

PERSONALIZATION OF EMPLOYEE'S KNOWLEDGE IN VIRTUAL LABOUR SPACE

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Abstract: Knowledge and processes of knowledge management in enterprises today are of essential importance to their existence. Because of the challenges of virtualization of the economic processes that include virtualization of labour space, knowledge management, with particular focus on tacit knowledge, should be considered with particular care. The aim of the present study is to present the essence of knowledge personalization in the aspect of virtual labour space. The study provides characterization of the concept of knowledge personalization. The virtual elements of labour space were presented. The focus was on selected activities to support knowledge personalization in virtual labour space and presents a holistic approach to managing tacit knowledge in virtual labour space.

Keywords: knowledge, knowledge management, knowledge personalization, virtual labour space

Introduction

Greater opportunities for application of information and communication technologies (ICT) became the basis for creation of virtual forms of business activity, including virtual cooperation between enterprises or virtual forms of labour organization. It is believed that virtualization of business activities is a natural phenomenon and each enterprise implements the strategies of virtualization to different degree. Therefore it seems essential that virtualization of enterprises should focus on the opportunities for creation of knowledge resources, particularly tacit knowledge.

Knowledge management in organization is a key problem in the context of management of contemporary enterprises. Knowledge resources are found to be the most essential from the standpoint of operation of enterprises because knowledge, if properly managed, provides the basis for creation of competitive and innovative business processes and business solutions. Knowledge management necessitates activation of certain processes in the enterprise, which, according to Gilbert Probst, Steffen Raub and Kai Romhardt include [11, s. 42]:

- localization of knowledge;
- acquisition of knowledge;
- development of knowledge;
- sharing and distribution of knowledge;
- using knowledge;
- maintaining knowledge.

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The processes of knowledge management concern both tacit and explicit knowledge, which can be supported by ICT solutions in a number of facets. However, development of ICT, which forms a new virtual labour space, forces businesses to pay particular attention to the strategy of knowledge personalization. According to Kowalczyk and Nogalski, this strategy "consists in complex and direct transfer of data, information and knowledge between people" [6, p. 63]. The basis for tacit knowledge management are processes of sharing and distribution of knowledge, which is difficult since knowledge sharing is not part of human knowledge and necessitates direct contacts, which in the case of virtual forms of organizational is substantially limited [12, p. 207]. Virtual labour space is based on electronic exchange of information, communication and cooperation, which is dominated by direct communication.

These problems are important and topical since greater percentage of people are employed in virtual labour space, which translates into a number of approaches to management of human resources in contemporary enterprises and to cooperation with customers, suppliers, contractors etc.

The aim of this study is to present key facets connected with the process of knowledge personalization in virtual labour space through:

- characterization of the essence of knowledge personalization;
- presentation of the elements of virtual labour space in the context of knowledge personalization;
- presentation of a holistic approach to the process of knowledge personalization in virtual labour space.

Outline of the Strategy of Knowledge Personalization

Knowledge management in enterprises is closely related to the two types of knowledge: explicit knowledge and tacit knowledge. Explicit knowledge is specified, systematized and easy to formulate and utilize, formed by means of words, numbers, signs, symbols and images. The sources of this knowledge include instructions, reports, analyses, strategies, procedures of databases, books etc. Explicit knowledge is subject to the processes of codification and thus easily available and easy to distribute [1, 325]. A number of ICT tools are used to support realization of the strategy of codification i.e. systems of knowledge management, labour circulation, decision support, expert systems, corporation portals, databases and data warehouses [7, p. 347-355].

Tacit knowledge is the knowledge which exists in everyday activity and cannot be clearly specified. This knowledge is accumulated as experience increases and is connected with perception of the world by a particular person and their intuition. It is reflected by the performed activities, even if an employee is not aware of this [4, p.197]. "It is estimated that tacit knowledge accounts for 80% of knowledge in the enterprise. Therefore, it is necessary to ensure proper management of this type of knowledge" [9].

This type of knowledge is difficult and even impossible to be formalized and transferred. The basic form of transferring tacit knowledge is words and common experience. Tacit knowledge necessitates implementation of the strategy of knowledge personalization. Knowledge personalization is a strategy with the main aim of managing the resources of tacit knowledge, which is primarily based on communication and cooperation and is realized through direct relationships between employees (e.g. teamwork, common experiencing, non-formal communication).

Knowledge management in each enterprise should be reduced to implementation of the strategies of codification and personalization. However, with the emphasis on such problems as enterprise size, space for enterprise's activities or products and services in the enterprise, one should identify the dominant strategy of knowledge management, which can be very useful in formation of the principles of operation of the system of knowledge management and specific solutions in this area [1, p. 332].

With respect to management of tacit knowledge, enterprise size has essential importance as it is easier to manage this type of knowledge in smaller businesses compared to bigger enterprises, where opportunities of direct communication between employees are limited, which results from the number of the employed people and spatial arrangement of the enterprise's departments. Furthermore, in the case of the conventional space, any activities are determined by the number of direct contacts, which provides good conditions for implementation of the processes of tacit knowledge management. In the case of virtual space of enterprise's operation, direct communication is substantially limited or it even does not exist, which necessitates application of ICT solutions, particularly in the area of communication and cooperation, which further limits the efficiency of tacit knowledge management. Another essential element which is worth considering which strategy, personalization or codification, is dominant, is product in the enterprise. With standard products, a good approach to knowledge management is exaggeration of the strategy of codification, whereas with products with individualized or innovative nature, the strategy of management of tacit knowledge is emphasized [1, p. 332].

As demonstrated by the above examples, the strategy of personalization is not always easy to be used and exhibits considerable limitations. It should be always taken into consideration that the processes of knowledge personalization are connected with the transfer of knowledge, which is affected by social processes (socialization, adaptation, adjustment) and formalization of knowledge (writing tacit knowledge in the form of concepts, comparisons, analogies, metaphors, pictures, images etc.).

Characterization of Virtual Labour Space

Virtual labour space (Fig. 1) is determined by the four principal dimensions: working time, working place, cooperation, and legal determinants (legal relations

between employer and employees, between the involved enterprises which form e.g. virtual organization). The basis for creation of the virtual labour space are solutions from ICT area, which reconfigure the enterprise's resources and have an essential effect on creation of new competencies among its members.

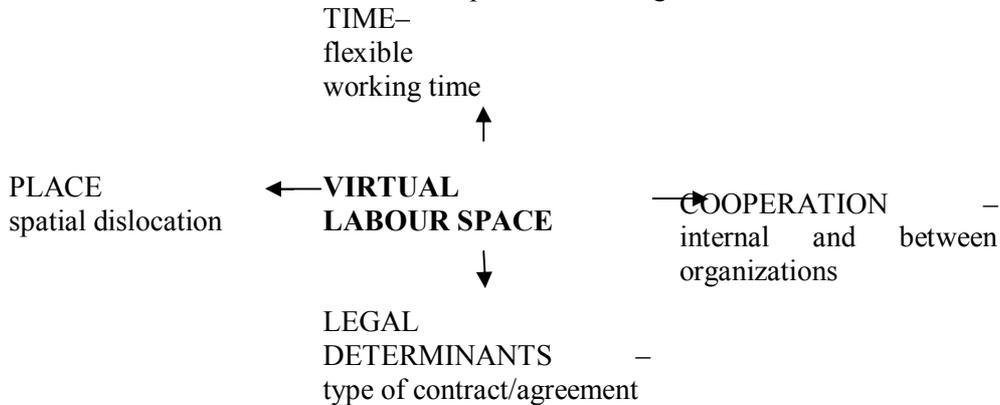


Figure 1. Virtual labour space and its key dimensions

Source: author's own elaboration

Virtual labour space is composed of several constitutive elements which from the technological standpoint include:

- equipment infrastructure: computers, notebooks, smartphones, PDAs, tablet personal computers, servers, mobile phones, computer networks (Internet, Intranet or Extranet) etc.;
- application solutions: software, e.g. content management systems, workflow systems, customer management systems, database systems, agent systems and others;
- communication solutions: making remote communication channels available to enable cooperation between users (i.e. between employees, between employees and superiors, between enterprises and the environment (customers), suppliers, business partners etc.) and the processes of formation of e-mail relationships, forum, chat lines or tele- and video-conferencing.

ICT plays a supportive role in knowledge management, which consists in particular on opportunities of information and knowledge management, both easily available and tacit knowledge in a variety of IT applications. However, easy access to this type of resources does not allow for obtaining of a variety of answers to such questions as: which were the difficulties during implementation of tasks, information about failures, about interesting or boring tasks and people which were willing to help or made the work difficult. This results from the fact that "formal systems do not provide opportunities for storage of knowledge which is difficult to be described or codify" [10, p. 27].

New importance of time and place of work means that remote employees feel much socially isolated (remote, less personal working place). Although the

potential of ICT technologies are the basis for creation of virtual labour space, it should not be considered from this point of view only. An important element of creation of virtual labour space is also organizational factors. Work intensity, focus on tasks and building trust are conducive to narrowing personal relationships and interpersonal communication, which forms new circumstances and working conditions where competencies of teleworkers and their managers are of key importance [2, p. 76].

Virtual organization of labour space necessitates not only application of ICT but also consideration of the elements of the organizational context i.e. communication, organizational culture of leadership, trust and competencies which essentially affect not only the efficiency and effectiveness of telework but they also impact on supporting socialization and activation of the processes of knowledge management connected particularly with sharing knowledge and "integration of everything a single employee knows into the enterprise's knowledge" [6, p. 68.].

Klobas and Jackson proposed to include two dimensions into the virtualization context: virtual and organizational one. The virtual aspects are specific factors which relate in particular to degree of enterprise virtualization. Furthermore, organizational aspects connected, on the one hand, with the threats of virtualization that might arise, and, on the other, with the factors responsible for its strengthening and extension. The virtual aspects concern: virtual personnel (proportion of permanent and contract-based staffs), distributed personnel (the scope where the employees are physically remote from each other, present in different locations), ICT tools necessary for virtual work and communication (the scope where ICT is used for supporting work, communication and maintaining the organizational culture), processes for virtual work and communication (the scope where the methods of working, practices and workflow supports virtual work and communication among distributed personnel), virtual mindset (the scope where personnel thinks about the organization as the whole, regardless the workplace and time zone) and innovation in customer service (opportunities of offering new services based on virtual working with customers). The organizational dimension is aimed at consideration of such components as [5, p. 30].:

- common values: the scope where the values are common for all the employees despite different geographical locations;
- common understanding: the scope where the employees have common understanding of the nature of the organization;
- identity: the scope where employees feel associated with the organization;
- trust: the scope where the employees have positive expectations of the intentions and behaviour of others, being vigilant, with constant monitoring and control of these behaviours;
- personnel satisfaction: satisfaction of employees from working within the organization;
- economic efficiency: profitability of changes connected with transfer of tasks, functions or processes into the virtual labour space.

The most of importance in the virtual labour space is attributed to communication, which considerably stimulates the efficient flow of knowledge and plays a particularly important role in the process of knowledge transformation, allowing for measurable benefits. Efficient communication is of essential importance on high degree of identification of employees with the enterprise and necessitates combination of skills required for management, coordination and accountancy. It should be expected that performance of the tasks from this areas will take a considerable part of the manager's working time [13, p. 140].

The Activities to Support the Strategy of Knowledge Personalization in the Context of Labour Space Virtualization

The processes of personalization in the virtual labour space can be implemented through such activities as mentoring, team work (virtual teams) or e-learning training.

Mentoring is a term used to denote the relationships between a master and a student, oriented towards discovering and development of the student's potential, which is of particular importance to personalization of knowledge in the case of new employees in the enterprise, since this might accelerate introduction of the employee to work and obtaining their full independence at the workplace [8, s. 237, 4, p. 84]. This form allows for transfer of information concerning the problems closely related to the scope of work at a particular workplace and attracting the attention to where and who to turn to for help when solving problems connected with performing work e.g. problems of ordering paper for printers.

Another example of the activities that support knowledge personalization is teamwork, which allows for exchange of information and development of new ideas. The key benefit of working in teams is stimulation of creative solutions through different knowledge and experience of team members, which allows for viewing the same problems from different standpoints. Moreover, working in teams generates the synergy effect, which results from the fact that the team is able to achieve more than the individual employees would [4, p. 198]. Teamwork and solving problems together contribute to improvement in the efficiency of activities and allows for utilization of the employees' skills, which necessitates abilities of the entities in terms of cooperation and efficient utilization of the intellectual potential used by the enterprise [11, p.33]. With virtual labour space, the team tasks are performed remotely, in the form of virtual teams "using such tools as chat, electronic mailing list, tele- and video-conferencing and peer-to-peer (P2P) solutions that combine individual computers to allow for remote viewing computer screens by other people, writing the same document by different users or completion of a graphical representation [4, p. 198]. In practice, even if the enterprise has the extended information and communication infrastructure and IT solutions in the context of remote communication are widely used by the employees, the conventional meetings are preferred in these enterprises. This situation can be explained by the fact that in the case of direct contacts of the

members of this team it is much more difficult to build mutual trust, share knowledge and solve problems, which has substantial effect on the processes of management of tacit knowledge.

Another method to support personalization of knowledge among remote employees are trainings, which are a solution that allows for increasing employee competencies and development of certain competencies which are found to be of key importance from the standpoint of management of the enterprise. In virtual labour space, trainings should be performed in the e-learning system. E-learning systems constitute IT solutions that allow for improving competencies in any place and time on conditions of having particular IT solutions (e.g. computers, Internet, Intranet, LCMS or LMS systems). The characteristic features of e-learning courses are: electronic form of the content that allows for learning remotely, opportunities of independent working with the material and the interface that allows for unlimited access to material. [3, p. 144].

The activities in the area of personalization should allow for obtaining the map of sources of knowledge that describes the competencies of the employees, identification of the experts in individual fields, which makes it easier to make decisions concerning the choice of particular people to perform planned tasks in the enterprise [4, p. 200].

The Holistic Approach to Knowledge Personalization in the Virtual Labour Space

The essence of knowledge management is adaptation of the knowledge to current conditions of operation since with technological solutions today compared to those of tomorrow creates the need for updating and verification of knowledge resources, particularly in the context of tacit knowledge. Encouraging employees to develop the resources of tacit knowledge and share knowledge with others necessitates a holistic approach to knowledge personalization with consideration of the technical and organizational aspects.

Table 1 presents the process of knowledge personalization, which takes into consideration such elements as the aim of management of tacit knowledge, application of ICT solutions, activities at the level of enterprise and the expected results.

Table 1. Process of Knowledge Personalization in the Virtual Labour Space

Knowledge Personalization in the Virtual Labour Space	Characterization
1. Aim of Tacit Knowledge Management	<ul style="list-style-type: none"> – Supporting the employee in the workplace – Skilful utilization of employees' competencies – Promotion of creativity and innovativeness of the activities – Creation of the resources of tacit knowledge in the

	<p>enterprise</p> <ul style="list-style-type: none"> – Utilization of the resources of tacit knowledge in the enterprise
2. The Scope of the Used ICT Solutions	<ul style="list-style-type: none"> – Intranet, enterprise portal, – Internet and Extranet, – Chat rooms, forums, electronic mailing lists, – Internal communication network, – Base of competencies of enterprise's employees, – Expert systems, – Intelligent agents, – Mentoring programs, – Systems for support for brain storming, – Systems for support of group work
3. Activities Started	<ul style="list-style-type: none"> – Preparation of the working environment in consideration of different aspects, both organizational and technical aspects, – Building the community of knowledge (community of practitioners), – Building the trust between the employees and between the employees and employers, – Utilization of mentoring, – Application of the method of brainstorming, – Identification of experts in a particular domain, – Building the network of contacts between the specialists, – Encouraging people in formal or informal network of cooperation, – Implementation of work in interdisciplinary teams, – Starting the tools that support current exchange of information e.g. forum, chat room, wikis, blogs etc., – Organization of trainings: implementation of e-learning, – Motivating workers, – Clear formulation of the aim, – Creation of the suitable organizational culture,
4. Expected Implications	<ul style="list-style-type: none"> – Active participation in the process of knowledge personalization, – Awareness of employees and managers connected with the process of socialization, – Development of skills of independent problem-solving, – Active participation in the process of common learning of the employees, – Raising the awareness of the employees and understanding

	<p>the idea of knowledge management, – Improving the competencies of employees and managers in the area of the IT tools used to support the processes of knowledge management</p>
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Source: author's own elaboration

One advantage of knowledge personalization to the enterprises is improved opportunities of familiarizing with the employee and building organizational bonds. To employees, the benefits include active participation in the process of learning and improving their knowledge.

Summary

Apart from codification, knowledge personalization allows for strengthening the bonds between employees, teams and the structure of the enterprise, ensuring complex approach to knowledge management. In the case of labour space virtualization, with employees devoid of direct contacts, the emphasis on the strategy of personalization allows for not only complex implementation of the processes of knowledge management in the enterprise but also on implementation of the attitudes for creation of the learning organization. Each enterprise today should have and absorb knowledge and be able to use the knowledge they have. Utilization of knowledge in action allows for e.g. improving the level of the system of labour organization, creation of innovative products, improvement in relationships with customers, obtaining the competitive advantage. Emphasis on the strategy of knowledge personalization in the context of virtualization of labour space might contribute to wider use of the potential of telework and virtual teams within the enterprise's structures. Additional benefit of adoption of the strategy of knowledge personalization is development of knowledge workers.

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PERSONALIZACJA WIEDZY PRACOWNIKA W WIRTUALNEJ PRZESTRZENI PRACY

Streszczenie: Wiedza i procesy zarządzania wiedzą w przedsiębiorstwach mają dzisiaj istotne znaczenie dla ich istnienia. Ze względu na wyzwania, wirtualizację procesów gospodarczych, które obejmują wirtualizację miejsca pracy, zarządzanie wiedzą, ze szczególnym naciskiem na wiedzę ukrytą, należy rozważyć ze szczególną starannością. Celem niniejszego opracowania jest przedstawienie istoty personalizacji wiedzy w aspekcie pracy wirtualnej przestrzeni. Studium zawiera charakterystykę pojęcia personalizacji wiedzy. Zaprezentowano wirtualne elementy przestrzeni pracy. Skupiono się na wybranych działaniach wspierających personalizację wiedzy w wirtualnej przestrzeni pracy i przedstawiono całościowe podejście do zarządzania wiedzą ukrytej w wirtualnej przestrzeni pracy.

將僱員的勞工在虛擬空間中的個性化知識

摘要：今天，知識和流程知識管理在企業重視他們的存在是必要的。由於經濟進程的虛擬化所帶來的挑戰，包括虛擬化技術，勞動，知識管理，特別注重隱性知識，特別注意應考慮與空間。本研究的目的，是目前的虛擬空間在勞動力方面知識的個性化的本質。這項研究提供了個性化知識表徵的概念。虛擬空間元素的勞動。在選定的活動重點是支持在虛擬空間中的知識個性化的勞動，並提供了一個全面的方法來管理隱性知識在虛擬空間中的勞動。