The use of information and communication technologies is the key to improving the efficiency of higher education institutions

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Abstract. Information and telecommunication technologies are confidently included in all spheres of human activity. The introduction of information technology is taking place in almost all areas, but the most acute solution to this issue requires the education system, in particular the organization of school management. The dynamics of development of an educational institution depends on the quality of construction of an integrated information automated management system of higher education institutions. The problem of informatization is the main issue around which the whole system of higher education is built. Solving this problem allows to solve the orders of the information society, to train specialists who are able to apply information technology at a modern level in professional activities, in everyday life. It is difficult to imagine a higher education institution that operates without the use of computers and information technology. Thus, the choice of topic is due to the need to study this issue in order to develop new approaches to the introduction of information and communication technologies in the educational process, its improvement and modernization in the general educational system, and on this basis to identify and disseminate positive experience higher education institution.

1. Introduction

Higher education institution - a separate type of institution that is a legal entity of private or public law, operates under a license to conduct educational activities at certain levels of higher education, conducts scientific, scientific, technical, innovative or methodological activities, organizes the educational process and obtaining persons of higher education, postgraduate education, taking into account their vocations, interests and abilities.

Thus, a higher education institution is an institution engaged in educational activities and as a result one of the first to be affected by the Internet, as the basis of its activities is the fastest possible receipt and further dissemination of relevant information covering not only the learning process and knowledge and direct management of the higher education institution. Knowledge in their new sense means a real useful force, a means of achieving social and economic results.

Now there is a new trend in the educational process, which is designed to improve the skills of teachers. Many foreign higher education institutions offer professionally designed Internet in Education courses. As a result of studying the course, students will be able to acquire and develop knowledge and skills in the following areas:

- prospects for the use of the Internet in various fields and areas of educational activity;
- features of information and educational systems based on Internet technologies;

- use of the Internet in educational activities and for self-education;
- selection of pedagogically appropriate means and technologies of the Internet depending on their didactic properties and functions;
- application of new pedagogical technologies and teaching methods in information and communication technologies -saturated environment;-organization and evaluation of pedagogical effectiveness of the educational process carried out using the Internet [1].

Globalization and increased competition are now having a significant impact on any business. The following levels of readiness of higher education institutions for global competition can be distinguished:
- initial provision of services;
- episodic improvement of educational activities;
- systematic improvement of the management process of higher education institutions (introduction of quality management, transition to knowledge-based management).

One of the most fundamental factors in the impact of the Internet on the economy is the qualitative changes in the exchange of information between people. The Internet provides unprecedented opportunities for collaboration, research, and communication.

2. Review of literature

The issue of using information and communication technologies in the activities of higher education institutions was paid attention to domestic and foreign scientists: Efremova SS, Nikitina AB, Sinepol VS, Khvatova YA, Tsikina IA [1], Alekseeva EG, SD Bogatireva SD [3] Voytyushenko NM [7], Dybkova LM [8], Bazhenova VA, Hungarian PS, Gorlacha VM [9], Shemchushenko YS, Chizha IS [10], Drucker P. F. [4]. In addition, the State Program "Information and Communication Technologies in Education and Science for 2006-2010" was aimed at the development of this area: the Ministry of Education and Science of Ukraine. - Kyiv, 2005 [5] and the order of the Ministry of Education and Science of Ukraine № 466 of 25.04.2013 "On approval of the Regulations on distance learning" [6].

3. The purpose and objectives of the study

In the current conditions of world socio-economic development, information support of the management process has become especially important, which consists in collecting and processing information necessary for making sound management decisions. The heads of higher education institutions are faced with the task of obtaining information, processing and generating and transmitting new derived information in the form of control influences.

Management information system is a set of information, economic and mathematical methods and models, technical, software, other technological tools and specialists, designed to process information and make management decisions. The management information system should address the current challenges of strategic and tactical planning, accounting and operational management.

Using the operational information obtained during the operation of the automated information system, the head of the higher education institution can plan and balance resources (material, financial and personnel), calculate and evaluate the results of management decisions, establish operational cost management of products (goods, services) , using resources.

Management information systems allow:
- increase the degree of validity of management decisions through operational collection, transmission and processing of information;
- ensure the timeliness of decisions on the management of the organization in a market economy;
- seek to increase the efficiency of management through the timely submission of the necessary information to managers of all levels of government from a single information fund;
- coordinate decisions made at different levels of government and in different departments;
- due to the awareness of management staff about the current state of the economic object to ensure the growth of labor productivity, reduction of non-production losses.

Training IPs are used to train specialists in the education system, in retraining and advanced training of workers in various sectors of the economy.

According to the degree of automation of information processes, IPs are divided into:

- manual information systems, which are characterized by the lack of modern technical means of information processing and the performance of all human operations according to pre-developed methods;
- automated information systems - human-machine systems that provide automated collection, processing and transmission of information necessary for management decisions in organizations of various types;
- automatic information systems are characterized by the performance of all information processing operations automatically, without human intervention, but leave the human control functions.

In the article "Internet - technologies", published by the analytical agency TAdviser, Internet-technologies are defined as - communication, information and other technologies and services, based on which activities are carried out on the Internet or through it. The basis of the Internet and Internet technologies are hypertexts and sites hosted on the global Internet or in local networks of electronic computers [2].

Among the properties of information technology that are essential for the development of modern society, economy and management, experts note the seven most important:

- Internet technologies provide an opportunity to activate the information resources of society and enterprises, which today are a major factor in development. Research shows that the competent use of information resources significantly saves the natural resources of our planet;
- Internet technologies allow to optimize (first of all automate) information processes. In many developed countries, the majority of the working population is involved in the processing, storage and transmission of information products and services;
- Internet technology is an element used in more complex production and social processes;
- Internet technologies organize information interaction between people and are actively used in the preparation and dissemination of mass information. Thanks to them, the issue of dissemination of information about the product or service, transfer of the information product is finally resolved. Borders no longer have an impact in the information sphere;
- Internet technologies have a tremendous impact on the intellectualization of society and the economy. All over the world - computer technology, training programs and multimedia files - are common attributes of everyday life;
- Information technologies play a key role in obtaining and accumulating new knowledge, the use of which increases the efficiency of economic processes that take place both within an individual company and throughout the planet.

The decisive factor for the development of society at the present stage is that the use of Internet technologies can have an effective impact on solving major problems of the global economy [3].

These properties of Internet technologies give the economies of all countries the opportunity to actively develop. But the introduction of Internet technology in the interior of any company - a very time-consuming process. This is due to the fact that Internet technology is a complex system consisting of physical and logical components.

Another area in the development of the theory of post-industrial society is the so-called concept of "knowledge society", a significant role in which is given not so much information as knowledge as the main condition of production. "Traditional factors of production," writes Drucker, "land (that is, natural resources), labor, and capital, have not disappeared, but have become of secondary importance." These resources can be obtained without much effort, if you have the necessary knowledge. Knowledge in its new sense means a real useful force, a means of achieving social and economic results "[4].

4. Formalization of tasks and search for optimal technological parameters of the process

The use of Internet technologies in the internal space of organizations, called "Intranet", allows them to increase the efficiency of their operation.

The ease with which Internet users can publish information and access the created information resources, reduces the cost of creating and maintaining the internal information environment of the organization. Based on Internet technologies, the only internal company information space has the properties of "managed transparency": users from the external environment have access only to the company's allowed information resources, employees' access to external resources is practically unlimited. In response to the threat of "information overflow", specialized systems of dissemination of operational information are being created: from personal news channels that serve one person, to global information services designed for all tastes and needs.

Simplicity and efficiency of messaging for groups and teams of almost any scale create an opportunity to increase the participation of all employees in the formation of the internal information environment of the organization. In-house Intranet networks allow you to quickly inform the entire staff of the organization about the current situation in the company, as well as give employees the opportunity to influence the assessment of the situation, to contribute to its discussion and clarification. The most important information becomes available to all interested parties almost instantly. Feedback from employees becomes the property of the whole team with minimal delays [5].

The development of "teamwork" on the Internet has created better opportunities to coordinate the joint activities of groups of people. This can be applied both at the internal level and at the level of global markets. Cheap funds for the organization of feedback allow you to simulate and lose in real time possible economic solutions, which involve a large number of participants. As a result, the accuracy of decisions is increased, as well as improved coordination of participants in the implementation of decisions. Enhancing capabilities and improving the quality of coordination for different configurations of teams has changed the structure of internal costs: it has become cheaper to outsource or outsource work than to retain full-time staff. This was confirmed by the practice of educational institutions during the full-scale invasion of the Russian Federation in Ukraine, when almost all higher education institutions switched to distance learning of students, regardless of their location or in other cities of Ukraine or by codon. They have equal access to the resources of the higher education institution where they study, participate in classes and take exams.

The Internet plays a significant role as a source of reference information about higher education institutions. All information about specialties, faculties, departments, educational and methodological support is provided on the Internet in the form of sites and forms the image of the institution of higher education and its attractive image, can significantly reduce advertising costs.

In order to increase website traffic, the website address is included in all information and advertising and marketing materials of the organization, including business cards of employees. Access to the site should be open 24 hours a day, 7 days a week, regardless of its location.

The sphere of distance learning has been most affected by Internet technologies, as virtually all educational activities are transferred to the Internet space.

According to the order of the Ministry of Education and Science of Ukraine dated 25.04.2013 "On approval of the Regulations on distance learning" distance learning means individualized process of acquiring knowledge, skills, abilities and ways of human cognitive activity, which occurs mainly through indirect interaction of distant participants educational process in a specialized environment that operates on the basis of modern psychological and pedagogical and information and communication technologies [6].

The task of distance learning is to provide citizens with the opportunity to exercise the constitutional right to education and professional qualifications, training regardless of gender, race, nationality, social and property status, gender and occupation, worldviews, party affiliation, religion, religion, state of health, place of residence according to their abilities.

According to foreign statistics, the majority of distance learning students are people over 25 who are already working and want to deepen their professional knowledge without quitting. However, distance learning is suitable for almost everyone.

From an economic point of view, distance education programs are much cheaper than traditional education. First of all, this is due to the fact that there are no premises for which you would have to pay rent. In addition, most of the time students study distance learning on their own, and the school reduces the cost of salaries for teachers, because distance learning is cheaper than education in the traditional scheme.

5. Strategy for solving optimization problems

The structure of the market using Internet technologies expands borders, creates new markets and usually requires the manufacturer to react quickly to the changing tastes of its customers. All this allows us to create new network versions of "horizontal" economic structures that serve all the diversity of organizations in economics and education. In institutional theory, horizontal economic structures are interpreted as systems of agreements between most members of society that define common rules for the most typical types of human interactions in society.

Modern higher education institutions strive to gain competitive advantage and maximum effect from the involved information and Internet technologies, but without the appropriate specialists and trained employees, the invested funds may not bring the desired result.

Possession of information technology is a prerequisite for the existence and development of higher education. In the complex process of managing a large organization, management usually identifies the main strategic areas: finance, personnel, level of service quality. As a rule, separate information systems are created for each of them to facilitate the collection and storage of information. Among the main practical results obtained in the automation of personnel service - reducing the overall complexity of the personnel management cycle, reducing the total cost of maintenance and support of the system, staffing, improving the quality of information support, security of personnel, corporate security in terms of personnel management. The economic effect of implementing an integrated corporate system is obvious. Savings are achieved by accelerating information exchange, more efficient data processing, reducing the likelihood of errors. The efficiency of a higher education institution is determined by the number of highly effective specialists graduated from the institution.

Our study showed that every higher education institution in Ukraine, which seeks to increase the efficiency and effectiveness of its competitive environment, should have not only automated accounting subsystems, salaries, e-library, own website of higher education but also an automated management system. can combine such subsystems as: "entrant", "student", "study", "finance", "documents", "staff", "dean's office", "admissions committee", "campus" information services and of course the ability to integrate with other control subsystems.

6. Conclusion

The rapid development of network information technologies, in addition to a significant reduction in temporal and spatial barriers to the dissemination of information, has opened up new perspectives in the field of education. It can be argued that in the modern world there is a tendency to merge educational and information technologies and the formation on this basis of fundamentally new integrated learning technologies based, in particular, on Internet technologies.

With the use of Internet technologies there is a possibility of unlimited and very cheap reproduction of educational information, fast and targeted delivery. At the same time, learning becomes interactive, the importance of independent work of students grows, the intensity of the educational process seriously increases. These advantages have led to the intensification of the work of teams of many universities on the introduction of information technology in the traditional model of the educational process.

Thus, it can be argued about the formation of a self-configured system on the Internet, through which any user has the opportunity to maximize the effectiveness of finding suitable conditions and partners for their activities.

So the global Internet has long been part of the lives of people who deal with information. The main subject of management of a higher education institution is information flows.

Already at the present stage, the economic efficiency of activities is determined exactly how the management of these flows will be built. In this regard, it seems appropriate to create a single information field of higher education, which permeates a number of management subsystems, with different levels of access to different people from anywhere in the world, depending on their involvement.

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