ENTERPRISE KNOWLEDGE MANAGEMENT: BASIC MODELS

The main models, concepts and approaches to enterprise knowledge management have been characterized. The economic essence of knowledge has been considered and the degree of its influence on the efficiency of functioning of modern enterprises has been determined. An effective organization of knowledge management system at an enterprise is able to ensure circulation, exchange and dissemination of knowledge between carriers, and in the long term creates competitive advantages for the enterprise. Knowledge management involves the formation and functioning of certain relationships between its carriers, creating a basis for the development and implementation of new technologies; helps to improve the efficiency of work and maximize the economic effect of its implementation in the activities of the enterprise. Identifying knowledge management methods requires considering essence and types of knowledge. The essence of explicit and tacit knowledge has been determined, they form the basis of knowledge management concept “Spiral of Knowledge”. The four stages of the “Spiral of Knowledge” concept (socialization, externalization, combination, internalization) have been considered, the main advantages and disadvantages of the concept have been identified. The model “Knowledge Economy within the Firm” has been characterized, it contains four stages of knowledge management and assumes the separation of knowledge from its carriers in order to optimize and automate the processes of knowledge dissemination. The model of five components for knowledge management and the peculiarities of its use at the enterprise through the prism of corporate culture development has been considered. The essence of codified and uncodified, concrete and abstract, undiffused and diffused knowledge (they form the basis for the formation of the knowledge management model “The Cycle of Social Learning”), has been characterized. It has been identified, that knowledge management models are an important tool for ensuring an effective process of knowledge dissemination within the enterprise, and there is a relationship between the efficiency of their use and the level of corporate culture development.

Keywords: knowledge, types of knowledge, knowledge management, concept of knowledge management, enterprise.

Problem statement. The activity of any enterprise is a set of resources that interact in a certain way, creating added value. It is interesting to note, that the possession of progressive resources is not enough for a successful operation, because the success of any enterprise is primarily the management of resources and the right approach to their use.

In recent decades, the business sector has paid special attention to the development of intangible resources that can significantly optimize production and organizational processes, to transform enterprises into more innovative, progressive and useful for
consumers. One of the effective tools is the part of the Resource-based View (RBV) – the concept of “Knowledge Management”. The relevance of this topic is that the correct knowledge management within an enterprise can ensure the circulation, exchange, and dissemination of knowledge between their carriers, and create a long-term competitive advantage for the enterprise. After all, there is nothing more stable and powerful than the constant readiness of the enterprise to transform its activities, introduce the latest technologies, and acquire new knowledge.

**Review of recent publications.** The concept of knowledge management has been considered and developed by a large series of well-known scientists. Revealing the primary essence of the category of “knowledge”, back in 1966 M. Polanyi [1] proposed the division of knowledge into explicit and tacit. This classification of knowledge became the basis for the knowledge management concept – “Spiral of Knowledge”, which was proposed by Japanese scientists and founders of the Institute of Knowledge Management I. Nonaka, H. Takeuchi [2,3,4]. Criticism of the “Spiral of Knowledge” model was proposed by scientist R. Suresh [5]. On the other hand, thanks to the work and research of M. Demarest [6], a conceptual model of “Knowledge Economies within the Firm” was launched, which explains the process of structuring existing knowledge in the enterprise and ensuring its implementation, dissemination, and use by a wide range of people. Knowledge management in the form of the concept of the “Learning Organization” was initiated and developed by P. Senge [7]. This theory is reflected in the research of other scientists, such as R. Flood [8], who described the key provisions of this model, and M. Rudenko [9], which revealed some difficulties in implementing this model in the practice of modern enterprises. M. Boisot [10], A. Canals, M. Boisot, I. MacMillan [11] proposed his knowledge management model “Social Learning Cycle” which shows the transition of knowledge from uncodified to codified, from concrete to abstract, from undiffused to diffused, presenting this path of transformation based on the model of three-dimensional space with 6 stages of knowledge modification. Among modern scientific researches, the scientific works of Z. Atkočiūnienė [12] and O. Miroshnychenko [12,13] were considered, which reveals the essence of the concept of knowledge as a component of the innovative potential of the enterprise.

The purpose of the paper is to identify the basic models and approaches to knowledge management, which is a source of sustainable competitive advantage in any industry and for enterprises of all sizes. In fact, many enterprises underestimate the capabilities and potential of knowledge management within the enterprise, so the purpose of this article is to identify the essence of knowledge and reveal the extent of its impact on the efficiency of the enterprises.

**Research methodology.** The research was carried out based on the results of critical analysis and synthesis of the scientific works in the area of knowledge management. To consider the basic models and approaches to knowledge management the comparative analysis, synthesis and generalization have been used. In order to consider the main differences between models of knowledge management, to explain the connection between tacit and explicit knowledge the inductive method has been employed. To identify types of knowledge the comparative, systematic analysis and interpretation have been
used. For formulating conclusions and future direction of the research, the synthesis analyses have been employed.

**Findings of research.** In the modern world, the resource as knowledge acquires a new meaning in the context of enterprise development. Today, more and more enterprises are shifting their focus from material resources to knowledge, or more precisely – the result of their use – technology. If earlier the main sources and tools of income generation were current assets and material resources, now enterprises prefer to form processes to ensure knowledge-intensive production. As a resource such as “knowledge” has become so widespread and important, there is a need for control and regulation of the process of acquisition, exchange, and distribution of this resource within a single enterprise between its carriers – people.

Thus, it was characterized by the emergence of the concept of “Knowledge Management”, which involves the creation and operation of certain relationships for the acquisition, exchange, and dissemination of knowledge between their carriers, to provide a basis for the development of new technologies in all the processes and maximizing the benefits of their implementation.

Knowledge is the main intangible resource, which is the driving force for the development and improvement of both the individual and entire organizations. However, to identify ways of knowledge management, first it is necessary to identify the essence of their types. According to the concept of M. Polanyi [1], which was proposed by the British philosopher in 1966, knowledge is divided into explicit and tacit. In turn, explicit knowledge is codified in the form of words and numbers knowledge, which can be easily transmitted in articles, documents, books, etc. The tacit knowledge is mostly inseparable from their carriers, i.e. specific people. This type of knowledge is difficult to transfer from one person to another, and they are usually the result of individual experience. The division of knowledge into explicit and tacit became a good basis for creating a knowledge management model – “Spiral of Knowledge”, which was invented by the followers of this concept.

**Spiral of Knowledge.** Knowledge Management Model “Spiral of Knowledge” was proposed by I. Nonaka, H. Takeuchi [2,3,4] – Japanese scientists, who popularized and developed the Institute of Knowledge Management. The main idea of this spiral of knowledge is the process of transforming tacit knowledge into explicit, moving from one carrier of knowledge to a large number of people. The main feature of this model is a gradual spiral movement of knowledge, divided into 4 phases:

1) socialization;
2) externalization;
3) combination;
4) internalization.

**Socialization** is actually the point of origin of tacit knowledge, which is characterized by the process of reception-transfer of knowledge in the form of “observation-copying”, in which one individual sees-analyzes-repeats the actions of another.

**Externalization** is a process of primary transition from tacit knowledge to explicit, which involves the formulation of the essence of knowledge in the form of words. At this stage,
knowledge can be transferred in the form of analogies, metaphors, or other non-standard types of speech. Some disadvantage of this stage is that people have the ability to interpret the acquired knowledge in different ways, and thus make conclusions that may often not correspond to the essence, which was primarily meant.

**Combination** is the dissemination of explicit knowledge gained after the externalization stage. This spread involves the transfer of knowledge from one individual to another. A very accurate example is the phenomenon called “best practices”, when enterprises receive knowledge from various communication sources of information – books, magazines, forums (lectures), social networks, and so on, and after that implement it to their processes. The most interesting is the fact that the practical implementation of these “best practices” is the fourth stage of the spiral – internalization.

**Internalization** is the transformation of explicit knowledge into tacit, which takes the form of implementation of acquired explicit knowledge into practice. The process of internalization takes place under the influence of the constant practical execution of acquired knowledge, which as a result of repetition and improvement becomes tacit knowledge for its carrier and others.

Like every model, the “Spiral of Knowledge” model has its advantages and disadvantages. On the one hand, such transformation of knowledge provides constant interaction between knowledge carriers, exchange of experience, awareness, and their practical execution, which is a good basis for the innovative development of enterprises. On the other hand, the model implies a mechanistic approach to knowledge categorization, which is over-simplistic, and the process of knowledge transfer is far more complicated in organizations [5].

**Knowledge Economies within the Firm.** Besides, the famous scientist M. Demarest considers knowledge management based on the model “Knowledge Economies within the Firm” [6]. In this model, M. Demerest considers the mechanism of the knowledge economy within a particular enterprise. According to this concept of knowledge, there are four stages: construction, embodiment, dissemination, and use (see Figure. 1).

![Fig. 1. Stages of knowledge economies within the firm](Source: [6])
Construction is a process of identifying and structuring knowledge in each division of an individual enterprise. This can be the structuring of knowledge, associated with a particular technological or organizational process in the enterprise in a particular unit, and so on.

Embodiment is the process of choosing a specific “storage” of knowledge and transferring this knowledge to an independent medium. Most often, enterprises retain some knowledge in the form of documents.

Dissemination is the process of organizing convenient mechanisms and information infrastructure that would ensure the circulation of knowledge within the enterprise, as well as easy access to the place of knowledge storage – “knowledge base” so that it can be used by all employees.

Use is the process of using the accumulated knowledge in a certain activity, the ultimate goal of which is improvement and optimization.

If we consider this process in terms of the enterprise's goals, then this model of knowledge economy within the enterprise aims to maximize added value by optimizing and automating the processes of knowledge transfer. Also, the manifestation of automation in this model is the separation of knowledge from their carriers – people and placing them on independent media – documents. That provides easy accumulation and transfer of knowledge from one employee to another while minimizing time and eliminating the risk of losing the source of knowledge when an employee leaves the enterprise.

Learning Organization Concept. One of the most relevant theories of knowledge management is the concept of P. Senge [7] “Fifth Discipline: The Art and Practice of the Learning Organization”. In this paper, the author builds knowledge management within the enterprise, based on the theory of “Learning Organization”. The enterprise's achievement of this approach to knowledge management is based on 5 pillars: personal mastery, mental models, shared vision, team learning, systemic thinking. The thing is, that to make a “Learning Organization”, using all of these factors separately, is impossible, because all these elements can have a positive impact on the organization only by interacting with each other. Consider each element of this model separately, taking into account also the critique of this concept, which was presented by no less famous scientist R. Flood [8]. The first element of this concept – personal mastery.

Personal Mastery is a discipline that aims to clarify the personal vision of each member of the enterprise. This vision is to focus and direct the energy of each person in the organization to develop its own vision and abandon the principles, to which this vision does not correspond. It is important to mention that this theory of personal skill is to cultivate the ability to objectively perceive things on the events happening around, analyze, and form their vision of their essence. The vision, or in other words the principles, of each employee, form the “spiritual foundation” of the enterprise. Interestingly, the development potential of the whole enterprise depends on the potential of each employee. Based on this, it is possible to trace the relationship between the improvement of personal skills and the improvement of the whole organization: the organization will develop to the extent and at
the pace, at which each of its individual employees develops. That is why one of the goals of any enterprise striving to become a “Learning Organization” is to support the true desire of its employees to develop, constantly learn new things and form their own vision of things.

Mental models are certain established patterns of behavior, stereotypical visions of situations that affect our perceptions and our decisions. On the one hand, typing certain things is a natural process, because everyone analyzes everything that happens to them, gains certain knowledge, and uses it to better navigate the situation, analyze and make decisions faster, identify threats or opportunities. However, the problem is that often these established patterns of thinking prevent both individuals and organizations from looking at things objectively and making the right decisions. In this case, the formation of a learning organization is possible only with a constant analysis of mental models, which begins primarily with each employee. Working with mental models is based on constant analysis of one’s own thinking, which includes critical thinking, discussing employees’ own vision, which in turn can help identify everyone’s way of thinking and be ready for external influence from other members of the organization for the effective operation of the enterprise.

Shared Vision is a culture of shared values between an individual employee and the enterprise as a whole. Each enterprise must form a mission at the beginning of its journey and hire people in a team, who will be able to follow this mission. That is why the enterprise must form a set of principles and practical recommendations that could be followed by its employees. They should know the purpose, go to it, and on the way to it understand that they work not only for financial gain, but also for the benefit they bring to the enterprise.

Team Learning is the organization of work and communication in the enterprise, which would create a synergy between employees. This means that working as a team they could achieve much greater results than each of them could separately. This effect can be achieved by organizing a “dialogue” between people in the group and between groups throughout the organization. The main emphasis of creating conditions for such a dialogue is to identify such features of communication between group members that can have a destructive effect on their interaction and each participant. In this case, if the members of the group cannot learn and improve together, then the organization will not be able to learn effectively and make progress. Creating the right atmosphere of lifelong learning should educate employees on so-called “flexible thinking”, which is that everyone in the enterprise accepts the fact, that no matter how much that person studied and no matter how much experience, – there are always prospects to do better. Any confidence that the enterprise has already become a “Learning Organization” means stopping development. The “Learning Organization” is not a state, it is a continuous process.

Systemic Thinking is a combination of all the components described earlier. In short, systemic thinking is the ability to see and explain the interactions and relationships between all the elements of a progressive enterprise. Without a logical combination of all these elements – the acquired and implemented knowledge has no value because any enterprise is a system, each element of which cannot function separately.

Summarizing the features of knowledge management in the enterprise based on the “Learning Organization” concept, the truth is that this model is not only relevant but has
not yet reached its peak of development based on domestic enterprises. Most enterprises both in our country and abroad have no idea about it or are at an early stage of development of knowledge management within the enterprise. That is why modern scientists, such as M. Rudenko [9], see the difficulty of applying this model due to the insufficient level of readiness and development of corporate culture, the culture of values in most modern enterprises.

**Social Learning Cycle Model.** Particular attention should also be paid to the M. Boisot [10,11], A. Canals, I. MacMillan [11] knowledge management model – “Social Learning Cycle Model”, which is a three-dimensional cube in which knowledge moves in three directions (see Figure 2):

1) uncodified go to the codified;
2) concrete go to the abstract;
3) undiffused go to diffused.

![Fig. 2. Social Learning Cycle Model](source: [11])

Within this cube, there is a Social Learning Cycle (SLC), which involves 6 stages of transformation of knowledge flows. Consider these steps:

1. Scanning: review and analysis of a certain amount of common knowledge.
2. Codification: the systematization of the knowledge, processed at the first stage, which at this stage are structured according to certain criteria.
3. Abstraction: systematized knowledge is analyzed in terms of spreading it to other activities, processes, things, and more. At this stage, structured specific knowledge in the form of hypotheses is spread to other objects and thus becomes more abstract.
4. Diffusion: the collected abstract knowledge is analyzed by the selected target audience, i.e. there is actually a process of dissemination of abstract but already structured knowledge.
5. Absorption: practical use of knowledge gained, creating new patterns, relationships, and results. Since they are still unexplored, they go into a state of uncodified knowledge.
6. Impacting: based on practical use certain rules of interaction and new models of behavior are formed. These rules, processes, become concrete knowledge after all are accurately defined in the course of experiments. Eventually, the process moves back to the scanning stage.

It should be noted, that codified and uncodified knowledge is aimed at the distribution of certain knowledge into groups, i.e. the implementation of the appropriate classification. Concrete and abstract knowledge characterizes the process of knowledge creation. Undiffused and diffused knowledge serves to determine and understand the extent of knowledge among a particular sample of people and the possibility of its transfer to other carriers.

**Conclusions.** Knowledge is an intangible resource that has inexhaustible potential for creating added value for a enterprise, but it can only become so, if it is managed properly. Knowledge management is a process that involves constant control, planning, and improvement of the mechanism of transformation of knowledge from tacit to explicit. This mechanism is not self-regulating, every enterprise should have a culture of knowledge management because what is not controlled is not developed. The result of the review and definition of the essence of knowledge management was considered “Spiral of knowledge” proposed by I. Nonaka, H. Takeuchi [1,2,3], M. Demarest’s model “Knowledge Economies within the Firm” [6], “Learning Organization” concept of P. Senge, “Social Learning Cycle Model” of M. Boisot [10,11], A. Canals, I. MacMillan [11]. All these models show the importance of the circulation of information within the enterprise and demonstrate that the prerequisite for their positive impact is the constant movement and development from one stage to the next. Another important fact is that knowledge management can be organized only by systematically working on all areas of the enterprise, because the knowledge management mechanism is based on a strong corporate culture, established principles, mission and usefulness that the enterprise brings to its customers. All these aspects must develop in parallel, because without proper conditions, the organization of knowledge management will not give an effective result, or will be distorted.

**Prospects for further research.** The considered models are intended for practical application and can be implemented in the activities of enterprises. The fact is that these models are not mutually exclusive, they can complement each other by minimizing or even eliminating the shortcomings of each of them. Therefore, the considered material is not purely theoretical – It is a tool that can be tested in practice based on the selected enterprise. In any case, even the implementation of one or more of these models will already correspond to the main cycle of knowledge circulation from tacit to explicit, and from explicit to tacit under the influence of structuring, implementation, practical application, and gaining new experience.

**References.**


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УПРАВЛІННЯ ЗНАННЯМИ ПІДПРИЄМСТВА: ОСНОВНІ МODEЛІ

Охарактеризовано основні моделі, концепції та підходи до управління знаннями підприємства. Розглянуто економічний зміст знань та визначено ступінь їх впливу на ефективність функціонування сучасних підприємств. Ефективна організація системи управління знаннями на підприємстві здатна забезпечити циркуляцію, обмін та поширення знань між їх носіями, а в довгостроковій перспективі створити ланцюг для підприємства потужні конкурентні переваги. Управління знаннями передбачає будь-яку фазу функціонування та функціонування певних взаємозв’язків між їх носіями, створення підстави для розвитку та впровадження нових технологій; сприяє підвищенню ефективності роботи та максимізації економічного ефекту від їх впровадження у діяльність підприємства. Виявлення способів управління знаннями вимагає розгляду їх сутності та відіблизь. Охарактеризовано сутність явних та неявних знань, які становлять основу концепції управління знаннями «Спіраль знань». Розглянуто основні моделі управління знаннями та станні, які становлять основу концепції управління знаннями «Економіка знань в межах фірми», яка визначає які етапи та перебігу відокремлення знань від їх носіїв з метою оптимізації та управління знаннями дрібно-абстрактних, непоширених та поширених знань, які становлять основу для основу для формування моделі управління знаннями «Спіраль соціального навчання». Встановлено, що моделі управління знаннями є важливим інструментом для забезпечення ефективного процесу...
поширення знань в межах підприємства та існує залежність між ефективністю їх використання та рівнем розвитку корпоративної культури.

Ключові слова: знання, види знань, управління знаннями, моделі управління знаннями, підприємство.

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УПРАВЛЕНИЕ ЗНАНИЯМИ ПРЕДПРИЯТИЯ: ОСНОВНЫЕ МОДЕЛИ

Охарактеризованы основные модели, концепции и подходы к управлению знаниями предприятия. Рассмотрено экономическое содержание знаний и определена степень их влияния на эффективность функционирования современных предприятий. Эффективная организация системы управления знаниями на предприятии способна обеспечить циркуляцию, обмен и их распространение среди носителей, а в долгосрочной перспективе создать для предприятия конкурентные преимущества. Управление знаниями предполагает формирование и функционирование определенных взаимосвязей между их носителями, создание основы для развития и внедрения новых технологий; способствует повышению эффективности работы и максимизации экономического эффекта от их внедрения в деятельность предприятия. Выявление способов управления знаниями требует рассмотрения их сущности и видов. Определена сущность явных и неявных знаний, которые составляют основу концепции управления знаниями «Спираль знаний». Рассмотрены четыре фазы концепции «Спираль знаний» (социализация, экстернализация, комбинация, интернализация), выявлены основные ее преимущества и недостатки. Охарактеризована модель «Экономика знаний в рамках фирмы», которая содержит четыре этапа управления знаниями и предполагает сепарацию знаний от их носителей с целью оптимизации и автоматизации процессов распространения знаний. Рассмотрена модель пяти компонентов для управления знаниями и особенности ее использования на предприятии через призму развития корпоративной культуры. Охарактеризована сущность кодифицированных и некодифицированных, конкретных и абстрактных, нераспространенных и распространенных знаний, которые составляют основу для формирования модели управления знаниями «Цикл социального обучения». Установлено, что модели управления знаниями являются важным инструментом для обеспечения эффективного процесса распространения знаний в рамках предприятия и существуют зависимость между эффективностью их использования и уровнем развития корпоративной культуры.

Ключевые слова: знания, виды знаний, управление знаниями, модели управления знаниями, предприятие.