Impact of New Knowledge and New Technology on New Economy and New Management

In hypercompetitive business environment today, knowledge is seen not only as a critical factor of faster and faster change, but also as a factor of rapid transformations of old economic paradigm and old concepts of management. Some methodological problems of transformation of contemporary economy under the strong influence of new knowledge and high technologies are considered in this paper. Special attention is paid to transitional countries of Eastern Europe.

New economy paradigm is based on intellectual capital, information and telecommunication technologies, new types of economic regulation, economic liberalization and globalization. New economy paradigm requires new management paradigm.

The aim of this text is twofold: 1. to show that new economy exists and work as a substantial result of new knowledge and new technologies, and 2. that it brings and asks for new kinds of rules, organizations and business decision making. In fact, our aim is to show that new economy and new management are interrelated, since they have the same origin: new knowledge and new technology.

Knowledge management is described as a core issue of the new management paradigm which is necessarily for development of new economy paradigm. Knowledge management promotes an integrated approach to identifying, capturing, retrieving, sharing, and evaluating a firm’s knowledge assets. We consider that knowledge management is a key factor for all successful transition processes in all transition countries.

Keywords: new knowledge, new technology, new management, knowledge assets, transition

1. INTRODUCTION

The phrase new economy is still a controversial issue among experts. On one side, the authors in new economy see a completely new economic paradigm which introduces new economic principles and new categories. On the other side, many authors consider it as only new practical economic skill which is not opposite to any of old economic paradigm.

A strong take off of practice of new economy during the last decade of last century gave strong arguments to proponents of first approach. However, fast termination of dot.com business gave the followers of the old paradigm possibilities to say that laws of traditional economic science are still too important.

The aim of this text is twofold: 1. to show that new economy exists and work as a substantial result of new knowledge and new technologies, and 2. that it brings and asks for new kinds of rules, organizations and business decision making. In fact, our aim is to show that new economy and new management are interrelated, since they have the same origin: new knowledge and new technology. The new is general metaphor of changes, which inevitably face the economic side of life, so that new economy should be understood as one of the results of these changes. In this context it should be pointed out that the biggest change, which has a direct economic effect, is a change in creating new value in a way that knowledge, creativity, innovation and entrepreneurship become the most important factors of economic development at all levels of organization.

Although the changes have always been generated by the ability of making new ideas by their use, never has the connection between new ideas, new knowledge, new skills, new technology, new organizational and management solutions, new visions, new initiatives, new fast reactions, etc. in a new, wider (global) environment, been dramatically shortened. This justifies and asks for use the term "new economy" as a new concept of nascent new economic reality. But, this new concept would not develop without new management models and, first of all, new perception of management, which beside old principles "making things in right way", asks for new solutions, as well as for some new principles. We think those are not only economic principles, but the following six principles are particularly important (Figure 1). Their use must be synergized.
Also, we can talk about interrelated relationship of new economy and new management as new economy "pushes", i.e. ask for new management, and on the other side, new leadership oriented management "pulls" new economy into new business challenges (new entrepreneurship), new institutional solutions (privatization), new system of economic regulation (liberalization, deregulation, etc.), new geographical spaces of business practice (globalization), etc.

2. SEVERAL THE MOST IMPORTANT FEATURES OF NEW ECONOMY

As it has been said, new economy is new kinds of business based dominantly on knowledge work. In fact, new economy is an economy where both final output and intermediate input mainly consist of information. Almost synonymous are the information economy, the knowledge-based economy, the virtual economy, the internet economy, the e-economy, and they are a are subset of the new economy. The new economy cannot be limited to internet companies, nor can it be further restricted to just electronic commerce. The evolution of the new economy is not a sectoral phenomenon, but is concerned with fundamental redesign and restructuring of products and production technologies throughout the economy. The new economy is based on knowledge and intangible assets, instead of financial capital, and in the management focus is a long term value creation.

The transition to new economy is associated with fundamental shifts in the relative scarcity of factors: in the agricultural economy, land was scarce and labour was abundant. In the industrial economy, physical capital was (is) scarce and raw materials are abundant. In the new economy, information is abundant. What is the new scarce factor? We agree with many other experts that it is human capital.

Human capital is based on the employee’s knowledge, their creativity and innovativeness, their skills and experience, and many other intangible features. These categories cannot be the property, but it can only be rented. Also, that is thr reason why the market values of successful firms are so much greater than their book values.

In the present day hyperturbulent competitive climate knowledge is seen to be the most important strategic resource. In this context intellectual capital is at the heart of wealth creation. In the new economy the essence of the business firm is its ability to create, transfer, assemble, integrate, protect and exploit intellectual capital. Therefore, intellectual capital management is a key process in the overall business process in new economy. Consequently, the priority of a competitive nation is to develop the people who will operate the new technological infrastructure and strive to be on the leading edge of future development.

High technology, especially revolution in information and communication technologies (ICTs) is extremely important for the emergence of new economy. But this revolution cannot be examined outside the context of economic globalization, the knowledge economy and knowledge management. Generally, technology is the application of knowledge to create products and services that serve human needs. Technology has been, is, and will continue to be the engine for wealth creation in human societies. The term "new technology" is often used to cover an array of knowledge, technologies and systems involved in the processing, storage and dissemination of information. There are broader views of new technology, which except ICT, include genetic engineering, biotechnology, nanotechnology, robotics, space technology, etc. New technology has a strong influence on old business that emphasized fixed assets, working capital and economies of scale. Old economy has become increasingly vulnerable to nimble organizations that employ new information and communication technologies.

There are several forces driving the new economy. The following four are especially important:

- Knowledge – intellectual capital as a strategic factor;
- Change – continuous, rapid and complex;
- Technology – scientific capacity to produce and create;
- Globalization – in all economic and noneconomic activities (production, trade, finance, technology, R&D, education, culture, crime, etc.), which has resulted in opening economies, global hypercompetition and interdependency of business.

It means, that the new economy has emerged from the confluence of several factors. All of the factors are very important, but the most important is – knowledge. In fact, this factor generates all the others, and above all, technology. For this reason, we think that the central issue of the following new management is knowledge management.

As regards globalization, there are a dozen definitions by various experts. We conclude that globalization is a complex set of social processes that create, multiply and intensify worldwide social, especially economic, interdependencies and exchanges. In fact, globalization can be defined as the increased opening of national borders to trade and financial transactions and direct foreign investment. In this sense, globalization is a phase of capitalism, but not a new phenomenon. We can say that globalization is a decisive break from the way that capitalism was in 1914-1989 period. T. Friedman [8] argues that the key stage of globalization started when a package of modern ICT
came together with an aggressive drive by companies and individuals to seek new opportunities around the world. Fridman writes on three great eras of globalization. The first era (1492–1800) he called Globalization 1.0. It shrank the world from a size large to a size medium. In this era the key agent of change was how much power a country had and how creatively you could deploy it. The second era, Globalization 2.0 (1800 – 2000) shrank the world from a size medium to a size small, and, according to Friedman, now we have entered a whole new era: Globalization 3.0, which is shrinking the world from a size small to a size tiny and flattening the playing field at the same time. This approach has a lot of opponents.

In short, globalization is very a controversial process, but it has a major impact on the economic, technological, political, and cultural scenes around the world. In fact, globalization is the result of both the ICT revolution and more liberalized trade.

First of all, globalization is opening companies up to competition from lower-cost producers to pressure from more demanding investors and capital markets. The long-run shift from manufacturing to services has been accelerated. Manufactured products are increasingly knowledge-intensive and sophisticated. This combination of forces means that intangible assets (research and development, know-how and human capital) have become the fundamental sources of wealth and value. Innovation and entrepreneurship transform these intangible assets into products and services, thereby driving forward economic growth and social welfare.

All what have been said points out in a special way the role of new knowledge as a basic component of new management for new economy.

3. KNOWLEDGE MANAGEMENT AS A NEW MANAGEMENT PARADIGM

We have already pointed out that knowledge represents the key variable of all the changes of human practice. In fact, knowledge has always been the driving force for social and economic progress. In this sense, all economies have been and are knowledge based. There are many types and forms of knowledge. Also, there are complementary definitions of knowledge [23]:

• knowing what information is needed ('know what')
• knowing how information must be processed ('know how')
• knowing why some information is needed ('know why')
• knowing where information can be found to achieve a specific result ('know where')
• knowing when some information is needed ('know when')

A common portrayal is that of a knowledge hierarchy that goes from data (facts and figures) to information (data in context) to knowledge (information with meaning) to wisdom (knowledge with insight). Nevertheless, the most important distinction is that between explicit and tacit knowledge. According to Nonaka [17] explicit knowledge is knowledge that is expressed in formal language and can be shared in the form of hard data, documents, scientific formulae, manuals, codified procedure and the like. Tacit knowledge is know-how that is highly personal and difficult to formalize and express in words. Tacit knowledge has both cognitive and technical elements, such as mental models, crafts and skills an individual has.

Western epistemology has traditionally viewed knowledge as explicit, but we need to recognise that tacit and explicit knowledge are complementary, and that both types of knowledge are essential to knowledge creation. Knowledge is always created through interactions between tacit and explicit knowledge and it is a continuous self-transcending process and interactions amongst individuals or between individuals and their environment. [19]. In fact, knowledge is interpreted in terms of potential for action, and only human beings can take the central role in knowledge creation.

Most successful companies are looking for ways to improve their ability to create new knowledge and to develop the best environment for knowledge creation. In fact, more organizations need not only turn their attention to improving efficiency and productivity, but to develop innovation systems to stimulate knowledge creation and its use as new products or service that customers want. In the Table 1 is shown some key elements of knowledge management [1].

Many authors emphasized the importance of knowledge management as the capacity or process within an organization to maintain or improve organizational performance based on new knowledge. Success in an increasingly competitive marketplace depends critically on the quality of knowledge which organizations apply to their main business process. Most traditional enterprise policies and controls focus on the tangible assets of the enterprise and leave unmanaged their important knowledge assets. Knowledge assets (Figure 2) are the inputs, outputs and moderating factors of the knowledge-creating process as the interaction between explicit knowledge and tacit (implicit) knowledge.

Nonaka and Takeuchi [18] called this process ‘knowledge conversion’ and detected four (Figure 3) modes of knowledge conversion: (1) socialization (from tacit knowledge to tacit knowledge); (2) externalisation (from tacit knowledge to explicit knowledge); (3) combination (from explicit knowledge to explicit knowledge) and (4) internalisation (from explicit knowledge to tacit knowledge).

Although Nonaka et. al. [19] emphasized that we do not yet have an effective system and tools for evaluating and managing knowledge assets, we believe that knowledge management can help considerably to evaluate and manage the knowledge assets of a firm. In fact, we believe that knowledge management is not only about managing knowledge assets but managing the processes that act upon the assets. These processes include: generating and developing knowledge; preserving knowledge; using knowledge, and sharing knowledge. Therefore, knowledge management involves the identification and analysis of available and required knowledge assets and related processes, and
Table 1: Elements of Knowledge Management

<table>
<thead>
<tr>
<th>Policy / Strategy</th>
<th>Processes / Methods</th>
<th>People / Skills</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governments (inc. EU)</td>
<td>Stimulation Good practice Regulation</td>
<td>Guidance Standards</td>
<td>Qualification and Skills</td>
</tr>
<tr>
<td>Intra-organization</td>
<td>Collaborative associations</td>
<td>Collaboration methods and standards</td>
<td>Skills development</td>
</tr>
<tr>
<td>Organization</td>
<td>Knowledge-based business</td>
<td>Best practice KM processes</td>
<td>Personal development programmes, e-learning</td>
</tr>
<tr>
<td>Teams</td>
<td>Tasks and outcomes</td>
<td>Virtual working</td>
<td>Team roles</td>
</tr>
<tr>
<td>Individuals</td>
<td>Career / life planning</td>
<td>KM specialties</td>
<td>Professional development</td>
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Experiential Knowledge Assets
- Tacit knowledge shared through common experiences
  - Skills and know-how of individuals
  - Care, love, trust, and security
  - Energy, passion, and tension

Conceptual Knowledge Assets
- Explicit knowledge articulated through images, symbols, and language
  - Product concepts
  - Design
  - Brand equity

Routine Knowledge Assets
- Tacit knowledge routinised and embedded in actions and practices
  - Know-how in daily operations
  - Organisational routines
  - Organisational culture

Systemic Knowledge Assets
- Systemised and packaged explicit knowledge
  - Documents, specifications, manuals
  - Database
  - Patents and licences

The term “knowledge management” became popular only within last twenty years. Contemporary literature suggested a plenty of definitions of knowledge management. We think that knowledge management is, first of all, new business philosophy that includes a set of principles, processes, organizational structures, and technology applications that help people and their organizations generate wealth from its intellectual or knowledge-based assets. In other words, the knowledge management can be defined as a part of total management process which focuses on the systematic accumulation, creation, developing and exploitation of knowledge in a firm. Meanwhile, knowledge management is not classical functional activity (like production management, financial management, marketing management, and so on). On the contrary, knowledge management is and must be a cross-functional activity. Knowledge management is a new managerial paradigm which considers knowledge as a resource at the basis of a company’s competitiveness.

Knowledge management includes two aspects: (1) managing the knowledge that already exists in organization, and (2) enhancing the ability to create new knowledge. As we said, knowledge management includes management and operational practices and philosophies, technologies, strategies, and human behavioral traits.

The field of knowledge management has advanced from the principle that the organization’s ability to utilise and share knowledge are important resources that would increase and improve the organization’s creativity, productivity and profits. There are many facets of knowledge management. A well-known authority Karl M. Wiig [25] offers four facets: KM as a technology; KM as a discipline; KM as management practice and philosophy, and KM as a societal and enterprise movement.

Figure 2: Four categories of knowledge assets [19]

Figure 3: Knowledge conversion [18]
A first facet consists of a large number of practical methods, systems, best practices, and approaches to manage knowledge-related processes in various organizations. Knowledge management may be people-centric or based on information technology. Knowledge management as technology is concrete and mainly focused on the application of "how-to" knowledge for various business and operational purposes.

KM as a "discipline" provides a basis to perform research, provide educational curricula and training, or develop new effective methodologies. Wiig says that "this view is inherently integrative and multidisciplinary and draws upon many established fields ranging from psychology and cognitive sciences, learning theory, philosophy, management sciences and theories, economics, social sciences, information technology, and broad artificial intelligence, to name a few".

A third facet of knowledge management are the practices and philosophies considered by managers who pursue KM to implement new business strategies or improve enterprise performance. Enterprise leaders incorporate KM within their philosophy and plan how to deal with stakeholders, culture, motivation, and obtaining the desired KM effectiveness.

A last facet of KM is the view that globalization makes KM a necessary activity to maintain or improve competitive stance. According to Wiig, this has produced a societal and enterprise KM "movement". This movement is based on the belief that current globalization has led to the "knowledge era" where the fundamental competitive factor is intellectual capital.

Today we can say that it never before has intellectual capital been so important for business and entire economic and social development. Every company depends increasingly on knowledge, new technologies, information about customers and suppliers, changes in business environment etc. Ongoing innovation, based on an increase in scientific knowledge and its almost immediate dissemination, increase the intellectual content of the design, production and distribution of products and services and makes knowledge management essential.

4. RECONCILING KNOWLEDGE MANAGEMENT AND E-BUSINESS STRATEGY

Previous discussion in this article has explained why most current interpretations of knowledge management that are often based upon an outdated model of business strategy may have serious and adverse implications for information strategy and e-business strategy. Related to the strategic notion of knowledge and knowledge management, there are some fundamental shifts that may be characterized as 'paradigm shifts', characterizing the transformation from the old world of business to the new world of e-business [15].

These transitions are labeled as 'paradigm shifts' as they represent changes of unprecedented proportions having implications for turning the 'tried and tested' management theories and assumptions on their head. These shifts are in terms of how managers think about business strategy, information technology, role of senior management, organizational knowledge processes, corporate assets and organizational design as depicted in Figure 4. As evident, these are interrelated issues, as each of these issues has implication for one or more of the other issues.

Malhotra [15] has emphasized next six paradigm shifts:

- **paradigm shift in business strategy**: instead of understanding the multiple future world-views by using techniques, such as scenario planning.
- **paradigm shift in design and use of technology**: with increasing computerization in organizations, organizational routines originally embedded in standard operating procedures and policies become embedded in the firm’s dominant logic embedded in programs and databases in the form of 'best practices'.
- **paradigm shift in the role of senior management**: senior managers need to view the organization as a human community capable of providing diverse meanings to information outputs generated by the technological systems.
- **paradigm shift in organizational knowledge processes**: the traditional information-processing model for the ‘old world of business’ assumes a problem as given and the solution as based upon the pre-specified understanding of the business environment. In contrast, the proposed model constructs the definition of the problem from the knowledge available at a certain point in time and context.
- **paradigm shift in economics of organizational assets**: in the emerging economy, knowledge is the primary resource for individuals and for the economy overall; land, labor, and capital - the economist’s traditional factors of production - do not disappear, but they become secondary.
- **paradigm shift in organization design**: while the traditional business logic was based on a high level of structure and control, the dynamics of the new business environment demands a different model of organization design. Often characterized as ‘living on the edge of chaos’, this model is characterized by relative lack of structure and lack of external controls. This model assumes the existence of only a few rules, some specific information and a lot of freedom.

The presented conceptualization of knowledge management is based on the need for synergy between the capabilities of advanced information technologies and human creativity and innovation to realize goals in
turbulent business environment. Transition from the old world of business to new world of e-business assume new knowledge, new business strategies, new design and use new information technology, new organizational knowledge processes, new economics of organizational assets and, first of all, new workers and new roles of management.

5. THE PERSPECTIVE OF KNOWLEDGE MANAGEMENT IN TRANSITIONAL COUNTRIES

Previously analyzed problems of conceptualization of the new economy and new management are of crucial importance for all the so-called transitional countries. Examples of ex-socialist countries in South-East Europe are particularly interesting, bearing in mind that "transition as a way to capitalism" was commenced in these countries in a very radical manner at the beginning of 90’s.

This was reflected not only through the process of privatization, but also through the implementation of new models of management and organization of economy with strongly emphasized deregulation and liberalization of the economic flows. Logically, business management has been recognized as an efficient tool for increasing the business efficiency, with managers being promoted as a new elite. Taking into account that the number of managers was not sufficient, the education development was taking place rapidly at different levels.

Hundred of business schools, colleges and various centers for education of managers and entrepreneurs have been established. Prevailing standard curricula at these schools might be considered as necessary, but certainly not as a sufficient prerequisite for the true transition into the world of new challenges in global business. In fact, very few programmes of previously mentioned schools and courses lay an emphasis on human resources, as a key factor of business success as well as of the success of the whole transition project of the postsocialist societies. That is one of the main reasons why the transition was not accepted as a desirable transfer into something new and better, instead of becoming a bad reminiscence of something already seen. However, the hopes and chances still exist. In recent times, new concepts of management education are getting through, becoming more and more attractive for both the students and the managers, who attend various courses for knowledge improvement in increasing number.

Nowadays, transition is entering a new phase requiring the development of new management models, new principles of business conduct and new profiles of managers with global vision and awareness of the significance of the new knowledge resources, creativity and innovation. That implies that they are bound to project the people, human resources and intellectual capital as the assets of crucial significance for their companies. With regard to this approach, there are important differences between certain transitional countries of the South-Eastern Europe region. The mentioned is a consequence of the different economic and market experience in particular, undergone by the countries of former Yugoslavia (Serbia, Montenegro, Slovenia, Croatia, Bosnia & Herzegovina and FYR Macedonia) in relation to all the post-socialist countries. In the former Yugoslavia, a special model of market economy was developing, as well as a quite developed private sector, particularly in agriculture. The most significant market institutions were rather developed, both in the real and in the financial sector. The awareness of market competition and its advantage, comparing it with state regulated economy was very developed and present. Regrettably, the incentives for innovation, as a key factor to competition, were not sufficiently established, although some former Yugoslav republics (for instance, Slovenia, being already EU member) were appreciably distinguished in comparison to other former Yugoslav republics.

In that context, the process of reception of the new management models and systems faced some obstacles and could not be performed uniformly and smoothly. However, a tendency to searching and acceptance of the new management approaches that are able to assert relatively high quality of human resources in terms of decent education, significant market and entrepreneur experience, aptitude to adoption of the innovation concepts and need for constant learning and development, is clearly recognized nowadays.

To conclude, the transitional process in the countries of former Yugoslavia are not only developing at a rapid pace, but also confirm the current need for development of the new management practise on a daily basis. We are of the opinion that in the current phase of transition and the emergence of the new economy, that can represent the management of knowledge.

Intellectual capital is a specific resource which asks for specific way of management, which is an additional reason for knowledge management to be developed as a new management paradigm. This is especially, reason for countries, such as Serbia and other former Yugoslav republics, which are in a transition to market economy, to pay special attention to the knowledge as a very important and insufficient factor. Knowledge management concept must be only the first step towards searching for new knowledge as a prerequisite of economic and overall recovery and development.

6. CONCLUSION

New knowledge as well as new technologies initiate changes in current business practices all around the Globe. Management practise is undergoing the process of change in a very rapid manner. Apart from the traditional principles of business conduct, the new business principles are assuming the increasing importance (ethics, esthetics, ecology, empathy etc.). Knowledge management, as a systematic process for capturing and communicating knowledge people, and sharing what we know with others, add great value to an organization and leads to greater innovations and productivity.

The knowledge management is a managerial paradigm which considers knowledge as a resource of company’s competitiveness and the main distinguishing factor of business success. In conclusion, we can say
that knowledge management plays a major role in conversion of learning capabilities and core competencies into sustainable development process.

Transitional countries in the region of South-Eastern Europe are facing the great challenges to introduce contemporary management concepts and models into the process of reforming their economic systems. We believe that the knowledge management concept is one to acquire distinguished position in the strategic development of the previously mentioned countries, taking into consideration that the vast majority of these countries is lacking intellectual capital, and the intensive process of brain-drain is very present.

As argued in this article knowledge assets underlie organisational capabilities, which are necessary to perform critical business processes. For these reasons we believe that this paper will be the foundation for more research complex relationships between new knowledge and new technology, on one side, and new economy and new management, on the other side.

REFERENCES

Нова економска парадигма се заснива на интелектуалном капиталу, информационим и телекомуникационим технологијама, новим видовима економске регулације, економској либерализацији и глобализацији. Нова економска парадигма захтева нову управљачку парадигму.

Циљ овог рада је двојак: 1. да се покаже да нова економија постоји као суштински резултат новог знања и нових технологија и 2. да укаже на нова правила, принципе, организовање и одлучивање. У ствари, наш циљ је да покажемо да и нова економија и нови менаџмент имају исто порекло: ново знање и нову технологију.

Менаџмент знања је представљен као суштинска компонента нове менаџерске парадигме неопходне за развој нове економске парадигме. Менаџмент знања промовише интегрисан приступ идентификовању, усвајању, прикупљању, делењу и евалуацији интелектуалне имовине сваког предузећа. Сматрамо да је менаџмент знања кључни чинилац успешности свих транзицијских процеса у свим транзицијским земљама.