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## INFORMATION SYSTEM OF ACCOUNTING AS A WAY TO REDUCE UNCERTAINTY ON THE MARKET BUILDING SERVICES

*Consider the possibility use an automated information system for account of the work of the building enterprise. Secrete the problem of forming a database of such system, which has the absence of full automation of the processes of collection, retrieval, processing and analysis of information. Exude information contacts and other contacts of building enterprise with external objects, including customers, project developers and manufacturers. Depicted functional structure of information system of accounting of building services. Constructed logical model of information system based on existing requirements and limitations to the system. Described the basic elements of interface of automated information system for accounting work building enterprise.*

**Key words:** information, information system, database, model, functional structure.

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## ІНФОРМАЦІЙНА СИСТЕМА ОБЛІКУ ЯК СПОСІБ ЗМЕНШЕННЯ НЕВИЗНАЧЕНОСТІ НА РИНКУ БУДІВЕЛЬНИХ ПОСЛУГ

*У статті розглянуто можливість використання автоматизованої інформаційної системи для обліку робіт будівельного підприємства. Виділено проблему формування бази даних такої системи, яка полягає у відсутності повної автоматизації процесів збору, пошуку, оброблення та аналізу інформації. Виокремлено інформаційні та інші зв'язки будівельного підприємства з зовнішніми об'єктами, зокрема замовниками, розробниками проектів, виробниками. Зображено функціональну структуру інформаційної системи обліку будівельних послуг. На основі сформованих вимог та обмежень до системи побудовано її логічно-інформаційну модель. Описано основні елементи інтерфейсу автоматизованої інформаційної системи для обліку робіт будівельного підприємства.*

**Ключові слова:** інформація, інформаційна система, база даних, модель, функціональна структура.

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## ИНФОРМАЦИОННАЯ СИСТЕМА УЧЕТА КАК СПОСОБ СНИЖЕНИЯ НЕОПРЕДЕЛЕННОСТИ НА РЫНКЕ СТРОИТЕЛЬНЫХ УСЛУГ

*В статье рассмотрено возможность использования автоматизированной информационной системы для учета работ строительного предприятия. Выделено проблему формирования базы данных такой системы, которая заключается в отсутствии полной автоматизации процессов сбора, поиска, обработки и анализа информации. Выделены информационные и другие связи строительного предприятия с внешними объектами, в том числе заказчиками, разработчиками проектов, производителями. Показано функциональную структуру информационной системы учета строительных услуг. На основе сложившихся требований и ограничений к системе построено ее логическую информационную модель. Описаны основные элементы интерфейса автоматизированной информационной системы для учета работ строительного предприятия.*

**Ключевые слова:** информация, информационная система, база данных, модель, функциональная структура.

**Formulation of the problem.** Today, the development of computer information technology is inextricably connected with the development of information systems in the economy, which used for automated solution of economic problems. That is to say, at modern stage, it is important not only simple processing and analysis of information, but use the latest achievements of science and technology for this. Because, nowadays it is difficult to imagine any sphere of human activity, that does not use the computer information technology.

Development information system of accounting works construction company and its implementation would

make it possible to significantly reduce operation of manual information processing, and significantly increase the speed analysis of the data if increases the volume of information and reduces risk of errors.

The problem of forming a database of performed work is that almost do not use automated systems for processing and analysis information. Accumulation and search not the main data is performed rather superficially or does not carried out.

**Analysis of recent research and publications.** Today, national and foreign scientists are working the question of using the information technology in the economy. In particular, Bocharnikov V. [1] explored the establishment and historical aspects in development of information technology, and also their technical hardware and software. Ehamov N., Hayitova I. [2] explained necessity introduction of information technology for the development of construction for the purpose of reduce of terms designing. Sirotkin A. [3] considered the question of priorities in the planning of information provision in the construction industry. Tsyutsyura S. [4] studied ways of improving the efficiency of operational management through the development of information systems. Vyklyuk Y. [5] described the mathematical modeling of complex social and economic systems and crisis events using artificial intelligence. Morozov M. [6] developed classification's system of information technology and their impact on economic processes.

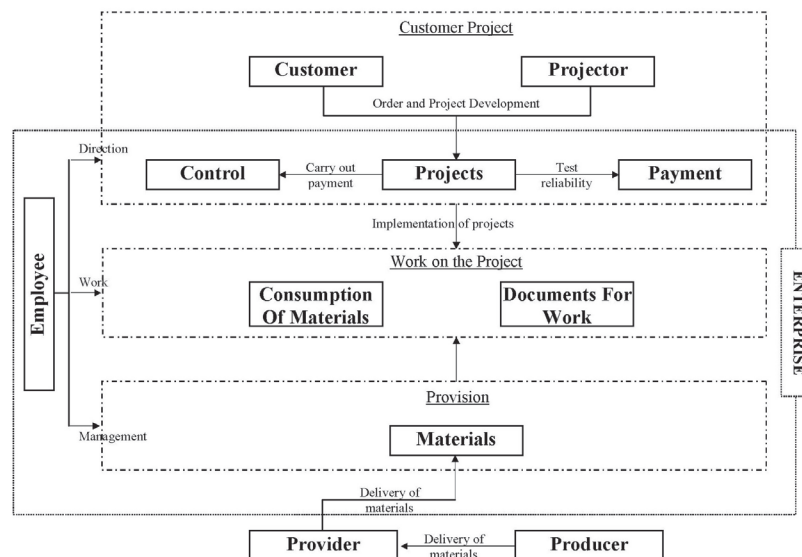
**The purpose and objectives of research.** Consider the possibility use an automated information system for account of the work of the building enterprise, using analysis of last researches and publications on the development of information systems and their applying to problematic issues.

Based on formed requirements and restrictions the task of this research is do develop a draft of information system, which includes the formation of functional structures, development of logical information model and its implementation in the form of an automated information system.

**Presentation of basic material.** The specifics of research leads to singling information contacts and other contacts of building enterprise with external objects, in particular customers of the works and services, the project developer (project institutes and estimates groups), construction and mounting organizations, manufacturers of necessary materials and also their intermediaries (suppliers).

In general, the construction work is carried out on such a scheme: the customer refers to the building company with a statement about the relevant works; Then, made elaboration of projects which performed design-budget groups or institutions; after this, construction works is performed; the final stage is conduction of expertise and inspections, the results of which object is put into operation. The main documents in this are «Estimated the cost of construction» and «Building passport». As for the systematization of these documents, the «Estimated the cost of construction» may form in the information system AVK, which is designed for automated printing of value documents of construction, and «Building passport» is filled mostly by hand.

Schematic image of the functional structure of information system of accounting building services shown in figure 1.



**Fig. 1. Functional structure of accounting information system construction services**

Create the requirements for information system of accounting of construction services:

1. Providing protection from input errors:
  - possibility the automatic introduction of the data (example: date of execution works by default must be current, numbers of projects and works are generated automatically);

- limitation on the introduction of illogical data.
2. Synchronous update information in the database:
    - automatic updates (for example, if the data about client changed, these changes must be reflected in the data of project);
    - automatic deletion of data (for example, if the data about project is deleted, then respectively, information about pay of project is deleted too).
  3. Providing of the convenient interface, getting documents by different criteria, printing and preview documents.
  4. Recovery of information (if accidentally, the data deleted, then must be possible to return them).

Logically and information model of system is represented in figure 2. According this scheme can be shown next functional subsystems: subsystem projects of customers; subsystem of works; subsystem of supplies.

Limitation of information system:

- the administrator can view and make adjustments in the structure of the database;
- numeric ranges, ranges of text, range of time and other values installed within, which the structure of system is define;
- technical limitations associated with the characteristics of personal computers;
- limitation the possibilities of object-oriented programming of control systems by database;
- limitation of integrity (reliability and consistency) contacts, attributes and their relational relations.

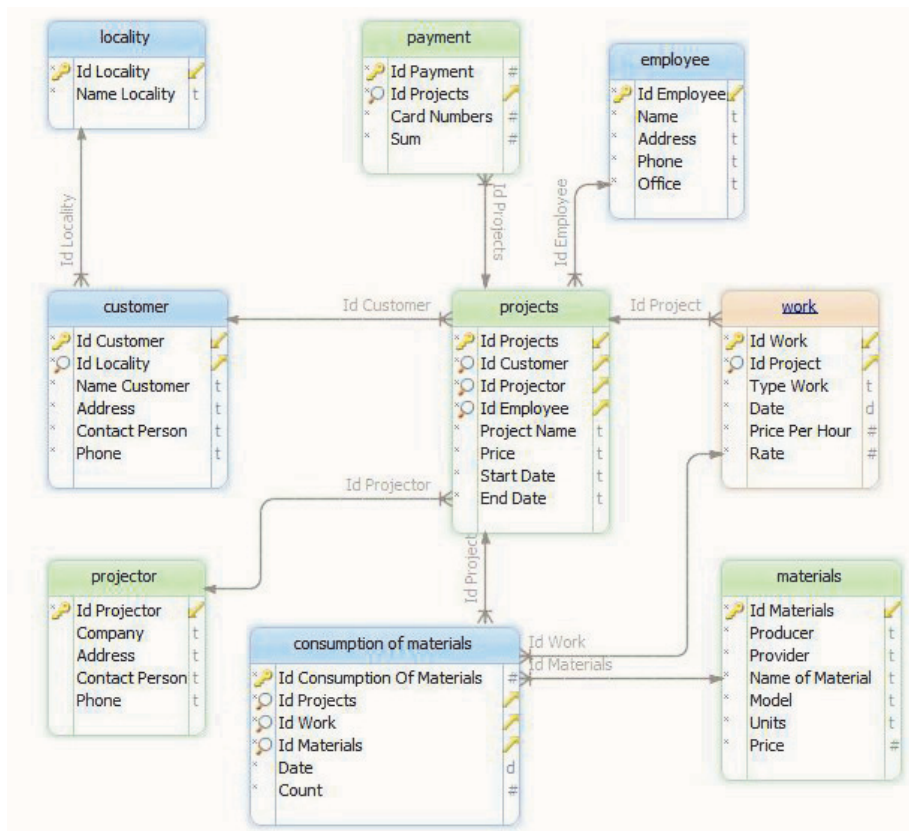


Fig. 2. Logically-informational model of system of accounting for construction services

Technical means of creation informational system is a personal computer. Language means of creation informational system is management system of database Microsoft Access and VBA. In perspective, for storage of the data will be possibly their transfer by local or global lines of communication to server of the database MySQL. In order to provide processing of the data it is advisable to use Structured Query Language SQL.

The main window appears, when starting information system (figure 3) and in the top of part is located string of menu.

Opening of the necessary forms and reports in the system is possible in two ways: by means of buttons forms and by means of appropriate menu options. Advantages of the last method are that the menu options are available at any time. At the opening of several forms and for access to them, at first is necessary to close current form. In the forms «Customers» and «Projects» the data about works and costs can only browse and they are introduced in the works of employees. Safekeeping of output information in format of Microsoft Word, Microsoft Excel is carried by default in the folder «My Documents». WEB page of legal entities automatically opens in the browser by clicking

on the appropriate field. For deleting of the data in the table «Locality» («Projector», «Materials») at first necessary to remove the subordinate data in the table «Customer» («Projects», «Consumption Of Materials»).

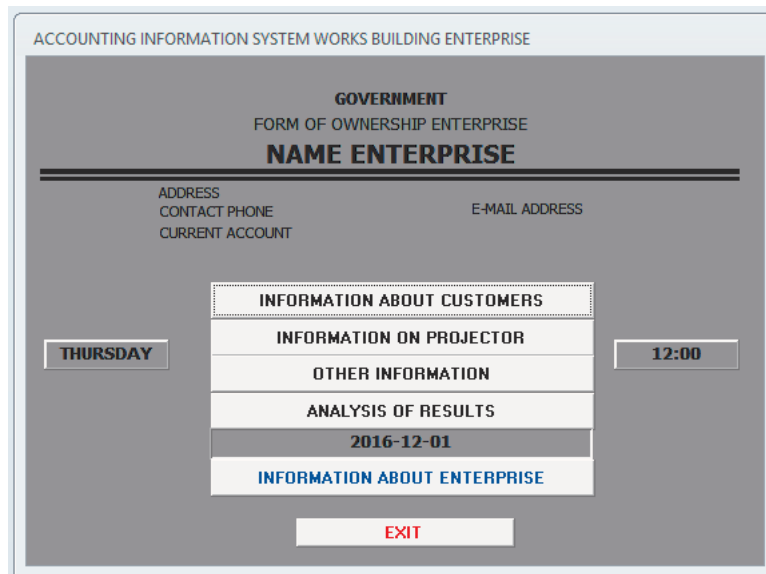


Fig. 3. The main window of information system of accounting construction services

**Conclusions.** Modern construction enterprise has exchange of information flows with external objects, in particular with customers of works and customers of services, project developers, manufacturers of necessary materials, construction and mounting organizations and other. For reduction of uncertainty it is advisable to use information systems.

The functional structure of information system of accounting construction services consists of three subsystems: projects of customers, work on implementation and delivery of materials. In the logical and information model of the data provide accordance of relations between the elements of the five conditions of normalization and data integrity. Described information system allows automating the creation such output documents as: building passport of project, direction on work of employees and the cost estimates by the customer.

Also the system allows implementing formation of additional output information, which gives the possibility to get statistical data about working of the enterprise.

Clearly, that the introduction and final definition of suitability for use the automatic system of accounting works of construction enterprise, is only possible during conducted of expertise, which can do specialists of organization or extraneous persons or experts in computer science and economics.

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