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Information Technology Models for Project Management of Education Development

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***Abstract*— This article is dedicated to the problem of the information technology models development for the innovative projects management of the educational sector modernization and development. The problems, which arise at each stages of the project lifecycle, were considered. The stages of the modernization and IT development and implementation for the educational institution were distinguished. The conditions, which are describing readiness of the educational institution to providing modernization, restructuring and development, were given. The deductive and inductive approaches to problems solving are considered. Two types of the information technology models are presented: the model "as is" and the model "as should be".**

***Index Terms*— The Modernization and Development Projects for the Educational Sector, Stages of the Modernization and Development of IT, Business Process, The Information Technology Models and Project Management of Education Development**

I. Introduction

NOWADAYS the actual problem is using of the contemporary technology in all sectors of economy of Ukraine. It led to understanding that is no alternative to implementation of the education development politics in the state.

Reform implementation in management of the education development through trials and errors without using any methods of the system analysis, the project management, theoretical basics of engineering and re-engineering – it is too expensive and ineffective process. Creation and implementation projects for modernization and development in educational sector and management of these projects with purpose of fund economy have a great sense for Ukraine.

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There are many problems with re-engineering of the business processes due to information technology implementation. Furthermore, there is point of view that process of management system implementation should be accompanied by educational institution business processes restructuration.

The objective of this paper is description of the model for information technology of project management of modernization and development in educational sector and enlightens the problems, which arise at each stage of the project lifecycle and sum up obtained experience.

II. Previous Research Survey

Scientific research development in the educational sector is the most dynamic developed branch of science in Ukraine. It is due to the rapid changes in economic [2], [4] and politic relations into the country.

The projects of total modernization, restructuring and development in educational sector [1]–[3] required substantial amount of funds, complete transition to the modern information technology with using of the unconventional and creative approaches, wide implementation of the information technology models at each stage of the development.

For the sake of research of the educational sector modernization and development project management, we need to resolve the following problems [4]:

--Find out the main problems, which arise during formation of the innovative projects for the educational sector development.

--Define the main causes of the problems appearance and find out the ways of its resolving.

--Determine the similar features and differences between the *modernization* projects, the *restructuring* projects and the *development* projects.

--Substantiate necessary of the conducting of the business processes for the project management of the educational sector development.

--Formulate scientific basis and the hierarchy sequence of the information technology models for the innovative projects management of the educational sector determination.

III. Problem Solving

Firstly, we need noted: re-engineering and information technology implementation [3] – it is the extremely different processes and they should not be confused. The most unsuccessful implementations of the information technology for the project management it is a result of bad project objectives clarifying before starting. Thereby during automation process, the previous system shortcomings were revealed and the opportunity to change, speed up and expand existing processes arises. Therefrom, the decisions about local restructuring were making, but it was week controlled and non-technological (Table 1):

TABLE 1
STAGES OF THE MODERNIZATION AND IMPLEMENTATION OF IT

Stages of the modernization	Stages of the information technology development and implementation
1. Development of the future educational institution appearance	1. Preliminary inspection
2. Creation of the existing educational institution (the model "as is")	2. Requirement specifications creation for the information systems development
3. New business development (the model "as should be") 3.1. Redesign of the business processes 3.2. Development of the educational institution business processes at the human resources level 3.3. Development of the supporting information systems	3. Development of the system Object-oriented, step-by-step, iteration development of the product
4. Redesigned processes implementation Evolutional improvement of the business processes and using others methods	4. Implementation of the system 4.1. Preparing the object to system implementation 4.2. Handing over the system to research exploitation 4.3. Conducting of the research exploitation 4.4. Handing over the entire system to industry exploitation

The information technology is the important part of the business re-engineering. The modern progressive information technology is an integral part of any development activity and it is the substantial constructive factor of success. M. Hammer and J. Champy [4] determined importance of the information technology for the development processes at the form of the following assertions:

--Educational institution, which cannot change your thinking from deductive to inductive, is not ready to conducting modernization and development.

--Educational institution, which place to the same footing the technology and the automation, is not ready to restructuring.

--Educational institution, which looks for the problems at first, and then looks for the technology to resolve them, is not ready to conduct development activity.

According to everything said above we suggest the following correspondence between stages of the modernization and stages of the implementation of the information technology.

It is possible to determine differences between deductive and inductive definitions as follows: *deductive* decision is looking for the solving of discovered problem; *inductive* thinking is determining of the efficient decision at first and after determines the problems, which can be solved by this decision. The basic instrument for the new abilities making is the information technology, but their incorrect application can frustrate the management processes of the development in the way of amplifying old-fashion behavior and stereotypes of thinking.

Key function of the educational sector activity process transformation [4] is the models construction and their functioning. At this stage the inspection result processing is conducting and the educational institution activity models are constructing. The models of two types as follows:

--Model, which is represent current situation in the educational institution (arrangement structure, subdivisions interaction, accepted technologies, automation and non-automation business processes etc.) at the moment of inspection. This model describes how the educational institute is functioning from the position of the system analysis. In addition, based on the automatic verification it discovers numbers of errors and weaknesses and make suggestions for situation improvement. This model is called "as is".

--Model, which integrates perspective suggestions from managers and employees of the educational institution, experts and system analysts, and allows forming vision of the new efficient technologies of the educational institution functioning. This model is called "as should be".

Transferring from the model "as is" to the model "as should be" can be done in two ways:

--Improving of the technology based on its efficiency. The criteria of the assessment in this case are: costs and time consumptions for the business processes; duplication and contradiction between particular problems in business process; degree of the employee commitment (light restructuring).

--Radical change of the information technology use and reinterpretation of the business processes (hard restructuring).

Suggested models are not just implementation of the system development primary stages and requirement specifications for the next stages. They are independent isolated result with considerable practical significance in general, and in particular the model "as is" consists of non-automated technology, which "functioning" in the educational institution. Formal analysis of this model will allow detecting weaknesses of the technology and elaborating instruction for it improving (regardless of whether it is envisaged at this stage automation of the educational institution or not). The model allows putting into practice automated and rapid training of the specific educational institution activities for new employees with diagram using. You can use it model to make preliminary

simulation of the new direction of activity for the sake of discovering new data flows, interacting subsystems and business processes.

IV. Conclusion

Comparison of the business processes modernization (restructuring) stages and implementation of the management information technology was conducted. The most unsuccessful implementation of the information systems is the result of unclearly objectives statement before project starts and the appearance of the shortcomings, which migrates from previous systems, during management process.

It was defined that the key function of transferring process of the educational institution is the management of the innovative projects for its modernization. Using processing of the inspection result at the stage before project and creation the models of the educational institution activity were considered. Two types of the models were distinguished: model “as is” and model “as should be”.

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