Conclusions

The provided analysis of organizational forms of venture financing helps to make a logical conclusion about transformation of the traditional venture capital market and its transition to a new dimension under conditions of digital transformation of socio-economic systems. Extensive use of recent achievements in IT technologies enable mobilizing resources to implement the most ambitious venture projects by reducing the period of withdrawal from the invested project and the costs of its financing. At this stage of the Belarusian financial market development, the main reasons for low interest of investors in alternative investments are the low level of confidence and low information transparency of the innovative (digital) investment market, high enforcing risks.

The following are proposed as the main measures to develop venture financing through crowdfunding:

establishing requirements for the operators of investment platforms to verify the accuracy of information provided by the person attracting investments, including legal verification of documents provided, verification of persons attracting investments;

establishing requirements for crowdfunding platforms to examine investment projects and persons attracting investments;

attracting large accelerators and venture funds as "anchor" investors;

involving specialized agencies for projects examination;

establishing requirements for crowdfunding platform operators to disclose statistical information on non-fulfillment of obligations.

Measures proposed in this study address improving the quality of investment projects placed on crowdfunding platforms, reducing investment risks and increasing the attractiveness of this form of investment for retail investors.

The development of innovative forms of venture financing, in turn, will contribute to:

additional capital inflow to the venture capital market;

increasing the number of participants in the venture capital market;

increasing the investments offers to finance the development of venture projects;

reducing the risk of transactions performed on crowdfunding investment platforms.

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Pavlyuchuk Yu. N., Zazerskaya V. V., Krivitskaya T. V., Flyachinskaya N. N., Filippova T. V.

**IMPROVING THE ACTIVITIES OF ENTERPRISES
IN THE IMPLEMENTATION OF INFORMATION TECHNOLOGIES**

Pavlyuchuk Yu. N., Zazerskaya V. V., Krivitskaya T. V., Flyachinskaya N. N., Filippova T. V.

Annotation. The article analyzes the possibilities of implementing information technologies in the activities of housing and communal services enterprises to increase their efficiency. The object of the study is enterprises that provide housing and communal services in the territory of the Republic of Belarus. The importance of implementing information technologies is determined by achieving a balance between the interests of producers of housing and communal services and consumers of housing and communal services who use information technologies in their activities, which allow housing and communal services entities to increase efficiency.

Keywords: information technologies, housing and communal services, efficiency, services, information systems.

Introduction. The constant growth of information flows encourages society to create new ways to manage information in order to get even more benefits from its use. The use of information technologies is now becoming a leading factor in the development of most countries of the world, including the Republic of Belarus. In this regard, at the current stage of economic development, there is a question of using new methods and tools for managing the housing and communal services sector.

The most relevant issue is the introduction of information technologies in the housing and communal services management system, which will open up new opportunities for managing this area and provide the population with high-quality services.

In the course of the research, the authors studied scientific works devoted to the study of the problems of information support for organizations operating in the housing and utilities sector.

Today the problem of building a unified information system for monitoring utilities in housing and communal services is one of the urgent tasks, despite the fact that there are quite a large number of publications on this topic, information systems for monitoring utilities are separate projects and the creation of methodological and software that can be integrated into one system becomes an urgent task.

Method. Evaluation of technical and economic performance indicators of the information system. This article highlights the works of A. S. Mozhaev, K. G. Skripkin, D. Legard and others, who consider both indicators of reliability of information systems and economic efficiency.

Results and discussion. One of the main problems of modern housing and communal services is the lack of information between legal entities, local self-government bodies and regions in general. Thus, there is no clear picture of the development of the industry, its opportunities, and problems.

The housing and utilities sector is a complex complex of in-house processes, without understanding and experience of work, with which it is quite problematic to implement the tasks of its digital transformation.

The introduction of information technologies allows you to create a qualitatively new management system housing and communal services as well as a system of regulated interaction with executive bodies of state power. It should be based on an information system that will help bridge the gap between the already relatively developed regulatory framework and law enforcement practice, as well as improve the quality of decisions made, social protection of the population, and strengthen control over housing and communal services.

An example of such an information system would be state information system "Housing and communal services" (GIS "Housing and communal services"), a complex software product that covers all processes related to the operation and maintenance of housing stock. Its implementation will make it possible to use a single methodology in planning and carrying out work on housing stock maintenance; collecting, storing, processing, providing and using information about any housing stock; the cost and list of services related to the management of common property; forming and calculating costs; collecting information on the provision of public services and the provision of public utilities. resources needed to provide public services; about the amount of payment for a specific residential object and utilities; about arrears on a certain fee; about objects of municipal and engineering infrastructure, as well as about other information related to housing and communal services.

Thanks to the resource, citizens will be able to have a clear idea of household expenses and incomes, directly file complaints if they arise, as well as check the correctness of calculations and charges and pay for utilities in their personal account through payment systems.

The main goal of creating and developing GIS "Housing and communal services" is to create the necessary technically, economically justified and socially significant information space for the organization of public utilities.:

1. Consolidation of necessary information in the field of housing and communal services in one place online.

2. Combining the necessary information in the housing and utilities sector in one place and online, i.e. in real time.

3. The possibility for government authorities to obtain information on the housing and utilities sector for analysis throughout the country.

4. Strengthening citizens ' trust in the authorities by providing users with free access to information in the field of housing and communal services, receiving the ability to send requests through the system with a guaranteed response.

5. Improving the efficiency of decision-making and manageability of the housing and utilities sector at all levels of government.

6. The possibility for citizens to receive complete and up-to-date information about the house, the method of managing the house, the list of services provided for managing common property, completed works, current and major repairs, and payments for housing and public services.

7. Providing the possibility of exercising public control.

It is assumed that the system will consist of an open part, where publicly available information will be placed, and a closed part (personal accounts of citizens, authorities, homeowners ' associations and housing and utilities organizations).

The system should include the following functional subsystems::

Subsystem for maintaining a register of programs in the housing and utilities sector. It is aimed at summarizing information about programs in the field of housing and communal services and evaluating the effectiveness of the implementation of these programs.

Subsystem for maintaining electronic passports of apartment and residential buildings, electronic documents on the state of municipal and engineering infrastructure located on the territories of state entities.

Subsystem for maintaining information about the activities of organizations that provide information to the Internet GIS"Housing AND utilities".

Utility management subsystem. It is aimed at providing the possibility of planning and accounting for the implementation of housing and communal services, planning and accounting for planned preventive work, accounting for emergency work and supply restrictions, receiving meter readings, and the possibility of electronic voting.

Personal account management subsystem. Provides an opportunity to maintain personal accounts of consumers of housing and communal services, view and print electronic invoices, pay utility bills.

Subsystem for housing stock inspection. It is intended for planning and carrying out activities related to the implementation of state housing supervision and housing control of housing and communal services organizations, emergency response and planned preventive work, and monitoring the activities of management organizations.

Subsystem for working with citizens ' requests. It is intended for providing the possibility of forming and executing citizens 'appeals to administrative organizations and executive authorities, as well as for monitoring the execution of citizens' appeals.

On the portal GIS"Housing AND utilities" There will be an opportunity to get acquainted with the latest news in the housing and utilities sector, take part in the discussion of issues on the forum, view the register of housing and utilities organizations registered in the system, display their location and serviced homes on the map, register of housing stock objects, register of inspections, and get free round-the-clock access to all regulatory legal acts.

The system will receive information from state resources, maintain unified reference books and classifiers that will allow organizations to place standardized information in a structured form in the system.

Integration of products such as AIS "Accounting of operating costs for a residential building" (inventory of the housing stock, planning, distribution and accounting of works and costs for maintenance and repair, sanitary maintenance, resource metering devices, operation of elevators, etc.); ecological map of the city (accounting of places of collection and processing of solid municipal waste); map of energy efficiency of housing stock; "Unified settlement and Reference Center" (ensuring the operation of the "one window" principle in the field of housing and communal services (formation and provision of various types of services). certificates and statements), as well as sending out invoices to citizens for housing and communal services, including in electronic form) It will allow digitalization of a number of processes in the housing and utilities sector, which will benefit both operating organizations, consumers of housing and communal services, and public administration bodies. Using the existing developments will help create and implement the state information system "Housing and Communal Services" faster and at a lower cost, as well as make the financial component of housing and communal services fully transparent.

The information system "Housing and Communal Services" will be a single information space in the housing and communal services system, which means that it is necessary to ensure its interaction with all information systems operating in this area in the Republic of Belarus. For example, systems creating and sending notifications about the amount of fees for additional services and contributions in electronic form, as well as about a number of features of the My Republic portal (115.bel) required for the operation of the housing stock, and about third-party systems. To ensure the unity of processes, it should undoubtedly be integrated into GIS and become its full-fledged module.

Informatization of the sphere, namely the introduction of this product, will create a completely new management system for housing and communal services. Such a system should improve the quality of decisions made, guarantee social security and comfort of the population, and generally strengthen control over the housing and communal services sector.

Evaluating the effectiveness of information systems requires taking into account the features of this product. In the last 30 years, there has been a lot of discussion about the impact of information technology on organizations at various levels. According to the well-known American researcher P. Strassman, investment in information technology is most correlated with such an indicator of the organization as administrative and managerial expenses. Information tools and technologies help reduce internal management costs [1].

P. David notes in his works that information technologies are "technologies of general use"[2].

A similar point of view is expressed by Professor G. Loveman of the Harvard Business School [3]. Information technologies open up the potential for the development of other applied technologies that would not be available without digitalization, and the technologies themselves often do not bring immediate benefits. Information technologies serve as a platform for optimizing current organizational processes, as well as introducing completely new tools. These circumstances significantly complicate the assessment of an organization's performance.

When implementing information technologies, it is necessary to take into account a fairly wide range of factors determined by both the characteristics of the information product and the scope of its application. V. N. Gebrial cites a number of characteristic reasons for failures in the implementation of information technology implementation projects: lack of consolidation between people and between departments in the enterprise, lack of motivation to achieve the best result in the implementation of IT-project, the lack of a clear task and purpose of implementation, the lack of a system for evaluating performance, and others [4, p. 387].

It is necessary to clearly understand the purpose of using information technologies, identify areas of application and have an adequate system for evaluating the results of using information technologies.

In the works of modern authors, several areas of assessment of the introduction of information technologies are distinguished [5, 6, 7, 8, 9], which can be summarized in the following classification:

using the classical methodology for evaluating investment projects and programs based on international standards;

use of economic methods to calculate the contribution of a factor to the overall result, save resources, calculate a system of financial indicators, and evaluate the level and dynamics of industry-specific indicators (where the information system is used) ;

application of expert assessment methods (usefulness, prospects, accessibility, ease of use of an information resource, etc.);

use of information diagnostics methods (network metrics, webometrics).

The first direction is based on the standardized approach to investment valuation developed by the International Center for Industrial Research at UNIDO. The Belarusian version of this methodology is reflected in the "Methodological recommendations for evaluating the effectiveness of scientific, scientific, technical and innovative developments and their implementation", approved by Resolution No. 9 of the State Committee for Science and Technology of the Republic of Belarus. The adopted investment assessment documents interpret the main terms, principles, subjects and objects of investment activity, and disclose the assessment algorithm. from the systematization of financial flows to the calculation of

specific indicators. This approach is well structured and has many years of successful practice, but its algorithm does not contain tools that take into account the specifics of project activities in the field of information technology implementation.

Using this approach to evaluate performance GIS"Housing AND utilities" it is necessary to establish the subject (s) of investment activity. The intended subjects may be authorities that form the digital infrastructure of housing and communal services through a subordinate organization. The remaining subjects of housing and communal relations will be users of the system.

The range of economic methods for evaluating the implementation of information technologies (not standardized for project activities) is quite wide: the method of determining the total cost of Ownership (Total Cost of Ownership) and its modifications, calculating the organization's production function, calculating the organization's key performance indicators (KPIs) (for example, the Norton and Kaplan Balanced Scorecard or the Lynch and Cross performance pyramid).

One of the variants of the presented methods is to assess the contribution of information technologies to the overall efficiency of the organization based on the use of the production function. In the classical function, the information technology factor is introduced along with traditional labor and capital resources.

A similar operation was performed by E. Brynolfsson and L. Heath, who studied the activities of 527 large American companies [11]. In this approach, as the authors note, an important role is assigned to complementary assets (assets that change under the influence of information technologies: the experience and qualifications of personnel, communication tools and technologies, the quality of decision-making, changes in business processes, etc.).

The results of timely implementation of information technologies gradually appear, on an accrual basis. A variant of the production function that includes investments in information technologies (real IT-capital) is also used in the work of G. Loveman [3].

P. Strassman in his research introduces the indicator information productivity, which is calculated as the ratio between the economic added value of the business and the costs of managing, administering, promoting, and supporting sales [1].

Calculation of the deposit GIS"Housing AND utilities" the overall result, i.e. a comprehensive housing and communal service, can be expressed in the following forms::

cost reduction while ensuring a guaranteed level of quality of housing and communal services;

improving the manageability of processes in housing and communal services (reducing the number of management operations, increasing the efficiency of decisions made, which is expressed in increasing the effectiveness of the work of subjects of relations);

increasing the labor productivity of industry employees (reducing the number of employees required, improving the efficiency of employees ' activities);

increase the quality of existing services and create new popular housing and communal services.

When assessing the contribution of the digital platform to the development of housing and communal services, it is assumed that the result of the work GIS"Housing AND utilities" for all subjects, it is expressed in the cost of the final service.

We will estimate the costs of providing housing and communal services on a national scale based on the materials given in Table 1.

Table 1 – Housing stock of the Republic of Belarus

Indicator	Indicator value for the period				
	2016	**2017**	**2018**	**2019**	**2020**
1	2	3	4	5	6
Total housing stock, mln. m2	254,4	256,4	258,6	261,2	264,4
Housing stock per inhabitant, m2	26,9	27,1	27,4	27,8	28,3

Note: Source: [12].

During the analyzed period, the housing stock of the Republic of Belarus showed a trend of progressive growth (the growth rate was 100.8 % in 2017, 100.9 % in 2018, 101.0 % in 2019, 101.2% in 2020). It is fair to assume that this growth should lead to an increase in the physical volume of housing and communal services provided to the population. Table 2 shows data on the dynamics of the cost of housing and communal services.

Table 2 – Indices of consumer prices and tariffs for housing and communal services

Type of goods (services)	Value of the price index for goods (services) compared to the previous period, %				
	2016	2017	2018	2019	2020
1	2	3	4	5	6
Housing and communal services	130,5	111,6	116,6	111,9	108,5
All services	119,7	108,7	109,6	107,2	107,2
All products and services	111,8	106,0	104,9	105,6	105,5

Note: Source:[13]

According to the data shown in Table 2, the level of prices for utilities was higher than the general level of prices for goods and services in the study period. Nevertheless, there is a tendency for the price level to decrease over a certain period of time. This trend indicates a decrease in utility consumption, which is most likely a consequence of saving resources by consumers and increasing the energy efficiency of the housing stock.

The expert method is less accurate in quantitative terms. However, it allows you to take into account the qualitative parameters of information systems: ease of use of applications, attractiveness for customers, the possible degree of integration of information systems with other resources, the growth potential of the organization based on the use of information systems, etc. Expert opinions can be obtained as a result of specially organized work of expert groups or based on the analysis of publications and presentations of experts on the functioning of information systems.

Since the main goal of GIS "Housing and communal services" is to increase the efficiency of housing and communal services. Thus, the opinion of individual consumers about the level of service quality, generalized using statistical observation methods, can be considered expert to a certain extent.

In the work of E. K. Shibanova and L. A. Sycheva, on the example of the activity of multifunctional centers, the author's methodology for evaluating the effectiveness of public services is proposed [14]. Public services will not be provided directly through GIS"Housing AND utilities" however, receiving services through a centralized information system has common features with the activities of public authorities. In this regard, the selected methodological provisions (especially evaluation criteria) can serve as a basis for forming an objective conclusion of consumers.

Next, we describe a group of infometric methods. This direction evaluates the use of information technologies in terms of the need for information, the degree of integration with other resources, the duration of the resource's operation, network status, etc.One of the most common infometric directions used to evaluate information resources in the network space is sitometry (webometrics). An example of the use of sitometry to assess the information activity of agricultural universities and research centers is given in the work of a group of authors led by V. I. Medennikova [15]. The authors ' methodology is based on the use of nine indicators: indexing in Bing and Yandex search engines, the number of links to the site recorded by Alexa, Google, Linkpad, Majestic, and the number of links from the site recorded by Linkpad.

When assessing the introduction of information technologies in the works of modern researchers, a set of selected methodological areas is used, which is quite justified. Using a wider range of assessment approaches increases the objectivity of the result. Moreover, some of the mentioned areas involve joint use (for example, the expert method is used when choosing the discount rate and forecasting cash flows from various types of activities, which is the basis for evaluating investment projects).

The method of A. A. Belykh belongs to the group of complex methods for evaluating and predicting information systems. The author identifies a number of criteria, the diagnosis of which requires the use of a wide range of methods for calculating economic indicators and expert assessment methods. The first group of criteria describes an information system as a hardware-software system for stable application support and includes: performance in "normal" conditions; noise immunity (performance in conditions of self – eliminating failures); survivability (performance in conditions of self-eliminating failures). permanent bounces). The second group of criteria is responsible for intelligent processing of data on the current state (efficiency) of complex objects and ensures the ability of the information system to interpret it.

The third group of criteria is responsible for the intelligent processing of data on changes in the state (efficiency) of complex objects and ensures the selectivity of management decisions [16].

Y. I. Guliyev, together with a team of authors, developed a methodology for evaluating medical information systems. The resulting indicators in this methodology are reduced to the classic indicators for evaluating an investment project (net present income, payback period, yield index, internal rate of return). At the same time, many indicators specific to the provision of medical services were used in the process of calculating cash flows. The paper does not present a method for calculating the discount rate, but it follows from the context that an expert approach was used to determine its level [17].

A meaningful model for evaluating the efficiency of using information resources and forming databases of research institutions in the agricultural and economic field was proposed by researchers from the Nikonov VIAPI. The authors suggest using the following elements to assess the effectiveness of information systems functioning:

seven groups of indicators of agricultural knowledge representation (publications; applied developments and innovative projects; regulatory documents; databases and knowledge; application software packages; distance learning; consulting activities);

data about the electronic trading platform and the electronic labor exchange;

five indicators of NRU publication activity over five years according to Elibrary;

nine indicators for evaluating sites using webometrics [15].

The considered methodology for assessing the use of information technologies in agricultural educational and research organizations includes elements of almost all the groups of methods identified by us.

Comprehensive methods for evaluating the effectiveness of information technology implementation include comparison with "best practices" and existing standards in this area. the main one for practitioners and standards in the area under study area of interest they include: Information Technology Infrastructure Library, Control Objectives for Information and related Technology, PMBoK Guide Third Edition, PRINCE 2, ISO/IEC 20000 Information technology – Service management, ISO/IEC 27001 – Information technology – Security techniques) [18].

The above-mentioned integrated areas of assessment and integrated methods for assessing the use of information technologies indicate a large variability of approaches and a high dependence on the specific field of technology application.

In the study GIS"Housing AND utilities" taking into account foreign experience, it is proposed to use an approach to evaluating an object as an information product, the creation and operation of which is associated with costs that have investment or consumer value for subjects of housing and communal relations.

Digital Platform GIS"Housing AND utilities" it has a direct impact on the activities of subjects of relations in the housing and communal services sector. Digital technologies in most cases pay off in the long run. The effect of digitalization can manifest itself not in the places of their direct use, but in related areas.

Conclusion. Modern information technologies: automation tools for housing and communal services allow not only automating standard accounting, tax, and personnel accounting procedures, but also optimizing housing and communal services management in general, making cash flow more extensive, and ensuring transparency and regulation of budget management. They allow you to organize monitoring of the state of housing and utilities facilities, keep records of energy consumption, and ensure adequate interaction between their suppliers and consumers.

Analysis of information systems used in the housing and utilities sector has shown that enterprises use a fairly large number of information systems to provide public services. Despite the fact that quite a large number of programs are used in the housing and utilities sector, information systems for monitoring housing and utilities are distributed projects, and today the problem of building a unified information system for monitoring housing and utilities is relevant in the housing sector.

The direction of using information technologies in the field of housing and communal services is state information system "Housing and communal services", a comprehensive software product covering all processes related to the operation and maintenance of housing stock.

The resource will create the necessary technically, economically and socially significant information space for consolidating the necessary information in the housing and utilities sector in one place online, combine the necessary information in the housing and utilities sector in one place and online, allow the authorities to receive information in the housing and utilities sector for conducting analytics throughout the country, strengthen citizens ' trust in the authorities by providing users with free access to information in the housing and utilities sector in order to be able to send requests through the system with a guaranteed response to them, improve the quality of their services. the efficiency of decision-making and management of the housing and utilities sector at all levels of government, the ability for citizens to get complete and up-to-date information about the house, about the management of the house, about the list of services provided, works performed, current and major repairs, payments for residential premises and utilities, etc., provide the possibility of public control.

In this article, we evaluated the effectiveness of GIS "Housing and utilities" in several areas.

When using the classical methodology for evaluating investment projects and programs based on international standards, it is necessary to identify the subject (s) of investment activity. Calculation of investment performance indicators: net discounted income, cost and investment return indices, payback period-will determine whether this investment project is appropriate or not.

To use economic methods for calculating the contribution of a factor to the overall result, saving resources, calculating the system of financial indicators, assessing the level and dynamics of industry-specific indicators, the following methods are given: assessment of the contribution of information technologies to the overall efficiency of the organization based on the use of the production function; method for determining the total cost of ownership and its modification, calculation of key performance indicators of the organization.

When using information diagnostics methods (network metrics, webometrics), it is advisable to use nine indicators: indexing in Bing and Yandex search engines, the number of links to the site recorded by Alexa, Google, Linkpad, Majestic, and the number of links from the site recorded by Linkpad.

When using expert assessment methods, the opinion of individual consumers about the level of service quality, generalized using statistical observation methods, can be considered expert to a certain extent.

The presented consolidated areas of assessment and integrated methods for assessing the use of information technologies indicate a large variability of approaches and a high dependence on the specific scope of technology application.

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INNOVATIVE DEVELOPMENT OF AGRICULTURAL ENTITIES

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Annotation. The goal of the present study is to analyze current trends, identify concerns and perspectives of innovatization of Russian agrarian entities. At present, the scientific and innovative infrastructure of the agricultural sector shows a weak capability to introduce high-tech innovative digital technologies into production. The existing situation is exacerbated by the high share of small industries within agro-industrial complex of Russia, low financial, investment and HR potential of entrepreneurs-farmers, and the lack of effectiveness in their support system. The search for factors constraining innovative processes in the country's agriculture system, formulation of proposals for their leveling was made using methods of comparative analysis, synthesis, generalization and interpretation of the study findings. To resolve these issues, the activities of large and small agro-entities which are potential triggers of digital economic growth in the economy, have been studied. It was found that it is necessary to use the accumulated foreign experience of digital transformation of small business forms and minimize the lag. One of the key issues related to innovations development in the agricultural sector is staff training through creating an effective infrastructure and with an appropriate financial support from the government. Using the example of Volgograd State Agrarian University, the article describes transformations of the training process and the academic base to improve the supply of agricultural entities with highly qualified personnel with digital competencies. In conclusion, the article determined that the main key factors enhancing innovative digital transformation of the agricultural sector are: building a high-quality and effective innovation infrastructure accessible both to large and small businesses, and improving educational activities in training of IT specialists for the agricultural sector.

Keywords: innovation, agriculture, digital transformation, personnel training, agricultural entities.

Introduction.

When shifting to innovations, agricultural enterprises face many challenges that has to be overcome, since in the current conditions only innovations will enable agricultural entities to increase production, maintain competitiveness