Human Capital and Knowledge Management in Innovative Organizations

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Abstract: This article deals with current issues related to the theoretical basis of knowledge in innovative organizations and the role of human capital for their development. Knowledge is refracted through the prism of the author’s views that define the classical and contemporary understanding of the issues. Although different ideas and schools in the study of the nature and specificity of knowledge are formed, it is concluded that knowledge stands as the essence of human development of science and technology. Hence knowledge is the driving force for the prosperity of many organizations, but it is especially important for those who create products and services based on the intelligence of the people, i.e. innovations. The authors are considering and discussing the most important features of knowledge management in the innovative organizations that add business value to the products and services they produce.

Index terms: knowledge, organization, management, research, development

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I. INTRODUCTION

Knowledge management in innovative organizations is a systematic process by which we can plan, organize and promote the work of the people so as to realize the best possible way their competencies and skills. This requires the creation of rules and procedures that cover various aspects of human capital, as well as efficient use and document management systems. Great importance is given to the generation, distribution, sharing and use of knowledge people (best practices) for management of innovative organizations.

Through knowledge management, the purpose of the innovative organizations is to improve their competitiveness, recruit and retain the best professionals who have intelligence and skills to create innovative products and services. Furthermore, the conditions are created to enhance corporate performance, improve the work environment, making good management decisions and more.

In this was knowledge in innovative organizations is a key lever for increasing the efficiency of business processes, selection of educated professionals and creating high-quality products and services.

II. TYPOLOGY OF KNOWLEDGE

In the specialized literature it is possible to distinguish a number of definitions of the term knowledge. Conceptually, however, there is no commonly accepted definition of its interpretation, and it is defined according to the context in which it is seen and discussed. According to the sociologist D. Bell, knowledge in post-industrial society is seen as an objective process inherent in the evolutionary development of humanity (D. Bell, 1973). The author thinks that in the post-industrial society it is essential and a lot of attention should be paid to "professional and especially technical activity, i.e. the most important is the human factor in society - scientists and engineers, through education and training, are the driving force of this process" (D. Bell, 1973). D. Bell considers that knowledge is a real priority, which is defined as "a set of statements, facts or ideas." He asserts two reasons that the post-industrial society should be seen as a "knowledge society". The first one is related to the fact that theoretical knowledge is seen as a key tool for progress in science and technology. This is so, because in overall, the last two are a factor in determining the R & D processes - the basis for innovation. Therefore, the symbiosis between them leads to the interpretation of the statement that "technology is a source of increasing productivity, which is a key element of the transformation processes in the economy." This defines the second reason, i.e. "The mere existence of much more knowledge in society should be a major factor for increasing employment and increasing the share of gross national product."

The scientists from the postmodern school on knowledge management hold upon the concept of T. Kuhn, destructive theory J. Habermas (J. Habermas, 1972) and J. Derrida (J. Derrida, 1976), the studies of M. Foucault (M. Foucault, 1972, 1980) and the essay by J-F. Loytard (J-F. Loytard, 1984) on the postmodern movements in the creation and transformation of knowledge into a way of verbal communication.

For Kuhn (T. Kuhn, 1970), human knowledge is subjective (rather than objective) and is determined by many factors, which are based on pedagogical, socio-economic, cultural and psychological activities. According to other authors, the globalization of socio-economic processes creates new conditions for the development of objective knowledge. They believe that this is a mass phenomenon, typical of the western economies, resulting in subjective knowledge is constantly underestimated. Ultimately, they found that this process can reduce the pace of economic development in these countries and to limit...
their ability to implement innovations (e.g. compared to their Asian competitors) (I. Nonaka, 1991; I. Nonaka & M. Kenney, 1991; I. Nonaka & H. Takeuchi, 1995). Others share the opinion that such a differentiation of knowledge (objective and subjective) is an activity that can be useful in the study of organizational processes, but management of the enterprise should not be underestimated their integrated (cumulative) significance (F. Blacker, 1995; U. Schultze, 2002; Hansen, M. et al., 1999).

J. Habermas (J. Habermas, 1972) argues that "knowledge does not exist as something abstract, but is the product of deliberate and sometimes unconscious human activity." For J. Derrida (J. Derrida, 1976) "Faith and knowledge are essential fragments of the postmodern theory." Developing the critical theory of Habermas and Derrida, some scientists oppose positivistic knowledge in science, at the expense of post-structuralist and postmodern theories. They conceptualize the relationship between creation and/or transformation of knowledge, its application in the socio-political system and its impact in terms of power and control (M. Alvesson & H. Wilmott, 1991; A. McKinlay, 2000; A. Kouzmin, 1980). On the other hand M. Foucault (M. Foucault, 1972, 1980) states that "the exercise of power constantly creates knowledge and, conversely, knowledge is a process which may be a prerequisite for the formation of power." A similar argument may be seen in the book of D. Zand (D. Zand, 1997) and publication of D. Brass & M. Burkardt (D. Brass & M. Burkardt, 1993).

Each definition and philosophical perspective e implications for the ideological nature of knowledge. As the B. Agger (B. Agger, 1991) "the theory of knowledge management precedes its historical and cultural nature." J-.F. Loytard (J-F. Loytard, 1984) refracts knowledge in postmodern theory as "man's ability to perceive the world around them so that through conscious intelligence to survive in aggressive surroundings."

In the postmodern tendency we can observed a trend of constant changes in "knowledge" and "reality (universal truth)" (F. Jameson, 2005; D. Hawkes, 1996). For C. Barabas (C. Barabas, 1991) "postmodernists stand firmly on scientific knowledge and investigation of reality by pretending that there is no universal justification of knowledge, since it depends on the attitude of the people and its approbation in society." According to D. Levinthal and J. March (D. Levinthal & J. March, 1994) "in knowledge management it is possible to identify two aspects: first, when knowledge is established and, secondly, when it is absorbed, shared and redistributed (transformed) into new knowledge."

Thus, in the literature on knowledge management it is possible to identify two strands of the concept - the presence of knowledgeable (object) and theoretical foundation (subject). As noted S. Wikstrom and R. Normann (S. Wikstrom & R. Normann, 1994), we must distinguish between practical and theoretical knowledge. From this position, the authors launched the idea that "in knowledge management focus should be placed on a culture of knowing that through relevant research can effectively influence organizational processes." Some authors advocate that practical knowledge is the highest form as opening up new possibilities for its management (M. Martiny, 1998; J. Heron, 1996; R. Taneski & R. Boland, 1996).

In literature specializing on this it is possible to distinguish researchers who view knowledge in terms of its intrinsically meaningful aspects. In particular, it is defined according to:


   - information or knowledge to answer the question of what type of know (know what);
   - skills that are inherent in the ethos or know how (know how);
   - knowledge that answers the questions of the type know why (know why).


   - knowledge equivalent of unconscious incompetence;
   - knowledge equivalent to conscious incompetence;
   - knowledge equivalent to unconscious competence.

Human resources can be viewed as a strategic lever in creating competitive advantage through the value of the knowledge, skills and training (B. Becker & B.Gerhart, 1996, W. Starbuck, 1992; J. Brown & P.Duguid, 1991). Expectations are trough training to prepare employees who can respond to constantly changing market requirements and the rapid introduction to technological innovations in production (P. Halachev, 2009a), which determines to a large extend and effectiveness of the learning process – the quality of acquired knowledge and skills (P. Halachev, 2009b). Other researchers focus on the IT infrastructure in the enterprise (R. Tenkasi & R. Boland, 1996; B. Jumnarkar & C. Brown, 1997; T. Davenport & L. Prusk, 1998) or see it macro – knowledge of national importance (S. Bender & A. Fish, 2000; U. Schmoch et al., 2006; R. Lopez-Martinez & A. Piccaluga, 2001). As noted M.Berman et al (M. Berman et al., 1997), "The ability of a country to create and use knowledge largely determines the economic and competitiveness."

In the specialized literature, some authors investigated the role of the so-called "Manifested (clear)" or "confidential (silent)" knowledge [M. Polanyi (1958, 1966); I. Nonaka & H. Takeuchi, 1995].

Based on the "clear" and "confidential" knowledge I. Nonaka, H. Takeuchi & N. Kono (I. Nonaka & H. N. kono & H.
Takeuchi, 1995), (I. Nonaka & N. Kono, 1998) believe that it is possible to distinguish the four model creation and transformation of knowledge. They are the following:

1. **Socialization** (from confidential to confidential knowledge) - sharing expertise to create a confidential knowledge through the development of mental models and technical skills.

2. **Internalization** (from obvious to confidential knowledge) - new knowledge is seen as a process of improvement of traditional practices.

3. **Externalization** (from confidence to manifest knowledge) - confidential knowledge is converted into explicit knowledge through metaphors, approaches, concepts, hypotheses or models.

4. **Combination** (from explicit knowledge to manifest knowledge) - available knowledge is used to create better models of its management.

According to the "theory of Nonaka and Takeuchi enterprise based on knowledge, should be characterized by economic production and project structure built of multifunctional (multidisciplinary) teams" (A. Brooks, 1994). In the model created by Nonaka and Takeuchi project managers (especially mid-level) have specific roles. The process of "creating new products and/or services is intended to be the most important element of the model of organizational knowledge" (D. Skyrme & D. Amidon, 1997).

III. KNOWLEDGE MANAGEMENT IN THE INNOVATION PROCESS OF ORGANIZATIONS

According to some authors in the modern contemporary innovative organizations there is a tendency whereby knowledge, particularly technological know-how is no longer accessible and confidential (company specific) and local (specific technology) (A. Pyka & H. Hanusch, 2006; D. Baird, 2004). This process is due to several reasons. First, due to the increasing complexity of innovative products, business organizations need to be flexible to new challenges in high-tech manufacturing. Second, the financial crisis and market situation is complicated in the middle and in the end of the first decade of the XXI century put many businesses under conditions of uncertainty and risk. Competition narrows the market positions of unprofitable businesses and restricts their development. So "they can function only by accumulated reserves" (A. Walter et al., 2001).

Therefore, to survive in the turbulent evolving business environment, one of the possibilities for innovative organizations to generate knowledge in various fields of business. One of these is the innovation process. As noted J. Tidd et al. (J. Tidd et al., 2003) "In the economy based on knowledge, competitiveness of modern organizations will depend on how you will organize and manage innovation processes." Those authors argue that "it is not important how you interpret the innovation process, it is important how to operate the processes."

According to G. Hamel and K. Prahalad (G. Hamel & C. Prahalad, 1991) "if companies do not have sufficient resources, personnel and assets, it is essential for them to establish an adequate system for knowledge management in the innovation process so that they can achieve competence appropriate to organizational competitiveness. "They should not only have specific competence, they should have access to external sources of information, companies should strive to absorb more complex base of intellectual activity indicated in the literature as "the capacity of knowledge" (W. Cohen & D. Levinthal, 1989; C. Frappalo, 2006). Another option is "These enterprises to accumulate internal competencies that will enable them to respond flexibly to external developments and knowledge". (G. Eliasson, 1990). In this regard, several researchers focus on internal organizational processes of knowledge management, and in particular the creation of a working environment that encourages innovation and creative potential of the people (R. Carnegie & M. Butlin, 1993; K. Soderquist et al., 1997). In this case, knowledge is determined by the intellectual capital of individuals, which is used to improve processes in the establishment and promotion of merit. As noted by other authors, this knowledge needs to be integrated to the potential of the enterprise, and not just be seen as information about the implementation of the innovation process (L. Marshall, 1997). One of the means of knowledge management in the innovation process can be direct contact with the users of high-tech products and services. Thus, in the literature on knowledge management it is revealed the growing importance of innovation in high-tech industrial enterprises, "where knowledge is seen as a major source of competitive advantage" (I. Miles, 1993). According to the cited author, "the goal is to create a scientific basis for effective use of knowledge and its application in the innovation process as a rational implementation of the latter is essential for the optimization of business processes in high-tech enterprises."

According to some other authors, this issue is relevant to those sectors and sub-sectors of the high-tech industry where innovation (in particular product) is developed for a long period of time (D. Decarolis & D. Deeds, 1999; G. Pisano, 1990). Third define knowledge as a decisive factor in the implementation of the innovation process (T. Li & R. Calantone, 1998; W. Powell et al., 1996). That is why modern enterprises build their competitiveness around the generation, application and transformation of knowledge (I. Nonaka & H. Takeuchi, 1995; J. Spender, 2002).

According to a report made by the "Center for productivity and quality of the US" there is a certain relationship between knowledge management and innovation process. It boils down to a few areas, the most important of which include the following activities (APQC Report, 2013):

- innovation oriented enterprises using knowledge
to improve the efficiency of the innovation process;
- innovation oriented enterprises apply knowledge
to absorb the technical, economic and interdisciplinary
competences;
• innovation oriented enterprises using knowledge to create a virtual partnership;
• innovation oriented companies use different systems for improving knowledge and identify "good or the best practices" in this area;
• innovation oriented enterprises employ people with communication skills, creative thinking and intellectual potential.

The literature had the perception that the innovation process (especially in innovative organizations) must be intense and dynamic response to new challenges in the market environment and comply with the business strategy of the undertaking (G. Perez-Bustamante, 1999). This fact arises from the fact that the products and / or services are standardized or subject to imitation.

Innovative organizations in knowledge and effective management should be considered in several directions. Two of them are significantly important "in terms of enterprise technology, processes and markets that are fundamental to its development, and the knowledge that is necessary to change these activities" (I. Nonaka & H. Takeuchi, 1995).

In the scientific literature it is possible to identify a number of authors who explore the types of knowledge in the innovation process (R. Wolfe, 1994; R. Grant, 1996). According to her, "innovation can be represented as a process that forms a new way for the study of knowledge" (R. Rouggles, 1998). Others argue that "this is a new approach to its management" (I. Nonaka & M. Kenney, 1991). On the other hand, J. Waters (J. Waters, 2000) suggests "that its application should be understood rather as a new stage in the field of knowledge management, rather than as a tool for the study of innovation."

What is striking is that in determining the types of knowledge, some authors advocate the classification of D. Goldberg (D. Goldberg, 1989). According to her, in the innovation process of the organization it is possible to interpret several kinds of knowledge (I. Nonaka & H. Takeuchi, 1995; R. Beijerese, 1999). They are the following:

1. Public (social) knowledge. This type of knowledge is manifested in the public and social sphere and is associated with market trends. It is used in cases where it is necessary to examine the processes that are relevant to the management of marketing activities and product sales.

2. Scientific knowledge. It is also called institutional, this kind of knowledge is used to carry out the research and development of products and processes, know-how and implementation of new products and processes

3. Entrepreneurial knowledge. This kind of knowledge reflects the intellectual potential of the owner of the enterprise. It aims to establish the level of new ideas, combining cutting-edge and traditional technologies, and promotion of alternative products to non-traditional markets.

4. General/Overall knowledge. Through this knowledge organization seeks not to provide information to competitors by limiting communication and relationships with them.

Because of the long period for carrying out the research and development processes "innovative organizations are flexible and competitive to the changing market trends and customer needs" (Y. Helbe & L. Choy, 2004). According P. Geroski et al (P. Geroski et al, 1993). "R & D processes enable the development of innovative organizations provide the necessary human resources and increase their productivity." On the other hand, G. Cohen (G. Cohen, 2004) believes that they "are a factor that has a positive impact on the countries where they are positioned such organizations and / or industries." Thus, the "R & D processes stimulate the growth of the national economy" (D. Audretsch & M. Feldman, 1996).

In practice, however, it shows that regionally specific countries adopt more innovative organizations than others (A. Di Minin et al., 2006). Independent "of their efforts to stimulate the production of a variety of innovative products some countries are still unable to make significant progress in the development of this activity" (E. Learner & M. Storper, 2001). Furthermore, "a regional innovation organizations need to comply with several requirements (laws, regulations, etc.) That the management of research and development processes cannot be neglected or completely ignored" (A. Kleinhecht & T. Poot, 1992).

In the specialized literature it is possible to distinguish between developments that raise questions about the nature and specificity of these international / global research and development processes (A. De Meyer & A. Mizushima, 1989; R. Florida, 1997). They embrace the idea that "their effective management is a fundamental guarantee for the implementation of corporate strategy." On the other hand, A. De Meyer (A. De Meyer, 1993) believes that "these international/global research and development processes are one of the factors for the increase of corporate knowledge in the field of technical and technological activities." For A. Gerybadze and G. Reger „urgent alternative changes in these international/global R & D processes of modern transnational companies are necessary” (A. Gerybadze & G. Reger, 1999).

Other authors offer an alternative view to consider the research and development processes. For this purpose launched the matrix approach (R. Katz & T. Allen, 1984). According to them, "it lies in the heart of one of the new trends in project management of corporate dimensions." In other studies (O. Gassmann & M. von Zedwitz, 1998) has developed a model that focuses on "informal structure and adds another level to the regional one”. Also Kuenmerl (W. Kuenmerl, 1997) has studied the structure of research and development networks and on this basis is categorized new developments in this area, "traditional networks and those that are characterized by an international / global importance.” Also, there are four types of R & D international/global processes (M. von Zedwitz, 2003). The first type is referred to as "traditional" as it determines the direction of internationalization from a developed country to another. The second type has received the name "modern" as it represents an offshore approach developed country to a developing one. The third type is associated as a "catch-up" - from developing country to a developed
country. The fourth type is the "extension" - from one developing country to another. In some of these phases in a subsequent study. Based on the experience of China's innovation he formulated several strategies to implement these international / global research and development processes.

Managers of innovative organizations "need to increase the efficiency in the organization of research and development activities to meet customer requirements and pressure from competitors" (K. Brockhoff et al., 1997). They also need to design and implement research and development processes for the purpose of independent organizations (M. Hammer & J. Champy, 1993; K. Brockhoff et al., 1997). The best way to implement these processes is to expand the spectrum of scientific knowledge (G. Romme & R. Dillen, 1997; K. Conner & C. Prahalad, 1996). According to N. Argyres & B. Silverman (N. Argyres & B. Silverman, 2003) "these skills should be utilized by organizations working with traditional functional units, such as marketing, production, innovation, etc." Moreover, innovative organizations' attention to corporate governance should be focused on solving complex problems or traditional" (O. Burgel & G. Murray, 1999). Therefore they need to create project teams to integrate requisite skills. These issues are dealt with by other authors (H. Boter & C. Holmlund, 1996; M. Lindqvist, 1997).

IV. CONCLUSION

Knowledge management in innovative organizations is a specific process that supports their development and competitiveness. Different activities are required for motivation and leadership of highly qualified specialists who are at the heart of the organizational success. Importance is given to research and development processes that are relevant to the intellectual potential of human capital and its management in innovative organizations.

The publication has achieved the following major results:
- the relationship human capital-knowledge is examined;
- a scientific analysis of some features of knowledge management in innovative organizations is carefully made.

REFERENCES


