G. Golovko, K. Nikiforova

Poltava National Technical Yuri Kondratyuk University, Poltava

INFORMATION SEARCH SYSTEMS USAGE IN POLTAVA NATIONAL TECHNICAL YURI KONDRATYUK UNIVERSITY CHEMISTRY DEPARTMENT INFORMATION SYSTEM

The article describes the features of the use of modern information systems in the activities of the department of higher education institutions. The essence of information systems and the tasks they can perform are revealed. The features of relational and social interaction are described. The basic components of the parts that form the internal information base are determined. The directions of the introduction of information and communication technologies in the management and educational activity of an educational institution are considered. The dependence of the information system effectiveness on the correct strategy for the development, acquisition and use of software products is determined. The article describes the ways of developing and developing information management systems in a higher educational institution It is proved that the information systems use is a prerequisite for the activity of a modern higher education institution, which will promote the adoption of sound strategic management decisions aimed at increasing competitiveness and creating an adequate and efficient infrastructure.

Keywords: systems, information systems, information technologies, automation, management, information search systems.

Introduction

Various types of resources are needed for the development of human society: instrumental, material, energy, as well as information.

At present, there is a significant increase in the volume of information flows and this applies to almost all spheres of human activity.

The environment in which a person lives, studies and works has a significant influence on the formation of the individual.

Therefore, the urgent problem for all higher educational institutions it is necessary to introduce modern innovative technologies to create a modern informational educational and scientific environment. The university has information systems in which the student can at any time receive all necessary information for training, tutorial instruction and communication with colleagues.

The university information systems correspond to the modern needs of the information society, the current state of science and technology development, educational standards and promote the formation of information and communication competencies of all participants in the educational process from the professor to the student [2].

The research purpose

Analysis of the peculiarities of the modern information systems use in the activity of the higher educational institution in order to create an effective infrastructure and its compliance with the strategic objectives of the higher educational institution. Identify the essence of information systems and the tasks they can perform. To study the main components that form the internal information base. Investigation of the importance of implementing information and communication technologies in the management. Determine the dependence of the effectiveness of the information system on the correct strategy for the development, acquisition and use of software products.

Literature Review

In scientific literature there are many definitions of the "information system" notion. However, as the research shows, there is no single established and generally accepted definition.

Depending on the need, in different cases, different thoughts are applied. Thus, in the economic encyclopedia E. Panchenko notes that the basis of information systems are information models that describe and regulate information flows in management with the help of certain algorithms and procedures for the recording and processing information.

According to V. Ponomarenko, the purpose of the information system is the production of information for the use by the management apparatus. Accordingly, it provides for the accumulation, editing, preservation, processing, generalization and specification of information.

I. Vovchak argues, if the definition of the term "information system" is to be based on a resource approach, the information system can be interpreted as a combination of means and methods of production, accumulation, transformation and use of information resources of the enterprise in order to realize the basic functions of management by users [6].

The Czech researcher K. Kachir considers the difference in the data processing system from information systems, emphasizing the destination and purpose of their design. At the same time, he notes that the data processing system is designed to perform this function over the data that arose at the enterprise and are recorded in certain information media. In other words, this system is not conditioned by the ultimate goal of management - making the necessary management decisions [1].

Research results

Information system is a set of organizational and technical means for storing and processing information in order to provide information needs of users.

Information systems exist from the moment of the society appearance, because at each stage of its development there is a need for management

The mission of the information system is the processing of information necessary for the effective management of all organization resources, the creation of information and technical environment for managing its activities.

An information system can exist without the use of computer technology, it is a matter of economic feasibility.

In any information management system, the three types of tasks are solved:

• problems of situation assessment (sometimes referred to as problems of pattern recognition);

• tasks of transforming the description of the situation (calculation tasks, modeling tasks);

• tasks of decision-making (including optimization).

Information systems include: technical means of data processing, software and relevant personnel. Four components form an internal information base:

• means of fixing and collecting information;

• means of transferring relevant data and reports;

• means of information preservation;

• means of information analysis, processing and presentation.

For a modern higher education institution (HEI) information is one of the most important components of management processes, because its production, transmission and consumption is a "foundation" for the effective functioning of all spheres of society's life.

The result of any modern social institution activity, first of all - the education system, largely depends on the formation correctness and use of information flows [5].

Information system of a higher educational institution is a set of interconnected components that:

collect,

process,

store,

distribute and analyze information that provides decision-making,

coordination,

monitoring and implementation of the organization's activities.

Information refers to data that are presented in a particular form and have meaning and benefit for those who use it.

The effectiveness of the information system depends on the correct strategy of the development, acquisition and use of software products.

Qualitative higher education should be focused on innovative technologies and products offered by companies - world leaders in the field of information technology.

The use of home-made software products that require the constant technical support of developers and become morally obsolete even before their normal work can be get its act together [1].

A new qualitative stage in the development of education is possible only with the intensive introduction of information and communication technologies in the management and educational activities of a comprehensive educational institution. Such activity is conducted in two directions:

• implementation of information technologies in the management of educational activities;

• computerization of the institution educational process and educational work.

The first of these directions is in creating optimal conditions for automating work places of the participants in the educational process and their use of software, which will help to systematize the management work of educational institutions at all levels of the management system.

The second direction is the testing and introduction into the educational process of electronic learning materials, the development and application of electronic support of training sessions, self-sustaining and educational work and test software tools [6–11].

The use of an integrated information system and modern information technologies in the educational process and in the management system as a whole can be considered from different points of view. On the one hand, it is the basis of the university's innovative management system, on the other hand, it is a means of creating conditions for the development of student's creative abilities, increasing the teacher's competence, individualizing the learning process, and ensuring the learning process quality.

Innovation in the educational institution management based on information technology is a key mechanism that will create an advantage in a competitive environment. In this direction, the main measures in the development of informatization is the creation of its proper and efficient infrastructure, the introduction of unified means of access to corporate data, the management improvement of all complexes of information resources, and also ensuring the compliance of the infrastructure with the higher educational institution strategic objectives [4].

In the structure of information systems of higher educational institutions one can identify a number of subsystems - both autonomous and integrated into the general automated control system of universities.

There are the following subsystems:

• subsystems such as "electronic dean's office";

• the subsystem of the educational process supervisory control, including the functions of developing the schedules of training sessions;

• subsystem of methodological support management and a base of educational materials, which is intended to accompany educational and methodical documentation and electronic educational materials;

• subsystem of the research sector management;

• subsystem of paperwork, supporting the work of the office, archives, expeditions, etc .;

• subsystem "Cadre";

• accounting and planning-economic subsystems;

- library information system, which serves for accounting of library funds, search for users of literary sources, registration and satisfaction of quotes;
- remote control subsystem included in the educational portals software;
- subsystem of university engineering services support.

Typically, there are two ways of developing information management systems at universities: the creation of a single corporate automated control system or the creation and integration of independent programs that automate the activities of individual units or some management functions [3].

In the process of developing the informatization project for educational process management at the university it is necessary to take into account such features:

- a large number of workplaces, where computer equipment is periodically changed and operating systems are updated;
- considerable distance of users of the system located in different parts of the city;
- information is created in the system by a small number of "active" operators;
- information is used by a wide range of consumers (management staff, dean's and department staff, teachers and students, their parents) with different access rights;
- the need for a permanent adaptation of the information system to the educational process needs, which change as a result of the higher education system transformation.

An information system is a system designed to store, retrieve, and process information, and relevant organizational resources that provide and disseminate information.

There are two important components to finding information on the Internet - completeness and accuracy. Typically, this is all called a single word - relevance, that is, the relevance of the response to the request [12].

Relevance is a measure of the search engine's relevance to the search query.

The primary method for evaluating relevance is the TF-IDF method, which is used in most search engines (both Internet search engines and reference systems (MSDNs).

Its content is that the greater the local frequency of a term (query) in document (TF) and the greater the "rarity" (ie, the less common it is in other documents) of the term in the collection (IDF), the higher the weight of the document relative to the term - that is, the document will appear earlier in the search results for that term [3].

Associative search is based on two key principles: all data is stored in computer memory (RAM); the calculations are performed in real time.

These architectural solutions are underpinned by two important trends in computer development. The first is the transition from 32- to 64-bit computing, which has led to an exponential increase in the size of computer RAM.

The second is the ubiquity of multi-core processors.

Currently, servers that have 8 processors and a total of 48 cores are widely used. The changes have dramatically increased the computing power of parallel-computing applications [5].

There is a task to create an information system for the chemistry department of the Yuri Kondratyuk National Technical University with a system of information search.

This information system should contain information about the history of the department and its staff composition.

Also it has to provide information to students and entrants about the teaching and research work of the department, methodological support and participation in conferences.

Conclusion

One of the challenges faced by a modern university is to increase its efficiency, namely, a comprehensive action on the strategy, network infrastructure, organizational structure, management and payment systems, and the corporate culture of a higher educational institution.

The construction, support and development of a single integrated university management information system is an extremely complex and time-consuming process that must be consistent with the concept of activity and strategy of the institution's development. The main features of relevant and associative search are described in the article.

The only solution to this problem is to automate the university activities and create an informational environment, which, on the one hand, provides access to the necessary, consistent and complete information when is essential for users, on the other hand, is an essential tool for the university staff activities and the training of students.

Such an information environment allows you to manage processes, data and people, that is, the information environment can be considered from the point of view of maintaining of the university life and as a management tool.

At the moment, most of the universities use "partial" automation, that is, they computerize only certain business processes.

It leads to duplication and loss of information, lack of data for operational analysis, loss of time for maintenance and maintenance of obsolete technologies, high degree of dependence on the human factor.

Thus, the experience of designing and practical application of the automated control system at a higher educational institution has shown that the innovative technologies implementation in the field of its informatization contributes to the optimization of the educational process and is an effective tool for providing high-quality training of specialists.

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**Використання систем пошуку інформації в інформаційній системі кафедри хімії
Полтавського національного технічного університету ім. Юрія Кондратюка**

Г. В. Головко, К. М. Нікіфорова

В статті описано особливості використання сучасних інформаційних систем у діяльності кафедри закладу вищої освіти. Виявлено сутність інформаційних систем та задачі, які вони можуть виконувати. Описано особливості реляційного та асоціативного пошуку інформації Визначено основні складові частини, які утворюють внутрішню інформаційну основу. Розглянуто напрямки запровадження інформаційно-комунікаційних технологій в управлінську та навчально-виховну діяльність навчального закладу. Визначено залежність ефективності інформаційної системи від правильної стратегії розроблення, придбання і використання програмних продуктів. У статті описано способи розробки та розвитку інформаційних систем управління у вищому навчальному закладі. Доведено, що використання інформаційних систем є обов'язковою умовою діяльності сучасного вищого навчального закладу, що сприятиме прийняттю обгрунтованих стратегічних управлінських рішень, спрямованих на зростання конкурентоспроможності та створення належної та ефективної інфраструктури.

Ключові слова: системи, інформаційні системи,інформаційні технології, автоматизація, управління, системи пошуку інформації.

**Использование систем поиска информации в информационной системе кафедры химии
Полтавского национального технического университета им. Юрия Кондратюка**

Г. В. Головко, К. Н. Никифорова

В статье описаны особенности использования современных информационных систем в деятельности кафедры учреждения высшего образования. Выявлена сущность информационных систем и задачи, которые они могут выполнять. Описаны особенности реляционного и ассоциативного поиска информации, определены основные составные части, которые образуют внутреннюю информационную основу. Рассмотрены направления внедрения информационно-коммуникационных технологий в управленческую и учебно-воспитательную деятельность учебного заведения. В статье описаны способы разработки и развития информационных систем управления в высшем учебном заведении Определена зависимость эффективности информационной системы от правильной стратегии разработки, приобретения и использования программных продуктов. Доказано, что использование информационных систем является обязательным условием деятельности современного высшего учебного заведения, будет способствовать принятию обоснованных управленческих решений, направленных на рост конкурентоспособности и создания надлежащей и эффективной инфраструктуры.

Ключевые слова: системы, информационные системы, информационные технологии, автоматизация, управление, системы поиска информации.