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**ROLE OF COGNITIVE TECHNOLOGIES IN INNOVATIVE  
MANAGEMENT STRATEGIES**

I. V. Brylina (a)\*, N. K. Okonskaya (b), B. K. Turchevskaya (c), E. E. Emelyanenko (d)  
\*Corresponding author

(a) National Research Tomsk Polytechnic University, pr. Lenina, 30, Tomsk, Russia, ibrylina@yandex.ru

(b) Perm National Research Polytechnic University, pr. Komsomolsky, 29, Perm, Russia, nataokonskaya@rambler.ru

(c) Pacific National University, st. Tihookeanskaya, 136, Khabarovsk, Russia, bkturchevskaya@inbox.ru

(d) National Research Tomsk Polytechnic University, pr. Lenina, 30, Tomsk, Russia, katerina\_em1994@mail.ru

***Abstract***

The article analyzes the potential of cognitive management strategies in emerging knowledge society. The authors stated that intellectual capital as the source and development mechanism of society under the conditions of emerging knowledge society failed to stand the test of time and was replaced by knowledge in terms of its functions of source, reserve and social development mechanism. Intelligent technologies, asserting as a management reserve, were created with the help of knowledge transformed into information. The article reveals the specificity of quantitative management strategies and defines the potential of cognitive management technologies. Knowledge is defined as the resource which has a potential of relevant impact in the context of strategically effective forms of management. Knowledge management is presented as a multi-disciplinary approach to achieve organizational goals through the most effective use of knowledge and cognitive technologies. Knowledge management is interpreted as an ideology that characterizes all areas of an organization. The use of cognitive technologies is seen by the authors as the basis of competitive advantages of an organization, where management process is carried out through the use of knowledge arrays and knowledge technologies. The authors analyze the process and the mechanism of the implementation of effective knowledge management practices. The process of knowledge management is presented as a complex of interrelated practices, aimed at the development and optimal management, manifesting the potential through the influence on behavior, mental structures, values and beliefs. Knowledge management is seen as the process of values formation.

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**Keywords:** Cognitive technologies, innovative management strategy, knowledge, information, intellectual capital, knowledge synergy.



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## 1. Introduction

The epoch of modern civilization evolution at the turn of XX-XXI centuries determined the vision of society, where knowledge and high technologies started to play the role of knowledge-based society. The use of cognitive technologies in management strategies helps to reduce the level and the extent of riskogenics in society, as well as to solve the problem of adaptation of society to profound transformations and to find and to optimize the directions and mechanisms of knowledge society development.

The issue of knowledge revealed in this article previously was the subject of studies of a number of Western authors. Such Western researches as Druker (1992), Romer (2001), Grant (1993) investigated knowledge management and the role of knowledge in solution of problems related to the management.

Nonaka (1991), Argote and Ingram (2000), Daghfous (2004), Garvin (1993), De Holan et al. (2004), Zack (1999) had also made their contribution to the elaboration of the theory of cognitive management.

The management of organizational forgetting as a phenomenon was analyzed in the research of De Holan et al. (2004).

Such analysts as Zack (1999) paid tribute to the inner side of strategic management with the use of cognitive technologies (of so-called resource-based view).

The issues of absorption capacity and the implementation of best practices in knowledge management were revealed and partially resolved by Daghfous (2004). The management of organizational forgetting as a phenomenon was analyzed in the research of De Holan et al. (2004).

Garavelli et al. (2004) outlined the contours of knowledge management strategy. In the works of Quinn et al. (1996a, 1996b) the process of professional intelligence management was analyzed in details.

An important contribution to research is presented by the issue of cultural barriers in terms of knowledge management. The development of an institutional mechanism of knowledge creation is also important. Such researchers as Nonaka and Konno (1998), De Long and Fahey (2000) were working in this area of investigation. The research works of Bontis (2001) are devoted to the development of models used to evaluate intellectual capital. The human factor in knowledge management was studied by Hasted and Michailova (2002), Wenger and Snyder (2000), Kelloway and Barling (2000), Brylina (2018), Pogukaeva et al. (2015), Makienko and Panamaryova (2015). Organizational learning and learning organization were written by Bratianu (2015). The cognitive and social aspects of the collective characteristics of scientific creativity were investigated by Sergodeeva (2018).

## 2. Problem Statement

The importance and urgency of issue elaboration associated with the identification of the role of cognitive technologies in the realization of the idea of «new horizon» management strategies, makes it necessary to address to several problems, among which the following ones may be mentioned:

- The investigation of structural components of technology as an instrumental approach of rational action, the investigation of knowledge and knowledge-based emerging technologies as the foundation of knowledge society;
- The investigation of the role of cognitive technologies in management activity as a management strategy of innovative type;

The formation of this strategy is a response to the challenges of emerging knowledge society.

### **3. Research Questions**

The study raised the following question.

What provides the sustainability, large scale and reliability of competitive advantages created using cognitive technologies of organization management in comparison with other advantages created by market conditions?

### **4. Purpose of the Study**

It is necessary to justify the value of cognitive technologies in management processes in order to unlock the potential in the management of cognitive technologies as the most valuable strategic resource, the role of which in terms of competitiveness insurance is hard to overestimate.

### **5. Research Methods**

The initial thesis is the idea that, being the most valuable strategic resource, knowledge finds its value only in terms of purposeful intellectual resources and capabilities; this management is performed through the implementation of programs and projects of knowledge management (Zack, 1999).

In their content these programs and projects are focused on the development of IT-applications which provide digital fixation of storage, retrieval and practice of explicit, documented knowledge. In addition, cognitive management strategies are formed by using the array of implicit knowledge. This knowledge is nonformalized; and the channel of its replenishment and distribution is interpersonal interaction. Pragmatically oriented and at the same time theoretically grounded model of reasoned actions, the basis of which is the potential is used in the management of cognitive technologies and is designated by the term «Knowledge management strategy» (Zack, 1999). The strategy itself represents balancing, carried out in the space of opportunities, threats and risks of the environment and potential (including knowledge-based) of an organization.

Similarly understood strategy underlies in business strategies that underlies in SWOT-analysis. Through SWOT-analysis, the investigators of the problem of competitive advantages of an organization focus on the resource component of the strategy - on resources and abilities of an organization. According to the same principle the so-called resource approach is implemented. This approach was used by such authors as Romer (2001), who had substantiated the paradigm of resource approach as follows. Resource approach presupposes that organizations should be strategically represented in the context of its valuable and unique resources and capabilities rather than in the context of goods and services produced in the course of the implementation of these capabilities. We may consider the resources and capabilities as a platform where a company produces a variety of goods for various markets. The basis of the strategy is presented not by specific production but by capabilities for the production of a variety of goods for many markets. Goods and markets may appear and disappear, while the resources and capabilities are more durable.

In this regard the authors suppose that the resource strategy is durable, long-term and more stable in a competitive environment characterized by uncertainty, dynamic and risks. The competitive advantage

created by the use of cognitive technologies is stronger and more durable in comparison with the benefits that are created by the market property position.

During the investigation of above-mentioned problems the authors used the potential of comparative method and possibility of an integrative approach and comparative methodology, as well as the possibility of system analysis methodology and structural-genetic synthesis.

## 6. Findings

What are the conditions that ensure stability, scale and strength of such advantages?

Such researchers as Zack (1999), explain it in the following way. Knowledge, in particular, depending on the context, implicit knowledge embodied in complex organizational processes and gained as the result of experience, as a rule, are unique – they are difficult to imitate. Unlike many traditional resources, knowledge cannot be purchased on the market in ready for use form. In order to acquire such knowledge, competitors should acquire the same experience. However, the acquisition of knowledge through experience takes time and competitors cannot speed up the process of learning, only through the increase in investment (Kornienko, 2016).

The implementation of this scheme is associated with another fact: the competitive advantages, based on cognitive technologies, are resistant by virtue of the large volume of knowledge arrays in an organization and present the reason why the organization by virtue of these arrays acquires the ability to learn more.

While explaining the reasons for the stability of competitive advantages in cognitive theory of management analysts actively use such constructs as «increasing returns», «knowledge synergy», and synergetic combination. Zack (1999) explains the content of these concepts as follows. The fact that an organization has already known something that uniquely complements new knowledge, thus providing the ability of knowledge synergy inaccessible to competitors.

New knowledge is integrated with existing knowledge, as a result the unique ideas appear and create new more valuable knowledge. Thus, organizations should look for areas of learning and experimentation, which may increase the value of existing knowledge in the organization through a synergetic combination.

The combination of newly-acquired knowledge on risk management with the available «meta-knowledge» (about how this new knowledge may be documented, codified and structured) presents the source of greater benefit than either of these types of knowledge individually. The sustainability of benefits in knowledge is caused by greater awareness in a number of areas in combination with temporary limits, which competitors face in obtaining similar knowledge regardless of the amount of their investment in order to catch up a company.

These are examples of what economists call increasing return. Alternatively, to traditional tangible products which are consumed when used (resulting in increase in returns over time), knowledge provides increasing returns as it is used. The more we use knowledge, the more valuable it becomes, creating a self-reinforcing cycle.

## 7. Conclusion

In the implementation of the idea of competitive advantage knowledge plays the role of the most important strategic resource; the key ability in the provision of advantage is the ability of an organization to ensure, to obtain, to integrate, to store, to disseminate and to apply knowledge with the help of cognitive technology system.

Using the knowledge, cognitive technologies in the field of management is the basic foundation that is able to provide increasing returns in the course of arrays of knowledge, as well as of cognitive technology formed with the help of knowledge. The last one is referred to «self-reinforcing cycle»: the intensity of use of knowledge arrays and cognitive technologies contributes to the increase in value of knowledge arrays, as well as to knowledge-based cognitive technologies.

It is necessary to use previously gained experience in the field of management and in the formation of new management strategies. This experience will strengthen and complement knowledge base; it will help to ensure a competitive advantage in the present and in the future.

It is concluded that the development of cognitive technologies in the field of management greatly facilitates the access to available sources of knowledge. In addition, such forms of advanced technologies, as multimedia, text analyzers and information search mechanisms are the means which provide optimal access to knowledge and information.

After systematization of priorities in the use of cognitive technologies potential, it is possible to group learning experience into «critical teaching mass» of major management problems that, in turn, allows «early warning» and management of future risks including decision-making management.

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