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INFORMATION AND COMMUNICATION SUPPORT OF QUALITY MANAGEMENT DECISIONS

Abstract. The article examines the impact of information and communication support on the process of making quality management decisions aimed at achieving sustainable development of higher education institutions in the context of Ukraine's integration into the European educational space. The essence of sustainable development of higher education institutions and the specifics of its achievement within competition of educational services in the market, which is especially acute in the conditions of European integration, are considered. The necessity of using effective information and communication support in the development of high-quality management decisions aimed at achieving sustainable development of higher education institutions is determined. The process of making managerial decisions is considered and the quality of making managerial decisions is characterized. The organizational aspects of making quality management decisions are determined. The sequence of actions on the decision of the problems arising in the course of activities of the higher education institutions is offered. The approaches to be considered in the course of accepting qualitative administrative decisions directed on the achievement of sustainable development of higher education institutions on the basis of management of information and communication maintenance of their activity are considered. The influence of people who make management decisions on their quality and effectiveness is determined. The requirements to the quality criteria of managerial decision-making, which are put forward in the development of economic and mathematical models of managerial decision-making aimed at achieving sustainable development of higher education institutions, are studied. The principles of optimization of management decisions are considered.

Keywords: management, management decisions, high-quality management decisions, information and communication support.

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ІНФОРМАЦІЙНО-КОМУНІКАЦІЙНЕ ЗАБЕЗПЕЧЕННЯ УХВАЛЕНЬ ЯКІСНИХ УПРАВЛІНСЬКИХ РІШЕНЬ

Анотація. Проведено дослідження впливу інформаційно-комунікаційного забезпечення на процес ухвалення якісних управлінських рішень, спрямованих на досягнення сталого розвитку закладів вищої освіти в умовах інтеграції України в європейській освітній простір. Розглянуто сутність сталого розвитку закладів вищої освіти і специфіку його досягнення в умовах конкуренції на ринку освітніх послуг, що особливо загострюється в умовах європейської інтеграції. Визначено доцільність використання ефективного інформаційно-комунікаційного забезпечення при розробленні якісних управлінських рішень, спрямованих на досягнення сталого розвитку закладів вищої освіти. Розглянуто процес ухвалення управлінських рішень та охарактеризовано якість його ухвалення. Визначено організаційні аспекти ухвалення якісних управлінських рішень. Запропонована послідовність дій щодо розв'язання проблем, які виникають у процесі здійснення закладами вищої освіти своєї діяльності. Розглянуто підходи, які необхідно враховувати у процесі ухвалення якісних управлінських рішень, спрямованих на розв'язання проблем досягнення сталого розвитку закладів вищої освіти на основі управління інформаційно-комунікаційним забезпеченням їхньої діяльності. Визначено вплив осіб, які ухвалюють управлінські рішення, на їхню якість і результативність. Досліджено вимоги до критеріїв якості ухвалення управлінських рішень, які висувуються при розробленні економіко-математичних моделей ухвалення управлінських рішень, спрямованих на досягнення сталого розвитку закладів вищої освіти. Розглянуто принципи оптимізації управлінських рішень.

Ключові слова: управління, управлінські рішення, якісні управлінські рішення, інформаційно-комунікаційне забезпечення.

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Introduction. Modern conditions of world socio-economic development and integration of Ukraine into the European educational space, exacerbate the issue of improving the efficiency of information and communication support of higher education management, which is to collect and process information required for making quality management decisions aimed at sustainable development. In the context of European integration, domestic higher education institutions should pay considerable attention to information and communication support of their activities, namely the construction of effective mechanisms for obtaining, processing and analyzing available information on the results of their activities, as well as obtaining reliable and timely information on internal and external environment, conditions that put forward external and internal stakeholders to the activities

of higher education institutions and its use in the process of making quality management decisions aimed at achieving significant competitive advantages in the market of educational services among other higher education institutions. The understanding by Ukrainian higher education institutions of their own capabilities to meet the demands of consumers of educational services and other external and internal stakeholders can help them to develop their own competitive advantages, make quality management decisions and increase their competitiveness in a fierce struggle between educational institutions, which becomes especially relevant in the context of Ukraine's integration into the European educational space.

Analysis of research and problem statement. The works of Nobel Laureate G. Simon [1], as well as many other foreign researchers [2—6] are devoted to the fundamental study of organizational behavior and decision-making processes, as well as on increasing efficiency of decision-making and implementation of management decisions. The works of such domestic scientists as N. Guberska [7], O. Moiseenko [8], O. Nesterenko [9], O. Savenkov [9], O. Falovsky [9] and many others are devoted to the adoption of managerial decisions. The works of such scientists as D. Jamali [9], G. Lopushnyak [11], O. Morgulets [12], S. Natroshvili [13], H. Rybchanska [11], M. Terovanesov [14] and many others are devoted to research on the issues of effective management of higher education institutions. At the same time, the problems and prospects of integration of higher education in Ukraine into the European educational space are considered in the works of such domestic researchers as: I. Grashchenko [15], V. Yankova [15], etc. However, despite the significant interest of scientists in studying the problems associated with the activities of higher education institutions and improving the efficiency of their management, the impact of information and communication support on quality management decisions aimed at achieving sustainable development of higher education institutions is still relevant and requires thorough research, especially in the context of Ukraine's integration into the European educational space.

The purpose of the article is to conduct a study to determine the impact of information and communication support on the process of making quality management decisions aimed at achieving sustainable development of higher education institutions in the context of Ukraine's integration into the European educational space.

Research results. In the context of Ukraine's integration into the European educational space, it is impossible to imagine the effective functioning of higher education institutions without proper information and communication support, which should support and serve all aspects of their activities. The use of information and communication technologies helps to improve the quality, accuracy and objectivity of information and, as a result, ensures the adoption of quality management decisions aimed at achieving their sustainable development.

It should be noted that in the context of higher education institutions, their sustainable development is proposed to mean a long-term set of processes of quantitative and qualitative changes in their activities, which lead to irreversible balanced improvement of their main ratings, as well as strengthening adaptive capabilities internal factors [16]. The above should take place with the rational use of the whole potential of higher education institutions through the effective management of information and communication support, using data, information, knowledge and communication as the main resources for achieving their sustainable development.

Current trends in higher education institutions and the need to ensure their sustainable development in fierce competition in the market of educational services, which is especially acute in the context of European integration and necessitate a radical overhaul of key aspects of higher education management. European integration encourages domestic higher education institutions to take into account not only national but also international interests, which, in turn, require a dynamic response to rapid changes in the external environment in order to achieve sustainable development, which is possible only with quality management decisions.

Achieving sustainable development of higher education institutions in the context of European integration requires solving the problems of effective management of information and communication support of their activities and requires improving the process of making quality management decisions in order to increase their efficiency. In this case, information and communication support is a set of data, information, knowledge and modern communication

channels that are necessary for the adoption and implementation of quality management decisions aimed at achieving sustainable development. The main components of information and communication support of higher education institutions are information, knowledge and communication, which are subject to certain requirements, violation of which will not achieve sustainable development. Adoption and implementation of quality management decisions in the activities of higher education institutions should be aimed at improving the effectiveness of institutions and contribute to their sustainable development.

Management decision in the context of higher education institutions is the result of analysis, forecasting, economic justification and selection of alternatives from many options aimed at achieving their sustainable development. Improving the efficiency of making and implementing quality management decisions is associated with the need to set goals, develop a target function, optimization criteria, a set of constraints, as well as improving the process of making and implementing management decisions aimed at achieving sustainable development of higher education. It should be borne in mind that the process of making management decisions is a consistent set of processes for developing, justifying and making management decisions [16].

The need to use effective information and communication support in the development of quality management decisions aimed at achieving sustainable development of higher education institutions, primarily due to the need to respond to the situation in conditions of uncertainty. Thus, management decisions should be developed in several alternatives, which provide the opportunity to choose the most acceptable management decision in a particular situation in conditions of uncertainty. Substantiation of quality management decisions should be based on the analysis of the results of higher education institutions, consistent with the strategic goals of their sustainable development.

Management decisions are not a one-time act. Thus, Nobel Laureate G. Simon [1] identifies the stages of information retrieval, search and finding alternatives, choosing the best alternative. Based on the stages of the decision-making process proposed by G. Simon, it is proposed to consider the process of making managerial decisions in the management system of information and communication support for sustainable development of higher education institutions as a certain sequence of stages: goal-setting management decisions; development and adoption of management decisions; organization of implementation and control over the implementation of management decisions.

At the first stage of goal-setting management decisions, all the necessary and available information at the time of the situation (problem) and management decision-making is collected. An effective means of obtaining all the necessary information (data) is an extensive and multilevel information and communication network of higher education institutions. On the basis of the available information at the first stage the analysis of a situation (problem) and the forecast of consequences of a situation (problem) which has arisen is carried out. Furthermore, at this stage it is possible to build mathematical models and identify the views of experts, internal and external stakeholders on the situation (problem) that has arisen in the activities of higher education institutions.

The second stage involves the development and direct adoption of management decisions based on the definition of alternative management decisions. To do this, first of all, the problem of solving the situation (problem) is set and the search and development is carried out along with the formation of alternative solutions to the situation. Following that, the most acceptable management decision is selected based on the evaluation of alternative management decisions based on the selected criteria. The final action at this stage is the adoption and approval of management decisions aimed at solving the problem (situation) in order to achieve sustainable development of higher education institutions.

The third stage includes the organization of implementation and control over the implementation of management decisions. At this stage, the management decision is documented and brought directly to the executors, as well as control over its implementation. In addition, at this stage the evaluation of the effectiveness of the management decision is carried out on the basis of the developed criteria and interpretation of the results of the management decision evaluation, i.e. whether the set goal is achieved, namely whether the existing situation (problem) is solved in order to achieve sustainable development.

The quality of management decisions reflects the set of characteristics inherent in management decisions. The implementation of this solution provides a successful solution to the problems of higher education institutions in order to achieve sustainable development. It is necessary to adhere to some principles of development of management decisions, such as: scientific validity, timeliness, adequacy, targeting, flexibility and specification.

It should be noted that one of the most important organizational aspects of the development and implementation of management decisions is the organization of the sequence of work required for the implementation of this process. Here the information and communication support of management at all levels of technology of acceptance and realization of the administrative decision acquires special value.

Achieving sustainable development of higher education institutions is possible on the basis of optimizing management decision-making processes. Optimization of the decision on management of information and communication support of sustainable development of higher education institutions provides for the allowable reduction of time, material and financial costs for the implementation of management processes and the achievement of sustainable development of higher education institutions. Based on the analysis of scientific works, it is established that the optimal solution of problems that arise in the process of implementation of higher education institutions, requires the implementation of certain measures in the following sequence:

1) setting a task related to solving specific problems aimed at achieving sustainable development of higher education institutions; its meaningful description, collection and analysis of the necessary information, as well as determining the nature of the relationships between the parameters of the problem;

2) development of criteria for the optimality of management decisions aimed at achieving sustainable development of higher education institutions, which are taken so that their extreme value corresponds to the best situation in terms of achieving a certain goal of sustainable development of higher education institutions;

3) the formation of a system of restrictions and balance relations that determine the allowable areas of the system and change some of its parameters to achieve sustainable development of higher education institutions;

4) construction of a model (set of models), with which you can solve the problem (solve the problem) of achieving sustainable development of higher education institutions;

5) the choice of methods for solving and developing an algorithm for solving the optimization problem;

6) analysis of alternative solutions to the problem using the built model and selection of optimal management decisions aimed at achieving sustainable development of higher education institutions.

Adoption of high-quality management decisions aimed at solving the problems of achieving sustainable development of higher education institutions on the basis of management of information and communication support of their activities, takes into account the fundamental approaches based on:

- the need to harmonize the requirements of external and internal stakeholders of higher education institutions, as well as the collective and individual aspirations of internal stakeholders of higher education institutions with the strategic goal of higher education institutions — to achieve sustainable development;
- identifying opportunities to achieve sustainable development of higher education institutions through achieving sustainable development of individuals who are internal stakeholders of higher education institutions, as well as sustainable development of higher education institutions as a set of individuals based on a synergetic approach and sustainable development of higher education institutions;
- clear formulation of criteria for the optimality of management decisions made in order to achieve sustainable development of higher education institutions, and the unambiguity of their development and interpretation;

- ensuring the optimal trajectory of the functioning of each element of the management system of information and communication support for sustainable development of higher education institutions;
- use of an intelligent recommendation system to support the adoption of effective management decisions, the implementation of which will contribute to the sustainable development of higher education institutions;
- taking into account the time factor and dynamics of the studied processes and management system of information and communication support of sustainable development of higher education institutions, as well as restrictions imposed on resources and parameters of management system of information and communication support of sustainable development of higher education institutions;
- the possibility of multiple recalculation of tasks to achieve sustainable development of higher education institutions over time, as well as their formalization using economic and mathematical methods and models using appropriate algorithms.

When studying the problems associated with achieving sustainable development of higher education institutions on the basis of management decisions, it should be borne in mind that in most cases management decisions are made by the person responsible for decision-making — the head or representative of the administration of higher education institutions. At the same time, for most management decisions it is impossible to accurately calculate and assess the consequences. One can only assume that a certain version of the management decision will lead to the best result. However, such an assumption may be erroneous, because a person cannot reliably determine the future results of a particular decision.

In the process of making management decisions, in addition to those who make management decisions, other persons — experts (professionals) in a particular field, to whom they turn for assessments and recommendations, can participate. Persons involved in the management decision-making process. The role of experts is to effectively organize the process of making management decisions and assist decision-makers in setting the right tasks, identifying alternatives and organizing effective work with other experts.

In addition, the decision-making process implicitly involves the environment of the person making management decisions, namely employees of higher education institutions who act as internal stakeholders. Usually, these individuals have common interests in achieving sustainable development of higher education institutions, as well as common views and values. It is to this group that the person who makes management decisions, first of all, explains the logic, expediency and validity of his decision. This explains the need to take into account in the management of information and communication support for the sustainable development of higher education institutions the collective and individual aspirations of the internal stakeholders of higher education institutions.

In the development of the information society, the role of experts in the management decision-making process is transferred to information and communication systems, based on which the development and use of an intelligent recommendation system to support quality management decisions.

The development of economic and mathematical models of managerial decision-making is associated with the need to choose the right criteria for their quality management of information and communication support for sustainable development. The quality criterion must meet the following requirements:

- evaluate the main, not secondary goals of setting and solving the problem of achieving sustainable development of higher education institutions;
- be critical of the studied parameters of information and communication management of sustainable development of higher education institutions;
- be the only one that facilitates the solution of the task of achieving sustainable development of higher education institutions;

- be simple, taking into account the results of all operations to achieve sustainable development of higher education institutions;
- correctly take into account the dynamics of the simulated process.

Modelling of information and communication support processes is a difficult objective, because there are nonlinear connections between the components of the information and communication support system, due to the dynamics of their flow. All this leads to a decrease in the reliability of information used in the information and communication network of higher education institutions, while increasing the study period.

Optimization of management decisions on sustainable development of higher education institutions takes into account the following principles:

- clear definition of functions and range of tasks to be solved by each structural subdivision of higher education institutions;
- determination of the logical sequence of solving each task of achieving sustainable development of higher education institutions as a whole, as well as the use of results to solve the following (in the form of constraints, source data, limits of change of indicators, forms of presentation of input and source information, etc.);
- elimination of contradictions between the criteria of local tasks and the general criterion of efficiency of higher education institutions;
- ensuring compliance of the constraints of each local task with the constraints of the general task of achieving sustainable development of higher education institutions.

The technology of management decision-making in general is a variant of the sequence of operations of development, justification and approval of the decision, selected according to the criteria of rationality of their implementation using special equipment, qualified personnel methods and principles in specific conditions of work. The technology of making quality management decisions to achieve sustainable development of higher education institutions is a set of methods, principles and processes for developing, justifying and approving management decisions, which has a certain sequence, the implementation of which is aimed at a certain result, such as eliminating a specific problem situation, institution of higher education.

The quality of management decisions reflects the set of characteristics inherent in management decisions, the implementation of which ensures the successful solution of problems and contributes to the sustainable development of higher education institutions. It is necessary to adhere to the principles of development of management decisions: scientific validity, adequacy, timeliness, flexibility, targeting and specification. Methods of developing management decisions include methods and techniques for performing operations necessary for the development of management decisions. These include methods of information analysis and processing, as well as the choice of options. The organization of development of the administrative decision provides streamlining activity of separate structural divisions of higher education institutions and separate workers.

Conclusions. The study concludes that the sustainable development of higher education institutions can be achieved only through effective management of information and communication support of its activities, which includes the formation of data, information, knowledge and modern communication channels necessary for making and implementing quality management decisions. The development and adoption of quality management decisions based on the definition of the main criteria for the effectiveness of higher education institutions should contribute to the rational use of existing aggregate capacity through efficient use of resources and take into account the requirements of external and internal stakeholders of higher education institutions. Further research is required to develop effective mechanisms for making quality management decisions and develop practical recommendations for their application.

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