Managing Knowledge in the Electric Power Production Sector

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Summary

Knowledge management is a topic of increasing involvements in strategic development of the Electric Power Production Sector in Croatia particularly because of the recent emergence of unification and integration of the European Electric Power market. New ways of thinking about management and organization are a key for Croatian participation in the European Union and in an integrated European Power market. Management of knowledge is the most important point of new sustain development towards the appropriate position of Croatian Electric power production sector in the European integration processes.
The awareness of importance of processing and managing knowledge is of vast importance as a focus on an application capacity of information science. It is a means to enable establishing hard connections between business activities and the development of information sciences.

Key words: Knowledge management, Unification and integration of European Electric power sector, applicative capacity of Information science

Knowledge management is a topic of increasing involvements in strategic development of the Electric Power Production Sector in Croatia particularly because of the recent emergence of unification and integration of the European Electric Power market. New ways of thinking about management and organization are a key for Croatian participation in the European Union and in an integrated European Power market. Management of knowledge is the most important point of new sustain development towards the appropriate position of

Croatian Electric power production sector in the European integration processes.

The awareness of importance of processing and managing knowledge is of vast importance as a focus on an application capacity of information science. It is a means to enable establishing hard connections between business activities and the development of information sciences.

Contemporary world is characterized by sharp development of service sector, market globalization, and technology standards unifications. Knowledge use to have some importance in industrial production from very beginning, but in service sector of economy, knowledge is sine qua non, and that is the main reason because in contemporary market, knowledge and innovation have a most important role ever. Knowledge and innovation today represent increasingly important intangible capital as the most important origin of profit in global market economy.

Intangible or intellectual capital is a subject of new business approach to maintain production and profit by pushing innovative behavior to empower competitiveness, to build consumer trust (brand) and in one word to be successful. Manage intangible capital is managing knowledge, because knowledge is a very core of intangible capital.

Under the new economic circumstances the development of the HEP Group must be well-prepared from the global aspect and the aspect of the local environment in which the corporation operates, as well as from the aspect of the necessary changes in the organization of the business operation to enable the utilization of HEP's intellectual potentials.

The position of HEP is determined, on the one hand, by the local requirement of further investment in the generation of electricity and of such a price of electricity that will stimulate economic development in Croatia, and in wider region, whereas on the other hand, it is determined by the process of Croatia's association with the European Union and the directives of the European Union on the common rules for the generation, transmission and distribution of electricity and gas aimed at establishing the European electricity and gas market.

The European Parliament and the European Council have passed Directives 2003/54/EC and 2003/55/EC on the common rules for the single EU electricity and gas market, making them obligatory for all Member States and for candidate countries. The implementation of these two Directives will make the European Union the best integrated energy market world-wide. These two Directives adopted in 2003 are a great step forward towards creating a single electricity and gas market in EU. These documents, which oblige all Member States, set the deadlines for fully opening their individual markets: it was 1 July 2004 for all commercial actors, and 1 July 2007 for all households. All Member States and candidate countries are under obligation to notify the European Commission about the implementation prior to the expiration of the deadlines agreed. The Directives set up common rules for the generation, transmission and distri-

bution of electricity, treated as independent business sectors. Consequently, the Directives provide for strengthening the system of transmission and its independence from other activities (generation and distribution) by legally and functionally separating those activities.

The legal basis of the Directives also entails numerous obligations to be met by national regulations, so national regulators must carefully follow the development of the competition and the levels of investment, and regulate the price level when necessary. This will lead to a much better transparency and provide European companies in the electric energy sector with many more possibilities to forecast, plan and design their own evolution.

There is still much to do for Europe to have an effective and competitive energy market, and it is, therefore, essential that Member States develop, as soon as possible, the necessary legal framework to implement the Directives. Of course, the regulations are only a working framework to enable competitiveness. It is necessary to make a further effort and deal with the nationally dominant position of traditional energy suppliers. The European Commission will continue to monitor the development of the market for some time in the future and to promote new initiatives to make sure the energy market functions as envisaged. National regulations will not be abolished overnight; on the contrary, they will play the central role in effectively establishing the market. It is probable that the European commission will increasingly transfer the responsibility for monitoring and promoting market development to national regulators, eventually.

Electricity and gas are not like other products, they have little, if any, real substitutes. Continuous power supply and its reasonable price are essential to the national economy and to building a modern society. Moreover, electricity and gas markets are most often determined by the framework of national markets and are subject to the domination of one or a small number of companies. New Directives take note of these facts. The introduction of competition does not include a total deregulation of power supply, or a laissez-faire concerning the market fundamentals in terms of prices and services. On the contrary, the Directives require Member States to continuously monitor the market and impose numerous additional obligations to power companies, if need be, concerning the services provided to the public. Such a security is very important during the transition period from fully regulated monopolies towards the situation in which the market will determine the focuses in the generation of electricity such as prices and investment decisions.

New ways of thinking about management and organization are a key for Croatian participation in the European Union and in an integrated European Power market. Management of knowledge is the most important point of new sustain development towards the appropriate position of Croatian Electric power production sector in the European integration processes.

For European companies developing a system of knowledge management is not only a way to their own sustainable development but also a way to the estab-

lishment of the common energy market (Pomeda, J. R., Camacho, 2005). A common electricity and gas market requires the closest technological cooperation and an unimpeded exchange of information. In this sense the development of a system of knowledge management in companies engaging in electricity and gas has a twofold purpose:

- on the micro level, in an individual organization, a correctly organized system of knowledge management is an effective aggregate of innovation, and an appropriate tool to put the innovation emerging from the processes of knowledge sharing and generation to the use of sustainable development of the organization,

-on the macro level, such as the European energy sector, knowledge management is a powerful system for mutual support in the transfer of information's and knowledge with which the single energy market is maintained.

In the energy sector knowledge and experience are cumulated in long years of application practice, which requires constantly keeping the system active. Examples from the practice confirm that it takes about seven years of theoretical and practical education to train an energy specialist to be able to participate in the system, and a life-time education to operate it. This surely shows the importance of knowledge management on the micro level. Close technological cooperation and unimpeded exchange of information are conditions to the existence of the energy market which requires technological compatibility. This is achieved through joint projects of power companies and mutually standardized permanent education and implementation of the knowledge acquired.

The transfer of knowledge and technologies is not a simple process and it will not run spontaneously and randomly. This process requires a developed system of knowledge management that will encourage and manage the processes of production and exchange of corporate knowledge both internally within own organization and externally by shaping the cooperation on the international level, enabling synergy through a collaborative approach to support the development of the single market. Knowledge management is a useful tool in transfer "the best practices" and encouragement of innovation (Pomeda, J. R., Camacho, 2005).

Innovation activities must be incorporated in everyday activities (the phenomenon known as "reutilization") to lower uncertainty in the processes (Jacono, 2000). Particularly in the electricity sector, competitive requirements and the existing pressure of the market underscore the use of systematized approach to innovation processes, trying as much as possible to reduce uncertainties caused by the opening up of the market. In case of technological innovations, there is a practical need to implement the knowledge of the groups of individuals who are solving the practical problems of such technologies. Technology and innovation are becoming key factors of success by re-activating the transformation process and constituting the basic source of the company's competitiveness. However, J. R. Pomeda (Pomeda, J. R., Camacho, 2005) claims that it is not just one's

own innovation that generates the competitive advantage, particularly with regard to the energy market which is based on broad cooperation; what is required is adaptation to the technologies developed by others. The adaptation to new technologies requires a high level of learning including the processes of technological awareness i.e. the processes of adopting and creating knowledge (McElroy, 2002). Knowledge management is a process of generating new knowledge that acts as a catalyst for innovation and creativity, and a process facilitating the collection and influence of knowledge across the industry. "Best practices" cannot possibly be transferred if there are no appropriate processes to make it possible to learn them. It is only through the knowledge management that the efficiency of business approaches incorporating industry knowledge can be successfully transferred (Von Krogh G., Ichijo K., Nonaka I., 2000).

In order to become the leading corporation in this area, HEP must complete the restructuring processes, introducing effective systems for making and implementing decisions, creating merger and takeover department, managing risks, developing and encouraging marketing, defining frameworks for negotiations with partners in the region, in short, HEP must fully use its intellectual potentials to hold its position and to secure its development through building its position on the regional market.

The maximum utilization of the intellectual potentials is only possible by developing a strategy for knowledge management at HEP, and its implementation. This strategy has been adopted in year 2005, by the HEP Group, and its implementation is under way.

HEP possesses the experience and knowledge with which to achieve sustainable development and encourage development in its environment by providing consultancy and other intellectual and technological services, provided it can systematically manage its knowledge.

Creating new knowledge and, perhaps more importantly, utilizing the available knowledge that is there in the organization (Nonaka, I.; Takeuchi H.; 1995), should become the central element of the contemporary business strategy of HEP.

By trying to master the complex processes of knowledge management HEP developed and adopted the strategy of knowledge management. This strategy is the operationalization of HEP's corporate vision by means of which HEP defines its development goals in terms of the growing demand for electricity in Croatia and in terms of the transformation of HEP into a strong regional electric power company optimally harmonized with its environment and strongly partaking in shaping the development of the regional electric power system, capable of utilizing its competitive advantages on the electricity and gas market.

The strategic plan for knowledge management in HEP is a means to secure the strategic approach in decision-making, notably a means to secure human competence in managing business processes and in technically shaping all the undertakings of HEP (Davenport, T. H; Prusak L.; 1998). This plan defines the

functional and technical aspects that can help shape the business space and successful implementation of initiatives in knowledge management in accordance with the Knowledge Management Strategy of HEP. It describes the basic components necessary for implementing a successful KM strategy and it notes the specific joint knowledge management goals of HEP.

The knowledge management strategy is defined as a tool to support the strategic business plan of HEP (Hansen, M. T.; Noria N.; Tierney T.; 1999). The implementation of the strategic business plan of HEP is based on the real power of HEP's organizational and intellectual resources. These resources depend, to a great extent, on creating and maintaining knowledge bases; on the possibility to attract, train and maintain high capabilities of the staff; and their expertise in utilizing these knowledge bases (Gupta, A.K.; Govindarajan, V.; 2000). The development of shaping the basic business processes and the realization of the strategic business plan rely on the knowledge of people, on the content of such a knowledge, and on the technology by which this knowledge is shared, or in short, on the knowledge management program.

The knowledge management program of HEP includes three dimensions: people, content and technology (Grundling, E.; 2000).

People: those who generate and use knowledge as the basis for making appropriate decisions (Wenger, E.; 1998).

Content: data, information and knowledge relevant to the organization, including processes and procedures (Afrić, V.; Lasić-Lazić J.; Banek Z. M.; 2004), (Storck, J., Hill, P; 2000).

Technology: technical infrastructure and tools making it possible to record, save and deliver the content of knowledge to those who need it when they need it (Borghoff, U. M.; 1999).

The knowledge management program practically includes the entire workforce of HEP. The integral knowledge management program requires the establishment of the business role and responsibility within the human dimension, notably the hierarchy that enables the introduction of management mechanisms in knowledge management processes. Defining new business roles is part of the general restructuring of HEP. Defining roles is not an easy task, it is very important because it enables flexibility at the very heart of the management and practice of the organizational power and politics. Defining business roles also includes defining knowledge communities.

A knowledge community includes those who work on joint groups of tasks within a project or a mission concerning development, operating or implementation plans, application support, maintenance service, project management etc. These common tasks are carried out by teams (knowledge communities) as parts of the organization in which people play individual roles based on their capabilities and skills, rather than on titles and functions (Ruggles, R.; 1997). Teams of practitioners may extend across several different sectors of activity, consisting of individuals from different parts of HEP, and from different areas

of Croatia. It is in this sense that a person may be included in several different knowledge communities as a member of different teams and projects.

Introducing the knowledge management practice and tools in any organization often requires cultural changes, e.g. from the Knowledge-is-Power frame of mind to a culture of knowledge sharing. Without motivation factors it is difficult to have people change the way they do things. There is the fear factor when employees fear their knowledge will be taken from them and they will become irrelevant. A change in behavior may only be brought about when there are rewards for accepting the transition and a shift in focus to a future situation. Pecuniary and non-pecuniary rewards also encourage the effort to accept the desired culture in the organization. This will happen if people are aware that by learning and making effort to contribute with their knowledge to the knowledge of the organization they will be better valued within their company. Creating a culture of mutual trust, teamwork and a strong feeling of common identity, is essential to introducing the knowledge management practice in HEP.

The roles and responsibilities in HEP's knowledge management will vary from informal to highly formal approaches. In most cases the attributed tasks will be treated as related duties. However, responsibilities, managing the content of knowledge, developing tools, maintaining the portal, training for knowledge management etc. will be attributed as formal duties established through the organization as part of the functional business structure. Every member of the knowledge community will have his/her own role in creating the knowledge base. The roles of older and more experienced members of the knowledge community will also be particularly valued in the evaluation and in the generation of new knowledge. In HEP, knowledge management will be institutionalized through virtual organization - the organization whose logic pursues quick growth and enlargement of autonomous networks to improve our business capabilities to know what we know, use and coordinate what we know, and learn something new. As in biological systems, this virtual organization will grow and adapt to its surroundings, rejecting the efforts and capabilities that are not productive, reinforcing and encouraging the initiatives that prove valuable (Stacey, R. D.; 1996). In this virtual way, HEP already used to organize project teams which, as organized groups, only existed at the time of preparing specific projects. This joining together requires a continuous effort, because knowledge management is a journey, rather than a point of destination. Implementing the knowledge management strategy at HEP means care about the human, social and/or cultural capital of HEP.

Human capital is, for the best part, what is meant by intellectual capital, it is hidden knowledge residing in the mind of each employee, same as the future capacity and potential for learning that everyone has. Hidden knowledge includes skills, experience, understanding, intuition and judgment, combined to shape the past and the present. The potential of each employee is an important part of the work resources of HEP.

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Social capital is the intellectual capital derived from communications, cooperation and human interrelations (Yli-Renko, H.; Autio E., Sapienza H. J.; 2001). It includes people and virtual networks of social relationships, the relations and interactions throughout such networks and the principles on which such relations are built. The social capital is an expression of the corporate identity and culture. The culture of the organization (cultural capital) is a pattern of beliefs, knowledge, attitudes, and norms of behavior and customs that exist in the organization. A developed culture of the organization defines a developed corporate identity, a strong WE-feeling that motivates people to mutual communication, cooperation and good human interrelations, which results in an increased value of knowledge resources.

The content includes the data, information and knowledge relevant to the organization, as well as processes and procedures. The content includes structured and non-structured information such as databases, magazine subscriptions, websites, news, e-mail, documents, notes, PDF files, summaries, spreadsheets, audio recordings, video recordings, bookmarks, LAN folders, forms, GIS data, transcripts of electronic communication, project sketches, product catalogues, rules, drawings, photographs, graphics etc. Various data, in particular the ones related to energy sector, from the randomly collected to the scientifically systematized or scientific ones, are very important in HEP's business operation. They make up the content of the knowledge that can improve HEP's business operation.

HEP is not interested in entire content of the knowledge created inside and outside HEP, but only in the content that makes the knowledge worth managing. For a content to become the knowledge worth managing, it must belong to HEP's business context. A good management of large quantities of knowledge content significantly reduces information overload, enabling us to have just the information we need, when we need it. The organization, or its knowledge community, cannot manage knowledge unless it is aware of what knowledge it needs and what knowledge it possesses. This is what knowledge maps are for, integrating company specific technologies, required data and priorities into a taxonomy that's serves as a guide to the conceptual and physical organization of information resources, experts, data, information and processes.

Knowledge audits, as content analysis techniques, are a means with which HEP will build knowledge maps for individual life cycles of knowledge (Solomon, P.; 2002) in order to transform non-structured content into data, information or knowledge, and to determine the description of that knowledge in terms of media object attributes, the attribute structure, and the rules for relations between attributes.

Knowledge audit helps the company establish a common vocabulary which is necessary to successfully communicate and cooperate. The common vocabulary of HEP is yet to be created.

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Today's Web-centered environment and the geographic dispersion of HEP's workforce leads to the assumption that most HEP's knowledge management practitioners will be using computer-based online environment and render their intellectual contributions through online depositories. The strategy, therefore, discusses, in the most general way, the technologies supporting knowledge management.

The knowledge management development at HEP calls for an organized storage of the data collected and produced by HEP's staff, notably for a further integration of the already stored data. The entire content managed by content management systems can be divided into: 1.) structured data, information, and knowledge, as well as applications generating, managing and maintaining such structured resources, and 2.) non-structured or semi-structured data, information and knowledge (including different types of multimedia objects), as well as applications generating, managing and maintaining them. As opposed to the structured data, the non-structured content has no standardized meta-data structure and there are no standardized procedures for examining, searching or analyzing them. The analysis of the management of structured data/information/knowledge shows a characteristic increase in complexity and integration of this area, as well as the existence of two primary areas of structured content in which the rising trend towards integration and complexity is noticeable (data stored and resources planned). Whereas the data stored are structured by means of a meta-data structure, the resources planned are most often relation databases designed to store particular types of data.

Online portal will be the main tool used in the institutionalization of HEP's knowledge management. In a virtual online space three types of online portals (Firestone, J. M; 2003) will be set up: decision-making portals, collaborative portals and knowledge portals.

Since teams must work together and since persons can be involved more teams simultaneously, knowledge management tools will be based on mutually harmonized standards. HEP will set up and maintain one horizontal knowledge portal and as many vertical knowledge portals as there are project initiatives that may be launched by knowledge management. Standardization (Knowledge Management Handbook, 1999) being essential to the success of the knowledge management program, HEP will adopt a single user interface with intuitive navigation and taxonomy tools that can be readily accepted by all the real and potential users of HEP's portals.

The general structure of HEP's knowledge map will be defined prior to determining the specific interest communities and, additionally, it must define the geographic spread of HEP to every village or town. The general interest communities, like other organization elements, can share approach to the resources through such knowledge maps of the company.

For HEP, the knowledge management strategy means focus on key business needs, further improvement of the project approach, construction of collabora-

tive business culture, stimulating innovation, decentralization of development resources with simultaneous adoption of common standards and purposeful restructuring of the formal organization in accordance with the need to achieve the business vision, the mission and the strategic programs of HEP.

The application of the knowledge management strategy at HEP will enable further restructuring of HEP towards HEP's vision and mission and thereby defined basic values of HEP as strong modern company with market focus, promoting improvement and innovation to achieve the maximum quality under the criteria of profitability. A company that guarantees its staff opportunity to develop on the basis of their competence and professional contribution, i.e. developing collaborative business structure oriented towards its users to whom it guarantees security and reliability of supply and service, providing competitive and quality solutions, caring for the people and healthy natural environment, the development and the prosperity of the entire region in which it operates

The awareness of importance of processing and managing knowledge is of vast importance as a focus on an application capacity of information science. The further development of Information science in Croatia is one of the corner stone of Croatian business development in contemporary circumstances is closely connected with growing of Informational sciences, not only for better processing knowledge, information and data; but for building on knowledge grounded business culture. Competitive potentiality of HEP, and of Croatian power industry, and whole Croatian economy is hard linked with applicability potential of information science in Croatia, and all economy sector must find a way to support that development or to enable establishing hard connections between business activities and the development of information sciences.

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