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MANAGEMENT OF AN ESTABLISHMENT OF HIGHER EDUCATION BY MEANS OF INNOVATIVE EDUCATIONAL TECHNOLOGIES

General directions of improving innovative management of educational organizations are studied in the paper. Innovativeness as an important factor of innovative management is also analyzed. Innovative educational factors and technologies are shown. Information management of the establishment of higher education is highlighted. Transfer of knowledge in educational processes is grounded. The use of information units as an innovative technology is shown.

Key words: *establishment of higher education, information-and-communication technologies, quality of education, management factors, knowledge management.*

The development of education serves the solution of the tasks of the country's social-and-economic development and is one of Ukraine's top priorities. To maintain its position in the domestic and world markets, Ukraine needs to maintain a high level of domestic education. To solve this problem, it is important to ensure effective management of educational establishments. Economic conditions of the country lead universities to the commercialization of educational and scientific activities and to the ability to create and use the results of scientific-and-technical creativity. The educational and scientific products produced by the establishment of higher education must have innovativeness and competitiveness.

Using the mechanisms of innovation increases the competitiveness and quality of educational services. The modern establishment of higher education can independently or in association with other universities or commercial enterprises ensure the advancement of innovative projects from conception to implementation. The solution of the problem of increasing the

efficiency of education necessitates the development of a strategy for optimizing the management of an establishment of higher education. Therefore, the modern activity of higher education should organically include innovative activity. Modern trends in the development of higher education reflect the transformation of universities from the classical to the innovative model of education. In connection with these trends, the problem of managing innovative processes in the educational environment arises. Transforming the typification of innovations into education, we can identify the factors that affect innovation activities and innovation management, these are: organizational; technological; motivational; information; intellectual; technical. The need for the development of an innovative environment, the activation of innovation activities of establishments of higher education determines the relevance of research in the field of innovative management.

Modernization and optimization of higher education management requires an analysis of experience and practical recommendations for establishments of higher education in order to choose the most effective and optimal solutions for the implementation of the developed strategy as an integral part of the package of measures for Ukraine's participation in the Bologna process in the entry of Ukrainian establishments of higher education in the international educational space.

The need to improve the measures to modernize the management of establishments of higher education in the environment of an establishments of higher education, provide information and methodological support to specialists and administrative-and-management personnel that modernize management processes, as well as improve the skills of specialists and management personnel in the field of modern management of an establishment of higher education, require appropriate justification. Such a substantiation is possible on the basis of studying the practice and experience of already existing management decisions using ICT.

Information and communication technologies are a broad concept that includes systems, processes and people involved in communication through technology [1]. Information and communication technologies mean the technological means and resources used to provide communication, creation, distribution, storage and management of information [2]. It is possible to single out the main directions of innovative management in the sphere of education: a) the establishment of higher education should have its own innovative policy in which all teachers of an establishment of higher education should take part; b) an understanding of the role of the establishment of higher education in the innovation process is necessary; c) the establishment of higher education creates and enhances its innovativeness; d) the establishment of higher education uses innovative methods and technologies; e) the establishment of higher education carries out scientific research, receives and formalizes the result in a form suitable for subsequent commercialization; f) the establishment of higher education must sell the products, not the products; g) the establishments of higher education has a coordinating body that is responsible for innovation policy; h) the establishment of higher education carries out the receiving and application of information educational resources for the purposes of education; j) the establishment of higher education develops technologies for obtaining and transferring knowledge in educational and managerial processes.

In the process of teaching and management, information educational models and information educational technologies are built on the basis of the use of information units as components of technology and the basis of information resources.

Unfortunately, at present there is a practice when any new or even old technology is associated with the terms "innovative" and formally announces innovation activity. There is a practice to call innovation any new development without an analysis of its characteristics and the more characteristics that would define it as an innovation. At present, the term "innovations" and "innovative" in different combinations are used in various fields. Often, the use of terms is not justified or attempts are made to distinguish between novation and innovation. In addition, discussions on the definition of the term "innovation" continue. This is partly due to the lack of a standard for this term and the fact that there is no "innovation" section in the UDC classifier and articles on this topic are under the heading "investments". This makes it relevant to study the distinctive features of novation and innovation and the disclosure of the essential characteristics of the concept of "innovation". Abroad, as a fundamental document they apply the manual, which is abbreviated "OSLO MANUAL". In accordance with this manual, adopted by the Organization for Economic Cooperation and Development (OECD), we pay attention to the difference between the concepts of novation and innovation. The essential property of innovation is novelty. This means that the main

four types of innovation [3]: product, process, marketing or organizational, must be new in relation to known and applied developments. However, this property is not unique. Many objects possessing this property are not innovations, but are novations. Novation is something new that was not there before. Under civil law, innovation means the agreement of the parties to replace one commitment they have committed with another obligation. Novations are the most important components of innovation, but they are not identical to them. Not every set of novations is also an innovation. Novation has a certain positive effect, but, as a rule, smaller in effect and scale than innovation. We define innovation from these positions as an integral set of novations, which provides an additional effect to the sum of the effects of novations that make up it. Innovation differs from the novation by a large scale, a great effect and the possible presence of a synergistic effect.

What new ideas are certainly not innovations?

Termination of the use of the process, method, methods of organization or release of specialists. Simple *capital investment* or *expansion* of the organization. Installation of new equipment in place of the old one. Minor *extensions* or *upgrades* to existing equipment, *software upgrades* are not process innovations.

The change in the price of a product or process that leads to an increase in profit is also not an innovation. For example, innovation does not arise when the computer model is sold at a lower price only because the price of computer chips falls [4].

Customization. If a one-time product is significantly different from the products that the organization previously did, it is not a product innovation. Regular seasonal and other cyclical changes are not innovations.

Copying other methods. The product, process, method or organizational transformations carried out by other organizations, even if they are new to the organization, are not innovations. The same goes for the industry. The introduction of a new technology in one industry, which is implemented in another, is not an innovation.

In addition, we should talk about educational innovation as a special type of innovation having its own specifics [5]. In particular, the direction of educational innovation as social innovation defines them as social innovations [3; 4].

Innovation is the introduction of new or significantly improved products (goods or services) or process, a new marketing method or a new organizational method in business practice, workplace organization or external relations [3].

Innovations are new to the market (industry), when the organization first introduces innovation that contains signs of innovation in its market (industry). Innovation has a global level, when the organization first introduced innovation for all markets and industries, domestic and international. New in the world implies a qualitatively higher degree of novelty than a new one for the market. It should be noted that when creators of scientific or technological projects often unreasonably attribute to themselves the level of novelty, only because in the industry or at the enterprise this project has not previously been applied.

To analyze the innovation of projects and developments, an information approach or system analysis can be used. The scope of innovation is close to the information sphere. In the field of informatization, there are two types of standards "de jure" and "de facto" [6]. The first are reflected in special documents, the latter are recognized by the world community, although they are not reflected in official documents. They are called informal standards. Examples of informal standards are Internet standards or Microsoft standards. Comparing with formal and informal samples, one can evaluate innovation or its lack.

It is a mistake to reduce innovation management only to the creation of technological innovations. A more important indicator is the innovative nature of the educational organization as the basis for obtaining innovations and innovative methods in education.

Innovation includes innovative potential and innovative resources. It is necessary to distinguish between innovation potential and innovative resources. We define the innovative potential as an integral assessment: the state of the elements of the innovation resource base, the set of methods and tools for the implementation of innovative resources and subsequent innovation activities [7]. Evaluation of innovative potential is a quantitative measure of the possibility of creating innovative resources and the implementation of innovation based on available innovative resources. Innovative potential is the basis for obtaining a resource.

Innovative resources are sources and prerequisites for obtaining innovations that can be realized with existing technologies and socio-economic relations. An innovation resource is a combination of available relationships, means and opportunities for creating innovations. Innovative resource is the basis for the implementation of innovation.

Innovative potential is also considered as a set of different types of resources, including material, financial, intellectual, information, scientific and technical and other resources necessary for the implementation of innovation activities [7]. Thus, the level of innovation determines the quality of innovative management and the state of innovative activity of the educational organization. Innovation also determines the competitiveness of the educational organization [8]. Innovation is not an end in itself of the establishment of higher education, but plays the role of the basis of its reaction to the variability of the external environment, that is, the adaptability of the organization.

Innovative educational factors and technologies

1. Educational virtual and media technologies. Media education as an innovative technosphere is seen as an essential factor in increasing the effectiveness of additional technical education, its role and place in the overall system of modernized education. The technosphere is a part of the pedagogically organized space of establishments of additional education, the values of which are modern technical means of information. Media education as an innovative technosphere is an actual factor of modern education. The advantage of this approach is the ability to integrate a variety of media in one application, for example, audio, video and text can be presented simultaneously on a web page. A special type of media resources are virtual educational resources [9].

2. Human resource management. The criterion of innovativeness of an educational establishment can be the growth of the intellectual capital of an educational establishment and the innovativeness of staff and the establishment of higher education as a whole. Personnel accounting is a formal procedure that does not reflect the innovativeness of personnel, the competitiveness of personnel and does not determine the relationship between the quality of education and personnel.

Increasing the competitiveness of the educational organization is possible due to research and development of mechanisms for forming the competitiveness of the educational organization on the basis of the organization of intellectual resources [8].

Intellectual factors are associated with the need for human resource (HR) management. Abroad in many organizations there is a post of director for HR management, head of HR management department or HR manager. In the Ukrainian education there are no such kinds of management yet. It is HR and their management that create intellectual capital [1], which is not included in the sphere of personnel accounting.

Intellectual capital should be taken as a new economic category, reflecting the objective reality of increasing the value of intangible assets partially accountable. Other factors of intellectual capital (a highly qualified employee, work, pedagogical experience) not only can not be accounted for, but are not even the property of the organization that owns them. These factors influence the market capitalization of the company or the brand of the educational establishment. The market value of such an organization exceeds the book value of fixed assets, material and financial resources. On the other hand, this situation creates additional difficulties in managing such capital, since a highly qualified specialist and a brand bearer can leave the establishment of higher education.

HR management leads to an increase in staff competencies. Competencies are the basis of innovation. Competence determines the level and intellectual potential of staff and enterprise. Now there are four models for determining competences: 1) based on the parameters of the individual; 2) based on the performance of tasks and activities; 3) based on the performance of production activities; 4) based on management of performance. Each of the four competency models leads to different approaches to planning, organizing and managing personnel.

3. Balanced scorecard as an innovative technology. Experience shows that an effective mechanism for managing an establishment of higher education and increasing competitiveness is a balanced system of indicators that has developed in the individual balanced system of indicators in relation to the task of managing the establishment of higher education. Such an individual system allows us to consider the performance indicators of the organization and the individual as an interconnected complex. Personal Balanced Scorecard (PBSC) is currently considered as an effective method of coaching (mentoring, work with employees, including individual training and counseling). A special role of this method is to change the behavior of the teacher in order to improve the

effectiveness of the establishment of higher education. PBSC is regarded as an integral part of the Total Performance Scorecard (TPS).

In its ideology, the TPS concept can be considered a systematic process of continuous, step-by-step training and development aimed at forming the competitiveness of both the individual and the staff of the organization as a whole. The main components of this process are improvement, development, training, which are closely related and must balance each other.

A balanced system of indicators is an innovative technology, so the set of indicators provides a synergistic effect, which is a sign of innovation.

4. Bimodal educational systems. Distance education and its methods are increasingly used in modern education. Expanding the sphere of education requires the use and improvement of methods of distance education. There are educational establishments that practice only distance education, others practice a combination of traditional and distance education. The latter are called bimodal educational systems. In bimodal systems, distance education is integrated into the structure of the traditional educational model. Full-time and distance students can learn from the same teachers, according to the same programs, and take the same, or similar, exams. Strictly speaking, "stationary" students often use educational materials aimed at distance students. In bimodal systems, teachers often have functions that are assigned to collectives in specialized systems.

In most bimodal educational organizations, distance education is administered by a special department of the organization. In comparison with specialized systems, bimodal systems of distance education are usually applied in a small area.

Distance education has another important aspect. Traditional pedagogy is aimed at working with young people to obtain general primary and secondary education, providing literacy, familiarizing with culture and orientation for choosing the future field of activity. However, in recent years, the scientific foundations of pedagogy have to some extent begun to adapt in the so-called adult education, that is andragogy. Adult education is currently one of the most urgent theoretical and practical problems. The level of economic and social development of the state largely depends on its solution.

Bimodal educational systems are not just an additive application of traditional and distance education methods, but an optimal combination of technologies based on the specifics of the establishment of higher education and the integration of its academic disciplines. It is these systems that provide a synergistic effect and are innovative.

Information management of the establishment of higher education can be innovative and non-innovative. In other words, the simple application of information technologies does not increase the innovativeness of the educational organization. Information management of the establishment of higher education becomes innovative when it creates technological or social innovation. We can talk about the levels of the hierarchy of issues of the informatization of education, which are considered in various sources. A general characteristic of educational processes can be given using the model introduced by I. V. Robert: "disclosure; development; implementation" [10]. Detailed character of educational processes in groups makes it possible to identify the next level of the hierarchy of the "group of processes". These groups of processes include: marketing of educational services; management of the educational establishment; personnel management; management of educational content; innovative technologies; management of the educational process, etc. In general, we can talk about information management in relation to the education system. The use of information-based indicators should be considered as one of the innovations of information management in relation to establishments of higher education. Informationally defined indicators are indicators, the value of which is determined explicitly on the basis of the collection of information or measurements. The conceptual level sets the principles, and the indicators themselves can be calculated in each specific case in different ways and in each case there can be a specific set of these indicators. The formal level includes complex calculations and indicators are obtained on the basis of calculations, which entails the appearance of errors. In both cases, the indicators are calculated. The real level of use of indicators is possible only with their information certainty. It is based on their direct measurement. Information-determined indicators of the establishment of higher education are a tool for direct or explicit management. Such a system of indicators allows us to consider the activities of the organization and the individual as an interconnected complex and simplifies the calculation of managerial actions.

Transfer of knowledge in educational and managerial processes is associated with two technologies: knowledge extraction and knowledge management. At present, technologies that use knowledge are becoming relevant. Among the most pressing problems is the study of the theoretical foundations of the representation of knowledge both for storage in the database and knowledge base and for application in educational technologies. Therefore, the common technologies for extracting knowledge are relevant.

The methods used in the theory of learning are actively based on knowledge. Therefore, the perception of knowledge as learning is a border area between sciences developing outside the education sphere and those methods that are characteristic of educational systems. Typically, training methods are procedures based on the use of verified information stored in a database.

By knowledge management we understand any processes and principles related to the creation, acquisition, exchange and use of knowledge or experience. Some definitions emphasize that this is the process of acquiring collective experience for its full use by the company where it can be useful for achieving the highest impact. Collective experience or "knowledge resources" are defined as core competencies, common practice or key art. Some definitions emphasize that knowledge management is based on the use of people, processes or technologies, which allows an organization to optimize knowledge sharing and preservation.

In modern literature, knowledge management is treated as a new management function, which consists in the purposeful formation, updating and application of knowledge to improve the effectiveness of the educational establishment and educational processes. In the same context, knowledge management is defined as a new type of management activity aimed at the intensive use of intangible assets [1] as the main resources of the knowledge economy and stimulating innovation in order to maximize the efficiency of the economy and a separate enterprise and to form real competitive advantages on this basis.

The essence of knowledge management in education lies in the targeted influence of the subjects of management on the development of corporate human capital with the aim of expanding the reproduction of new knowledge and educational information products that provide the establishment of higher education with strategic competitive advantages. It is possible to note a number of key aspects arising from the interpretation of the essence of knowledge management.

Firstly, the management of an educational institution must possess such managerial knowledge and competences that would be adequate to the requirements of the reproduction of human capital of high quality. These subjects of management, or leaders in the field of the reproduction of corporate knowledge, must possess such managerial skills that would be the leader basis for the highly efficient functioning of their managerial capital.

Secondly, if the object of the corresponding administrative influence is human capital, represented by a complex and contradictory unity of human personalities and characters, then the expected high quality of this management should be a function of targeted influences on the corresponding socio-cultural, socio-psychological, sociological and other humanitarian-and-economic aspects and spheres of collective corporate activity.

Consequently, the final product of the educational establishment, acting in the form of an educational service, is not only a function of the professional knowledge and competences of the managers and staff of the establishment of higher education itself, but an integral result of the social, institutional, and other knowledge of the establishment of higher education. Therefore, existing approaches to the management of educational knowledge are closely related to the cognitive model of the human capital of the enterprise [11].

The main functions of the system of management of educational knowledge are to solve two general interrelated tasks. Firstly, in the formation of innovative and self-learning corporate human capital, capable of high-speed creative-labor, creative "conversion". Secondly, in the creation of social conditions, within which corporate human capital of innovative quality realizes itself in creating innovations that are in demand by the market and other consumers in the form of educational products.

Recently, information units are widely used in various scientific and technological areas. They serve as a tool for describing and forming: processes, models, situations. Currently, a system approach is widely used to model management technologies, educational systems, educational technologies and educational resources.

In different methods of teaching, traditional, information, virtual, remote information units are used as elements of knowledge transfer. These information units, unlike information units used, for example, in communication theory, can be defined as information educational units. The analysis and study of these units is relevant and especially important in distance and virtual education, in which they are the elements and the basis for the transfer of knowledge and training. The process of education and the quality of education depends on the correct registration and use of these units. Information educational units are informational bricks in the system of building educational scenarios, technologies and resources.

From the standpoint of a system approach, information units are elements of a complex system that describes managerial processes. In the aspect of management groups of information units are of interest: structural; semantic; procedural; operational; visual; transactional. All groups of information units are a means of describing various management technologies or technologies supporting management activities [12].

Structural group of information units includes tools for describing the structures of management models and the structures of situations in which the managed object is located. The semantic group of information units includes means for conveying the content of control and corrective actions. The procedural group includes means for describing managerial processes at the formal level of management.

The operating group of information units includes tools for describing managerial processes at the operational level of management. It essentially implements management processes in practice. The visual group of information units includes means for presenting the results of processing information in the form of images, presentations, visual dynamic models, virtual reality models. It performs the functions of supporting management decisions. The transaction group includes tools for describing the exchange of transactions when dealing with databases and storages.

Analysis of management methods using information units makes it possible not only to improve the quality of management, but also to carry out interdisciplinary transfer of knowledge. The use of information units makes it possible to conduct a comparative analysis of different methods and technologies in education, and also to conduct an analysis of information educational resources [13].

For modern establishments of higher education to provide quality training methods of innovation management become relevant. The need for innovative development, changes in the organization arises in any case, regardless of the target orientation adopted by top management. This determines the use of innovative management as a set of measures to improve the competitiveness of education and improve the quality of education. Innovation is associated with the use of advanced methods and technologies and increases the level of education in the establishment of higher education. It is necessary to share the management of the establishment of higher education proper and the management of the transfer of knowledge. All this is based on the concept of information units and integrated information technologies. Information resources for educational tasks are also organized in a new way. They are more structured and formed using cognitive models. At the same time, one of the key ideas of this work is that not every use of information technologies, management technologies, bimodal systems and virtual learning systems is innovative. They become such only when a synergistic effect is obtained.

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