How does knowledge management influence innovation and competitiveness?

Alberto Carneiro

Introduction

Management is increasingly aware that knowledge resources are essential to the development of their organizations. Nowadays, the knowledge and the information technology (IT) are critical success factors for strategic formulation. Critical success factors refer to those managerial and organizational constructs that need to be effectively addressed in order to further the likelihood of implementation success. Since industry attractiveness depends on those factors, strategies and their implementation should be supported by a set of informational data and a knowledge development process.

Knowledge is becoming progressively more useful because management is taking into account the value of creativity, which enables the transformation of one form of knowledge to the next. The perception of the existing relationships among several systems elements leads to new interpretations and this means another knowledge level where a new perceived value is generated. This relationship indicates that the innovation highway depends on the knowledge evolution. On the other hand, all the technologies that are present in the activities of the chain value have to be articulated and assisted by an efficient knowledge level. Some of the knowledge involved in the use and improvement of technologies can be written down in detail in procedures manuals and use instructions. Others are tacitly transmitted and learned through practical knowledge. Moreover, the success of technological modifications needs to be supported by more clarified and enhanced knowledge.

With but few exceptions, most firms have had difficulty in developing a viable strategic knowledge system. There are manifold reasons for this, but certainly a major one is the omnibus nature of the sources required. Knowledge may flow into the organization in a continuous but unsystematic manner, probably because the amount of information processing resources varies by level of management activity. The lack of specific system objectives inevitably led to a data bank of enormous magnitude. It is necessary to consider the structure of such a system and to implement it, in accordance with the
organizational functions that use information to realise activities and to decide.

Considering the need to increase managers’ concerns, this work sustains that a set of factors is dramatically useful to justify the relationship between innovation process, competitive advancements and a strategic knowledge management (KM). First, it presents a brief review of the relevant literature on the role of knowledge in the management processes. Second, and in a modelization perspective, we will discuss the relationships among these factors to suggest a better way to deal with human value, to improve KM, and to attain a higher level of competencies. Finally, this article discusses the implications of KM on innovation and competitiveness and presents suggestions for future research.

Knowledge: an organizational asset

What kind of knowledge should organizations develop?

Organizations need to use adequate information to check the status of business activities as well as to make informed business decisions (Martin et al., 1998). According to their tasks, managers must have the adequate information and the ability to analyse and evaluate alternatives in the light of the goal sought. This information comes from different internal and external sources and their credibility is crucial to provide an adequate knowledge (Joyce, 1993).

Managers have to consider that the most valuable human attributes should be developed because they are one of the most important assets of many corporations. To do so, they need to adopt a new KM philosophy, based on search of information and innovative efforts. In this philosophy, managers should distinguish between different levels of knowledge. Initially, everybody can be aware of various facts and use data coming from those sources. This means that knowledge is reduced to a basic level, although each individual already has a professional understanding of his/her role in the organization. In the next phase, knowledge tends to specialisation. The knowledge level and the fields of specialisation will increasingly be taken as standards to measure the companies’ value of their assets. However, without being stimulated, it may stay in a static relation within functional areas, although tasks are performed in a qualified manner. If management is interested in knowledge development, it is necessary to consider that knowledge workers should be included in a dynamic process. This process demands the support of motivation, creativity and the ability to improve an intellectual and comprehensive vision of the relationship between the organization and its environment.

Management should differentiate these levels, because the core of the decision-making process could be severely damaged if they were intended as similar. In fact, knowledge workers (strategists, engineers, technicians, researchers, etc.) are able to offer insights in what concerns problems and/or new situations. In an upper level they can also contribute drastically to include more evident values into the company’s offering in order to generate the client’s preferences. Knowledge workers are the core intellectual competence of many firms. In fact, they dominate their expertise fields and, for example, they know how to optimise the systems software that is relevant to strategic decisions. Knowledge workers create most of the value in some industries. The benefits are immediately visible in some innovative industries, such as software, pharmaceutical, health care, financial services, communications, and consulting. That is, knowledge influences competitiveness.

At this moment, it is necessary to underline a question: can knowledge be seen as a specific value for the organization or is management only using the employees’ brain capacities in a very innocent manner, because they are human resources?

In the past, the returns on investment came predominantly from physical assets like physical products and equipment. Today, knowledge is the main source of another type of assets: intellectual assets. Knowledge levels can be an asset only if they are enhanced and efficiently used. Being so, managers must purposely organize, motivate and control the development of their knowledge workers. These ones are able to provide new solutions in the complex network of organization-client relationships. Owing to technologies, materials, and competitiveness, several industries find themselves in complex scenarios. Knowledge is not the solution, but, in the near future, the intellectual capital will be required to deal with this complexity, and
to support innovation and creativity (Brooking, 1996).

Usually and specially in the context of dynamic industries, higher knowledge levels live near a frequent dissatisfaction and the capacity of questioning what seems to be already understood. The need of search is one of the consequences. In various industries, the search activities can lead to new products and to innovative processes. Undoubtedly, the increasing complexity of research militates in favour of formal institutions like universities and government laboratories. Nevertheless, if KM is able to stimulate and support their commitment, individual innovators may have an important role in the changing process. Moreover, research activities in the business sector tend to be integrated within manufacturing firms (Mowery, 1983) and they can propose incremental innovation.

Considering their missions and strategic objectives, organizations have to define what kind of knowledge will be more important to take care of. Managers should develop the ability to stimulate knowledge workers in order to obtain better effective levels in what concerns the analysis of target markets, technological innovations, and economic trends.

**Knowledge and information technology**

Data and information are used for a variety of purposes in organizations, namely for improving the possibility of increasing knowledge potential. Some information is simply data obtained from the database in its initial stage, which is mainly supported by internal documentation and tacit knowledge. Sophisticated or specific information is included in a management information system. Based on various subsystems of information, KM may use many combinations of factors in accordance with the database system and data that are provided by the users (DeSanctis and Gallupe, 1985).

In general, firms’ search for information can be viewed as part of a process, through which an organization adapts to its external environment in order to survive and to become more competitive. Particularly, organizations look for information about specific activities, such as the purchase of new equipment and launching of new products, to obtain benefits of improved final decisions. Information requirements depend on the nature of each situation and on the need to formulate competitive strategies (Wetherbe, 1991). Building effective information systems is a very important challenge that managers are facing today, but it is necessary to pay attention to the need of comprehensive information systems architecture. A firm and its managers use a variety of approaches to combine, sort, and process the environmental data to produce timely and relevant information for forming, monitoring, evaluating, and modifying strategy. This variety should reach a high integration level in order to be possible to obtain a strategic information system. Knowledge professionals do have a decisive role in this integrative task.

Summarising, aggregating, comparing, or combining various sets of data collected in the environment and from competitors and customers produces other information sets, which are used, for example, to measure performance and report on the financial health of the organization. Knowledge workers are often exposed to incomplete information about new events and modifications, but they also have the option to search for additional information in order to update their knowledge levels (Ozanne et al., 1992; Burke, 1990).

KM is also a question of cultural way of operating in the market. To enable this culture to prevail, IT is needed. Nowadays, IT is assuming a decisive role in KM and is one of the most important tools, which is used to decide, to fight competitors, and to catch target markets. In fact, adequate software can capture and distribute to knowledge workers all the useful information the company has stored over time. Taking this operation as a training process, knowledge workers can integrate several types of data and try to find new solutions for their problem tasks. This is true because they can use information about clients and competitors, technical databases, decision support systems, management models, successful solutions to competitive situations, and access to specialised sources of knowledge. Understanding, interpretation, and the use of IT may enable a possible competitive advantage to be identified and obtained. These three aspects can not be done without specific and organized knowledge of the relationships among hardware, software, processes, and required results. In fact, some equipment replaces human command-and-control procedures,
but knowledge advances have to be used to optimise this equipment utilisation.

Knowledge workers have adequate qualifications to communicate the information that is needed. Information sharing is a very usual practice. However, some of them avoid this communication flow, because they are not able to see the organization as a system, where the global objectives should be accepted as a common value. In some organizations, information sharing should be stimulated, because it is one of the most important tools of creativity and, moreover, intellectual assets, unlike physical assets, increase in value with use.

**Knowledge management: some guidelines**

Management has to analyse in the right time all the environmental elements because they affect the organization performance. Managers must intend to come to the best solution by selecting the alternative that best satisfies goal achievement. The main role of environmental analysis is to detect, monitor, and analyse those current and potential trends and events that will create opportunities or threats to the organization. A number of companies have developed effective means of learning about their environments and, most importantly, have implemented strategic decision systems which allow them to capitalise on opportunities and to defend themselves against threats. These analyses and systems are based on IT and KM.

KM improves the conditions for strategic action by way of appreciating and treating problems and challenges by the company. Strategically, the success of most management decisions depends also on a competitive effort, which includes a deep knowledge of customers’ attitudes and an adequate analysis of the stronger competitors (Curren et al., 1992). This means that managers must learn: weaknesses, strengths and movements of their direct competitors; and how their customers perceive their products. Finally, all these findings should be integrated into a management information system.

Managers should become aware that the great challenge is settled on the efforts to innovate, to exploit technological advances, competitors’ failures, industry opportunities, and the investment in knowledge processes and knowledge workers. In fact, knowledge and knowledge workers can be interpreted as a company’s intellectual capital, and also as a key factor to its sustainable development. According to Kao (1996), some companies are already able to carry out internal knowledge audits in order to quantify the innovative effort for competitive advantage. Most of the times, the intellectual capital is not well recognised and remains largely hidden from the view of financial analysts and executives alike. As a consequence, it is undermanaged. This means that its potential is not entirely used. Top management should focus their attention on these situations because the intellectual capitals of their companies and innovation infrastructure are one of the real sources of future competitiveness (Leonard-Barton, 1995).

It is well known that managers have to face uncertainty, that is, they must make decisions under uncertain conditions, often before all the required data are in. Today, managers must be able to embed more knowledge-value in their decisions. Doing so, they will become much more prepared to come out with a new improved and even better alternative before their competitors. Knowledge workers may help in these situations. In fact, they are adequately able to deal with information and present hypotheses and proposals. Therefore, they can have an efficient role in the reduction of uncertainty. This point of view demands new directions of KM. To stimulate the development of creative skills, management should point out some directions to the most important knowledge workers:

- to be able to define objectives of each task in a systemic network in order to share knowledge and available information with others;
- to increase the level of individual commitment;
- to be entirely aware of the amount of resources (equipment, software, materials, assistance) that they are going to need; and
- to ask for answers, creativity, and innovative solutions.

Management needs to show some interest in the intellectual capital, the crucial importance of creativity, the need to sustain a constant flow of innovation, and the new concept of learning organization.
**Competitiveness and knowledge management**

**Knowledge and the formulation of competitive strategies**

The success of a strategy depends also on a co-ordinated resources management. Resources may be divided into two groups: physical resources (money, equipment, materials, facilities, and time) and conceptual resources (data, information, and knowledge). Managers have to decide how available resources will be distributed throughout their organizations. In fact, the organizational context calls for or demands certain decisions and results. Being a manner of finding a solution for a problem or formulating a strategy to achieve the objectives previously defined, every decision should be based on: an integrated set of information; the knowledge skills of human resources. In what concerns dynamic organizations, KM is a valuable strategic tool, because it can be a key resource for decision making, mainly for the formulation of alternative strategies. KM should be able to combine innovation efforts, updated IT, and knowledge development in order to achieve a set of capabilities to increase competitiveness. In fact, when this combination is adequately managed, the company can formulate competitive strategies, which integrate innovative products and new technological weapons to face its competitors.

Management decision is a very complex process whose evolution integrates several stages. The first step in solving a decision problem is its formulation. In a practical perspective, defining its boundaries and critical components depends on information resources. The analysis of input data needs also a complete and updated understanding of several realities and the capability to find relationships among them. Further, the decisionmaker is able to predict the outcomes because they result from each available alternative. These stages are always based on data, which need to be organized in order to be useful; that is, every management decision must be supported by a set of information because of each situation, the context where it is occurring, and the organization objectives achievement.

In a fast-changing environment, the competitive advantage of many companies is based on the decision to exploit, to develop the power of knowledge development. That is why some corporations try to provide opportunities for personal and professional development and are seeing that they should stimulate knowledge development to formulate competitive strategies. To find out and exploit opportunities, companies need to establish the main orientations of KM in order to enlarge their growing possibilities based on innovation and competitiveness. Managers know that it can be disastrous to enter or compete in an industry without being aware of changing critical success factors that define their target markets, since they play a significant role in determining the likelihood of implementation success or failure. If a firm is entirely aware of the vital importance of these factors, management decisions have to consider a complex background where the knowledge of the clients’ needs and preferences and the competitors’ strategies is decisively important. Practically, this means that a market orientation includes the concept of competitive orientation (Slater and Narver, 1994; Day, 1994, 1990).

In this context, a company can decide its competitive advantage as a function of the capability to generate radical change in its processes and technologies and of the flexibility to adapt its resources to the strategic formulation. For example, if an organization decides to become a fast innovator, managers should co-ordinate the ability to formulate a competitive strategy and to build advantages against competitors. This ability depends on the capacity of speeding up creative operations to generate innovations (Page, 1993).

These considerations are already known and well accepted, but we need to extract from them the logical consequences. A competitive decision should be based on a wide and quite firm support, which shall integrate the different relationships among several types of knowledge. As a consequence, a comprehensive knowledge is the vital ground where competitiveness should be built.

**Increasing competitiveness using knowledge benefits**

According to modern approaches, KM is already considered as a key factor in the organization’s performance, because it deals with different resources that can aid decision makers in many ways (Keen, 1991).
Managers require complete and updated information and, according to their level of activity, they hope to rely on their knowledge workers. Nevertheless, this hope is useless if these experts are not effectively motivated to deepen continuously their levels of knowledge.

Some companies know that the innovation effort and the adoption of new procedures and new technologies may increase competitiveness (Goel and Rich, 1997). This relationship seems to have the following reasons:

- the innovators can be inventors if they are able to manage research and development function (Gilbert, 1995);
- knowledge workers can perceive and deal with what target market accepts or expects as value;
- knowledge development is a fruitful background where incremental innovation may be attempted;
- if a company can use a knowledge-based competitive edge, it is able to defend itself against the aggressive movements of its competitors.

The need for scientific and technical information flow within the firm is well recognised. Knowledge and information derived from data are required for competitive initiatives such as improving customer satisfaction, developing new products and markets, and providing faster response. The link between knowledge and systemic databases should be understood within the context of information resource management (McFadden and Hoffer, 1994). This means that effective decision making requires a rational selection of inter-related data and the possibility of these data being integrated into KM. This orientation can be applied in the strategic planning area, and it presents flexible capabilities. In fact, managers have the possibility of asking for more updated information, using pre-programmed models based on the integrative knowledge of previous situations, considering alternative solutions, and stimulating the construction of innovative proposals.

A KM can lead managers to anticipate problems better and to experiment and innovate. Based on a good KM, managers are more able to analyse and evaluate environmental scenarios, and adequate response alternatives in the light of the global objective previously determined (Dutta and King, 1980). At this point, managers can desire to come to the best solution by selecting the alternative that best satisfies the achievement of global objectives. This means that they are deeply concerned with increasing competitiveness. A primary objective of this orientation in modern business organizations is to contribute to greater efficiency in achieving organizational objectives. To assure this contribution, researchers should reinforce their efforts to explore the relationship between the competitiveness optimisation and the KM optimisation, and also the effectiveness of a KM, which has not been entirely clarified.

**Innovation and knowledge management**

Can knowledge management support innovation? The innovative efforts include the search for, and the discovery, experimentation, and development of new technologies, new products and/or services, new production processes, and new organizational structures. The consequences of these efforts are sometimes seen as a raw material of information industry. New management philosophies are aware that information is the result of knowledge evolution and that a solid network between intellectual effort and technological innovations is enlarging. The innovative efforts are also the right consequence of the investment in knowledge and knowledge workers. If KM is positively influenced by the search of innovations, the investments in the development of new knowledge may propel companies into new business in more rewarding markets.

To achieve better results, innovative efforts have to be strategically combined with a competitive orientation and its consequent movements. This combination depends vitally on the highest level of individual knowledge and on its technological basis. Many companies are taking into account that new technologies and management approaches are changing the traditional perspective of managing intellectual resources.

According to some works (Harari, 1994; Nonaka, 1994; West, 1992), the organizations that are able to stimulate and to improve the knowledge of their human capital
are much more prepared to face today’s rapid changes and to innovate in the domain where they decide to invest and to compete. Managers should recognise that the skills of human resources and the motivation level make possible creative suggestions, different proposals, and research activities to build up innovations. Due to the new insights of KM, a creative knowledge worker can contribute to face the problems that need new kinds of resolution, the situations that demand innovative approaches, and the relationships that can be discovered in the more and more complex markets where companies are operating.

In old times, capital was the company’s most critical and scarcest resource and human attributes were used to contribute decisively to obtain the return of the company’s investment in equipment and plants. Presently, companies are trying to understand and to use a new logic of value, which is founded on its competencies, customers’ evaluation criteria, and competition. It should be underlined that the knowledge development in the fields of technological innovations, specialisation on business processes, and innovative products is the strongest source of competencies. Moreover, all competitive efforts, which come from competitors’ knowledge and innovations, dramatically affect the success of strategies (Gatignon and Robertson, 1993).

Innovation should be viewed as a complex process, which involves a set of investment possibilities. In this investment perspective, knowledge has to be considered as a sort of capital. Owing to this reason, its development process is a managerial concern, because it can lead to the launching of a new product. The success of an innovative product is notoriously connected to research activities and changing orientation. On the other hand, these two elements depend on the development of knowledge levels and the innovative efforts of knowledge workers.

Knowledge development

How to intensify learning involvement
One of the most important objectives of a competitive KM should be to increase frequently the different levels of knowledge. Increasing them implies:

- to straiten the links among the latest advances of IT and the processes of gathering and process information;
- to motivate knowledge development by recognising its importance in companies’ evolution;
- to promote the acquisition of scientific culture, specially in the fields directly connected with the company’s main activities;
- to invest in theoretical courses and practical training;
- to intensify an effort to get updating in industry.

According to the usual characteristics of all learning and experience curves, the knowledge level may grow exponentially if management is able to stimulate the conditions to learn more and to increase experience. Considering the power of these stimuli, which should be integrated into a global human resources policy, management has to define the adequate procedures to enlarge and to deepen knowledge development. Within a scenario of competitive imperatives of speed and considering the need to innovate constantly, learning will be the essential hedge against the possibility of negative consequences. Organizational learning should be seen as one of the most important responsibilities of top management. In fact, organizations may use the individuals’ learning activities and learn through them to create an organizational learning system, which provides the possibility of enhancing the capacity to generate new offering proposals (Coopey, 1995; Sinkula, 1994; Senge, 1990). Some authors consider that an organizational learning includes the ability to increase the understanding level from experience through analysis of problems, experimentation of solutions, and evaluation of results (McGill and Slocum, 1994; McGill et al., 1992).

Organizations’ development needs to have the support of the positive changes in the education and training of the work force. This means that management should stimulate and organize this changing process. In general, there are two main ways that managers have to consider:

(1) updating efforts: scientific and technological knowledge is almost constantly changing and everybody in the organization should be conscious of the state-of-art of their fields of work;
(2) knowledge progresses have to be transformed in a more effective effort in order to obtain better production processes and more competitive technological advances.

Learning involvement could be defined as a state of energy that a knowledge worker experiences in regard to an effort to increase his/her knowledge level (McQuarrie and Munson, 1987). A knowledge worker who is highly involved in learning is likely to expect more abilities to create and to suggest new ideas. A set of adequate information technologies should be foreseen. In fact, at any time during the learning process, errors or imprecision can occur. To avoid their negative consequences, KM should take into account the reliability of the information sources and also the data accuracy. These factors will affect positively the objectives’ achievement.

**Knowledge development as a strategic management instrument**

If management has a true strategic orientation, the knowledge development is a systematic, integrated, and planned approach to improve the effectiveness of intellectual capital of an enterprise (Edvinsson and Malone, 1998). It is designed to solve problems that adversely affect operating efficiency at all levels. Knowledge is one of the branches where development movements can occur to help managers in their decision-making process, to create new responses, and to enable a set of competitive reactions and/or pro-active proposals.

In the last two decades, we have seen a knowledge explosion and a change of the labour force. In fact, knowledge workers are not directly involved in manual activities, but make up a greater proportion of the labour force than ever before. Many companies try to provide an internal environment for experiential learning in which knowledge workers become more and more involved in solving job-related problems. In a quickly changing environment, the organization’s flexibility is one of its key success factors. This flexibility should be strategically combined with knowledge workers’ adaptability and high-quality standards to obtain two types of competition tools:

1. **Sustainable advantages against competitors**;

   (2) capability to offer to the target market new alternatives.

Knowledge development is a sort of response to changes in the external environment and internal situations. It can be adapted to solve problems that negatively affect operating efficiency, including the need to replace obsolete products by new ones. In what concerns knowledge development, the improvement of products (incremental innovation) and process innovation (radical innovation) should be integrated. The aim is to improve the horizontal flow of information, because this flow is a very important tool to understand the relationship between the organization, its clients and its competitors.

To make better decisions, managers have the option to search for more accurate information. One of the most important sources is the knowledge development of their collaborators, because they have been adequately trained to find out what are the new advances of science and technology. Training and motivational measures can be used to leverage professional intellect, but human intellectual capabilities can not be managed as if it was the only goal. In fact, top managers must consider the critical knowledge bases, the intellectual skills, and also the accumulated experience that can be used to increase the organization performance and to support their strategic decisions. Most developments at enterprise level are not possible without changes in education and training of the human resources, namely the intellectual capital. In fact, this capital is focused on innovative effort, on the information about competitors, and on proactive strategic decisions (Prescott and Gibbons, 1993).

In many important complex problems there simply are not enough empirical data to provide a basis for complete analysis. Many aspects of a decision process require personal judgement, that is, the presence of updated knowledge workers. The problem-solving capabilities of knowledge workers lie in education background, professional training, creativity, and motivation. Non-routine processes demand for more skilled workers, because innovative solutions should be found and adapted to market needs. Sometimes, an organization needs to assimilate competitors’ technologies, to imitate them, and, in a benchmarking perspective, to adapt them in
order to obtain specific benefits (reduction of costs, faster capacity to satisfy their market needs). This strategic effort demands a sufficiently motivated intellectual capital. In fact, even people with exceptional talent will not be able to develop potential without the adequate motivation (Twining, 1991).

Moreover, knowledge development should include an effort to integrate the intellectual power of the organization’s human resources. Skills that are integrated according to a systemic perspective are more effective than a set of disconnected and/or uncoordinated talents. The co-ordination of the various abilities and aptitudes may lead to a learning process with a holistic approach. Being so, knowledge workers can learn more, recall information more accurately and use all their resources to build up innovative solutions.

**Influence of KM on competitiveness and innovation**

The influence of KM on management decisions effectiveness should be considered to support and also provide insight into how knowledge workers can contribute to obtain better results. However, management must consider that knowledge is not a simple and unique entity. The commitment to generate new discoveries and a more demanding understanding is not enough. The organizations need to look for the knowledge that is able to add value. Value adding knowledge is very different to an information-mix. This mix can be important, but first it is necessary to find out how the markets perceive the presence of value. These considerations can be taken as a guideline for KM.

There are perhaps an unlimited number of factors that can define management attitudes regarding the role of intellectual capital into organizations’ life. Some managers evaluate significantly this capital as a very important resource that should be used to obtain adequate profits. Therefore this capital should be constantly improved.

As can be seen in Figure 1, a conceptual model of KM is proposed. It emphasises that innovation and competitiveness can be a function of the KM. This model takes into account numerous determinants (determinant factors) of the relationships among various fields. The top portion of the model shows the most common factors that usually define management’s attitudes and deals with the following questions:

- How important is intellectual capital?
- How does management evaluate knowledge development?
- Is training one of the important aspects to be planned?
- Is knowledge considered as a strategic tool?
- Are managers prepared to motivate knowledge development?
- Are managers able to stimulate the potential capacities of their knowledge workers?

KM has to deal with two domains:
1. (1) personal characteristics of each knowledge worker;
2. (2) factors that affect personal development.

The most common factors that affect initially the personal characteristics of a knowledge worker are education level, attitudes and values, innovativeness and creativity (Eagly and Chaiken, 1993; Allen et al., 1992; Mayo and Marks, 1990; Bearden et al., 1986; Hirschman, 1980). Innovativeness is an important factor for supporting innovative efforts and it contributes also to define the personality. However, it is not enough to desire new products or new processes. In fact, an innovation that an enterprise presents into the market may be also due to the creativity of its knowledge workers.

Personal development is directly related to professional experience. Any personal experience may be an information source and a learning situation. As a result from a personal or a managerial decision, training courses may contribute to reawaken previously acquired knowledge and to facilitate the access to a higher knowledge level. The development of each knowledge worker has its own dynamics, which is related with personal objectives. The more demanding the objectives are the more the learning efforts should be intensified.

Nowadays, learning processes and knowledge updating procedures depend on information technology. Moreover, it has a decisive role on knowledge development because competitive advantage can only be maintained by the use of information for innovation (Huffman et al., 1990).

Nowadays, managers have to decide whether they want to obtain better results from their knowledge workers or they prefer
to lose the creative power that they possess in their minds and their professional experience. Managers’ attention must be focused on personal development. To obtain an effective knowledge level, investment in knowledge development is needed. Managers should improve their ability to motivate knowledge workers to attain higher knowledge levels, because the arousal of this set of intellectual needs may be caused by external stimuli. Motivations should be intensified, because they should impel knowledge workers to increase their knowledge levels. This movement will be decisive in terms of innovation and can contribute to a stronger competitiveness. Even when no innovation is possible, an improved knowledge of the market and competitors can lead to more competitive movements. The technical capacities of a modern information technology will help this motivational scheme.

Companies have to find ways to reach knowledge workers’ involvement. A person’s level of involvement plays a role in how much

Figure 1 Influence of KM on innovation and competitiveness
effort is used to learn new subjects or to deepen knowledge. Moreover, this involvement is an adequate condition for information sharing among knowledge workers. Adding IT, creativity and knowledge leads to a particularly potent combination. Managers can obtain impressive results in what concerns the companies’ abilities to innovate if they are able to develop the stimulation of innovative proposals through motivational methods and adequate rewards. The same can be said in what concerns key success factors: managers should practice frequently the stimulation of competitive efforts, provided through utilisation of both existing and new technologies.

This conceptual model intends to interpret the relationship between KM, innovation, and competitiveness. It may contribute to an integrated understanding of the knowledge development process and its influences into the domains where management efforts should be focused.

Conclusions

This article intends to provide insights to a better understanding of KM in what concerns the possibility of influencing innovation and competitiveness. Its considerations provide considerable support for the importance of knowledge workers as a decisive contribution to the strategic enhancement. The implications for managers have been underlined. Regarding these implications, some concluding remarks can be made:

- define methods for measuring the degree of KM effectiveness;
- develop effective strategies for integrating innovative efforts, professional experience, skills, interactive capacities to create value for a company’s competitiveness;
- determine the means to capture, transfer and leverage knowledge effectively;
- let KM enter into strategic decisions concerning the profitability of intellectual assets.

The suggested model also enables us to extend some of the frameworks for understanding managers’ evaluation criteria. This extension to traditional models of management strategic decisions is a direct result of the informational complexities in modern organizations. Consequently, these considerations intend to represent an important step forward in unravelling the KM as an efficient support for innovation and competitiveness relationships.

Directions for further research

Deepening the analysis of managers’ interest on knowledge is critical to understand how KM can contribute to improve strategies’ formulation. Future research should examine the differences among industries, and measure accurately the relative importance of the factors that affect personal characteristics and knowledge development. Because these relations are not fully investigated, we suggest additional studies concerning the industries where knowledge workers have a more defined and important role. Future research on managers’ attitudes facing the linkages between strategic management and human value may have to examine carefully the role of a KM orientation as an effort to support adequately successful strategies.

This discussion contributes to a better understanding of the consequences of a management orientation, which is able to leverage knowledge advances. It is the task of management to improve the types of knowledge that best fit innovative efforts and competitive strategies. If this management orientation is well pursued, the organizations are likely to profit from knowledge development and from their human resources creativity.

References


