
THE ARTICULATION BETWEEN INNOVATION AND COMPETENCES ANCHORED BY KNOWLEDGE MANAGEMENT AIMING SUSTAINABLE COMPETITIVE ADVANTAGE

Jurema Suely de Araújo Nery Ribeiro (1), Marco Antônio Calijorne Soares (2), Paulo Henrique Jurza Abranches (3), Fabrício Ziviani (4)

(1) Universidade FUMEC, Av. Afonso Pena, 3880 - Cruzeiro - CEP: 30.130-009 - Belo Horizonte - MG - Brasil, jurema.nery@gmail.com, (2) marco.calijorne@techsysinfo.com, (3) paulo.jurza@gmail.com, (4) fabricio.ziviani@fumec.br

Abstract

While seeking to establish higher standards of performance and sustainable competitive advantage, organizations have been stimulating a critical reflection about the factors that affect the performance of the individual and of the organizations themselves. Knowledge became one of the main organizational competitive factors, and knowledge management could contribute as an enhancer for organizational results. This paper aims to demonstrate the importance of knowledge management practices as a promoter of sustainable competitive advantage, considering its influence in the organizational context. For this reason, this theoretical paper has performed a brief literature revision in the knowledge management and

sustainable competitive advantage fields, presenting concepts and approaches, in order to understand the interaction of these constructs with competence and innovations constructs. The results signalized that the comprehension of the relations between competences and innovation, anchored by knowledge management, is the assurance that the adequate conduction of the mechanisms through the competitive advantage could be sustained. For demonstrating this, it was proposed a systematized model to knowledge management and competitive advantage, structured with competence and innovation constructs.

Keywords: Competences; Innovation; Knowledge Management; Sustainable Competitive Advantage.

1 Introduction

The restless search for a privileged position in the market or even for survival has been taken the organizations to act with diversified and more incisive strategies as well as to identify resources and activities that bring competitive advantage, as a condition to the superiority of performance (Barney, 1991 and Porter 1985). The comprehension of the performance of the companies and their corporative strategies have been the aim of constant studies, according to Porter (1991), through the analysis of the competitive structure of the market as a central element, although organizations are also exposed to inherent influences to their inner environments. Thus, having knowledge and control of endogenous and exogenous questions regarding the organization is primordial factors to the conduction of organizational performance.

The convergence of actions towards results requires alignments in the company strategic planning and objectives, and goals redefinition is an almost daily exercise for managers who seek to comply to market demands, confirmed by Miller and Cardinal (1994). Kotler, Keller and Armstrong (1998:23) define strategic planning as “the development process and maintenance

of a strategic reference amongst the objectives and capacity of the company and the changes in its market opportunities”. Fleury & Fleury (2000) corroborate saying that the organization defines its strategies and competences to implement, located in an institutional environment and in a process of constant learning, without the existence of an order of precedence in this process, but rather a virtuous cycle, which one feeds other through the learning process.

To Senge (1998) the learning process in the organization occurs due to concrete conditions for people learning the context where they live and interact. The Knowledge Era creates a new mentality in the society, aiming the development of community practices of human knowledge. According to Wenger (1998), the practice community could be considered a community that learns because it is composed by people that have the commitment to aggregate the best practices, people who learn, build and actually do the knowledge management. Thus, the knowledge management contributes to the use of the knowledge in order to maximize the performance and consequently the results reached by the companies. Studying the individual behavior of the organization and its growth reasons is determinant to

understand the factors that lead the firms to have superior performances.

Against the perspective of sustainable competition, companies must promote the creation of knowledge and best practices through the creation of distinct competences, and transmit these to the whole organization, aiming to improve the business in order to generate promising results. Inserted in this scenario, the question that intrigues the researchers and headed this paper is: How knowledge management could articulate the constructs competence and innovation in an organization in order to promote sustainable competitive advantage?

The context involving the research question is permeated by countless variables, and to understand them, it is necessary to understand knowledge management as promoter of sustainable competitive advantage through the articulation of innovation and competence constructs; analyze the importance of the organizational knowledge in organizations; understand how knowledge management occurs and verify how the connection of the competence management and innovation management provides a superior performance as a consequence of sustainable competitive advantage.

The development of this paper is organized in five sections, included this introduction. The second section is about the theoretical framework where some concepts and questions about knowledge management, competitive advantage and construction of competence and innovation are discussed. Third one is the methodology. The fourth section depicts the final considerations.

2 Theoretical frameworks

2.1 Knowledge management

The theme of Knowledge Management (KM) raised interest in scientific studies in the beginning of the 90's. The management characteristics that have stood out since the 90's and are more forceful today are related to the management of processes that make organizational knowledge an element that generates value, which makes KM the true competitive differential of organizations. Knowledge Management means organizing the main policies, processes and management and technological tools in light of a better understanding of the processes of generation, identification, validation, dissemination, sharing and use of the strategic knowledge to generate (economic) results for the company and benefits for the collaborators (Terra, 2001).

Rubenstein-Montano et al (2001) corroborates stating that knowledge management is an emerging field that has imposed attention to the organizations and some of them are engaged in knowledge management to leverage the knowledge inside and outside their operations. The social and technological transformations occurred in the last decades initiated a dynamic behavior in the

modern world, leading to a rapid obsolescence of working processes of the production of goods and services forcing the extreme competition in the organizational environment and the need of adoption of more versatile management practices.

KM has been gaining prominence in the management of companies in recent decades, as a way to organize the knowledge produced by the internal actors in the creation of organizational knowledge. Scholars of the theme point out the importance of creating mechanisms for this appropriation of knowledge to take place (Choo, 1998; Davenport and Prusak 1998; Sveiby 1998; Dalkir 2005; Barbosa, 2008; Heisig 2009).

According to Polanyi (1966) the efficient and effective management - creation, storing, sharing, developing and application – has been a constant challenge to contemporaneous managers, in consequence of the difficulty of measuring it objectively. There is in the literature a huge number of definition approaches and attempts. Understanding about knowledge management has been the target of important studies realized in the past few years, however there is not even a conceptual consensus between theorists interested by the matter in question.

Choo (2003), for example, proposes a model to represent the use of information and knowledge by organizations in three moments: in the "construction of meaning", which includes understanding what occurs in and around the organization environment based on information and experience; in "knowledge creation", which addresses the generation of new knowledge through organizational learning in the creation, organization and processing of information; and "decision making", when the organization chooses the best among the various options, linked to the organizational strategy, and the choice must be rational and based on the use of information.

Sveiby (2003), on the other hand, classifies the approaches of knowledge management in two main categories: those oriented to information management and those oriented to organizational learning and competences. Interesting fact alerted by Senge (1998:167) is that the "organizations only learn through learning individuals. The individual learning does not assure the organizational learning. However, without it, the organizational learning does not occur."

The knowledge management concept as "the set of activities that search developing and controlling every kind of knowledge of an organization aiming the achievement of its objectives", is presented by Moresi (2001:137). He also complements that managers should establish policies, procedures and technologies oriented to the effective management of the knowledge basis existing in the distinct organization departments, favor-

ing the occurrence of knowledge management and the support to the decision-making process in all organizational management levels. In this sense, it is primordial that these policies, proceedings and technologies create necessary conditions to the collection, distribution and efficient and effective utilization of knowledge (Moresi, 2001).

Smith and Lyles (2003, p.12), define the knowledge management as an “economic perspective of the strategic value of organizational knowledge that eases the acquisition, sharing and utilization of knowledge”. Angeloni (2002:15) comments that “it cannot be denied the relevance of knowledge management in the organizational environment as a management technique, fact that demands a new posture regarding the contemporaneous organizational challenges”. Lacombe (2005, p. 343) clarifies that the knowledge management is the “set of ordered and systematized efforts to create a new knowledge, spread it through the organization to whom may need it and incorporate it to products, services and systems, as well as protect it from misuse”, and it can be applied to several organizations, adapting its methods, practices and purposes.

According to Dieng-Kuntz (2006, p.79), the knowledge management could be defined as “the management of activities and processes that aims the magnification of the use and creation of knowledge within an organization”. The knowledge management, according to the author, must be oriented to two main complementary objectives, one patrimonial and the other based on continuous innovation. These objectives must be comprehended in the strategic, organizational, economic, socio-cultural and technologic dimensions. Besides, the knowledge resource management of an organization must facilitate the accessing, sharing and reusing of the knowledge (individual, collective, tacit or explicit), beyond the creation of new knowledge, with the objective of innovation (Dieng-kuntz, 2006).

When Nonaka & Takeushi (1997) defined the theory of knowledge creation, they identified four knowledge diffusion forms expanded through a spiral movement that return to phases that have already been passed, in a continuous and expanding act. The processes of conversion consist in socialization, in which the tacit knowledge, e.g., the inherent knowledge of an individual, is shared through experience; the externalization, phase in which the tacit knowledge is explained through metaphors, analogies, slogans and models; the combination, which consists in the systematization of knowledge through the conversion of explicit knowledge into explicit systematized knowledge; and finally the internalization, which is the learning of the practice with the incorporation of explicit knowledge into tacit knowledge, by application of individual knowledge in work tasks.

In Eboli’s (2004) view, the knowledge management follows a cycle of four main steps beginning with the generation, step in which the investigation and search of knowledge begin, followed by the assimilation, processes in which the knowledge is taught to people so it can be absorbed when concepts and techniques involved are known. Then comes the communication, phase in which the knowledge is diffused by the organization, stimulating the employees to apply their knowledge acquired in the application phase.

The knowledge management has been considered by authors like Davenport, Jarvenpaa and Beers (1996) as a strategy to the company to deal and manage its knowledge in order to obtain competitive advantages. According to Salim (2001), the knowledge management could be synthesized as an intentional process created to sustain the organization performance. So, Knowledge Management leads the company to get ahead of its competitors, creating a competitive advantage over its pairs, detecting points that lead to innovation in order to put the company ahead of its competitors

2.2 Sustainable Competitive Advantage

The constant search for the maximization of resource application by the companies causes imbalances of firms and markets, and from these imperfections of the market, the companies extract their competitive advantages (Grant, 1991). The notion of advantage requires the development (renovation, investment and leverage) of new resources and capabilities or the combination of skills (capabilities/competencies) or even of unique resources (dynamic or essential) that build, maintain and highlight the distinct and hard to imitate advantages (Prahalad and Hamel, 1990; Collis and Montgomery, 1995; Teece, Pisano and Shuen, 1997).

According to Cantwell (2005, p. 561) “the competitiveness derives of the creation of differential capabilities needed to sustain the growth in a competitive selection environment”. An organization has competitive advantage if it is capable to create more economic value than its competitor. The economic value created by a company in providing goods or services is the result of the difference between the obtained advantages by the buyers and the economic cost to the company, as said by Barney and Clark (2007). The generation of a superior performance will depend on the obtained income from strategies and from the costs of execution of these strategies.

Different performances amongst companies are the result of different basis of their knowledge and different capacities on the development and unfolding knowledge, as concluded by Bierly & Chakrabarty (1996). Understanding the concept of dynamic capacity is fundamental once some authors advocate the exist-

ence of a hierarchy of capabilities, being the dynamic capacity the most elevated level. It is observed that the company dynamics is the main driver to all other competencies e capabilities. Andreeva and Chaika (2006) associate dynamic capabilities to organization abilities in renewing its key competencies as changes occur in the environment in which the company operates. Collis (1994) defines dynamic capability as the skill of the firm to innovate more rapidly or in a better way of its competitors. Wang and Ahmed (2007) define dynamic as the organizational behavior oriented to integrate, reconfigure, renew and recreate its resources and capabilities and, most important, improve and rebuild its key capabilities in response to the environment mutations to reach and sustain the competitive advantage. For them, the dynamic capabilities are not simply processes, but constitute something that is embedded within the processes.

The organizations, according to Ghemawat (1986), need to entrepreneur different profit and growth strategies making decisions that make them to develop products and services to fulfill the needs of their clients and stakeholders, and thus, obtain a sustainable competitive advantage to achieve a superior performance. To Porter (1998) the knowledge is considered the only advantage to offer a differentiation to a sustainable competition. Consequently, it is surged the notion of sustainability as a function of heterogeneity of the advantage is being preserved and durable when value is added. Therefore, sustainability is subsequent to a higher position reached by the firm, generating thus bigger returns when resisting to the dilution of the behavior of the competitors.

Kretzer and Menezes (2006) corroborate this suggesting that the conditions thru the resources generate competitive advantage could be grouped in two dimensions: I. The competitive positional advantage – it gathers the conditions that define the nature, type and magnitude and the nature of resource stock acquired or built by the firm, focusing the factors that difficult or limit the free expansion or imitation by other firms; II. Sustainable competitive advantage – it gathers the conditions that guarantee and sustain the firm to retain the resources that are specific to it or they are not easily transferrable.

Barney (1991) emphasize that the pathway to success when implementing a strategy, passes thru the creation of specific conditions that permit to the organization identify those resources considered relevant in the achievement of sustainable competitive advantage, without its competitors being capable to implement simultaneously or even imitate it. According to Drucker (1994) develop the systematic practices to administrate the self transformation is one of the most important challenges imposed to the organizations of knowledge societies. The organization has to be pre-

pared to abandon the knowledge that became obsolete, to learn to create the new thru the continuous improvement of all activities, develop new applications from its own successes, and realize the continuous innovation as an organized process.

2.3 The different constructs

2.3.1 Competencies

The restless search for the improvement in organizational performance, to a certain point of modern history, was focused on the productive process and on machines. However, over time, the knowledge management has taken even more space in the improvement processes of sustainable performance, being a crucial system with the competence management.

Some important definitions of competence under the look of different authors were gathered by Brandão & Guimarães (2001). Zarafian (1996, p. 5) has defined competence as “assume responsibilities for complex work situations [allied] (...) to the systematic exercise of reflexivity in these situations”. Sparrow and Bognanno (1994) treat competence as a set of attitudes that together allow the individual to adapt himself rapidly to a mutable environment and still be able to innovate and keep learning. And Dutra, Hipólito & Silva (1998) define competence as a person's ability to generate results within organizational objectives. Ropé and Tanguy (1997) believe that one essential aspect of competence is that it cannot be understood apart from action. In his turn, Durand (1998) defines competence based on three dimensions - knowledge, ability and attitude - encompassing not only technical issues, but also cognition and attitudes related to work.

Brandão and Guimarães (2001) say that despite distinct views, and despite not having a unity amongst the concepts, all views are integrated through analogue attributes, that is, individuals (or the work/task group) with certain characteristics and abilities use their knowledge to generate competitive advantage to their organizations through proactive attitudes.

There are three forms of developing competences according to Lévy-Leboyer (1997): by prior training, before active life, during the active life and through the active life, that is the professional practice. Yet Ruas (2005) defines that competences are subdivided into two dimensions: strategic, where organizational competencies are closely correlated with vision, mission, and strategic intent; and where the competencies are observed in the macro-processes executed and linked to areas and functions.

Understanding the concept of competence is important so that the understanding of the definition of competence management takes place more naturally. Ociecek, Sapeta and Prym (2009) define competence man-

agement as actions taken by Organizations, with the objective of guaranteeing knowledge, experiences and skills in order to allow the vision of the whole company, implement strategies and organizational goals. It can then be identified that competence is attributed to the individual and competence management should be promoted by the organization.

Therefore, the organizational competence consists in the mobilization of resources and their application will appear as a result in performance. In this way, the main role of the management of competencies is to ensure that performance improves with respect to employees and employers and their actions. The organization needs to have some important goals in its focus, by starting a competence management process, such as: defining work standards appropriate to the positions, adherence to the selection of employees and managers for the positions, preparing the employees for present and future tasks, increasing the value of the company through the growth of human resources, maximum utilization of employees' strengths, minimizing their weaknesses, as well as increasing the level of employee satisfaction and their positions in the labor market.

Competence, both organizational and individual, is only acquired with knowledge enabled by the process of continuous learning (Duarte and Da Costa Santos, 2011). Increasingly, knowledge is perceived as fundamental to organizational competence (Sanchez and Heene, 1997), and was defined by Sanchez, Heene and Thomas (1996) as the ability to sustain the coordinated development of assets and capabilities, in order to help the organization to achieve its goals.

Prahalad and Hamel (1990) developed the concept of core competencies and according to them, the core competencies of the firm are the roots of competitiveness and can be considered as resources of the firm, which when shared and integrated, would be establishing its core competencies. Prahalad and Hamel (1990) argue that the capabilities portfolio of an organization is its greatest competitive advantage and, therefore, the corporate identity should be developed based on them. At the same time, they explain that core competencies should not supplant a product / market perspective but complement it. Thus, for these authors the competitive advantage results from organizational competencies built throughout a collective learning process of the organization and cannot be copied and become the foundation for the development of new business.

2.3.2 Innovation

In the Strategic Management literature, Drucker (1994) already mentioned the importance of innovation as one of the essential functions for the company to achieve its main goal: the customer. If these studies are not recent, one difficulty is to define innovation, since it can oc-

cur, according to Kimberly and Evanisko (1981), in relation to the product, the technological process, the administrative structure or the administration program, bringing to production process new techniques, products or technologies in order to have the competitive advantage.

Tidd, Bessant and Pavit (2003) point out that innovation is a beneficial change for the organization, a fundamental condition for companies to realign their competitiveness for sustainable success. Innovation must be effectively deployed in an enabling environment (Damanpour, 1991). However, some obstacles may occur during the process of implementing innovation, according to Nadler, Tushman and Nadler (1997), such as the fear of risk, paperwork, corporate culture and its complex hierarchies and internal rivalries.

The innovation also renews tools and techniques to measure the processes of creation, use and transfer of knowledge, factors that eventually lead companies to stand out and produce the competitive advantage (Lastres, Cassiolato and Arroio, 2005). But the process of innovation also requires, according to Guzmán, Barbosa, Rodrigues & Scianni (2005), the transfer of organizational knowledge. It is also fundamental to have an environment that is conducive to the implementation of innovation processes, with the involvement and commitment of the entire firm (Dutton, Ashford, O'Neill, Hayes and Wierba, 1997).

Ferraz, Kupfer & Haguenaer (1995), point out that the innovation process has been one of the most used indicators to evaluate competitiveness, since its results are linked to the capacity to follow the changes and the development of the market, as well as the Creation and occupation of new markets - an increasingly dynamic process. Kandybin (2004) sees the innovation process on the concepts of the value chain, (Teboul, 1999). For him, the process of innovation runs parallel to the links of the value chain of innovation. It advocates the use of search along the chain, allows feedbacks, and has a high degree of relationship with agents outside the company. Each link in this chain of activities is linked to the next.

Knowledge, through innovation, must be transmuted into a competitive differential, so that there is a significant advantage that leads to the growth of the company. It is necessary to make "highly productive use of any and all acquired knowledge" (Drucker, 1994:144). Thus, in order to effectively implement Innovation Management, the main and most important tool is Knowledge Management, which has practices that help the company to deal with the limitations of innovation caused by internal obstacles to organizations and to improve the capacity response to effective and targeted measures to gain competitive advantage (Hull, Coombs

& Peltu, 2000). Thus, the creation of organizational knowledge becomes the basis of innovation, continuous and incremental.

3 Methods

This topic will be addressed through qualitative research, reviewing, analyzing, and discussing existing concepts and researches already published. The choice of method was to deepen the understanding about knowledge management, building understanding on the subject that is the subject of constant conceptual reviews in several areas, and also about its relation with sustainable competitive advantage, in order to contribute in the theoretical constructions on the relation of these in the integration between the constructs competences, resources and innovation.

Knowledge managers will only be able to develop actions and strategies to obtain and maintain competitive advantage, when they can deepen the understanding on the issues related to the management of organizational knowledge and its articulation with competences and innovations. Therefore, this research inserts itself in this conceptual gap, trying to contribute in the understanding of how the knowledge management can articulate the constructs competences and innovation, in an organization, in order to promote the sustainable competitive advantage.

In order to answer this research question, a Knowledge Management model was proposed. This model assists the administration of knowledge management in an articulated way: identifying the individual and organizational competencies that a company needs to have and develop, promoting constant and systematized innovation of products and processes, and developing, improving or acquiring the resources necessary to reach the organizational goals and respective business sustainability.

It will be discussed below the articulation of the constructs innovation and competences with the knowledge management with reflections related to their relations and mutual impacts.

4 Results analysis

The knowledge-based business vision can be considered one of the most significant actions of strategic management, at a time when the production of knowledge has become the driving force of the economy for companies. This approach presupposes, as far as business competitiveness is concerned, that companies have different types of knowledge, and that each can provide the basis for a competitive advantage. According to Terra (2001) Knowledge Management uses and combines different sources and types of organiza-

tional knowledge aiming at the development of new skills to leverage the capacity to innovate.

It is at the discretion of the company to act as an organizing agent of the knowledge that exists within it, making it applicable and generating new knowledge, performing this task in a way that is superior to the competition, according to Nonaka and Takeuchi (1997). Organizations need to know how to integrate the acquired knowledge in an articulated way to the competences and the organizational innovations, in order to obtain a satisfactory and lasting performance that will give rise to the sustainable competitive advantage, as can be verified in Figure 1.

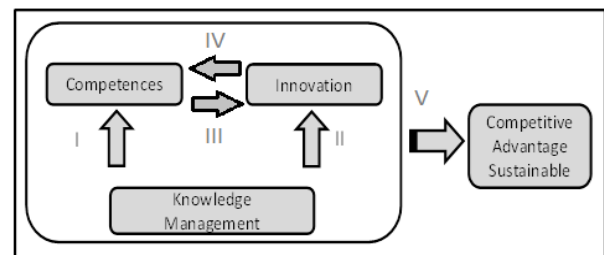


Figure 1: Systematized model of knowledge management performance

Source: Prepared by the authors, 2017.

According to the considerations made so far, it can be seen how it is opportune to present the relationship of knowledge management with the constructs competencies and innovation, as well as with the resultant of the model, the sustainable competitive advantage, according to Figure 1 and the following developments.

4.1 Knowledge Management and Competences

The implementation of the management of competences, in the middle of a project of Knowledge, brings significant results to organizations, directly improving the performance and results of these companies.

From the perspective of sustainable competition, companies should promote knowledge creation and best practices, through the creation of distinctive competencies, and also in the transfer of these competences, for the whole organization, with the purpose of improving the business, as represented by the digit I in Figure 1. It is observed that the competition between companies in this new market context depends on their knowledge and competence. For this reason, the creation of knowledge must be built into the organization, within a framework of renewal and mutual sharing of ideas between employees and the organization itself.

In this way, the competitive market (Ociecek, Sapeta & Prym, 2009), where organizations must take actions aiming at guaranteeing knowledge, experiences and skills, allows the realization of the company's vision,

realization of strategies and achievement of organizational goals in order to generate value. Doing this differently from other players and on an ongoing basis will ensure the sustainability of your decisions. Kochanski (1997) argues that knowledge management involves the identification of competencies that distinguish high performance from medium performance.

Dos Santos (2001) states that competence is not a state or a knowledge one has and is not the result of training. Competence is to put into practice what is known in a given context, that is, it is applied knowledge that generates ability to produce results.

Guzmán, Barbosa, Rodrigues and Scianni (2005) corroborate with the model proposed in Figure 1 when they define the management of competences as organizational knowledge and conclude that there is a need for greater articulation of management tools, such as change management, knowledge management and skills management, to improve results in a dynamic organization. Therefore, the dynamic ability to manage the knowledge resource is defined by Teece, Pisano and Shuen (1997) as unique for each organization and can be considered a source of competitive advantage and superior performance.

Knowledge management, in its turn, serves the purpose of creating a continuous learning environment so that the management of the competences becomes a reality. Dixon (2000) states that organizational learning from the execution of tasks develops in cycles. During the execution of the same, the generated knowledge, the product of an activity, must be incorporated to the organizational competences to ensure that a new execution of the same task happens with a greater degree of expertise. This does not mean that to manage competence it is necessary to manage knowledge, but the management of knowledge creates the psychological environment conducive to it.

In this way, KM, in applying its practices, enables the dynamization of the knowledge formation cycle, making its execution systematic and continuous, promoting an uninterrupted cycle of applied knowledge generation, which in turn will develop the individual competences, the team and consequently of the organization as a whole taking it quickly to levels of superior performance and gaining competitive advantage.

4.2 Knowledge Management and Innovation

Organizations need to be prepared to learn how to create the new and abandon the knowledge that has become obsolete through the continuous improvement of all activities; the development of new applications, from their own successes and failures, and systematizing continuous innovation as an organized process. Knowledge management advocates the use of employ-

ees intellectual assets, aiming at the development and innovation of organizations, products and services (Valentim, 2008; Rodriguez, 2010).

The creation of knowledge leads to continuous innovation, as represented by digit II in Figure 1, which in turn leads to competitive advantages, however, what will determine the success of the company in this process of knowledge transformation, existing in people, in actions that differentiate it from its competitors, is its effectiveness in fostering innovations in processes, products and / or services. The innovation of the product includes the change of the existing product, promoting greater efficiency and performance. The innovations of processes are assigned to forms of technologically new operation, impacting positively on the performance of the Organization (Tigre, 2006), and can improve the quality and efficiency of work, sharing and using knowledge redefine the entrepreneurial capacity to learn (Oslo Manual, 1997), the organizational innovation has a major impact on the performance of the Organization. The successful companies are those that consistently create new knowledge, able to spread them by the Organization, and incorporate them into new products and technologies (Choo, 2006; Takeuchi and Nonaka, 2008; Rodriguez, 2010).

Companies that do not change what they offer to the market, whether it is service or product, take the risk of being surpassed by others who do (Bessant and Tidd, 2009). Freeman (1995) argues that an information-intensive society, but without knowledge or ability to learn, would be chaotic and unmanageable. However, real competition does not take place between companies producing the same products, but between companies looking for innovation, seeking to create new products, rethinking their processes, promoting so-called "creative destruction" (Schumpeter, 1981). In this, consumers start to want and consume the new products and stop consuming the old products.

Competitive advantage can occur through innovation to promote business sustainability. Nonaka and Takeuchi (1997) relate the creation of knowledge with continuous innovation and competitive advantage. They argue that the key to nurturing innovation in a continuous, incremental, and spiraling way is the creation of organizational knowledge, which is understood as the ability of a company to create new knowledge, to disseminate it in the organization as a whole and to incorporate its products, services and systems. According to them, such creation brings forth continuous innovation that provides competitive advantage. Some authors (Von Krogh, Ichijo & Nonaka, 2000) point out that the creation of knowledge is the most important source of innovation in any organization, and that there seems to be a strong relationship between innovation and tacit

knowledge, and in general, this kind of knowledge represents its source of competitive advantage.

But the challenge would not even be the innovation of the product or process itself, but the management of innovation in organizations and the innovation of management itself. Therefore, innovation management is complex, mainly because it involves different management processes, such as knowledge management and the transfer of organizational knowledge.

4.3 Articulation amongst the constructs Competence and Innovation

A conducive environment for the development of creativity - that generates innovation - can be provided by the application of innovation, which consists of the motivation and coordination of people to develop and implement ideas by engaging in transactions (or relationships) with others and making the necessary adaptations to achieve the desired results within an institutional and organizational context (Van de Ven, Angle & Poole, 2000). However, the innovation process depends on both creative ideas and technical skills, such as the company's workforce, tacit knowledge of the company, market information and customers. This refers to the joint relationship between competence and innovation constructs.

The simultaneous articulation between competence and innovation is represented in Figure 1 by the digit III and IV. The competence and innovation relationship (digit III) occurs when the individual and/or organizational competencies promote innovation in a product, service and / or process, either in an informal process of continuous improvement, or in a formal internal research and development process or as well as in creating new organizational or even individual competencies to deal with the innovations of products, services and/or processes created. Thus, the company motivated to innovate, promotes an arrangement of individual and/or organizational skills that result in the innovations offered to the market.

On the other hand, the relationship between innovation and competencies (digit IV) represents the fact that the innovations disseminated, assimilated and/or developed require the creation of organizational competences that did not exist previously, since the new services, products and processes have an impact on individuals in a process of evolutionary or adaptive change, requiring the development of new individual competencies and, consequently, new organizational skills are created against innovation. In this way, new competencies in the organizational environment are developed as a result of systematic processes of training and learning, given the innovations undertaken by the organization.

In this context, knowledge management can be considered as the basis for generating competencies and innovations in order to create sustainability, that is, to design, develop and exploit products, processes and / or services to support and expand the functions and objectives of the business, supporting the coordinated development of assets and capabilities and can become a durable source of competitive advantage if organizational resources are well protected by creating barriers to imitation.

The result of the good articulation between innovation and competencies in an organization would be measured, then, in the sustainable competitive advantages achieved by the organization. The effectiveness of the articulation of these practices should then be measured, accompanied by organizational performance, in order to develop an organizational learning and feedback system for continuous improvement through the lessons learned in the management of each of these subjects and the whole as one all.

4.4 The Competitive Advantage Sustainable as resultant

The result of the balance between the constructs competences and innovation interactions with knowledge management establishes the level of impact on sustainable competitive advantage, a relationship identified by the digit V in Figure 1. Inserted in this context is that innovation emerges as an enabler of factors promoting superior performance through the creation of diversified knowledge and differentiated opportunity for organizational performance, knowing that an innovative organization "is the one that introduces novelties of any kind on a systematic basis and harvests the expected results" (Barbieri, 2007:88).

It should be noted that the expression "systematic bases" means the implementation of innovations with autonomy, intentionality and proactivity (Barbieri & Andreassi, 2010). However, innovation can be considered as an essential element of an organization's operations, which presupposes that it continually develops tangible and intangible resources to innovate permanently. The development of these resources comes from the improvement of the organizational competences insofar as they enable greater attention and concentration of forces, and it is fundamental for the company to understand how the competencies develop along the trajectory of the organization, thus directing efforts to deepen its composition and the relations established with internal and external sources of knowledge. The generation of value becomes the main focus of the close relationship established between organizational competencies and innovations in order to contribute to the achievement of the company's sustainable development.

However, the convergence of articulations between the constructs competence and innovation in results can be made somewhat complex, due to the constant endogenous and exogenous changes, causing the need for constant monitoring. Promoting alignments between constructs and discovering opportunities may occur through the measurement of performance results and comparison between expected and current performance. The creation of appropriate strategies and organizational mobilization for the implementation of knowledge management will certainly promote superior results, through the management of the flow of knowledge within the organization, that is, creation, sharing, dissemination, application and control, making the processes of organizational management and decision making accurate, responsible and effective.

Organizations, when managing the incorporation of new knowledge and personal experiences and by stimulating the spread of learning as one of its main assets are positively contributing to its performance. Knowledge Management is therefore linked to the ability of companies to use and combine the various sources and types of organizational knowledge to develop specific skills and innovative capacity that translate into sustainability in business.

Thus, knowledge management can lead the organization to advance its competitors by creating a sustainable competitive advantage over its peers, by detecting points that lead to innovation, by creating value that remains exclusive despite attempts at imitation by competitors, in order to position itself ahead of its competitors.

5 Final considerations

The continuous changes in the competitive scenario motivate the search of new strategies by the companies, in order to guarantee their permanence in the market in a different level. This paper aimed to demonstrate the importance of knowledge management practices as a promoter of sustainable competitive advantage through the articulation of the constructs competences and innovation, considering their influence and operability in the organizational context.

For this, this article of theoretical character carried out a brief review of the specialized literature in the field of Knowledge Management, presenting the main concepts, theories and approaches and also on the relation with the sustainable competitive advantage. In order to contribute to the theoretical constructions on their relation in the integration between the constructs competences and innovation, a systematized model of knowledge management was proposed.

Through the theoretical review carried out, it can be seen that the creation of strategies and the organiza-

tional mobilization for the occurrence of knowledge management is what will increasingly differentiate the competitiveness between companies. Sustainable competitive advantage depends on the knowledge they create and mobilize. The identification and use of appropriate tools and methodologies is fundamental to manage the flow of knowledge within the organization and direct it, providing a conducive environment to its creation, sharing, dissemination, application and control, making the processes of organizational management and decision-making precise and responsible. However, for this to be possible, it is imperative that organizations propitiate the transition from tacit to explicit knowledge, valuing individual experiences, making them collective in a process of learning and incorporating continuous innovations at all levels.

It has also been found that the key for formulating differentiated strategies is to understand the relationships between competencies, innovations, competitive advantage and knowledge management - in particular, an understanding of the mechanisms by which competitive advantage can be sustained over time - in particular, an understanding of the mechanisms by which competitive advantage can be sustained over time. Understanding endogenous and exogenous conditions becomes paramount to detect opportunities for action. The need for a systematized and specific methodology to the reality of each organization, capable of administrate the Knowledge Management in a structured way: identifying the necessary individual and organizational competences that the company needs to have and develop; promoting constant and systematic innovation of products and processes and respective sustainability of the business, as presented in the Figure 1 model.

For all this, knowledge Management needs to be seen as a systematically structured to: facilitate the usable knowledge in the work processes, increase the value of what is offered in the market; disseminate innovation and ensure the development of individuals and organizations. Instead of the existence of isolated feuds of knowledge, management allows the construction of integrated and lasting relationships, where the knowledge generated is disseminated, shared, applied and managed by the company, being incorporated in processes, technologies and products.

It is also important to understand that the management of innovation in the organization and the management of competences are processes supported by Knowledge Management and that their effectiveness should be measured in the organizational performance to verify their impact on the results and on the competitive advantage obtained. Soon, institutionalizes a new logic for generation of promising results in which the competence and innovation go together, subsidized by knowledge management. Future work is advised to

identify the real applicability of the model proposed in this study, since this article was limited to the bibliographic revision and proposition of the model.

References

- Andreeva, T. E.; Chayka, V. A. (2006). Dynamic capabilities: what they need to be dynamic? // [Working Paper, 10 (E)] St. Petersburg State University, São Petersburgo.
- Angeloni, M. T. (2002). Organizações do conhecimento: infraestrutura, pessoas e tecnologias. Saraiva, São Paulo, 2002.
- Barbieri, J. C. Organizações inovadoras sustentáveis. (2007). // Barbieri, J. C.; Simantob, M. Organizações inovadoras sustentáveis: uma reflexão sobre o futuro das organizações. São Paulo, Atlas, 2007.
- Barbieri, J. C.; de Vasconcelos, I. F. G.; Andreassi, T., & de Vasconcelos, F. C. (2010). Inovação e sustentabilidade: novos modelos e proposições/Innovation and sustainability: new models and propositions/Innovación y sostenibilidad: nuevos modelos y proposiciones. // Revista de Administração de Empresas, 50:2 (2010) 146.
- Barbosa, R. R. (2008). Gestão da informação e do conhecimento: origens, polêmicas e perspectivas. // Informação & Informação, Londrina 3: Esp (2008) 1-25.
- Barney, J. (1991). Firm resources and sustained competitive advantage. // Journal of management, 17: (1991) 99-120.
- Barney, J. B.; Clark, D. N. (2007). Resource-based theory: Creating and sustaining competitive advantage. Oxford University Press on Demand, 2007.
- Bessant, J.; Tidd, J. (2009). Inovação e empreendedorismo: administração. Bookman Editora, Porto Alegre, 2009.
- Bierly, P.; Chakrabarti, A. (1996). Generic knowledge strategies in the US pharmaceutical industry. Strategic management journal, 17: S2 (1996) 123-135.
- Brandão, H. P.; Guimarães, T. D. A. (2001). Gestão de Competências e Gestão de Desempenho: tecnologias distintas ou instrumentos de um mesmo construto? // Revista de Administração de empresas 41:1 (2001) 8-15.
- Cantwell, J. (2005). Innovation and competitiveness. The Oxford handbook of innovation, 2005. 543-567.
- Choo, C. W. (1998). The Knowing Organization. Oxford: Oxford University Press, 1998.
- Choo, C. W. (2003). A organização do conhecimento: como as organizações usam a informação para criar significado, construir conhecimento e tomar decisões. Senac São Paulo, 2003.
- Choo, C. W. (2006). A Organização do Conhecimento. Editora Senac, São Paulo, 2006.
- Collis, D. J. (1994). Research note: how valuable are organizational capabilities? // Strategic management journal 15:S1 (1994) 143-152.
- Collis, D. J.; Montgomery, C. A. (1995). Competing on Resources: Strategy in the 1990s. Harvard Business Review, Jul./Aug, 1995.
- Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. Academy of management journal, 34:3 (1991) 555-590.
- Davenport, T. H.; Jarvenpaa, S. L.; Beers, M. C. (1996). Improving knowledge work processes. MIT Sloan Management Review 37:4 (1996) 53.
- Davenport, T. H.; Prusak L. (1998). Conhecimento Empresarial: como as organizações gerenciam seu capital intelectual. Campus, Rio de Janeiro, 1998.
- Dieng-Kuntz, R. (2011). Corporate Semantic Webs. // Schwartz, D., (Ed.). Encyclopedia of knowledge management. Hershey: Idea Group Publishing, 2006.
- Dixon, Nancy M. (2000). Common knowledge: How companies thrive by sharing what they know. Harvard Business School Press, 2000.
- Santos, E. M. (2001). Aprisionamento tecnológico: novos desafios da gestão das estratégias organizacionais na era da informação. // REGE Revista de Gestão, 8:1 (2001).
- Dalkir, K. (2005) Knowledge management in theory and practice. Elsevier, Oxford, 2005.
- Drucker, P. (1994). Sociedade pós-capitalista. Pioneira, São Paulo, 1994.
- Duarte, E. N.; Costa Santos, M. L. (2011). O Conhecimento na administração estratégica. // Perspectivas em Gestão & Conhecimento 1:1 (2011) 15-24.
- Durand, T. (1998). Forms of incompetence. // Proceedings Fourth International Conference on Competence-Based Management. Oslo: Norwegian School of Management, June, 1998.
- Dutra, J. S.; Hipólito, J. A. M.; Silva, C. M. (1998). Gestão de pessoas por competências: o caso de uma empresa do setor de telecomunicações. // Encontro da Associação Nacional dos Programas de Pós-Graduação em Administração, 22. Anais Foz Iguaçu: ANPAD, 1998.
- Dutton, J. E.; Ashford, S. J.; O'Neill, R. M., Hayes, E.; Wierba, E. E. (1997). Reading the wind: How middle managers assess the context for selling issues to top managers. // Strategic management journal, 18:5 (1997) 407-423.
- Eboli, M. (2004). Educação corporativa no Brasil: mitos e verdades. Editora Gente, São Paulo, 2004.
- Ferraz, J. C.; Kupfer, D.; Haguenaer, L. (1995). Made in Brazil: desafios competitivos para a indústria. Campus, Rio de Janeiro, 1995.
- Fleury, A.; Fleury, M. T. L. (2000). Estratégias empresariais e formação de competências. Atlas, São Paulo, 2000.
- Freeman, C. (1995). Information highways and social change. Mimeo, IDRC, 1995.
- Ghemawat, P. (1986). Sustainable advantage. Harvard business review, 64:5 (1986) 53-58.
- Grant, R. M. (1991). The resource-based theory of competitive advantage: implications for strategy formulation. // California Management Review 33:3 (1991) 114-135.
- Guzmán, G. A.; Barbosa, A. C. Q.; Rodrigues, M. A.; Scianni, M. A. (2005). Competence Management as Organizational Knowledge Transfer Process. // Proceedings of the International Research Conference on Quality, Innovation and Knowledge Management, 7, Malasya.
- Heisig, P. (2009). Harmonisation of knowledge management – comparing 160 KM frameworks around the globe. Journal of Knowledge Management 13: 4 (2009) 4-31.
- Hirschey, M.; Wichern, D. W. (1984). Accounting and market-value measures of profitability: Consistency, determinants, and uses. // Journal of Business & Economic Statistics, 2:4 (1984) 375-383.
- Hull, R.; Coombs, R.; Peltu, M. (2000). Knowledge management practices for innovation: an audit tool for improvement.

- // International Journal of Technology Management, 20:5/8 (2000) 633-656.
- Kandybin, A.; Kihn, M. (2004). Raising your return on innovation investment. // *Strategy-H Business* 35 (2004) 38-49
- Kimberly, J. R.; Evanisko, M. J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. *Academy of management journal*, 24:4 (1981) 689-713.
- Kochanski, J. (1997). Competency-based management. *Training & Development*, 51(10), 40-45.
- Kotler, P.; Keller, K. L.; Armstrong, G. (1998) *Princípios de Marketing*. 7 ed. LTC – Livros Técnicos e Científicos Editora S.A, Rio de Janeiro (1998).
- Kretzer, J.; Menezes, E. A. (2009). A importância da visão baseada em recursos na explicação da vantagem competitiva. // *Revista de economia mackenzie*, 4:4 (2009).
- Lacombe, F. J. M. (2005). *Recursos humanos: princípios e tendências*. Saraiva, São Paulo, 2005.
- Lastres, H. M.; Cassiolato, J. E.; Arroio, A. (2005). *Conhecimento, sistemas de inovação e desenvolvimento*. UFRJ, Rio de Janeiro, 2005
- Levy-Leboyer, C.; Prieto, J. M. (1997). *Gestión de las competencias*. Gestión, Barcelona, 2000.
- Manual de Oslo. (1997). Diretrizes para coleta e interpretação de dados sobre inovação, 3ª edição, 1997. <http://www.finep.gov.br/images/apoio-e-financiamento/manualoslo.pdf>. (14/09/2017).
- Miller, C. C.; Cardinal, L. B. (1994). Strategic planning and firm performance: A synthesis of more than two decades of research. *Academy of management journal*, 37:6 (1994) 1649-1665.
- Moresi, E. A. D. (2001). *Gestão da informação e do conhecimento. Inteligência organizacional e competitiva*. Editora Universidade de Brasília, 111-142.
- Nadler, D.; Tushman, M.; Nadler, M. B. (1997). *Competing by design: The power of organizational architecture*. Oxford University Press, 1997.
- Nonaka, I.; Takeuchi, H. (1997). *Criação de conhecimento na empresa: como as empresas japonesas geram a dinâmica da inovação*. Campus, Rio de Janeiro, 1997.
- Ocieczek, W.; Sapeta, J.; Prym, C. S. E. (2009). Competence Based Management. // *Zeszyty Naukowe Wyższej Szkoły Humanitas. Zarządzanie* 1 (2009) 56-63.
- Polanyi, M. (1966). *The Tacit Dimension*, New York; dt. (1985): *Implizites Wissen*, Frankfurt a. M.: Suhrkamp, 1966.
- Porter, M. E. (1985). *Competitive advantage: creating and sustaining superior performance*. FreePress, New York, 1985.
- Porter, M. E. (1991). *Estratégia competitiva: técnicas para análise de indústrias e da concorrência*. Campus, Rio de Janeiro, 1991.
- Porter, M. E. (1998). *Como as forças competitivas moldam a estratégia. Estratégia: a busca da vantagem competitiva*. Campus, Rio de Janeiro, 1998, 11-27.
- Prahalad, C. K.; Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review*, 1990. 79-91.
- Rodriguez, M. V. R. (2010). *Gestão do Conhecimento e Inovação nas Empresas*. Qualitymark Editora, Rio de Janeiro, 2010.
- Ropé, F.; Tanguy, L. (1997). *Saberes e competências. O uso de tais noções na escola e na empresa*. Campinas, Papirus, 1997.
- Rubenstein-Montano, B.; Liebowitz, J.; Buchwalter, J.; McCaw, D., Newman, B.; Rebeck, K.; Team, T. K. M. M. (2001). A systems thinking framework for knowledge management. *Decision support systems*, 31:1 (2001) 5-16.
- Salim, J. J. (2001). *Palestra gestão do conhecimento e transformação organizacional*. // *Semana da EQ/UFRJ*, 68, 2001, Rio de Janeiro. Rio de Janeiro: Universidade Federal do Rio de Janeiro.
- Sanchez, R.; Heene, A. (Eds.). (1997). *Strategic learning and knowledge management*. Wiley, Chichester, 1997. 163-187.
- Sanchez, R.; Heene, A.; Thomas, H. (1996). *Towards the theory and practice of competence-based competition*. // *Dynamics of competence-based competition: theory and practice in the new strategic management*. Oxford: Elsevier.
- Schumpeter, J. (1981). *A Teoria do desenvolvimento econômico*. Abril Cultural, São Paulo, 1981. (Coleção Os Economistas).
- Senge, P. M. (1998). *A quinta disciplina: arte e prática da organização que aprende*. Best Seller, 1998.
- Smith, M. E.; Lyles, M. A. (2003). *The Blackwell handbook of organizational learning and knowledge management*. Blackwell, UK, 2003.
- Sparrow, P. R.; Bognanno, M. (1993). Competency requirement forecasting: issues for international selection and assessment. *International journal of selection and assessment*, 1:1 (1993) 50-58.
- Sveiby, K. E. (1999). *A nova riqueza das organizações: gerenciando e avaliando patrimônios de conhecimento*. Atlas, São Paulo, 1999.
- Sveiby, K. (1998). *A nova riqueza das organizações: gerenciando e avaliando patrimônios do conhecimento*. Campus, Rio de Janeiro, 1998.
- Takeuchi, H.; Nonaka I. (2008). *Gestão do Conhecimento*. Bookman, São Paulo, 2008.
- Téboul, J. (1999). *A era dos serviços: uma nova abordagem de gerenciamento*. Qualitymark Editora Ltda, 1999.
- Teece, D. J.; Pisano, G.; Shuen, A. (1997). Dynamic capabilities and strategic management. // *Strategic management journal* (1997) 509-533.
- Terra, J. C. (2001) *Gestão do conhecimento: o grande desafio empresarial: uma abordagem baseada no aprendizado e na criatividade*. Negócio Editora, São Paulo, 2001.
- Tidd, J.; Bessant, J.; Pavitt, K. (2003). *Gestão da inovação: integração das mudanças tecnológicas, de mercado e internacionais*. Lisboa, Monitor, 2003.
- Tigre, P. B. (2006). *Gestão da Inovação. A Economia da Tecnologia no Brasil*. Elsevier Editora, Rio de Janeiro, 2006.
- Valentim, M. L. P. (2008). *Gestão da Informação e do Conhecimento*. Editora Polis, São Paulo, 2008.
- Van de Ven, A. H.; Angle, H. L.; Poole, M. S. (Eds.). (2000). *Research on the management of innovation: The Minnesota studies*. Oxford University Press on Demand, 2000.
- Von Krogh, G.; Ichijo, K.; Nonaka, I. (2000). *Enabling knowledge creation: how to unlock the mystery of tacit knowledge and release the power of innovation*. Oxford University Press, New York, 2000.
- Wang, C. L.; Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. // *International journal of management reviews*, 9:1 (2007) 31-51.
- Wenger, E. (1999). *Communities of practice: Learning, meaning, and identity*. Cambridge university press, 1999.

Zarifian, P. (1996). A gestão da e pela competência. Centro Internacional para Educação, Trabalho e Transferência de Tecnologia, Rio de Janeiro, 1996.

Copyright: © 2018 Ribeiro et al. This is an open-access article distributed under the terms of the Creative Commons CC Attribution-ShareAlike (CC BY-SA), which permits use, distribution, and reproduction in any medium, under the identical terms, and provided the original author and source are credited.

Received: 2017-11-05. Accepted: 2018-01-17