of the sphere of housing and communal services is not an easy task. Thus, the Uzbek government should set goals and go step-by-step to reach these goals successfully. Here are the principal directions of step-by-step achievement of informatization in the sphere of housing and communal services:

1. To create a system of relations based on the separation of management and service functions;
2. To develop the competitive environment in the sphere of housing and communal services;



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3. To optimize of the state system in the sphere of housing and communal services management;
4. To optimize the tariff system and financing.

The field of activity and the degree of development of housing and communal services directly affect the comfort of living and the level of the well-being of the population. Therefore, the sphere of housing and communal services is under the constant attention of society and authorities. To sum up, we can say that to solve a number of problems in the sphere of housing and communal services, including the satisfaction of different needs of consumers of housing and communal services and participants in the production processes, an integrated approach to issues concerning the interests of participants in the sphere, organization Management, state support and the formation of a modern regulatory framework, which is based on information and communication management technologies.

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