KNOWLEDGE MANAGEMENT IN THE CORPORATE LEARNING SYSTEM BASED ON INTERNATIONAL STANDARDS

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Abstract: *The article considers methodological approaches to the organization's knowledge management; on the basis of international standards, the elements of the knowledge management system are identified and adapted to the conditions of the educational organization; the result of the work is an algorithm of the knowledge management process in the conditions of corporate training implementation, which was tested on the basis of the Technical University of the Ural Mining and Metallurgical Company (Russia).*

Key words: *knowledge management system, organizational conditions of corporate training, management system process, algorithm of the organization's knowledge management process.*

Introduction

In the context of various enterprises and organizations, the management of the resources of the organization is of great importance. Resources determine the potential, the ability to withstand internal and external risks. This means that resources are directly related to the level of competitiveness of the enterprise and are an element of the organization's management system. In accordance with the provisions of the international standard ISO 9001, the resources of the organization include human resources, infrastructure, environment of the organization and knowledge of the organization [1]. The knowledge of an organization is recognized as an independent resource that is an object of management. The goals and development strategy of the enterprise, as a rule, depend on its flexibility and speed of response to the needs of consumers, and this is directly related to the ability of the organization's personnel to create new knowledge, adapt existing ones to new conditions. On the other hand, knowledge management should be inextricably linked to the achievements of pedagogical science and practice, therefore corporate training at the enterprise should be organized and managed on the basis of integrating the processes of the quality management system, knowledge management and modern pedagogical approaches to training. In this regard, there is a problem of streamlining the activities of educational units, which can be solved by developing a unified algorithm. On the basis of the Technical University of the Ural Mining and Metallurgical Company (Russia), research work is being carried out, at the present stage of implementation of which ways are being developed to improve the efficiency and effectiveness of the university management system. The object of the research stage presented in this article is the process model of the university management system [2]. Subject – knowledge management in the corporate training system. The goal is to develop and implement a procedure for the knowledge management

process in the context of the implementation of corporate training. Tasks to be solved: to substantiate a set of methodological approaches for the development of a knowledge management algorithm; adapt the standardized stages of knowledge management to the conditions of the corporate training unit and test the proposed developments. To solve the set tasks, theoretical and practical methods of research work are used, such as analysis, synthesis, generalization, experimental research work. In this article, we present the progress of solving the tasks and the results obtained.

The main part and the results obtained

Knowledge management is an area of theoretical and practical activity that began to form in the early 90s. and received the greatest distribution in the format of the development of the knowledge economy. The term "knowledge management" was introduced by K. Wiig and generally means the systematic formation, renewal and application of knowledge in order to maximize the efficiency of enterprises. M.K. Rumisen [3] believes that „knowledge management" is a systematic process through which the knowledge necessary for the success of a company is created, stored, distributed and applied. W. Bukovich and R. Williams [4] define „knowledge management" as a process by which an organization manages to profit from the amount of knowledge or intellectual capital at its disposal.

Modern international standards defines knowledge management as the planned or ongoing implementation of individual activities or continuous management of processes to improve the use of existing or create new individual or collective knowledge resources in order to increase the competitiveness of an organization [5].

Knowledge management system is a set of concepts, subjects and tools to manage knowledge that facilitate individuals and organizations assuming responsibility for what and whom they know.

The regulatory framework for practical implementation of knowledge management includes CWA 14924 standards, whereby national standards are developed [6,7].

Knowledge management system relies on the following:

1) the focus is on production activity, at which any initiative pertaining to knowledge management must be targeted,
2) performance of knowledge related core activities: to create, store, share and use knowledge that must be introduced as the entire process;
3) tools for performing knowledge related activity. They include two major complementary categories: personal and organizational capabilities for knowledge [5].

In the context of an enterprise (organization), knowledge management system is mostly inextricably linked with standard functions of an organization such as IT-function, marketing/communications, HR training, HR management.

However, it is worth mentioning that an organization is not in need of training per se, but requires its results. Effective training is possible only provided that some methodological approaches are applied, the mainstream of which is a systematic one. Given that corporate training relies on adult training techniques, a prerequisite for the system functioning is an application of andragogical approach whereby the theoretical and

methodological framework is produced, which allows adults to acquire common and professional knowledge, to develop (or recalibrate) approaches to life [8,9]. Process approach will result in integrating core activities of knowledge management system into the existing management system.

Each organization must develop knowledge management process, determine the best set of tools for each process step, allocate responsibility and decide on the way knowledge management system processes will be documented and recorded. Corporate training stands for a system meant not only to ensure normal functioning, but also development of innovation organization as a whole. In this respect, the useful effect of the system is that productivity of each employee individually and an organization as a whole is enhanced. Broadly speaking, corporate training can be considered as a kind of continuing vocational training as it serves to let each employee acquire missing professional and cultural competencies to perform their duties in a more successful way.

When considering ever-changing needs and trends, an organization must evaluate the current knowledge level and decide on how to get and provide an access to further knowledge and its necessary updates.

Many enterprises have corporate training centers, the size and organizational form of which depend on the needs of an organization itself, while small and medium organizations lack such centers and resort to services of specialized training organizations. However, knowledge management is a hot topic for enterprises of all organizational forms and sizes, which means that it must be controlled. Let us consider developing knowledge management system based on international standards by an example of a large corporate university that provides trainings both for holding group and third-party customers (on higher and continuing training programmes through all levels – from reskilling and upskilling programmes to Master's programme). Subsequently, the university is involved in building personal and corporate knowledge.

Generally, corporate knowledge is a system for gathering and transferring process, production, organizational, functional, business and other information among employees to improve and enhance enterprises. Personal (private) knowledge of employees encompasses a set of competencies whereby an employee holds a respective position and applies at his work.

Process approach involves dedicating processes in the context of an activity in question, each process characteristics as well as defining its performance algorithm. We suggested dedicating standardized activity stages of knowledge management as knowledge management system processes. Each of the stages can be considered as sub-processes in the common management system. Organizational conditions for executing processes are proposed as an algorithm reasonable for being applied in any management system business process, for which adaptation, management and creation of new corporate knowledge is relevant. The algorithm is used as a model that can be specified both for business process and a center to solve the current, design and long-term objectives and to develop company capacity.

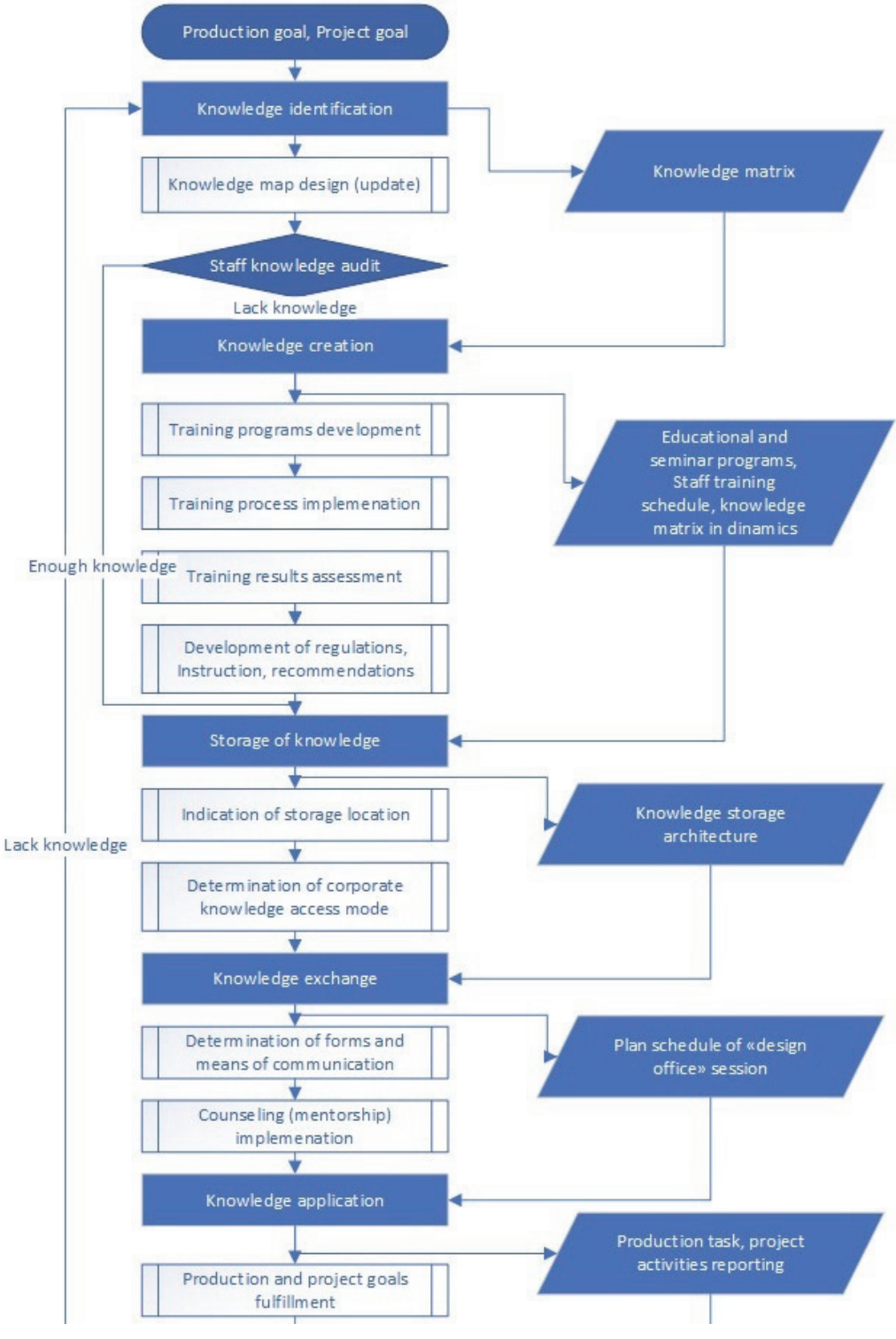
Production goal, Project goal
Knowledge identification
Knowledge map design (update)
Knowledge matrix
Staff knowledge audit
Lack knowledge
Knowledge creation
Training programs development
Training process implemenation
Educational and seminar programs, Staff training schedule, knowledge matrix in dinamics
Enough knowledge
Training results assessment
Development of regulations, Instruction, recommendations
Storage of knowledge
Indication of storage location
Knowledge storage architecture
Lack knowledge
Determination of corporate knowledge access mode
Knowledge exchange
Determination of forms and means of communication
Plan schedule of «design office» session
Counseling (mentorship) implemenation
Knowledge application
Production task, project activities reporting
Production and project goals fulfillment

Fig. 1 – Knowledge management process algorithm in corporate training.

Given the fact that the knowledge management system is harmonized with the existing management system, the organizational technique for its implementation can be considered a procedure based on the algorithm (Fig.1), built in the notation of the Basic Flowchart diagram. The type of diagram may be different depending on the forms of documentation adopted by the company. To adapt the procedure to the conditions of the project or department, it is more rational to use a functional diagram, which will show in more detail the distribution of activities by job units. If it is necessary to demonstrate the flow of information (knowledge) through interconnected processes, you can use IDEF modeling notations.

The stages of knowledge management play a role of activity blocks of the algorithm [10]. For the purposes of adapting the stages to the conditions of the corporate training center, let us disclose each stage established by the standard. For further development of the procedure based on the algorithm for each block to determine the input, output, resources, performance indicators, recommendations on the use of methods and techniques for the implementation of activities. *The first process* is knowledge identification, this stage should include the analysis of existing knowledge and missing knowledge. The "input" is the information from the customer on the relevancy of mastering new competencies by the company's employees; the „output“ is the information in a formalized form. The information is transformed into a knowledge map format, which facilitates the transformation of incoming information into a formalized form indicating the specific labor actions, skills and knowledge required by the employer. As part of the first process, it is necessary to assess the knowledge of staff, which is aimed at identifying the current state and defining the missing knowledge. The data received shall be reviewed and distributed between the following levels: the organizational level, responsible for strategic knowledge needs, and the personal level, responsible for the daily search for necessary knowledge and information. The way to document the result of the process is a knowledge matrix, which summarizes the data on the current and required level of knowledge, distributed by job positions. The „output“ of the previous process is the „input“ of the subsequent one. *The second process* The second process is generation of (new) knowledge – at the personal and

group levels this way is often social interaction, in other words, generation of knowledge through training and education. The second process is implemented if the first reveals a lack of knowledge. The second process involves development of training programs, training process, and the evaluation of learning outcomes. The „output“ of this process is employees with a higher level of knowledge. The results are documented through the educational programs, programs of seminars and trainings, schedule of personnel training and knowledge matrix in dynamics. *The third process* is knowledge storage – to build up knowledge assets they must be „embedded“ within the organization. The technical tools of knowledge storage may include for instance the document databases. There for the process stipulates в рамках процесса provides for the definition of the place of storage of knowledge, which should be available in the organization and the definition of access mode to corporate knowledge, provided the technical ability to access within the competence of the employee. „The output“ of this process is the organization of the knowledge repository and a maintenance tool to keep it running. *The fourth process* of the system is knowledge sharing - to transfer knowledge in the right place, at the right time, and of the right quality. This means that knowledge comes in the right context, it means where the value is created. Arrangement of stages in this process, acceptable for the university is definition of forms and ways of interaction, counseling, mentoring. Documentation method is a plan schedule of „design office“ sessions (the method may be different, taking into account the practice of the organization). *The fifth process* is knowledge application. The process is accomplished through the tasks of the project or production, identifying development opportunities, and setting goals, taking into account the novelty. The final stage is a review of staff knowledge, if the results are positive it is acknowledged the staff is ready to apply the new knowledge. If inconsistencies are detected, following the algorithm, it is required to return to the first process and repeat the entire procedure focusing on the weakest area. "Output" of the fifth process is the status of the implementation of the production task, on the project activities, taking into account the performance indicators. Assessment of the effectiveness of knowledge management can be performed based on the application of at least six indicators: financial; innovative; technological (process); consumer indicators; indicators characterizing human resources; characterizing the provision of services [4].

An example of the implementation of the model is distant learning arranged by the university during the pandemic lockdown. An „input“ task is the application of a learning platform for the distant learning of full-time students.

This operational task involves specialists from IT department, academic department, tutors and students. The IT manager is responsible for the process. The knowledge map for the academic department specialist showed that they needed new knowledge, such as how to track student attendance in a distant learning and how to post and delete content in a virtual room. The knowledge matrix showed that 30 percent of specialists possess the required knowledge. For 70 percent of employees instead of training on a specially designed educational program a dynamic counseling system through webinars was arranged. Such webinars were conducted by IT-service specialists. The team work has resulted in a set of instructions for participants of distant learning programs. The university web portal is designed to provide the formalized corporate knowledge. Access to the instructions is controlled through accounts for the training staff, lecturers and students as each category of users has specified instructions.

The system of dynamic consultations proved to be an effective form at the stage of knowledge sharing. The academic spring term of 2019-2020 showed the effectiveness of

the taken measures based on the elements of the knowledge management system. The application of the proposed algorithm allowed minimizing the time spent on the task completion and the risks of hampering training sessions due to the staff's knowledge gap. This evidences that the effect has been obtained for all six groups of indicators. Promising areas for further studies are the extension of the algorithm to other processes and departments and a deeper assessment of the effectiveness of knowledge management.

Conclusions

1. The theoretical background for introduction of elements of the knowledge management system in the corporate training system is proposed by combining comprehensive activity, competence, and andragogical approaches taking into account the standards of the knowledge management system and the process approach to the organization of the company activity in a given context.
2. Implementation of the corporate training was accompanied with development of a knowledge management algorithm, which includes five processes complying with the requirements of the international standards. The processes are adapted to the needs of the corporate training organization by using the appropriate practices, techniques and methods of findings documenting.
3. The proposed knowledge management algorithm was tested in the Technical University of the Ural Mining and Metallurgical Company. The obtained results showed the feasibility of using the proposed algorithm.

Thus, the management activity associated with knowledge management has its own methodology, essence and structure, which can be rationally "embedded" into the current management system in terms of auxiliary processes of HR management. Effective knowledge management should make a positive contribution to all components of the intellectual capital of the organization, forming a unified system of corporate training.

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