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**Social Knowledge**

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INTRODUCTION

With the intensity of globalization world´s economy is experiencing a time of great change. In the transition of the economic environment proactive management of knowledge acquires a central role for the competitiveness of both, companies and the countries. This, however, was not always the common traditional scene. Resources as geographic advantages, access to cheap labor and financial capital, were more important than nowadays.

The "knowledge" resource has been gaining increased importance to business performance. In Brazil, the challenges posed by the relative and recent economic liberalization make the issue of Knowledge Management even more crucial for local companies. The lack of business, local and national, strategies capable to efficiently manage all available resources makes it difficult for organizations in the search for competitiveness and survival to the challenges of international competition (TERRA, 2005).

A deeper look into the national industry illustrates the challenges and needs in changing the way of thinking: the economic model of import substitution, adopted by the early 90's, favored the "learn to operate." The economic liberalization and competition with domestic and foreign companies in developed countries, however, make other ways of learning more relevant and require a reversal in the trend of stagnation in public spending and lack of cooperation between research institutions and the public sector.

As TERRA (2005):

> *"Competitive advantages need to be constantly reinvented in sectors where low-intensity in technology and knowledge lost, inexorably, economic participation. In this context, the challenge of producing more and better is being supplanted by the challenge, permanent, of creating new products, services, processes and management systems. In turn, the high speed of change and growing complexity of challenges do not allow focusing these efforts on a few individuals or areas of organizations. "*

A visible effect on contemporary society and consequence to the high degree of economic competition is the increased level education of the working class who wishes best placements. The acts of public authorities, or by the promotion of ways to educate better the population or by facilitating an economic environment, should also be considered as an important factor in the promotion of Knowledge Management.

These moments in the history of a country represent opportunities to achieve leaps and promotion of virtuous cycles in the generation of knowledge. As LEITE (2006), companies need to reinvent themselves, develop their skills, test different ideas, learn from the environment and pursuit new challenges. To do so, they should adopt styles, structures and management processes that trigger similar processes at the individual level.

It is in this context that is possible to identify that necessary response to the business challenges of today's economy is technology investment in education and Knowledge Management in general.

But Knowledge Management is, however, much more of investing in technology or innovation management. It necessarily involves the understanding of the characteristics and demands of the competitive environment and also by understanding the individual and collective needs associated with processes of creating and learning.

## RESEARCH OBJECTIVES

With the topic importance, a large number of theoretical approaches have been developed. This fact has led to the proposal of different models to analyze the Knowledge Management. This article aims to summarize some of these models, providing the possibility of application in other contexts and scenes.

## THEORETICAL DEVELOPMENT

Many areas of science have dedicated efforts to understand issues related to knowledge and information. In general, they are concerned to study the phenomenon of knowledge and information as they relate to the dynamics in the human mind, the creation of knowledge and its communication as well as their own structures. Sociology, psychology, administration and, above all, information science have been concerned and dedicated to the understanding of issues related to knowledge and information. Even under various interests, all these subjects agree in their understanding of knowledge as capable of transforming the individual, group or society (LEITE, 2006).

Any process of creating and learning involves associations with mental and behavioral models, with clear dependence on external factors such as motivation and relationship between groups. So, Knowledge Management should emphasize the importance of assessment practices and business processes that enable and facilitate the development and dissemination of knowledge in an organization.

These mediators expand the analysis to subjects such as organizational culture, hierarchy, strategy, coordination of information between levels of the company and others. Knowledge Management has a broad character: it is a topic with relevance and application to any company, regardless its sector of activity or character of management.

Knowledge Management can be understood as a step ahead of the Management Information, as follows:

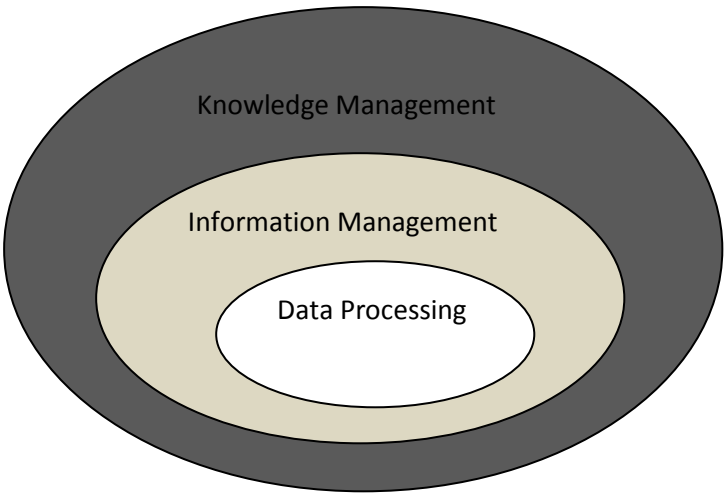


Figure 1: Evolution of data processing to Knowledge Management.

While the information is defined as a flow, knowledge is defined as the combination of information and context in order to base shares (DIAS, 2000).

Thus, Knowledge Management can be defined as:

> *"Way of looking at the organization in search of points of business processes in which knowledge can be used as a competitive advantage"* or as *"A permanent process, articulated and intentional, to support or promote on knowledge the overall performance of the organization"* (SALIM, 2001).

| **Data** | **Information** | **Knowledge** |
|---|---|---|
| Simple observations | Data endowed with relevance and purpose | Valuable information from the human mind. Includes reflection, synthesis and context |
| Easily structured | Requires theoretical framework for analysis | Difficult to structure |
| Easily obtained by machines | It requires consensus on the meaning | Difficult to capture on machines |
| Often quantified | Necessarily requires human mediation | Often tacit |
| Easily transferable | | Difficult to transfer |

Table 1: Classification data x information x knowledge
Source: Adapted from Davenport (1998).

The relationship between knowledge and information resides in the assumption that the first is made as vehicle to input to the second. The process of transforming information into knowledge requires the analysis and assimilation of information. Therefore, it is necessary that an individual has prior knowledge that enables him / her

to recognize and decode the information transferred through a process of communication. This process of incorporating new information to the collection and tacit knowledge is personal and individual. Although not dependent on the technologies, it can be a strong ally (LEITE, 2006).

The data is the raw material of information. It has no meaning until it is given a context. For example, the number 1000 alone is just a number, but when presented in a bank statement (context) it informs us about our money. Using our knowledge about the reading of extracts we absorb information about our financial situation with a particular bank. Our wisdom (or not) will be used in consumer decisions or savings based on the data, information and knowledge we have acquired.

Wise decisions often include access to data and information. However if we do not have the knowledge to understand the data and information, the quality of our decisions is negatively affected.

Knowledge management can be defined as the creation, acquisition, sharing and use of knowledge for the improvement and promotion of organizational performance (Laurie, 1997). Not only the academy, but several companies dealing with the issue by proposing terminology and schemes that represent with a huge reliability and a range of influence factors in Knowledge Management.

Whether through the differentiation of Knowledge Management with the information and raw data or using the relationship between organizational efficiency and quality of management, handling and Knowledge Management have had numerous attempts to outline in the scientific literature (WEN, 2009):

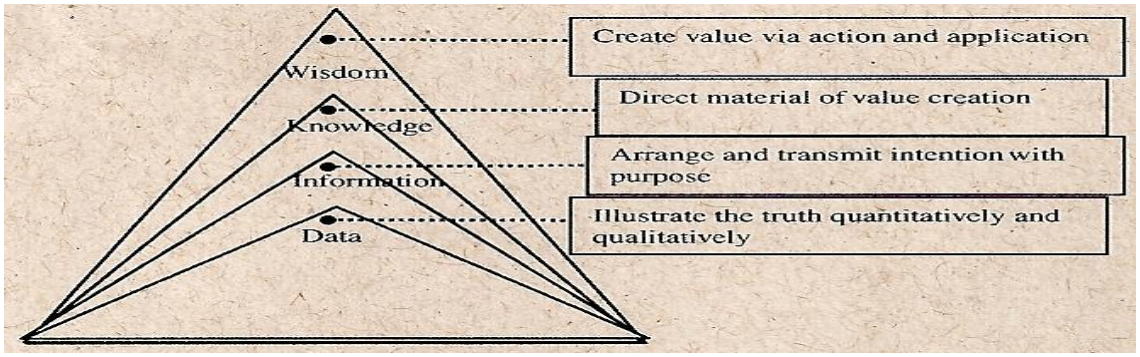


Figure 2: Schematic representation of the relationship between data, information, knowledge and wisdom.

Source: Arthur Andersen (2009), adapted from WEN (2009).

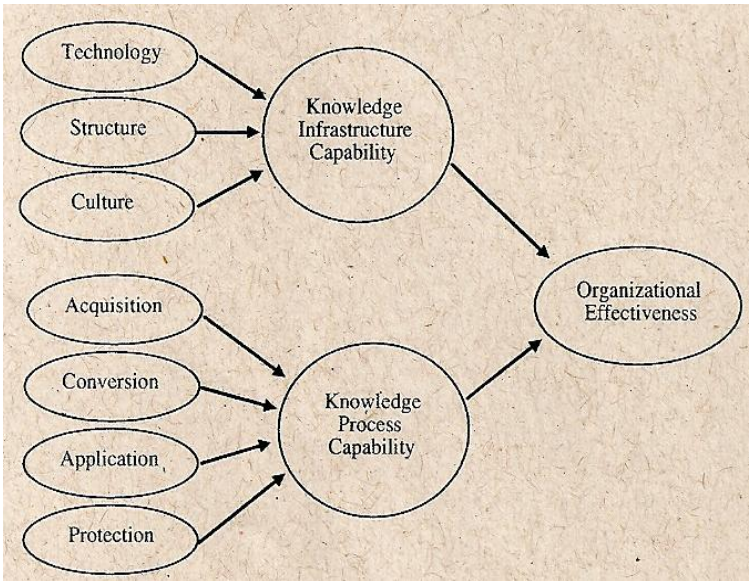


Figure 3: Schematic representation of the knowledge and ability organizational effectiveness.

Source: WEN (2009).

Knowledge Management has received much attention in recent decades, while it predicted that few companies had specific policies for the treatment of this issue (DRUCKER, 1993).

The focus on Knowledge Management has analyzed the issue with assistance of theories of capabilities from RBV - Resource Based View (GRANT, 1996), being the

knowledge assigned as a competence of distinction and difficult imitation by companies that act in the same sector.

With such attention on the subject, knowledge deepened its approach to wider scientific areas, with contributions from economics, philosophy, sociology and others (EARL, 2001). The advance of the theoretical content of a theme leads naturally to questions of practical applications, making clear the difficulty of bringing the concepts developed in the daily life of organizations. This gap is being tackled by the development of models and methods that help executives to understand the variables affecting the best use of the knowledge of their employees (EARL, 2001, LIN, 2007, WEN, 2009).

EARL (2001), through a case study in six companies and data collected from interviews with managers and workshops, offered a summary of seven large schools. In this scheme, each one represents an ideal type, in which the objects of definition are not mutually exclusive: as it is, it is possible to identify more than one type of school in the same company.

The seven schools were divided into three groups: technocratic - based on information in order to facilitate the daily tasks of employees, economic - more commercial focus and exploitation of human capital, and behavioral - prioritizing activities and interaction between employees and managers to create and share the use of knowledge as a resource for the organization.

| SCHOOL | TECHNOCRATIC | | | ECONOMIC | BEHAVIORAL | | |
|---|---|---|---|---|---|---|---|
| **ATTRIBUTE** | **SYSTEMS** | **CARTOGRAPHIC** | **ENGINEERING** | **COMMERCIAL** | **ORGANIZATIONAL** | **SPATIAL** | **STRATEGIC** |
| **FOCUS** | Technology | Maps | Processes | Income | Networks | Space | Mindset |
| **AIM** | Knowledge Bases | Knowledge Directories | Knowledge Flows | Knowledge Assets | Knowledge Pooling | Knowledge Exchange | Knowledge Capabilities |
| **UNIT** | Domain | Enterprise | Activity | Know-how | Communities | Place | Business |
| **IT CONTRIBUTION** | Knowledge based-systems | Profiles and directories on internets | Shared databases | Intellectual asset register and proccessing system | Groupware and intranets | Access and representa - tional tools | Ecletic |
| **"PHILOSOPHY"** | Codification | Connectivity | Capability | Commercialization | Collaboration | Contactivity | Consciousness |

Table 2: Schools of Knowledge Management
Source: EARL (2001)

The system school represents a more traditional approach to knowledge management. Its main idea is to "capture the knowledge of a person or group to make it accessible throughout the organization". The essence of this school and its distinguishing feature of the other proposed classification is the focus on the system, not on interactions among members. The priority of presentation of knowledge to other employees allows them to take advantage of the experience of previous events and to increase the model: knowledge comes not just from theory but from practice. The dependence of the inclusion of new knowledge on superior validation allows the maintenance and respect for hierarchical levels.

The cartographic school performs the mapping of knowledge´s organization and makes its availability in the entire organization. The main concept of this school is to ensure that people or groups with expertise in the organization are accessible to other employees for consulting, discussion or even knowledge exchange. This school

maintains the mapping as a way to encourage the exchange of personal relationships, which would be more effective than just providing knowledge (system school) - the philosophy of recovery of connectivity between people. The role of IT in this program is to promote ways for employees to interact one with another, such as intranets and extranets.

The engineering school has a greater focus on processes, seen as able to enhance people's knowledge: the process performance can be increased by the knowledge applied to daily tasks; the management of processes intensifies the use of knowledge to provide solutions. The general idea is that the existence of a real and practical problem enhances the adoption of knowledge to find solutions. This approach promotes continuous improvement of management. As EARL (2001), learning by experience and ensuring workers access to knowledge improve management processes and performance of the organization as a whole. Instead of giving the tools to do the job, the idea is to give access to knowledge for the implementation and improvement activities. The role of IT in this context is the provision of data processing, tables and logistics to improve the processes involved.

The commercial school acquires this connotation because its major concern is knowledge as an asset of the company, responsible for generating revenue. Thus there is a specific focus on protection against imitation and exploitation of the economic potential of this "active". A clear example of performance of organizations with approaches from this school is the registration and commercialization of patents: the mapping and identification of projects that is not economically feasible to maintain exclusivity and protection versus exploitation of knowledge with high potential returns.

The contribution of IT is superficial in that scene, with more support than fundamental processes.

The organizational school is based on the use and support of the organizational structure or social networks for dissemination and sharing of knowledge. As a community of a specific knowledge, a group of people with specific interests or similar experiences is organized with a specific purpose in the company. With the conclusion of these projects the group promotes the revision of procedures for the results, adding value and knowledge to existing projects. The main purpose is the increase of personal relations and cooperation between employees that detains the knowledge.

The spatial school is an emergencial response to the need to promote knowledge management. That is, the feasibility of combining space and logistics to facilitate the exchange of knowledge. Also labeled as a social school, the school stands to promote the socialization as a channel for exchanging of knowledge. This school has an appeal to improve the organizational environment, where employees leave the coolness of the notification e-mails and talk face to face. There is a greater legitimacy in the hierarchy when identified by the explicit knowledge, not just the name of the official position in the hierarchy.

The last school is called strategic by identifying knowledge as a dimension of competitive strategy. A strategic approach to knowledge management is to promote full (whether the organization or in a specific department) and in an integrated way people, processes and systems for the creation of better products and services. It is the constant search for value creation, where knowledge resources are essential.

The classification of schools allows the development and reflection of what is effectively the management of knowledge. More than a simple application of information technology, it should begin by the difficult task of identifying the real learning needs. In questioning the dimensions shown in Table 2, it´s possible to do the surveys to the formulation of a policy of Knowledge Management. As EARL (2001) it is possible to relate Knowledge Management with business strategies.

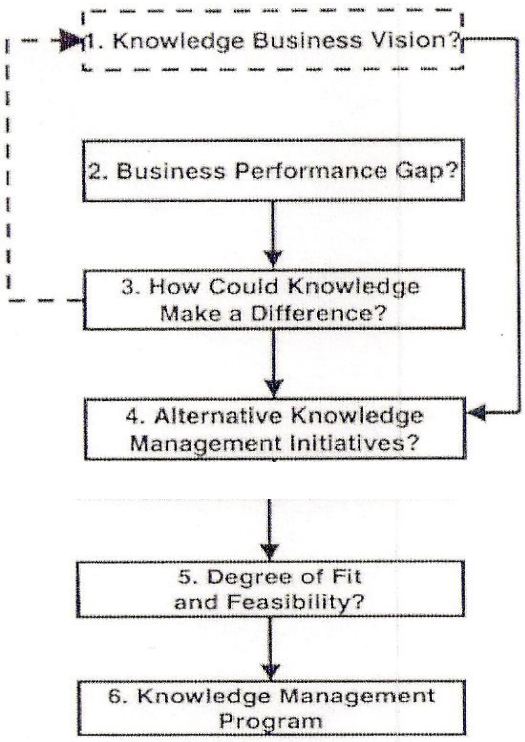


Figure 4: Formulation of strategy for knowledge management
Source: EARL (2001).

The need for creating and maintaining an effective policy for the management of knowledge is intuitive to most managers. The identification of gaps in the promotion and organization of methods for promotion contain the real issues. For the models described above are several ways to do the policy formulation. Such proposals should serve as suggestions and alternatives for developing initial ideas.

After identifying the importance of Knowledge Management for the success or failure of a company evaluating research approaches and models and stages of development emerged. Issues such as determining the time to develop policies, identification of evolutionary stages between different companies and dimensions of the process of Knowledge Management are now part of the issues studied on the subject.

NONAKA & TAKEUCHI (1995) mapped four processes of knowledge conversion: socialization, externalization, combination and internalization. The cases listed involve the transformation of tacit into explicit knowledge and vice versa. Such a model emphasizes the creation of knowledge as a process of sharing, identifying the social activities such as drivers for the promotion of Knowledge Management. BHATT (2001) has identified five steps in the activities of Knowledge Management: creation, validation, formatting, distribution and application. His model covers all activities involving the operational flow of a company - activities involving application of knowledge.

GOLD et. al. (2001) mapped four dimensions, named as follows: knowledge acquisition, knowledge conversion, knowledge application and, finally, protection of knowledge. This model allows complete analysis of organizational capabilities related to Knowledge Management.

- Knowledge acquisition: the process refers to the accumulation of knowledge and its creation from the existing theory. The use of an existing base is fundamental to the effective accumulation (INKPEN & DINUR, 1998). The acquisition can be assessed by the ability of organizational learning (HUBER, 1991).

- Knowledge conversion: represents the step that makes knowledge useful for the organization. This consists of organization, structure and combination of new data and making new knowledge accessible to all employees. Accessibility is also made by eliminating duplication, ensuring consistency and succinct document generation (KANKANHALLI et. al., 2005, DAVENPORT & KLAHR, 1998).

- Knowledge application: stage where the knowledge becomes active and relevant to the procedures of the organization. The application of knowledge helps organizations to improve their innovation performance and cost reduction.

- Knowledge protection: the ability of an organization to protect their knowledge from being used illegally or inappropriately, necessary issue for the maintenance of competitive advantage (PROTER-LIEBSKIND, 1996). This protection can be evaluated from a legal perspective - intellectual property such as trademarks and patents - or for the development and sophistication of IT processes by restricting access to vital knowledge for creating a product or service.

For any model adopted as a reference, the knowledge begins at the individual or small groups. From this point the combination of mechanisms and technology are adopted to disseminate this knowledge throughout the organization (GRANT, 1996).

LIN (2007) evaluated the progress of Knowledge Management in companies seeking greater effectiveness in this field. Through empirical analysis collected from companies the author has deepened the theoretical basis for the diagnosis and changes

in the evolutionary stages of such policies. Knowledge can be explicit or within individuals, making it difficult to verbalize and coding. In this situation knowledge is defined as tacit. In the authors perception Knowledge Management starts with planning and learning capabilities that enable the company to implement management practices. With this development is expected to increase the efficiency of such practices. With the adoption of management tools by various officials, or even other companies, there is the institutionalized form of management developed, facilitating the transfer and exchange of knowledge with partner companies. In this scene described, the management went through three stages: initiation, development and maturity.

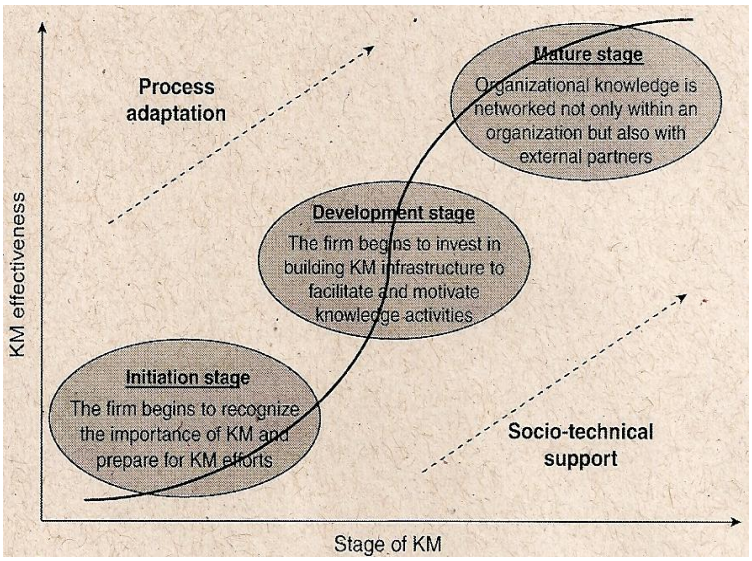


Figure 5: Stages of Knowledge Management.
Source: LIN (2007).

Some studies have been conducted in order to better understand the Knowledge Management in organizations (DAMIANI, 2002). From those studies it is possible to adapt some models proposed and discussed above for the domestic companies. The work in question made empirical basis of questions such as Knowledge Management in

business, technology and tools, objectives and benefits of Knowledge Management and barriers to implementation.

## CONCLUSION AND LIMITATIONS

Knowledge Management had a significant advance in its theory on the recent decades. We can see a lot of work with different models being proposed. This article aimed to produce a summary of some of these models, suggesting possible applications for specific scenes, including where there is already data collection, like some technical reports.

## BIBLIOGRAPHY

ANDREW, HG; ARVIND, M.; SEGARS, AH. Knowledge Management: an organization capabilities perspective. Journal of Management Information System. p.185-214. 2001.

ARTHUR Andersen Business Consulting. Zuka Knowledge Management, Inc. Tokyo Keiso Japan, 2009.

BHATT, GD. Knowledge management in organizations: examining the interactions between technologies, techniques, and people. Journal of Knowledge Management. v.5. p.68-75. 2001.

DAMIANI, W. Knowledge Management. Technical Report: Center for Research and Publications. EAESP / FGV / NPP. 2002.

DAVENPORT, T. Information Ecology: just because the technology is not sufficient for success in the information age. São Paulo: Futura: 1998. 316p.

DAVENPORT, T; KLAHR, P. Managing customer support knowledge. California Management Review. v.40. p.195-208. 1998

DIAS, JM. Grants deployment of strategic information management: a mapping of processes and informational flows in a company in the construction industry. Belo Horizonte: Master's Thesis, School of Information Sciences (Universidade Federal de Minas Gerais), 2000.

DRUCKER, PF. The Post Capitalist Society. Oxford: Butterworth-Heinemann, 1993.

EARL M. Knowledge Management Strategies: Toward a Taxonomy. Journal of Management Information Systems, v.18, n.1. p.215-233. 2001.

GOLD, AH; MALHOTRA, A; SEGARS, AH. Knowledge management: an organizational capabilities perspective. Journal of Management Information Systems. v.18. p.185-214. 2001.

GRANT, RM. Towards a knowledge based theory of the firm. Strategic Management Journal, 17. p.109-122. 1996.

_____ Prospering in dynamically-competitive environments: organizational capability as knowledge integration. Organization Science. v.7. p.375-387. 1996.

HUBER, GP. Organizational Learning: the contributing processes and literatures. Organization Science. v.2 p.88-114. 1991.

INKPEN A; DINUR, A. Knowledge management processes and international joint ventures. Organization Science. v.9 p.454-468. 1998.

KANKANHALLI A, TAN, BCY; WEI, KK. Understanding seeking from electronic knowledge repositories: an empirical study. Journal of the American Society for Information Science and Technology. v.56. p.1156-66. 2005.

LAURIE, J. Harnessing the Power of intellectual capital, Training and Development. p.66-77. 1997.

LEITE, HR. Knowledge Management in the academic context: a proposed conceptual model. Dissertation. Faculty of Economics, Management and Information Sciences. University of Brasilia. 2006.

LIN, H. A stage model of knowledge management: an empirical investigation of process and effectiveness. Journal of Information Science, v.33. p.643-659. 2009

NONAKA, I; TAKEUCHI, H. The knowledge creating company: how Japanese companies create the dynamics of innovation. Oxford University Press. New York. 1995.

PROTER-LIEBSKIND, J. Knowledge, strategy, and the theory of the firm. Strategic Management Journal. v.17. p.93-107. 1996.

SALIM, JJ. *Strategic Direction and Knowledge Management.* An integrated model for the GC. Book for the course Strategic Direction and Knowledge Management, held in October 2001, facsimile.

TERRA, JC. Knowledge Management: The business challenge!; Available at: http://www.pucrs.br/uni/poa/feng/civil/professores/giugliani/Gestao_Biblioteca_Terra_Forum.pdf. 2005.

WEN, Y. Knowledge-Based Systems: An effectiveness measurement model for knowledge management. P.363-367. 2009.