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Problems of distance learning systems monitoring and evaluation of their efficiency

Oleksandr Viunenko ¹, Andrii Tolbatov ¹, Volodymyr Tolbatov ²
¹Sumy National Agrarian University, ²Sumy state university, tolbatov@ukr.net

Abstract – *The article is devoted to problems of high tech technologies implementation in the information-intensive educational process in the university.*

Keywords – distance learning, distance learning management systems, information and communication technologies.

I. INTRODUCTION

Practical implementation of monitoring models of innovations' efficiency points at a number of conflicts between current "stereotype" descriptive approach to efficiency evaluation of innovations and a need to discover criteria and factors, which allow to correct evaluation of the innovation implementation efficiency, as well as between traditional educational institutions with regular educative practices and a need from the state and society to use adequate systems to evaluate the implemented innovations. These conflicts determined the problem of the investigation. The problem involves a need to establish the content of monitoring models of innovations' efficiency in the distance learning systems (further - DLS), peculiarities of their elements, criteria and factors [1 – 12].

II. RESULTS

New legal background in Ukraine activated the development of distance postgraduate education. But, from the organization and economic point of view, more important is the professional development without discontinuing work. In addition, one more advantage of distance learning is an effective use of intellectual and creative resources of academic and teaching staff, possibility to create modern academic programs, which are constantly updated.

There are new opportunities, based on crowdsourcing and noosourcing, popular in the professional sphere, and priorities, concerning creation of the sphere, where constant knowledge generation becomes a vital need of professionals, are determined.

The implementation of innovative educational technologies is one of the few ways to update content and form of educational process organization, to provide equal access to modern high-quality education, and, in general, to actualize national doctrine of education development.

The factors, which affect negatively the organization of innovation activity in higher educational

establishments, and shortcomings in activity of educational authorities, should be also noted:

- 1) absence of special-purpose investments in the innovation processes;
- 2) an insignificant level of theoretical and scientifically methodical qualification of the staff;
- 3) an insignificant level of activity of regional psychological services for psychological follow-up of innovation processes;
- 4) an insignificant level of educational-material base of universities;
- 5) periodic behavior of monitoring studies of innovation activity of educational institutions;
- 6) an insignificant level of public awareness campaign among applicants and specialists of modern educational innovations;
- 7) lack of cooperation between the universities while testing and implementing educational innovations;
- 8) problems of academic support of innovative educational activities from academic organizations and field scientific organizations;
- 9) no regulatory and legal framework, which can confirm the status of experimental educational institutions;
- 10) insufficient introduction of the administrative educational innovations in the activity of education authorities and heads of educational institutions.

The development of the structure of the DLS monitoring systems should include the following stages: 1) definition of the monitoring goals and objectives; 2) definition of the object and subject of the DLS monitoring; 3) definition of the monitoring sources; 4) development of the information-gathering methods; 5) definition of monitoring materials' structure and content; 6) definition of the monitoring procedure.

The object of the DLS monitoring is an innovative reformation, while the subject is efficiency evaluation of innovations implementation.

The monitoring sources are:

- a) documents, confirming using of innovations;
- b) survey results, questionnaire surveys, interviewing etc.;
- c) focus-groups material;
- d) analysis of publications in the fields of innovation development.

Therefore innovations monitoring system will allow to:

1) perform quantitative and qualitative analysis of the development and implementation processes of innovations;

2) analyze efficiency of innovative changes;

3) discover factors, preventing the complete implementation of innovations, “tension” elements in the system;

4) determine the dynamics of quantitative and qualitative indicators of the process efficiency of innovative reformation.

The most important stage for building the monitoring information system is to determine principles of system organization and evaluation of its efficiency. The existent monitoring analytical systems are mostly focused on the staff cost minimization, planning and technologic forecasting of scientific research and development, analysis of the activity results. To create effective monitoring information analysis system, it is necessary to review the main principles of building the basic model [3,4,5]:

1) to create individual database register of employees, accounting methods and analysis processes;

2) to develop the algorithm of efficiency and potential evaluation of the scientific activity;

3) to create possibility for monitoring on a regular basis.

The system information base should also collect the data in the following areas:

1) the publication’s activity and citation rating of scientific works, their citation index;

2) state training system for academic and teaching staff;

3) international activity, foreign grants;

4) participation of academic and teaching staff in economic contracts, grants and target programs.

Change of any of these elements can change other dependent factors. That is why, while building the system, it is necessary to take into account the combined effect of external and internal factors. Consequently analytical system of DLS monitoring should contain informative and control components, use the organization potential effectively, and storage, data-processing and control functions for rational decision-making [6].

It should be also considered that modern technologies in the information society always promote the virtual environment for the individual, who lives in the real society. A modern person manages not material objects, but symbols, ideas, images, intelligence, knowledge. It means that there is a need to solve informational and ecologic problems, problems, concerning information security of an individual and society, information wars, collective consciousness manipulation, computer-related crimes, virtualization of interpersonal communication, protection of the human nature in a context of creating artificial intelligence etc [7].

Distance learning system as a social organization and technology is based on the practical use of knowledge about interaction peculiarities between human and information technologies for continuous education and self education, use of interactive technologies for organization of virtual educational process. Information technology is an essential characteristic of modern educational process, while high educational technology is an inherent characteristic of an effective distance learning.

Principles of integrity, structure and additionality as methodological principles of educational process development also allow to solve the conflict, which arises because of incompatibility between traditional approaches and new educational technologies; to determine the development paths of the educational process structure; to combine traditional and innovative components of educational process into one integral distance learning system; to unite instructivism and constructivism strategies in education; to overcome representation conflicts of members of innovative educational activities; to generalize the existent types of communicative competence; to determine perspective of cognitive learning.

One of main factors of distance learning development are the following: a need to train professionals and intellectuals, creative specialists, who are able to coordinate, accumulate and convey knowledge; an active search of the improvement mechanism for institutional and management structure; positive consequences of globalization, internationalization and informational support of education that allow to combine technocratic trends, beliefs and academic culture.

Traditional form of learning process organization, which involves live interactive communication between the lecturer and the student, dominates for educational needs of students. But the complete model of educational system is still in demand. It depends on the fact that the requirement level for information and communication technologies usage in educational process is higher than the real student knowledge and skills, and because distance learning is a new mode of study for higher education without wide practical use.

It should be also considered that, except a huge number of software programs represented as super-tutors, prof-tutors, complays, R-tutors etc., a complete educational model suggests a continuous use of such types of telecommunications as teleconferences, tele-tutorings, various imprinting video films and slide lectures, which require heavy financial expenses.

Distance learning system actualizes characteristics of virtual reality. However, distance learning appeared as a new form of extramural studies. That is why it is closely connected with intra-extramural and extramural form of study.

At the same time distance learning is an alternative to traditional extramural learning, however, distance

learning technologies are actively used in traditional intramural studies. They provide more effective introduction of information and communication technologies. It means that in distance learning the student is the active subject, and the percent of creative independent work is constantly increasing.

Lately the role of higher education institutions in building regional information systems and advisory services has increased. It is connected with the development of the following directions [8]:

- reproduction of intellectual potential, necessary for knowledge development and commercialization;
- production of innovative products and services by own efforts;
- incubation and generation of research-intensive small enterprises;
- forming of the support infrastructure of scientific researches, which serve with the needs of regional innovation systems;
- development of innovative culture in business environment.

The proactive attitude of higher educational institutions in the development of the above mentioned kinds of activities will allow forming innovation activity centers for regions and other individual fields. However, it is impossible to prioritize the scientific and innovative activity of the higher educational institution, as a part of social and economic environment, without solving a pair of high-priority management tasks:

1) conclusive and complete identification of the object of management;

2) creation of an indicator system, evaluation factors and ways of their determination as a base to receive the information to make well-founded decisions concerning the innovative strategies development of higher educational institutions.

By now these tasks are not solved, it complicates the development of scientific suggestions and decisions, concerning the activation of innovation activity of higher education. The innovative potential, accumulated by universities, needs to be structured, structurally analyzed and monitored.

While solving the tasks, concerning the development of in-house infrastructure, the following problems of monitoring and evaluation of universities efficiency have the top priority:

- to bring the innovation activity in the line with scientific and educational activities by creating innovation system of higher institutions with the main institutional elements, represented by innovative and active units - academic departments, centers, institutes, laboratories etc.
- to form the ongoing institutions, necessary to market the science-intensive products (exhibitions, contests and other interactive technologies), and associative communities to

protect interests of innovative business, to develop material and technical base of universities;

- to create the network of small science-intensive enterprises on the basis of, or assisted by, higher educational institutions, aimed at commercialization and use of scientific potential of higher education;
- to create an infrastructure of university innovative management, basing on specialized subdivisions of transferring technology and intellectual property, created on their base, together with businesses and intellectual recourses;
- to create industrial research laboratories and research centers, together with large regional and national corporations, that will be included in the innovation processes of technological clusters and enterprises of real sector of economy;
- to deliver the innovation activity results to academic and scientific processes, aimed at extended reproduction.

Modern monitoring systems are created in the educational institution for targeted investigation, continuous monitoring of academic process and diagnostics of its quality by means of information analysis and special researches and measurements.

The monitoring result is events planning, concerning the improvement of educational quality and efficiency by delivering true evaluation of the academic process organization in the distance learning system.

The monitoring system itself is a mean to manage expenses by setting them into one-to-one correspondence with the received educational result.

Now the progressive are social monitoring methods and investigation of continuous educational systems with the use of distance technology of interconnection with consumer needs and regional social and economic environment.

They allow to predict possible results, to implement corrective measures in the individual student's training, to guarantee a necessary quantity and efficiency of education by means of improving management and using innovative technologies.

Therefore, the building of effective information model of management becomes actual. It will allow to plan and organize the academic process including distance learning both on operative, tactical, and strategic levels of the university development. Only single information model of universities system will allow solving the following tasks:

- to create a structure for planning and monitoring the implementation of education program;
- to plan implementation of education programs on faculties and institutions;

- to organize monitoring and business-analysis of the implementation of education program on the basis of the credit-module education system;
- to optimize the implementation of education programs basing on requirements of business-processes;
- to plan and implement information model to organize various types of education for various educational levels, including distance learning
- to develop common functional requirements to develop and improve the information system of university.

Eventually, the most relevant task of managing scientific and innovation potential of universities is the development of formal evaluation procedures and development of information base with attached for rational decision making functions of storing, accumulating and processing data and management.

The main direction to solve the tasks of distance learning system development is improving of the employees' competence, research skills, studying new information technologies, designing and analyzing business-processes, aimed at the higher result of the activity of the members.

The important role in this process is scientific justification of practical recommendations, concerning the information support of monitoring system, and reliable operative scientific and information support of management processes of the university scientific potential.

III. CONCLUSIONS

In the nearest future the creation of well-equipped institutions of distance professional development will become relevant and economically justified. They will give an opportunity to use intellectual and creative potential effectively by decreasing expenses for technical equipment and computer software, but to greater extent, expenses of state and private establishments for professional development. Refocusing on the working people, who have a certain motivation and long-term project of life, who are able to build their own development path, and who understand, that their purposes need certain resources. It can activate the development of the distance learning in the industrial and regional aspects.

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