KNOWLEDGE MANAGEMENT AS A MEANS OF DEVELOPING A FIRM'S COMPETITIVE ADVANTAGE

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Due to the increasing gap between the market and book value of firms, business literature claims that the capital of a firm must consist not only of financial but also intellectual capital. For this reason, some authors already talk about the era of intellectual capitalism. A firm's intellectual capital comprises mostly of (commercial) knowledge, which a firm has acquired and developed during its operation. Since its importance rapidly grows, it is only natural that systematic knowledge management is needed in a firm. Even though knowledge management represents a part of the total management process, it should not be understood as a functional activity, but rather an activity which must be practiced at the highest managerial level.

Nowadays, knowledge management is one of the most popular themes of modern scientific literature. However, in spite of all the published research on the importance of knowledge management, there is little said about knowledge as a direct source of a firm's competitive advantage. In the past decades, three main hypotheses on the sources of a firm's competitive advantage were developed; namely, the industrial organization, the resource-based and the capability-based hypotheses. In this paper, we argue that the knowledge-based hypothesis can and should be considered as the fourth tantamount hypothesis on how the sources of the competitive advantage of a firm can be explained.

The basic lesson is that a firm can win a competitive battle only if it possesses more relevant knowledge than its competitors. Competitive advantage, therefore, finds its source in knowledge and knowledge management can be an efficacious means of its creation and development.

1. INTRODUCTION

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On the subject of knowledge management, some authors argue that it is just another management fad, while others claim that firms will find it hard to even survive without it in the future. Nevertheless, as we have entered into the new millenium, the need for relevant knowledge and its systematic management has never been more obvious. Our aim in this paper is to brighten the relationship between knowledge management as a relatively new management paradigm and the knowledge-based hypothesis on the sources of the competitive advantage of a firm. To be able to do that, we first analyze some of the definitions of knowledge management, as well as the most important findings of the so far published works about why a firm should practice knowledge management as a part of its total management process. Next, three basic hypotheses on the sources of a firm's competitive advantage, which were developed in the past decades, are presented and critically assessed. After that, we argue that the knowledge-based hypothesis should be considered as the fourth tantamount hypothesis on how the sources of the competitive advantage of a firm can be explained. Finally, in the last part of the paper, a discussion about the need for systematic knowledge management is offered.

2. ANALYSIS OF KNOWLEDGE MANAGEMENT DEFINITIONS

When discussing knowledge management, different authors are bound to put different definitions of the term. Since we naturally cannot mention all of them, we offer a review of those which are as different from each other as possible. On one hand, there are authors who define knowledge management as a process. Quintas, Lefrere and Jones (1997), for example, define knowledge management as a process of continually managing knowledge of all kinds to meet existing and emerging needs, to identify and exploit existing and acquired knowledge assets and to develop new opportunities. Quite similar is the definition of Duffy (2001) who believes that knowledge management is a formal process that engages a firm's people, process and technology in a solution that captures knowledge and delivers it to the right people at the right time. Short, but to the point, is also a definition by Brooking (1997) who understands knowledge management as an activity which is concerned with strategy and tactics to manage human-centered assets. According to Macintosh (1999), knowledge management is a process of identifying and analyzing the available and required knowledge assets and knowledge assets related processes, and the subsequent planning and controlling of actions to develop both the assets and the processes so as to fulfil a firm's objectives. Wiig (1997) sees knowledge management as facilitating and managing knowledge-related activities such as creation, capture, transformation and use. Its function is to plan, implement, operate and monitor all the knowledge-related activities and programs required for effective intellectual capital management.

On the other hand, there are also authors who do not explicitly define knowledge management as a process. Bair (1997), for example, defines knowledge management as a set of policies, organizational structures, procedures, applications and technologies intended to improve the decision-making effectiveness of a group or firm. Knowledge management, therefore in his opinion, promotes an integrated approach to identifying, managing and sharing all of a firm's information assets, including databases, documents, policies and procedures, as well as previously unarticulated expertise and experience resident in individual workers. Lank (1997) sees the signification of knowledge management in maximizing value to customers. In order to do so, a firm must have an outstanding capability to create, enhance and share intellectual capital within its units. Knowledge management is a term that covers all the things that must be put in place (e.g. processes, systems, culture, roles, etc.) to build and enhance this capacity. Another similar definition is also the one of Raisinghani (2000) who understands knowledge management as an attempt to put processes in place that capture and reuse a firm's knowledge so it can be used to generate revenue. Finally, according to Harris (1998), knowledge management is a discipline that promotes a collaborative and integrated approach to the creation, capture, organization, access and use of an enterprise's information assets. This includes databases, documents and, most importantly, the uncaptured, tacit expertise and experience of individual workers.

If we try to assess the above-mentioned definitions (as well as many others, which we had analyzed), the following conclusions can be made:

1. Basic elements of knowledge management definitions are in all of the cases: (a) what actually is knowledge management and (b) what is its purpose. In addition, some definitions also explain: (c) who benefits by the initiation of knowledge management and (d) what is the content (or components) of knowledge management (process). Let us have a more detailed look at these elements of knowledge management definitions:
   (a) With regard to the basic understanding of what really is knowledge management, two basic types of definitions can be identified. First, there are so-called "process-based" definitions, where knowledge management is referred to as a "process", a "formal process", or an "activity", and second, there are definitions which are not based on the

notion of process, in which knowledge management is seen as a "discipline", a "set" of certain elements, etc.

(b) Considering the purpose of practicing knowledge management, almost every definition explains this purpose in a slightly different way. Some of the authors emphasize maximizing value to customers, some prefer improving the decision-making process, while others pursue different goals. Irrespective of all the terms used to describe the purpose of knowledge management in different definitions, their point of contact is in managing the knowledge-related activities in order to fulfil a firm's objective(s).

(c) Not all definitions, however, discuss who actually benefits by the use of knowledge management. Partially, this is probably because it is quite obvious that knowledge management is used to improve the performance of a firm (or a group within a firm).

(d) Finally, some of the definitions also describe into details the content (or components) of knowledge management as a process or discipline. From those definitions, it can be concluded that knowledge management directly or indirectly engages or deals with a firm's people, policies, systems, structures, databases, documents, processes, procedures, applications, technologies and all other (preferably tacit) expertise. In addition, it comprises of many different (but necessarily knowledge-related) activities, such as identifying, creating, managing, transforming, sharing and using a firm's knowledge-related assets.

2. Based on the above-mentioned conclusions, we can probably say that the scope of knowledge management is wide. This makes us believe that it is an interdisciplinary field that draws on a variety of business activities and even different academic specializations, such as strategic management, human resource management, production and service management, etc. This, however, does not mean that knowledge management is a functional activity. On the contrary, knowledge management must remain within the competence of a firm's top (strategic) management.

3. Finally, although many of the above-presented definitions explain the purposes and the advantages of practicing knowledge management in a firm, none of them connects knowledge management with the process of developing and/or creating a firm's competitive advantage. Since we believe this should be corrected, we intend to offer another definition of knowledge management at the end of the paper (after discussing some vital

elements of knowledge management and creation of competitive advantage).

3. BENEFITS OF KNOWLEDGE MANAGEMENT – A LITERATURE REVIEW

The first conclusion based on the knowledge management literature review can undoubtedly be that much has already been written about the philosophy, elements and concepts of knowledge management. Since knowledge management has become a big trend of the scientific literature, new articles are being written every day. Unfortunately, little attention has been focused on research about what actually are the concrete benefits of implementing a knowledge management paradigm in a firm. The literature that does exist on this subject can be divided into three categories.

The emphasis of the first group of authors is focused on the importance of knowledge management for process and technology improvements. Raisinghani (2000), for example, maintains that the need for knowledge management is technology driven. He supports this "common view" with the idea that the glut of information produced and distributed so effectively by technology must be received, organized, filtered, re-packaged, distributed and recycled. Similarly, Hichs (2000) believes that technology is one of the factors that contribute to the knowledge management imperative. The reason for this is in the advances in technology that influence the rate of change and require an adaptable, skilled and educated workforce, which cannot be achieved without effective knowledge management. Demarest (1997) mentions that the most obvious advantage of knowledge management is in improved innovation. He believes that innovation begins with the construction of a new kind of knowledge within the firm. Knowledge management systems, therefore, are the key to a program of ceaseless innovation in products, services and processes. Finally, also the work of Carrillo and Gaimon (2000) should be mentioned, where the authors claim that the investments in the accumulation of knowledge and its management have the potential to enhance the process of change effectiveness.

The next group of published papers surpasses the thesis that knowledge management is needed to improve a firm's processes and technology and connects knowledge management directly with the improved financial performance of a firm. Lloyd (1996), who recapitulates the research presentations from the First European conference concerned with the measurement, management and leverage of knowledge, held in March of 1996, reports that knowledge management has a strong, positive impact on sustained improvements in bottom-line profitability. Demarest (1997), on the other hand, claims that an important advantage of practicing knowledge management is also an improved positive cash flow. In his opinion, knowledge management systems, applied particularly to the front end of the cash flow cycle, are likely to produce significant cycle time reductions and an increased likelihood of significant positive cash flow every time.

Other interesting results were also obtained by Dyer and Nobeoka (2000). They demonstrate that Toyota's ability to effectively create and manage knowledge and knowledge-sharing processes at least partially explains the relative productivity advantages enjoyed by Toyota and its suppliers. Evidence is provided that suppliers do learn more quickly after participating in Toyota's knowledge-sharing network. Naturally, the above-mentioned researches represent only a small portion of work which tries to explain the positive impact of knowledge management on a firm's financial performance. Similar conclusions were also made by Tyson (1999), Chait (1999), Hitt, Ireland and Lee (2000), and many other researchers.

Finally, in the third group, there are authors who believe that the benefits of successful knowledge management systems are not only in helping improve a firm's financial performance but also in creating and reinforcing a firm's competitive advantage. Chaves et al. (2000), for instance, maintain that in the era of rapid changes it is important that managers understand knowledge management as a driving force of competitive advantage. Hicks (2000) similarly sees a struggle for competitive advantage as the number one factor which contributes to knowledge management imperative. Lee (2000), on the other hand, tries to answer the question of why knowledge management now and not earlier. He suggests that, among other factors, an increasing search for competitive advantage is the most important one.

As we can see, there are some authors who believe that knowledge management really can help develop a firm's competitive advantage. Unfortunately, researches on this subject are limited and few in number. In the following sections, we try to explain the potential sources of competitive advantage of a firm and, in this way, contribute to the understanding of knowledge management as a direct means of developing and reinforcing a firm's competitive advantage.

4. BASIC SO FAR EXISTING HYPOTHESES ON THE SOURCES OF COMPETITIVE ADVANTAGE OF A FIRM

A competitive advantage can be defined as a unique position that a firm develops in comparison with its competitors. Outward evidence of a competitive advantage is a position of superiority in an industry or market (Bamberger, 1989). Naturally, in order to create a competitive advantage, certain foundations for it must exist (or must be created) in a firm. In this paper, such foundations are labeled the "sources of competitive advantage" and can be compared with the foundations of a house. Just as we can say that a house is safe only if it has quality foundations, we can also say that a competitive advantage is sustainable only if its sources are appropriate (i.e. stable, unique, hard to imitate, etc.). Thus far, scientific literature has discussed three main hypotheses on the sources of a firm's competitive advantage: (1) the industrial organization hypothesis, (2) the resource-based hypothesis, and (3) the capability-based hypothesis. In the following sections, their critical review is offered.

4.1. The origin of a firm's competitive advantage according to the industrial organization, the resource-based, and the capability-based hypotheses

The **industrial organization hypothesis** about the sources of competitive advantage of a firm mostly derives from the work of Michael E. Porter. According to Porter (1981), there are some fundamental parameters of industry dictated by the basic product characteristics and technology, but within those parameters, industry evolution can take many paths, depending (among other things) on the strategic choices firms actually make. The normative implications of the industrial organization hypothesis for strategic management are that a firm should first carefully analyze the structural parameters [1] of its industry, then assess its profitability potential and finally, select a strategy that can effectively align the firm to the industry and simultaneously generate superior performance (Porter, 1980). In doing so, a firm can build its competitive advantage on two sources: (a) cost efficiency (if a firm is able to attain lower costs than its competitors) or (b) differentiation of products and/or services (Pučko, 1999).

Generally, a firm's cost behavior and its differentiation potential depend on the following cost and/or differentiation drivers (Porter, 1985): (a) economies or diseconomies of scale, (b) learning, (c) synergies [these encompass linkages between activities, interrelationships with other business units, and integration effects], (d) capacity utilization, (e) timing [i.e. when a firm performs critical activities], (f) location [i.e. where a firm performs critical activities], (g) discretionary policies independent of other drivers, and (h) institutional factors [for instance, government regulation, unionization, local content rules, etc.].

Naturally, cost/differentiation advantage will result in above-average performance only if a firm can sustain it. The sustainability of cost/differentiation advantage depends not only on the cost/differentiation drivers that create it, but also on the number of activities that can be performed at a lower cost or enable a firm to offer differentiated products and services. Cost/differentiation leaders usually accumulate advantages gained from numerous sources in the value chain that interact and reinforce each other. This makes it difficult and expensive for competitors to imitate their leading position (Porter, 1985).

The **resource-based hypothesis** rests heavily on the so-called "resource-based view of the firm" (Mahoney, Pandian, 1992; Wernerfelt, 1984) and teaches us that a firm's competitive advantage can be built on its resources. According to Barney (1997), a firm's resources can be classified into four groups: physical, financial, human, and organizational resources. It is necessary to stress that such understanding of the resources is very broad and that their existence is not enough to create a competitive advantage. If a firm wants to base its competitive advantage on its resources, eight conditions must be met:

1. Value of resources: Resources must enable a firm to exploit environmental opportunities and neutralize environmental threats. The question of value thus links internal analyses of strengths and weaknesses with external analyses of threats and opportunities.
2. Heterogeneity of resources: As long as the resources are heterogeneous across firms, firms with superior resources can earn rents (Peteraf, 1993).
3. Rareness of resources: The level of rareness of resources tells us how many competing firms possess particular valuable resources. In general, as long as the number of firms that possess a particular resource is less than the number of firms needed to generate perfect competition dynamics within an industry, that resource can be considered rare and a potential source of competitive advantage (Barney, 1997).
4. Durability of resources: Durability of resources can be understood as the rate at which a firm's resources depreciate or become obsolete (Hunger, Wheelen, 1996).
5. Imperfect resource mobility: The more resources are immobile, the better source of a competitive advantage they can be. Resources are imperfectly mobile when they are somewhat tailored to firm-specific needs (Peteraf, 1993).

6. Unsubstitutability of resources: Resources cannot be substituted if there are no adequate resources available. The fundamental danger lies in the fact that successful substitution threatens to render the original resources obsolete (Dierickx, Cool, 1989).
7. Imperfect "imitability" of resources: In order to enable a firm to build a competitive advantage, resources should not be easily and/or cheaply imitated by competitors.
8. "Ex ante" limits to competition: This means that prior to any firm establishing a superior resource position, the competition for that position must be limited (Peteraf, 1993).

Only when all of the above-mentioned conditions are met can a firm expect to build its competitive advantage on its resources that are linked with environmental opportunities.

The advocates of the **capability-based hypothesis** claim that the competitive advantage of a firm derives from its capabilities. Different authors use different expressions to describe the sources of capability-based competition. The most common expressions found in the related literature are: core skills, distinctive capabilities, organizational capabilities, organizational capital, dynamic capabilities and core competencies. Usually four groups of capabilities (competencies) are mentioned in the literature, namely the managerial, input-based, transformational, and output-based competencies (Lado, Boyd, Wright, 1992).

Many famous and successful firms are said to have built their competitive advantages on the fact that they succeeded in creating some capabilities that their competitors did not have. Their experiences have led researchers to suggest the four basic principles of capability-based competition (Stalk, Evans, Shulman, 1992):

1. The building blocks of corporate strategy are not products (services) and markets but are business processes. For this reason, firms should focus above all on their business processes when formulating their strategies.
2. Competitive success depends mostly on transforming a firm's key processes into strategic capabilities that consistently provide superior value to the customer.
3. Firms create their capabilities by making strategic investments in a support infrastructure that links together and transcends traditional strategic business units and functions.
4. Since the capabilities on which competitive advantages can be built necessarily extend across the whole firm (they are cross-functional), the

champion of any capability-based strategy must be the chief executive officer.

Within the capability-based hypothesis, an additional sub-hypothesis should be mentioned. It teaches us that the competitive advantage takes its source in a firm's core competencies. To demonstrate the logic of this sub-hypothesis, we can compare a firm with a large tree. In this case, the root system that provides nourishment, sustenance and stability is the core competence, while the trunk and major limbs are core products. These products, which invisibly connect core competencies and end products, are the physical embodiments of one or more core competencies. Out of the limbs (core products) grow smaller branches, which represent end products (Prahalad, Hamel, 1990). Firms must understand that in order to shape the evolution of end products, they must maintain dominance in core products. Similarly, if it wants to be dominant in core products, it has to have unique core competencies.

4.2. Critical assessment of the three hypotheses

Although each of the three above-explained hypotheses seems logical and self-sufficient, they all have certain weaknesses. In the following paragraphs, only the most important among them are mentioned.

With regard to the **industrial organization hypothesis,** its first weakness is its exaggeration of the importance of industry structure. Still more, classical industrial organization scholars have typically assumed that a firm can neither influence industry conditions nor its own performance (and competitive advantage). Such a view was later advanced by a new group of industrial organization theorists who recognize that a firm has a certain power to influence its own performance and the creation of its competitive advantage. Second, the potential sources of competitive advantage, according to the industrial organization hypothesis, are cost efficiency and differentiation. At the same time, the hypothesis teaches us that cost efficiency and differentiation find their source in a specific set of a firm's activities that differs from the set of activities performed by the competitors. The question that logically appears is "why don't we treat cost efficiency and/or differentiation as a firm's positional advantages and activities as a firm's real sources of competitive advantage". Finally, some of the cost/differentiation drivers (for instance, economies of scale, institutional factors, etc.) used to explain the cost/differentiation advantage seem to be less and less relevant.

As far as the **resource-based hypothesis** is concerned, it has two fundamental weaknesses. First, all kinds of a firm's resources surely cannot represent potential sources of a sustainable competitive advantage. This means that the resource-based hypothesis probably defines the potential sources of competitive advantage of a firm too broadly. Above all, this criticism obviously concerns physical and financial resources. Second, the resource-based hypothesis also fails to offer any proper explanation of how the sources of competitive advantage actually emerge, which means that it does not explain how and why resources appear in the firm. It simply treats a firm's resources as given.

The **capability-based hypothesis** has at least three important shortcomings. First, it still defines the potential sources of competitive advantage quite broadly, although it must be stressed that it is much narrower than the resource-based hypothesis. Second, like the resource-based hypothesis, the capability-based hypothesis also fails to offer any good explanation of how the sources of competitive advantage actually emerge. Partially, the answer to this question is given by explaining the basic principles of capability-based competition. The second principle proposes that a firm must transform its key processes into strategic capabilities. A more concrete explanation of how a firm's capabilities can be created is unfortunately not available. Finally, the capability-based hypothesis also does not pay much attention to a firm's environment. It could even be said that the hypothesis has absolutely no point of contact with the environment except that it treats the manager's concern to develop good firm-environment relations as part of managerial capabilities.

5. KNOWLEDGE-BASED HYPOTHESIS AS A NEW WAY OF EXPLAINING THE SOURCES OF COMPETITIVE ADVANTAGE OF A FIRM

5.1. Why knowledge-based hypothesis

Based on the above critical assessment of the three hypotheses, one can say that each of them has some important weaknesses (i.e. unsatisfactory explanations of the origin of competitive advantage). For this reason, it can be said that none of them represents a perfect and self-sufficient explanation of the sources of the competitive advantage of a firm and that there is probably enough room in scientific literature for another hypothesis on the sources of a firm's competitive advantage – i.e. the knowledge-based hypothesis.

Naturally, merely the weaknesses of the so far existing hypotheses on the sources of the competitive advantage of a firm do not provide a sufficient reason for the development of a new hypothesis. There must be a deeper reason for that. In our case, this "deeper" reason is in the increasing value of the relevant knowledge in everyday life. Surely, one of the most important mysteries of today's scientific literature is the question why the market values of successful firms are so much greater than their book values [2]. The best answer so far suggests that the market value of any firm consists of its financial capital and its intellectual capital (see Figure 1), which can be divided further into human capital and structural capital (Edvinsson, Malone, 1997).

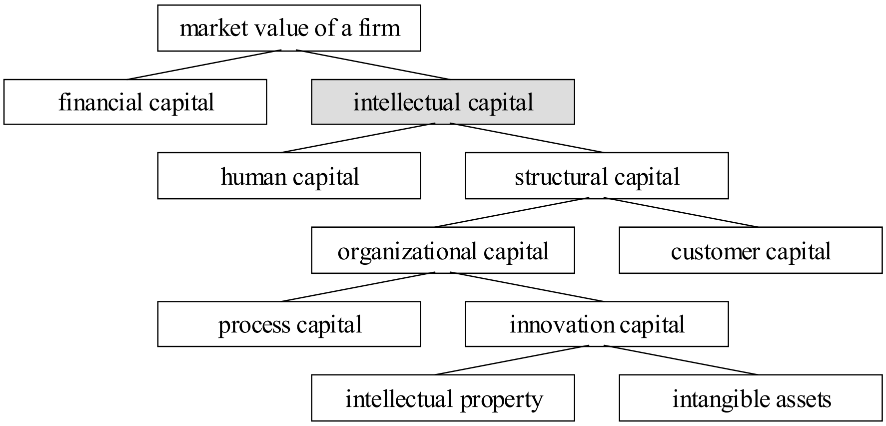

Figure 1. Division of a firm's market value (Edvinsson, 1997)

5.2. The origin of a firm's competitive advantage according to the knowledge-based hypothesis

Advocates of the knowledge-based hypothesis about the competitive advantage of a firm argue that a firm can win a competitive battle only if it possesses more relevant knowledge than its competitors. Competitive advantage, therefore, finds its source in knowledge. Naturally, from the firm's point of view, not all kinds of knowledge are equally useful.

Especially important is that part of knowledge that can be labeled commercial knowledge. The nature of commercial knowledge was perhaps best described by Demarest (1997), who proposed that the goal of commercial knowledge is not to find the truth, but to ensure effective performance. It does not answer the question "what is right" but rather "what works" or even "what works better" where better is defined in competitive and financial contexts". All commercial knowledge is provisional, partial, muddled, social (i.e. produced and shared among a network of human and non-human actors within the firm), traded, and, when it is good, it works. All these attributes, we could argue, are those that make commercial knowledge different in kind from philosophical, scientific, and other kinds of knowledge.

With regard to its contribution to the creation of competitive advantage, a distinction between explicit knowledge and tacit knowledge (as introduced by Polanyi (1966)) should be drawn. Explicit knowledge is objectively "codified" knowledge, which is transmittable in formal, systematic language. It can be found in manuals, textbooks, computer programs, patent documents, etc., which means that it can be learned by observing and studying.

Tacit knowledge, on the other hand, is personal, subjective, context-specific knowledge, which means that it is hard to formalize and communicate. Sharing tacit knowledge between individuals through a communication process is an analog process that requires a kind of "simultaneous processing" of the complexities of issues shared by the individuals. For this reason, tacit knowledge usually is acquired only in the direct working experience.

If we now ask ourselves, which type of knowledge is more important in terms of creation of the competitive superiority of a firm, the answer is quite obvious. Explicit knowledge usually will not play a vital role in the competitive battle between firms. Even if it is protected as the intellectual property, such protection is usually limited in time and in many countries also hard to enforce (Pučko, 1998). On the other hand, a firm will probably be able to base its competitive advantage on the relevant tacit knowledge.

It is extremely desirable that such knowledge is potentially codifiable, although a firm must be sure that such codification will not be transmittable in use to competitors. In order to be useful, such knowledge must also be understood by its distant users. Since it is usually very context-specific, it is often hard to understand it in contexts different from those in which it was created (Čater, 2000).

5.3. Knowledge-based hypothesis as compared with the industrial organization, the resource-based, and the capability-based hypotheses

If we now examine how the knowledge-based hypothesis can be compared with the other three hypotheses, two basic differences should be mentioned. First, the most important difference between the knowledge-based hypothesis and the industrial organization hypothesis is the way in which they explain the creation of competitive advantage.

While the knowledge-based hypothesis believes that we must start in the firm (the so-called "inside out" view), the industrial organization hypothesis believes that a firm should first carefully analyze the structure of its industry and only then choose its competitive strategy (the so-called "outside in" view).

On the other hand, the most important difference between the knowledge-based hypothesis on one side and the resource-based and the capability-based hypotheses on the other side lies in their width. While the knowledge-based hypothesis believes that the only source of competitive advantage is knowledge, the capability-based hypothesis believes that competitive advantage can also be built on some other capabilities besides knowledge.

Similarly, the resource-based hypothesis defines the potential sources of competitive advantage even more widely. It believes that competitive advantage can be built on knowledge, capabilities and some other resources of a firm that cannot be classified as either knowledge or capabilities. In other words, we can say that the knowledge-based hypothesis (if we compare it with the resource-based and the capability-based hypotheses) is the narrowest, while the resource-based hypothesis is the broadest.

A conclusion based on the above-mentioned differences between the knowledge-based and the other three hypotheses can be that there are some substantial differences between them which means that we must necessarily treat these hypotheses separately and that the existence of the knowledge-based hypothesis is justifiable.

In other words, there are at least four substantially different hypotheses about the sources of the competitive advantage of a firm, among which the knowledge-based hypothesis is lately becoming more and more important.

6. DISCUSSION ON THE NEED FOR KNOWLEDGE MANAGEMENT AS A MEANS OF DEVELOPING A FIRM'S COMPETITIVE ADVANTAGE

The growing importance of intellectual capital naturally calls for its systematic management. In other words, there is a growing need for knowledge management, especially the management of processes in which knowledge is created and used (Quintas, Lefrere, Jones, 1997). This thesis cannot be shaken even by the statements, characteristic of the critics of the knowledge management paradigm, that knowledge and intellectual capital are not new and that employees' knowledge, capabilities and expertise have always been fundamental elements of any business.

If knowledge management is to give proper results – i.e. help create a firm's competitive advantage – its basic goal should be to transform as much of a firm's human capital as possible into its structural capital. As we have already explained, a firm's intellectual capital can be divided into its human and structural component (see Figure 1). Human capital is based on the employees' knowledge, their innovativeness and ingenuity, their skills, as well as their values and culture. This category of intellectual capital cannot be the property of a firm because employees take their knowledge, skills and experience with them when they leave the firm. Human capital can, therefore, only be rented, which means that it is highly risky. On the other hand, structural capital is everything left at the office when employees go home. It is the property of a firm and can thereby be traded. For this reason, one of the most important challenges of knowledge management is to transform a firm's human capital into its structural capital (Lank, 1997).

In order to transform human capital into structural capital, the basic tasks [3] of a firm's knowledge management should be:

1. At the strategic level, knowledge management should (a) establish a "knowledge-oriented" mentality in a firm, (b) make sure that a firm is able to analyze and plan its business in terms of the knowledge it currently has and the knowledge it needs for the future business process, and (c) ensure a suitable business environment for an efficient process of creating new knowledge in a firm.
2. At the tactical level, knowledge management should make sure (a) that existing knowledge is properly identified, (b) that new knowledge for the future use is acquired and properly archived in organizational memories, and (c) that new systems that enable effective and efficient allocation of the knowledge within a firm are created.
3. At the operational level, knowledge management should see that knowledge is used in everyday practice by those who need access to the right knowledge, at the right time, at the right location. In other words, knowledge management cannot be successful unless it ensures a proper and profitable use of knowledge.

Let us discuss some of the above-stated tasks in more detail. In order to achieve the basic goal of knowledge management in most of today's firms, first new mind-sets and modes of thinking are required. In other words, firms will need to adopt a "knowledge-oriented" mentality. As to that, one of the basic problems is how to focus the attention of a general manager on knowledge-related problems in a firm. There is probably no need to emphasize that in most of the firms, the investments in material and financial assets still take precedence over the knowledge-related investments and that many managers still believe that their firms' capital consists only of financial capital. In addition, many firms are conscious of the importance of knowledge management, but they understand it too narrowly – i.e. solely as a concern for an individual learning of a firm's employees.

Naturally, if a firm seeks to create a competitive advantage based on knowledge, a firm's management must not only assure the accumulation of knowledge from the outside but also the permanent process of knowledge creation within the firm. According to Nonaka and Takeuchi (1995), knowledge creation is a two-dimensional process. The first dimension is the epistemological dimension, where knowledge conversion takes place between tacit and explicit knowledge. The result of such conversion is the creation of new knowledge. The second dimension of the knowledge creation process is the ontological dimension, where the knowledge created by individuals is transformed into knowledge at the group and organizational levels.

As suggested by Nonaka (1991), a creation of new knowledge always begins with the individual. A brilliant researcher has an insight that leads to a new patent. A middle manager's intuitive sense of market trends becomes the catalyst for an important new product concept. A shop-floor worker draws on years of experience to come up with a new process innovation. In each case, however, an individual's personal knowledge must be transformed into organizational knowledge and such transformation is said to be the central activity of the "knowledge-creating" firm. The result of both dimensions, epistemological and ontological, is the five-phase process of knowledge creation (Nonaka, Takeuchi, 1995): (1) sharing tacit knowledge, (2) creating concepts, (3) justifying concepts, (4) building an archetype [i.e. converting "intangible" concepts into "tangible" items (for instance prototypes)], and (5) cross-leveling knowledge [i.e. using created knowledge elsewhere (for instance, at a different ontological level)].

Also, at the very beginning, the dilemma of archiving knowledge must be solved. This could be a double-edged sword because two things have to be considered at the same time: (1) the ability of transmitting the knowledge between different employees and units in a firm, and (2) the ability to protect the knowledge from competitive firms. For the efficacious transmittal of knowledge, it is of course best if the knowledge is codified. Codification can be achieved in many different ways. Designed forms, codes, expert systems, business policy, prototypes, technology, etc. – all these are examples of a firm's codified knowledge. On the other hand, however, also the problem of protecting the knowledge from competitors must also be considered. Taking this into account, the codification of knowledge is disputable because it is clear that codified knowledge can more easily be pilfered by the competitive firms than tacit knowledge. For this reason, competitive advantages based on tacit knowledge are usually much more durable and stable than those based on codified knowledge.

Finally, if a firm wants to benefit from acquired knowledge, it must be able to correctly exploit and use it. For this purpose, however, management must first convince the employees that sharing knowledge and information with each other is extremely useful for a firm as a whole. Knowledge and information sharing is critical because intellectual assets, unlike physical assets, increase in value with use. The problem that quite often emerges is that people, especially top-level experts, are reluctant to share their knowledge with other employees. The reasons for this, as presented by Lank (1997) and Quinn, Anderson and Finkelstein (1996), are particularly: (1) competition among professionals [because professionals' knowledge is their power base, they might ask themselves "what's in it for me"], (2) assigning credit for intellectual contributions of individuals is difficult, and (3) cross-disciplinary sharing is often made difficult because many experts have little respect for those outside their field. Overcoming employees' reluctance to share knowledge is, therefore, one of the most important challenges of knowledge management.

After everything we have written, knowledge management should probably be defined as *a part of the total management process which focuses on the systematic analysis, planning, accumulation, creation, developing, archiving and exploitation of a firm's knowledge (as well as other knowledge-related assets) and tries to transform as much of a firm's human capital as possible into its structural capital in order to develop the competitive advantage of a firm and help fulfil its other main objective(s) in an expedient manner*.

There are several points that should be emphasized in the above definition. Although we have defined knowledge management as part of the total management process, this does not mean that it is a functional activity as is, for instance, production management, marketing management, financial management, and so on. On the contrary, knowledge management is and must be a cross-functional activity (it rises above the level of business functions) and as such remains within the competence of a firm's top (strategic) management. This statement also explicitly rejects all the attempts to show knowledge management as part (or even a synonym) of human resource management. A great stress in the knowledge management definition should also be laid on the primary purpose of knowledge management. As mentioned, the knowledge management system is not adequate unless it can *help create, protect, develop and increase a firm's competitive advantage*. In addition, knowledge management should naturally also help fulfil a firm's other main objective(s).

NOTES:

[1] According to Porter (1979), there are five structural parameters of an industry: (1) the bargaining power of suppliers, (2) the bargaining power of customers, (3) the threat of new entrants, (4) the threat of substitute products or services, and (5) current competition within the industry.
[2] Baruch (2000), for instance, mentions that the market-to-book value of the largest U.S. firms exceeded 6.0 in May of 2000.
[3] Partially, such classification of knowledge management tasks derives from a discussion of Macintosh (1999).

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UPRAVLJANJE ZNANJEM KAO NAČIN RAZVOJA KONKURENTSKE PREDNOSTI PODUZEĆA

Sažetak

Zbog sve većih razlika između tržišne i knjigovodstvene vrijednosti poduzeća, u literaturi se javljaju tvrdnje kako se kapital poduzeća ne sastoji samo od financijskog, već i od intelektualnog kapitala. Zbog tog razloga neki autori već danas govore o dobu

"intelektualnog kapitalizma". Intelektualni kapital poduzeća se uglavnom sastoji od (komercijalnog) znanja, kojeg je poduzeće pribavilo i razvilo tijekom svog postojanja. Pošto njegov značaj naglo raste, prirodno se javlja potreba za sustavnim upravljanjem znanjem u poduzeću. Iako upravljanje znanjem predstavlja dio ukupnog procesa managementa, ne smije ga se promatrati kao funkcijsku aktivnost, već kao aktivnost koja se obavlja na najvišoj managerskoj razini. Trenutno je upravljanje znanjem jedna od najpopularnijih tema u znanstvenoj literaturi. Međutim, bez obzira na sva objavljena istraživanja koja naglašavaju značaj upravljanja znanjem, malo je toga rečeno o znanju kao izravnom izvoru konkurentske prednosti poduzeća. U proteklih nekoliko desetljeća razvijene su tri glavne hipoteze o izvorima konkurentske prednosti poduzeća: hipoteza industrijske organizacije, te hipoteze utemeljene na resursima i sposobnostima poduzeća. U ovom se radu polazi od toga kako bi kao četvrtu temeljnu hipotezu koja objašnjava izvor konkurentske prednosti poduzeća trebalo prihvatiti onu utemeljenu na znanju. Njegova je temeljna poruka kako poduzeće može pobijediti u konkurentskoj borbi samo ukoliko posjeduje više relevantnog znanja od svojih konkurenata. Konkurentska prednost, stoga, pronalazi svoj izvor u znanju, a upravljanje znanjem može biti efikasnim izvorom njezinog stvaranja i razvoja.