



Technology of implementation of the software *Module 1C:University* in activities of primary labour union employee organization of a higher education institution

Tecnología de implementación del software *Módulo 1C:Universidad* en actividades de organización de trabajadores de enseñanza primaria de una institución de educación superior

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Received: 03/10/2017 • Approved: 25/10/2017

Contents

- [1. Introduction](#)
 - [2. Methodological framework](#)
 - [3. Results](#)
 - [4. Discussions](#)
 - [5. Conclusion](#)
- [References](#)

ABSTRACT:

The relevance of the researched problem is caused by the need for management process automation of the organization and an insufficient readiness of theoretical, informatory-technological and scientific-methodical aspects of implementation of software products for university activities. The purpose of the presented article consists in development of technology of implementation of the software module 1C: UNIVERSITY in activities of labour union and its approbation. The leading method of the research of this problem is the modeling that enables to consider this problem as a process of purposeful and conscious management decision on management process

RESUMEN:

La relevancia del problema investigado se debe a la necesidad de la automatización de los procesos de gestión de la organización y a una insuficiente preparación de los aspectos teóricos, informativos- tecnológicos y científico-metódicos de la implementación del software productos para actividades universitarias. El objetivo del presente artículo consiste en el desarrollo de tecnología de implementación del módulo de software 1C: Universidad en actividades de Unión laboral y su aprobación. El método principal de la investigación de este problema es el modelado que permite considerar este problema como un proceso de decisión de gestión útil y consciente sobre la mejora del

improvement of an organization. The methodology of implementation of the software module of 1C: UNIVERSITY into activities of labour union is presented in the article; the methodology consists of the weighed and reasoned stages; their features and problems of implementation are revealed. The technology is focused on improvement and simplification of a management activity at Primary labour union organization of university and oriented to the development of scientific and methodical ensuring process of automation of activities of the educational organizations; the materials of this article can be useful to heads of the labour union organizations adapting to new conditions of a management activity in the sphere of electronic document flow, for specialists in the field of implementation of the software of automated control systems of the organization.

Keywords: automation of activities of university, labour union organization, management system, software.

proceso de gestión de una organización. La metodología de implementación del módulo de software de 1C: Universidad en actividades de Unión laboral se presenta en el artículo; la metodología consiste en las etapas ponderadas y razonadas; sus características y problemas de implementación son revelados. La tecnología se centra en la mejora y simplificación de una actividad de gestión en la organización sindical primaria de la Universidad y orientada al desarrollo de un proceso científico y metódico de automatización de las actividades de la educación organizaciones; los materiales de este artículo pueden ser útiles para los jefes de las organizaciones sindicales que se adaptan a las nuevas condiciones de una actividad de gestión en el ámbito del flujo de documentos electrónicos, para especialistas en el ámbito de aplicación del software de control automatizado sistemas de la organización.

Palabras clave: automation de actividades de la Universidad, organización sindical, sistema de gestión, software.

1. Introduction

The importance of transition of any organization to an electronic document management system, for its effective functioning, the timely reporting and remote control of organization activity has been recently emphasized. Implementation of the automated information system of a higher education institution will help to solve problems with realization of the simple mechanism of combination of information in a single resource, providing thereby a possibility of complex use of information by many users.

Higher education institution management automation will lead to forming of certain managing directors and organizational structures of higher education institutions, and opportunities of interaction between them (Dorozhkin et al., 2016). The correct functioning will allow to avoid emergence of double documents and actions that will significantly accelerate adoption of timely and competent decisions. The organization management system the will allow increasing the quality of performed activities, to lower costs for forming and servicing of document flow, and also to provide more intensive exchange of information resources.

Purchase of the license for the implemented software and conclusion of the contract for implementation don't guarantee success and lack of problems at all. However, the organization is able to do everything possible in order to reduce the risk to the minimum. The correct planning of the process of implementation, development of the thought-over and reasonable model of implementation practically eliminate the risk of a failure and inefficient implementation of the software product (Chernenko, 2010).

It is necessary to consider the features which are inherent in implementation projects of information systems. For this purpose, it is necessary to know answers to the following questions: what features of implementation projects of managerial information systems are; what value is more whole than implementation of managerial system for realization of the strategy at the organization; what key factors of progress and failures are; what main stages of an implementation project are; what difficulties the organization realizing the similar project are; how correctly organize implementation (Glivenko, 2005).

2. Methodological framework

The models of implementation of software products have a number of the features distinguishing them from other types of projects. They follow from the fact that any model of implementation is a reorganization of organization management system. Similar reorganization can look differently: from radical transformations to soft options, however, in any case, implementation requires concentration of attention, responsibility and care of carrying out

separate works (Chernenko, 2010).

The development of a full-scale plan of a strategic development of the organization will help to simulate future management system, will make work more accurate, transparent, increase efficiency, save resources and, eventually, remove the work on a qualitatively new level. Strategic objectives shall become a starting point in the choice of the software, and the program shall turn into the tool for achievement of these purposes over time. The requirements to implementation project objectives, shall be achievable, distributed in time, measured and completely correspond to the strategy of the organization (Baronov, 2000).

Meanwhile, the analysis of practical activities of educational organizations demonstrates that requirement of fixed monitoring of activities of all structural divisions of higher education institutions, creations of complex reports for the supervising departments, intensive information exchange between divisions, a higher education institution and the external organizations, all these and many other things cause the need for a single automated control system (Dorozhkin & Zeer, 2014; Dorozhkin et al., 2016; Davydova et al., 2016).

It is obvious that patchwork automation, problems of integration of the used information systems in various subdivisions of a higher education institutions assume that the implemented unified information system shall adapt easily to the available databases and separate elements of information support (Chenushkina & Narvatkina, 2016).

Modern realities require theoretical conceptualization and identification of organizational conditions which could provide fast and effective implementation of the information system for organization management.

The activities of Primary labour union organization of a higher education institution are very closely crossed practically with all subdivisions of university; creation of reporting documentation requires sometimes necessary data from four, five subdivisions; the timely notification of employees about entering of changes in the work of social, personnel or other departments is complicated by territorial dissociation of educational divisions of university. These and other factors determine the relevance and requirement of implementation of the software in labour union management and correlation of this software with the used one in other subdivisions of a higher education institution.

In the course of the research the following methods are used: theoretical (analysis; synthesis; specification; generalization; method of analogies; modeling); empirical (studying of experience of implementation of the software in activities of the educational organizations, regulating and methodical documentation; observation); experimental (stating, creating experiments); methods of mathematical statistics and graphic representation of results.

Experimental and research base of the study is presented by Russian State Vocational Pedagogical University.

The research of a problem was carried out in two steps:

- theoretical analysis of the existing methodological approaches in scientific literature and dissertation works on a problem was performed at the first step; the problem, the purpose, and research methods were allocated; the plan of pilot study was drawn up.

- the technology of implementation of the module of the software 1C: UNIVERSITY was developed at the second step; the complex of organizational conditions of effective implementation of software products in organization activity were identified and proved; experienced and experimental work was carried out; the conclusions received during experimental work were analyzed, checked and specified.

3. Results

On the basis of the analysis of scientific and practical experience of implementation of software products the technology of process of implementation of the module 1C: UNIVERSITY was developed in activities of Primary labour union organization of the Russian State Vocational

Pedagogical University, including ten stages. The first stage is characterized by determination of strategic objectives and tactical project plan. For effective management of the project it is necessary to present all works in the form of the sequence of actions with accurately particular purposes, terms and independent check of results, validating perfect actions. The main project plan is drafted for this purpose. The success of the project directly depends on documentation of the made decisions at all stages. At this stage the project control board is chosen, which shall have powers to make decisions according to corporate standards and their changes, to make operational decisions in a production process of works, and also to estimate activities of a project team and if necessary to do conclusions: up to discharge from the project of the employees who didn't cope with the tasks. Also, for operational project implementation, it is necessary to create a working group which shall control a process in general, prepare questions on statement for managing committee, and perform contacts with the supplier of the software and consultants. Except the staff of department of implementation and support group, the staff of the organization shall enter into this group. The task of a working group is the maintenance of functioning of system in the course of implementation, and after its termination. One system integrator and also one specialist in databases and programming shall enter this group.

The second stage consists in the inspection and description of organization activity and process. The task of this stage is the description and formalization of organization activity and the researched process, and also determination of a circle of tasks on development of corporate standards and early diagnostics of problems of implementation. On the basis of the formalized description of organization activity there is a development of requirements to the system; understanding of what future system will do and how it will work; all further scheme of creation of a corporate information system is built. At this stage the most significant and complex problem of projects implementation is shown: lack of the system management at the organization. The description and formalization of organization activity are necessary for getting a clear picture of interaction of all divisions in case of activities implementation.

The manager determines: duplicative functions, bottlenecks, excessive transactions, unprofitable centers, fully or partially absent corporate standards, poorly designed or absent source documents, reference books, regulations and standards. Adjustment of organization activity under system opportunities is one of the mistakes when carrying out inspection by specialists implementing the specific software. By the results of inspection two documents are worked out. The first describes the processes of an organization, and the second describes revealed problems and ways of their liquidation. The documents shall be approved and signed by all project participants.

The third stage consists in training of specialists of a project team. Careful matching of group of implementation and preliminary training of participants in fundamental disciplines, task allocation and obligations of each project participant with determination of terms of the beginning and completion of works will help to avoid a project value addition.

The fourth stage is characterized by the development of future model of organization activity. The depth of reorganization in case of development of future model can be different: from step-by-step, requiring small capital investments, before the cardinal enhancement which is followed by transition to a new technology, fundamental changes in the process structure.

The fifth stage is implemented through development of corporate standards. Through this stage adjustment of the available standards is made; lacking elements are developed; the regular structure of the organization is affirmed; the managerial policy is determined; the budget is approved; the financial analysis is carried out; corporate safety is determined.

There is a choice of system of automation, its setup and testing at the sixth stage. Any information system contains a large number of parameters, which setup work of all the system depends on. It as much as possible brings closer functioning of the system to the developed and approved requirements of the previous stages, reduction in compliance to customer requirements. On completion the system passes the testing. The setup itself is almost completely made by external consultants; the main role is assigned to specialists of the

customer and users during testing. The business logic of the system and technical parameters of work are tested.

The end consumers are trained at the seventh stage. The training is provided in workplaces or in the specialized centers on the customized system. It is desirable to provide training after a full control of the system of access division with observance of all measures of security information. As a rule, training is provided by the experts of the customer who are a part of design group.

Trial operation takes place at the eighth stage. At this stage double entry of data is remained: into old and new systems. In the course of trial operation and by its results final setup of various parameters of the system is performed. The complete modeling of organization activity, including, first of all, the main transactions. The complete accounting quarter cycle of organization activity, including closing of the accounting period is realized. The decision on the transfer of the system to commercial operation is made based on the work results.

The ninth stage consists in final documentation. After operational development of parameters, preparation of documentation on the system, job descriptions, and regulations on departments comes to the end. The aim is to provide unambiguous determination of sources of input of incorrect data and, whenever possible, to exclude their emergence, the description of all variations of input and an order of application of standard reference books.

The last tenth stage is characterized by input of the system into the commercial operation that means successful implementation according to the plan developed at the previous stages.

We have analysed several systems that meet the objectives and requirements: " Galaxy ERP", "1C: Document Flow", the program "PRO" for accounting and analysis of a labour union personnel, etc. The information system 1C: UNIVERSITY was chosen for implementation since it answers all necessary criteria: functionality of system (allows to solve problems which are urgent for the organization at this stage of development and gives the chance to integrate system with other applications); system modularity (allows to purchase blocks as required, with the advent of the need for functions); reliability (ensuring safety of data and functionality of the system); cost (cost of the license, maintenance and development of the system); compliance with a corporate platform (the system approaches to the available operating system of university); movement from simple to difficult (complexity of the system increases gradually, starting with simple applications and finishing with systems of resource planning, accounting and analysis).

Implementation of this technology assumed carrying out the following phases of experimental work:

- preproject research of activities of the labour union organization, the analysis of examples of implementation of the software in educational organizations;
- development of technology of implementation of the software promoting successful functioning of the Russian State Vocational Pedagogical University Primary labour union employee organization and its approbation;
- determination of the cost level on the process of implementation of the program 1C: UNIVERSITY.

For determination and characteristic of the process of implementation of the module "Labour Union" "1C: University" at the Russian State Vocational Pedagogical University Primary labour union employee organization, preproject examination of the organization was conducted. The purpose of this inspection is in the receipt of basic data for reasons for option of adaptation of a standard system. The tasks of inspection included: establishment of structure of functional tasks of the organization, their short substantial description and requirements to frequency, efficiency and reliability of information processing on tasks, establishment of information interrelation of tasks, determination of document flow between the organization and subdivisions of a higher education institution, description of documents, establishment of structure of managerial work of an organization.

Activities of the labour union organization include:

- control of accomplishment of labour legislation by employers;
- control of a condition of protection and working conditions;
- promotion of members of labour union into governing bodies and control;
- accounting of membership of labour union workers;
- cooperation with social departments of university;
- consultations on legal and economic problems of university staff;
- carrying out cultural and health-improving work among university staff and their families.

Also, labour union organization as independent unit interacts with public authorities for submission of reports and problem solution of labour collective.

In the present research, the interrelations with subdivisions of a higher education institution, configuration objects for the software 1C were determined for each type of activity. The main interrelations and configuration objects are presented in the Figure 1.

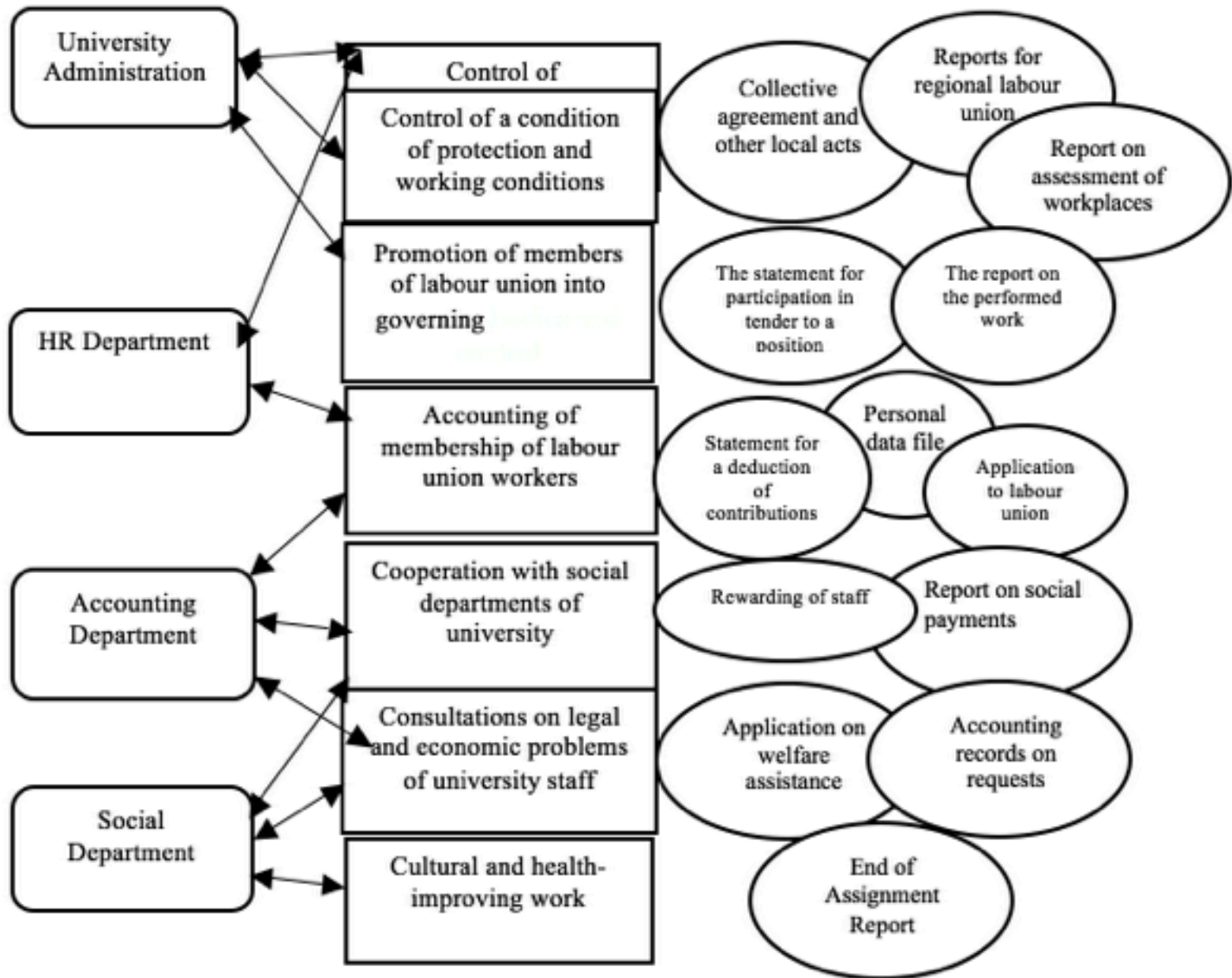


Figure 1. Results of the predesign analysis of Primary labour union organization

The main functions of the organization, its connection with structural subdivisions of a higher education institution are revealed during the research of activities of labour union; also, the list of the main documents fixing organization activity is determined.

The implementation of organizational conditions in the course of approbation of a technology demanded an involvement of necessary human resources. The implementation team was determined: Vice Rector for Informatization, Head of a Working Group; Head of Department of Legal and Staffing Assistance, a workgroup member; Head of Department of Documentation, a workgroup member; Head of Department of Property Complex, a workgroup member; Chairman of labour union committee, a workgroup member; Head of Department of Web Technologies and Programming, Deputy Manager of a working group; Leading Expert of

Department of Web Technologies and Programming, Secretary of a working group. Also, the staff of Department of Web Technologies and Programming and the specialists who are well familiar with the specifics of university and performing completion of functionality of the system absent in basic package of system were involved into work.

The step-by-step plan with indication of temporary and human resources was developed by Implementation Task Team; for the plan creation it was required to prepare the description of business processes and interaction of the module with other subsystems and applications.

Firstly, the analysis of opportunities of various software products presented at the market was carried out: " Galaxy ERP ", "1C: Document Flow", the program "PRO" for accounting and analysis of a labour union personnel, "1C: University", and others. The majority of the provided programs are realized on the platforms closed for editing that won't make it possible to finish its functionality further. "1C: Document Flow" and other similar to it programs cover only a work with documentary maintenance not including a personnel and contingent of students.

Secondly, the experience of implementation of the similar software in different educational organizations was analyzed. It was clarified that the most part of the labour union organizations of educational institutions have no specialized program maintenance; they carry out data accounting in the MS Office programs or use opportunities E-Labour Union – a web system of electronic information exchange for labour unions and workers.

Thirdly, with the participation of workgroup members, the problems arising in the course of functioning of labour union were fixed; the set of documents and printing forms as on support of the member of labour union and connected with administrative organization activity are prepared and approved (a statement, orders on entrance and expulsion, accounting of fees, base of encouragement payments, and social projects).

Fourthly, taking into account the specifics of activities of a higher education institution and the existing systems, the basic functionality of system was completed and improved; the original form of the module "Labour Union".

In addition, supplementary documents and reports were worked out with assistance of the working group and Department of programmers: "Collective Agreement", "Application to Labour Union", "Application on Welfare Assistance", "Report for Regional Labour Union", "Report on Assessment of Workplaces", "End of Assignment Report". Modules of synchronization of data on employees from the system "1C: Salary and Personnel" were also optionally adjusted; and unloading of data in a format necessary for the report in superior organizations.

After accomplishment of preliminary works on setup of the module, additional organizational events for approval of printing forms and accompanying instructions were held.

Information on 10 members of the labour union organization was input at the phase of the module system testing; several documents and reports were created. These actions enable to reveal the mistakes arising during the work in the system, for example, the need of additional check of fees during designing of the document for encouragement payment.

The atmosphere of goodwill and mutual support was created while the technology implementation; it promoted fast and high-quality work of the team on implementation, transferring activities of the labour union organization to a higher level of functioning.

The discussion of difficulties was conducted in the course of the analysis and assessment of the performed work both on the part of team of contractors and employees of the labour union organization; the substantial and developed characteristic of results of activities at each stage of implementation was given; merits and demerits of the performed work were analyzed. It offered the possibility to adjust timely actions for implementation of the software. The implementation of this module will allow employees to monitor quickly staff appointments, their social and scientific achievements.

The calculation of all costs on project implementation was carried out at this stage of an experiment for determination of efficiency level of implementation. The data of control cross-

section of functioning of the organization has showed the improvement of the main indicators: time for forming of documentation, search of necessary information was decreased; storage of up-to-date information was systematized; cooperation within subdivisions of a higher education institution was established; energy costs were reduced through creation of reporting documentation.

The changes occurred during the technology implementation approbation allowed to reveal the main difficulties and methods of their overcoming. The personnel problem became one of implementation issues. Throughout the experiment, it was necessary to overcome resistance to changes on the part of employees caused by temporary increase in loading during implementation and also fear of innovations, conservatism, concern to lose work or to lose own indispensability. The solution of this problem consisted in training of employees in the principles of work in the system 1C, and also in material and not material stimulation of workers for the raised loading. Additionally, the difficulties arose with information offcut, i.e. administrative employees of subdivisions of a higher education institution and the staff of the labour union organization operate with different information. Some employees do not have essential experience in information transferring from papers into electronic database. These problems were solved with the help of technical software.

The changes in efficiency of organization activity consequently were shown in improvement of working health of employees. Most of employees of labour union aren't exempted from the main work therefore maintaining documentation on the labour union organization is additional and low-paid loading; implementation of the software 1C finally reduced costs for these activities.

The analysis of the implementation results of an automated control system and costs for this process gives the grounds to consider that implementation of a developed technology gives the chance to increase considerably the efficiency of management process and functioning of the labour union organization of a higher education institution.

4. Discussions

The studying of literature allows to state lack of special researches devoted to the problem of implementation of automated control systems in activities of the labour union organizations of higher education institutions. However, common problems of implementation of automated control systems for the entity or organization were considered in works of A.M. Dubrov (2001), S.V. Kartyshov (2002), F. Kotler (2006), N.I. Koteleva (2014), G.G. Vernikov (2003), S.V. Mkhitaryan (2006), V.O. Filatova (2004). The essence and structure of automated control systems, their main functions, features and types were revealed in the works of V.A. Vtyurin (2006), L.M. Makarov & E.E. Rodin (2015), V.I. Gissin (2002), G.N. Kalyanov (2000), etc. Practical aspects of designing of automated control systems are considered by A.R. Gayduk, V.E. Belyaev & T.A. Pyavchenko (2011), T.A. Pyavchenko & V.I. Finayev (2007), A.I. Krivtsov et al. (2016).

The creation of modern technical means of collection, organization of transfer and information processing, and also specially prepared personnel are necessary for implementation and operation of automated control systems of the organization.

The tendency of modern systems development for difficult processes management consists in creation of adaptive intellectual systems which functioning is impossible without use of the developed computer network including personal computers, microcontrollers and a broad set of modules of input/output.

The solution of various tasks of management shall be made on the basis of a single system approach both when designing automated control systems and in case of operation of these systems. The application of system-based approach when designing consists in allocation and representation of some set of objects and connections between them in the form of a system, in the correct understanding of the phenomena occurring in them, interactions, ability to

allocate and setting of first-priority group of tasks.

The use of the latest techniques and information technologies in case of management of various processes in real time considerably raises the level of professional activity of staff of educational organizations and promotes efficiency of implementation of multidimensional educational process (Boronenko & Fedotova, 2016; Kotlyarova, 2015; Khenner, 2014; Davydova, Dorozhkin & Fedorov, 2016; Khuziakhmetov & Gabdrakhmanova, 2016; Khuziakhmetov & Nasibullov, 2016; Zaripova et al., 2015).

In case of the choice of an automated control system for the organization, it is necessary to consider a number of the methodological principles of their creation: new tasks, integrated or system-based approach, first head, continuous development of a system, modularity and type-design practice, coordination of handling capacities of separate parts of the system, automation of document flow and single information base (Glushkov, 1972).

Three methods of implementation of automated systems are allocated: total implementation, pilot project and subsequent total implementation, implementation of services (Kalayev, 2003). The most effective method of implementation is services implementation as it is characterized by short deadlines and small amount of labour costs that enables to reduce financial risks, fast assessment and adjustment of the achieved results.

There are several methods of an efficiency evaluation of implementation of automated control systems for organization management. The first consists in assessment of overall performance of information systems through consideration of both direct indicators and a possibility of their increase. It is obvious that it is necessary to compare a condition before and after implementation of a platform. The assessment is difficult due to the fact that there are other projects in the organization (both implementation and organizational). In this case, it is necessary to determine what share the implementation project of an integration platform contributes in general result. The second method is realized by a part of implementation effect of applied system on an integration platform. In this instance, it is not obvious at all by what rules to determine a share; integration of applications of the data line usage is less labor-consuming, rather than without it. The third method consists in accounting of direct expenses on monitoring, test environments and their support. Also, accounting of labour contribution costs on process maintenance, construction of the system of accounting of working hours is required; it will enable to make an automated system more managed in general.

The efficiency of implementation of management systems by the organization is caused by accomplishment of a complex of the following organizational conditions: determination of all opportunities of the chosen automated control system, the formulation of the procedure of implementation of an automated control system, corporate training in the principles of work in a new automated control system, development of methodical ensuring implementation of an automated control system.

So, during implementation of an automated control system into activities of the labour union organization there is an increase in effectiveness of work of labour union; intensity of interaction with other subdivisions of higher education institution increases; process of knowledge of labour union staff is improved.

The analysis of literature and practice of implementation of automated control systems allowed us to come to the conclusion that insufficient attention is paid to methodical maintenance of the implementation process. In general, heads of organizations in the course of the system and methods choice of its implementation are guided only by public opinion or advertizing of developers of systems. At the same time, the theoretical analysis and our own experience of implementation of an automated system 1C showed that successful, painless and a little costly option of transition to automation of management of the organization is possible in case of the corresponding methodical study of technology of implementation and the reasonable choice of the system (Shaydurov, 2015; 2016).

5. Conclusion

It is established that transition of an organization to automated control systems will be more effective on condition to perform implementation on carefully developed and well-judged technology of implementation including ten consistent stages: from identification of strategic objectives of the organization before commercial operation of the system software.

In the course of the research new questions and problems have arisen and it is important to find the answers. It is necessary to continue researches on development of new methods of implementation of automated control systems for entities and organizations which would make it possible to implement the system at once in several organizations interconnected by a form of activities and enables to expand borders of interaction between organizations.

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