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Knowledge Management Maturity Model in the Interpretativist Perspective

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1. Introduction

Since the last years of the 20th century a strong social revolution has begun; it is a revolution based on information and knowledge, which is driven by the developments in informatics and communications technologies ICT. *"We are entering –or we have already entered– in the knowledge society, in which the basic economic resource ... is the knowledge itself... and where the worker of knowledge will perform a central role"* (Drucker, 1993).

Emerging global economy progressively becomes more distinguished by intensive knowledge enterprises that need specialized workers, exhibiting knowledge that diversify and develop unique competences, and that get involved with the collaboration to create new knowledge for the improvement of the company performance. The ICT's progresses perform an integrating role within these companies as a way for the achievement of the shared learning. These changes have resulted in the need for the improvement of knowledge management, which in turn leads to more changes in the same companies. Different authors (Hedlund, 1994; Nonaka & Takeuchi, 1995; Tenkasi & Boland, 1996; Schultze, 1998; Brown & Duguid, 1998) have proposed categorizations for the knowledge management –KM– approaches, being the most outstanding the *functionalist* and *interpretativist* approaches. In the functionalist approach, the knowledge is considered like an *"static object"* that exists in a number of ways and localizations; in the interpretativist approach, it is considered that knowledge does not exist being independent of human experience, social practice, the knowledge itself and its use, where it is shaped by the social practices of the communities, because it is *"active and dynamic"*.

This work focuses in reviewing, analyzing and presenting a study about the interpretativist perspective, and describing a maturity model to turn operative the knowledge management based on it. The work begins with a discussion of the concept of knowledge management. Later, the current knowledge management perspectives are described; the functionalist and interpretativist. Finally we propose a maturity model to turn operative the knowledge management in the interpretativist perspective.

2. The knowledge

Knowledge definition. In the context of knowledge management this term can be defined in different ways in such a way that it reflects the different research perspectives. Most of the

definitions belong to one of the following categories: 1) it can be defined by means of comparison or relation with data and information (Marshall, 1997; Burton-Jones, 1999; Kanter, 1999); and 2) it can be defined as knowledge *per se*, that is, without any direct relation with data and information (Nonaka & Takeuchi, 1995; OECD, 1996; Rennie, 1999; Davenport & Prusak, 2000).

In the first category it is considered as an entity which is located in an authority level higher than data and information (Stewart, 1997). Data is a set of discrete facts about events (Davenport & Prusak, 2000), while information is *"data provided of relevance and with a purpose"* (Drucker, 1988) that can be created by adding value to data through contextualization, categorization, calculation, correction and condensation (Davenport & Prusak, 2000). Therefore knowledge is described like *"information suitable to be processed"* (O'Dell et al., 1998; Tiwana, 2000), which provides *"the power to act and to take decisions that produces value"* (Kanter, 1999). On the one hand, however, in the real world, it is not always possible to distinguish among knowledge, information and data, because the differences between these terms are simply a matter of degree (Davenport & Prusak, 2000). On the other hand, in accordance with the importance of the knowledge and the knowledge base of individuals, that which is considered as information for some people is interpreted as knowledge by others and vice versa (Bhatt, 2001).

The second category presents the features of knowledge, quality and components, instead of contrasting it with information and data. Therefore, avoid the particular distinction between knowledge and information. An example within this category is Davenport & Prusak (2000), who define knowledge like *"a smoothly mixture with a backdrop which consists of experiences, values, context information and expert's visions, who provide a framework to evaluate and to incorporate new experiences and information"*. Apart from this, knowledge also is defined like a series of *know-what, know-how and know-who* (OECD, 1996; Rennie, 1999), a *"dynamic human process to justify the personal beliefs about truth"* (Nonaka & Takeuchi, 1995) and the result of learning process (Orange et al., 2000).

Knowledge economy. To understand knowledge management is necessary to see the subject within the whole context of the big changes which occur in the global economic framework (Neef, 1999). It is argued that western society entered since the last part of the 20th century in a deep revolution, a second industrial revolution based on the information and does not on the energy, related with the development of the computational sciences (UNESCO, 2005). The economist Fritz Machlup (Checkland & Holwell, 1998) declares that already in 1960 there was an increasing proportion of knowledge workers, and coined in his discussions the sentences *"knowledge industries"*.

Marshall (2008), an ancestor of the neo-classic economy, was one of the first authors that recognized explicitly the importance of the knowledge in the economic issues: *"Capital is formed mostly by knowledge and organization ... and knowledge is our more powerful production tool"*. However, like point out Nonaka & Takeuchi (1995), the neo-classic economists were concerned only about the usage of existent knowledge, not for the creation of new knowledge.

In 1993 Peter Drucker, talking about manufacture, services and information said: *"We are entering –or we have already entered- in the society of knowledge, in which the basic economic resource...is knowledge... and where the knowledge worker will perform a central role"*. The changes in the computing technology of middle 80's were the key for this change and, because of the exponential growing of computer science in speed, cost reduction and availability of applications, for the first time the companies were able to capture, to code and to spread in a fast way big amounts of information all over the world (Tapscott, 1997).

Because of that growth it was possible to redesign company processes, which modified the way in which worked the companies. Such “reengineering” of business processes provide a valuable profitability on investment, but in Europe and USA it had bad press because the changes, often, were too much for the company culture to manage it (Neef, 1999); this lead to Snowden (2000) to describe it like the “*last breath of the Taylorism*”. The fast increase of technology in the workplace requires new skills from employees, therefore the companies became aware that it was necessary the management of information and knowledge in different ways. This implies to help the employees to react before changes, to promote creativity and innovation, and to learn and to boost productivity (Neef, 1999). Companies need to turn into “*knowledge companies*”.

Davenport & Prusak (1998) suggest that companies having more than two hundred or three hundred employees are too big for people can have a comprehension of company collective knowledge, for this reason this becomes a need “*to know what is known*” (Sieloff, 1999). If knowledge turns into a valuable company asset, therefore it must be accessed, developed and used (Davenport & Prusak, 1998). Knowledge management started because of the wish to improve company knowledge; however, it occurred without a definition of this widely accepted. Nonaka & Takeuchi (1995) define the company-knowledge through its ability to adapt itself to the environmental changes by creating new knowledge, effective spreading and put into practice; the only task of a “*knowledge creating*” company is continuous innovation (Nonaka *et al.*, 2000; Nonaka, 2008).

Knowledge Management. Describing this term is usually difficult because there is little agreement about its definition (Neef, 1999; Bhatt, 2001). Raub & Ruling (2001) point out in their study that there is not a unique area accepted for the discourse in the academic or management-related literature. Many authors simply avoid the term, and prefer to focus on specific issues of the subject like knowledge, innovation or learning (Costello, 1996). Others argue that knowledge management is deeply related with concepts like company learning, company memory, information exchange and collaborative work (Schultze, 1998).

As we have seen, there is no consensus about a definition of knowledge management, and many authors avoid the epistemological discussion about its definition by comparing knowledge with information and data (Alavi & Leidner, 2001). A generalized opinion is that data consists of facts and raw numbers, that information are processed data and that knowledge is the authenticated information (Alavi & Leidner 2001). Through a review of the literature on knowledge management, Scarbrough *et al.* (1999) define knowledge management like “*any process or practice of creating, acquiring, capturing, sharing and using knowledge, wherever it lies, to improve the performance and learning of the companies*”. Hedlund (1994) suggests that knowledge management refers itself to the generation, representation, storage, transfer, transformation, application, insertion and protection of company’s knowledge. Such definitions, apart from incorporate many aspects of the “process” around the knowledge management, implies an essentially objectivist vision of the subject. Even the vendors of technology emphasize more on the influence of technology in the knowledge management, for instance, the following definition of knowledge management was quoted in the web page of Microsoft (Brown & Duguid, 1998):

Knowledge management is the use of technology to make that information become important and accessible wherever is located. To perform this efficiently it is required the appropriated application of the proper technology for the specific situation. The knowledge management incorporates systematic processes to find, select, organize and present the information in such a way that it improves both the employee comprehension and the use of company’s assets.

Others argue their own points of view about knowledge and point out that it also occupies itself of creating an environment and a culture in which knowledge can evolve (Davenport & Prusak 1998; Wenger, 1998; Wenger & Snyder, 2000). For example, already in 1996 Davenport et al. criticize the technologies approaches for KM:

The emphasis of encoding in the KM literature probably reflects the predominance of the vision of information systems: many articles have been focused on the development and implementation of the KM databases, of tools –for example, decision supporting tools- and techniques despite the recognition, now very wide, that most spectacular improvements in the KM capacity in the next ten year will be in the human and managing issues.

The lack of a rigorous definition and the aggressive promotion of technologists, has lead many people to point out that knowledge management is a fashion-like subject. Although the subject clearly exhibits the features of a fashion issue (Davenport & Grover, 2001), and even can be analyzed from the fashion perspective (Raub & Ruling, 2001), the consultancy firm TFPL (1999) considers that is probable that concepts and values of the knowledge management practice are deeply-rooted in the basic managing processes of the companies.

Knowledge management models. Because of the divergence of points of view, opinions and ideas having the general motto of the knowledge management, it is necessary to identify a set of structures that allow that subjects make sense, a challenge that have been assumed by different researchers. An example, frequently cited, is that of Earl (2001), who proposes seven strategic schools for knowledge management, as can be seen in Table 1.

TECHNOCRATICS			ECONOMICS	BEHAVIOURAL		
Systems	Cartographic	Engineering-based	Commercial	Company-Related	Spatial	Strategical
Technology	Maps	Processes	Incomes	Networks	Space	Mentality
Bases	Directories	Flows	Goods	Agreements	Interchang	Abilities
Coding	Conectivity	Capacity	Marketing	Collaboration	Interconexión	Inventiveness

Table 1. Schools of Knowledge Management by Earl (2001)

These schools identify the types of strategies that use the companies for knowledge management, and Earl categorizes them in three large types: Technocratic, Economical and Behavioral. The approach of Technocratic ones is to manage the knowledge through the information or management of the technologies that support and condition the employees in their daily tasks; the Economical ones explicitly have the goal of produce incomes by exploiting knowledge like an asset; the approach of the Behavioral ones is to manage the knowledge from a behavior-based perspective, in which they manage and encourage to directors and managers for creating, sharing and proactively using the knowledge resources (Earl, 2001).

While these schools provide a useful classification of specific approaches, mainly in the issues related to how is used technology within a knowledge management initiative, it is considered that they do not achieve the emphasis of the epistemological base of the strategies of knowledge management, particularly because they do not efficiently classify the social aspects. Earl’s social interaction model only is fully applied in the spatial school, which is centered in using the space the exchange of knowledge, like a chat in which is discussed about how to cool the water, o when builds are designed for knowledge exchange (Schultze & Boland, 2000; Ward & Holtham, 2000). However, many authors think that

knowledge social interaction is more complex than this (McAdam & McCreedy, 1999-a; Nonaka *et al.*, 2000; Von-Krogh *et al.*, 2000).

McAdam & McCreedy (1999; 1999-a) provide an alternative structure for the comprehension of knowledge management and they propose three model categories for it: 1) the intellectual capital, in which the knowledge is like a material good; 2) the knowledge category models, in which the knowledge is identified by categories; and 3) the social constructivism models, in which knowledge is intrinsically tied to the learning and social processes.

Knowledge management usually treats on systematize, organize and use the knowledge inside a company for transforming it and storing it with the objective of improving the performance (KPMG, 1998); additionally, exists, as we have already pointed out, a big number of available definition for KM, all of these trying to encapsulate what it is and how it must be done (Quintas *et al.*, 1997; O'Leary, 2001; Diakoulakis *et al.*, 2004; Nicolas, 2004), but until now, there is no consensus.

2.1 Tacit and explicit knowledge

The following is an "official" definition of its differentiation:

On the one hand tacit knowledge is personal, context-specific and for this reason it is difficult to formalize and to communicate. The explicit knowledge is "codified", on the other hand, has to do with knowledge that can be transmitted in a formal and systematic language... Therefore, scientific objectivity is not the only source of knowledge. Much of our knowledge is the result of our determined effort to relate ourselves with the world... (Nonaka & Takeuchi, 1995, pp. 59-60).

The explicit knowledge requires being not subjective and can lie on databases, written reports, among others. In addition to this tacit knowledge subdivides itself in two categories not fully different:

Tacit knowledge includes cognitive and technical elements... mental models, cognitive elements, like schemes, paradigms, perspectives, beliefs and points of view, which help individuals to perceive and define its world. Opposite to that, knowledge technical elements include concrete know-how, jobs and abilities. This is important because cognitive elements of tacit knowledge are referred to single pictures of reality and to visions for the future; this is "what it is" and "what should be" (Nonaka & Takeuchi, 1995, p. 60).

It is important take notice that technical skills are mainly body-related skills.

3. Perspectives of knowledge management

Applying the Burrell & Morgan framework (1979) in a social and company-related research, Schultze (1998) identified four research paradigms in KM: radical humanism, radical structuralism, interpretativism and functionalism, as it is showed in the Table 2.

Among these paradigms exist a continuity between the subjective and objective perspectives: from the objective's point of view, knowledge is considered as an object awaiting to be discovered, that can exist in a number of forms –tacit or explicit–, and in a number of places –individual, group or organization (Schultze, 1998)–; from subjective point of view it is pointed out that knowledge emerge through a continuous elaboration, it is determined by social practices of communities, and cannot be located in an specific place because it cannot exist independently of human experience and social practices of knowing (Schultze, 1998).

According to these paradigms, functionalism prevails on KM current research, that frequently contrast with the interpretativism, because exist a lack “of *structuralist perspectives or humanists in the research on knowledge management*” (Jashapara, 2004). Probably the weight of both perspectives can be affected by its incapability to accept post-structural theories (Schultze, 1998), for this reason they must be mixed in a “*critical perspective*” to accept them (Schultze, 1998; Venters, 2002).

	The sociology of change		
S u b j e c t i v i s m	Radical Humanism <ul style="list-style-type: none">▪ Knowledge as social practice of knowing▪ The value of knowledge and work is refuted, and it becomes a source of conflict	Radical Structuralism <ul style="list-style-type: none">▪ Knowledge as an object that can exist independently of human actions and perceptions▪ The value of knowledge and work is refuted, and it becomes a source of conflict	O b j e c t i v i s m
	Interpretativism <ul style="list-style-type: none">▪ Knowledge as social practice of knowing▪ There is a consensus about the value of knowledge and work	Functionalism <ul style="list-style-type: none">▪ Knowledge as an object that can exist independently of human actions and perceptions▪ There is a consensus about the value of knowledge and work	
	Sociology of regulation		

Table 2. The four paradigms in the KM research (Schultze, 1998)

Schultze applies a framework developed by Burrell & Morgan (1979), with the objective of locating the theories of knowledge management. In the application of this framework the following perspectives are identified.

3.1 The functionalist perspective

Knowledge exists as an objective representation of the world that is waiting for being discovered by a human agent. Schultze (1998) argues that this approach, that can be found in Hedlund (1994) and in Nonaka & Takeuchi (1995), represents an objectivist perspective of knowledge because it considers that it exist in different ways and places. Besides inheriting the features of the objectivist perspective, the functionalist approach is highly scientific, it uses quantification methods, coding and of structure to make the most of knowledge, and depends the most of technology and of the “*activities managed by the databases*” to achieve their objectives (Venters, 2002).

In the last decade, relatively, there has been an explosion of literature on the knowledge management field. Almost all of this literature is managerialist and is supported on the belief that competitive advantages can be derived from knowledge exploitation –both for companies and countries– in the developed countries. A typical argument is:

The widely forecasted “information society” and “knowledge economy” are emerging like concrete “facts. The main theoretical researchers on management point out that is much more profitable for a company to invest a certain amount on its knowledge assets instead of investing the same amount of money on material goods (Probst *et al.*, 2000, p. 3).

The challenge is for both; creating new knowledge and exploiting the previous one –inside a company– in a more aggressive way being different to the way it has been until now. The work of Nonaka & Takeuchi (1995) have one of the seminal accounts of these processes, and offer prescriptions –for the managers of foreign companies–, related to how creating and

exploiting knowledge. They argue that, with the goal of persist; the companies must continuously offer new products and competitive services.

Many years of research in Japanese companies –and other western companies– convince us that knowledge creation has been the most important source of their international competitiveness (Nonaka & Takeuchi, 1995, p. viii).

In view of the fact that market is conceived like dynamic, it is inferred that constantly it is needed new knowledge to support the existence of a company.

We called knowledge creation as the ability of a company, as a whole, for creating new knowledge, spread it out, and incorporate it in products, services and systems... The objective of this study is formalizing a general model of the creation of company knowledge (Nonaka & Takeuchi, 1995, pp. vii-ix).

This approach –and many others in the field of knowledge management– hypothesize and, undoubtedly encourage, a desire without precedents for the knowledge in the company. As Orlikowski (2002) points out, this has little to do with a –picturesque– desire based in the curiosity for knowledge. The knowledge management literature is focused in the needs of the competitive companies – or maybe in their stockholders–:

The comprehension that knowledge is the new competitiveness resource, has affected like a thunder to the West world. But all this talks about the importance of knowledge-for companies and countries-make little contribution to understand how is created the knowledge (Nonaka & Takeuchi, 1995, p. 7).

Philosophically this is significant. The current epistemology is in a big extent a regulatory activity; most of philosophers have occupied themselves of the issue of how to assess the demand of knowledge, and they have abandoned at a great extent the generative issues. The knowledge management literature emphasizes on the generative aspects and let uncovered a big part of regulatory aspects –in fact, the consequence is that these problems have been solved. Sometimes, one has the secure impression that while useful things are produced, the debates about its trustiness are limited to the scholasticism.

There are deep implications of this point of view, but the complimentary discussions are out of the scope of this work. At a certain extent, it can be pointed out, from a critic perspective; Lyotard (1984) established these arguments in the 70's. A key argument of Nonaka & Takeuchi (1995) is that knowledge is divided in different categories; the main difference is that the authors indicate is that of tacit and explicit knowledge.

3.1.1 Lyotard's performativity principle

Lyotard (1984) was one of the first persons in associate, in a systemic way; the production of knowledge to the economic wellness and, at a certain extent, the knowledge management literature is a kind of “non-rigorous” extension of this thesis:

Cannot be denied the current predominant existence of techno-science, which is the massive subordination of cognitive declarations to the finality of the best possible performance, which is the technologic criterion. But mechanics and industrial, especially when entering fields traditionally reserved for the artists, carry with them much more power effects. The objects and thoughts originated in scientific knowledge and capitalist economy transmit one of the rules that support their possibility: the rule that there is no reality if it is not verified by a consensus among the partners between a concrete knowledge and concrete compromises. This rule is not of little consequence it is the footprint made over the policies of the scientists and the capital manager through a kind of scape from reality based on the

metaphysic facts, religious and politics that the mind thinks that supported it. This escape is absolutely necessary for the arousal of science and capitalism (Lyotard, 1984, pp. 76-77).

However, like has been already mentioned, Nonaka & Takeuchi establish a difference between the tacit and explicit knowledge; from which, [...] the most important type of knowledge is the tacit knowledge (Nonaka & Takeuchi, 1995, p. viii).

Curiously, if Nonaka & Takeuchi seriously considered – and the management literature seems to make it- therefore, for critic purposes, the tacit knowledge is where must be focused the attention. However, a big part of the Lyotard's argument it is referred to, more or less completely, explicit knowledge; the tacit knowledge do not consider it predominantly textual. Consequently, in this context, the critic solution for the problems of the performativity principles proposed by Lyotard, would not be sustainable anymore:

Finally we are in position of understand how the computerization of the society affects this problems. Could be become in the "dreamed" instrument for controlling and regulating the market system, extended to include own knowledge and ruled exclusively for the performativity principle...But also might help to the groups..., to provide them with information of what generally lack for taking decisions. The line to follow for the computerization when taking the second of these roads is, at the beginning, quite simple: to allow the public free access to the memory and to the data banks. The language games could be information games perfect at any specific moment (Lyotard, 1984, p.67).

A critic theory on the diffusion of tacit knowledge must take an approach very different. Apart from this, Lyotard has little to say about active management of knowledge process creation in a place like a competitive company.

3.1.2 The process of creation of dynamic knowledge

Which specific interventions are involved in the creation of knowledge in the literature of knowledge management? An answer could be arrogant because exist so many answers to this short question, ¿as books on knowledge management! Nonaka & Takeuchi (1995) reach some conclusions to explain their theoretical and pragmatic suppositions, and help to provide guidance about the questions with which must be managed. To start, we could ask ourselves, ¿how can totally be created the knowledge? Of course, is of enough common sense to point out that the creation of knowledge it is not "by casualty", but also seems of enough common sense to point out that knowledge generally is discovered instead of be generated. The key point here is to point out that the use of the term "created" involves an active process; in fact, different dynamic processes are adopted:

In our theory of company knowledge creation we adopt the traditional definition of knowledge like "true belief justified". It is important to notice, however, that if it is true that western epistemology has been centered like the essential attribute of knowledge, we remark the nature of knowledge as "justified belief"... While traditional epistemology emphasize on the absolute feature, static, and non-human of knowledge, typically expressed in propositions and formal logic, we consider knowledge as a dynamic human process for justifying the personal belief towards "truth" (Nonaka & Takeuchi, 1995, p. 58).

Truth is, very probably with quotation marks, because the justification for the generated "thing" must be based in the future: in the acceptance of the consumer of the products or services, produced like the result of "knowledge" generated in the competitive market- instead of be generated in a direct evidence of truthfulness. In a sense, this is perhaps the final conclusion of the justification argument for performativity presented by Lyotard (1984).

The different issue is that the exploitation –or liberation– of explicit knowledge, do not is enough, or even important. Apart from that, the involved processes in the active management of the process of dynamic knowledge creation –for example, knowledge management– have escaped themselves in a big extent of the critic attention until now. To critically analyze the tacit dimension, other approaches can give important trails, like the analysis of the pastoral power of Foucault as far it provide the beginning of a genealogic approach for the analysis of the relationships power/knowledge, intrinsic in the typical contemporary descriptions –and the prescriptions– of knowledge management –tacit– in the competitive companies.

3.1.3 The pastoral power and the knowledge management in Foucault

Foucault characterize this way of power in this way:

This way of power it is applied itself to the daily life that categorize the individual, it mark him by his own individuality, gives himself his own identity, it imposes him a truth law which must be recognized and that other people must recognize in him. It is a way of power that make individual subjects ... The modern western State has integrated, in a new politic way, an old technique of power that was originated in the Christian institutions. We can call this technique of power that was originated in the Christian institutions. We can call this technique pastoral power... This way of power does not can be exerted without knowing the inside of people's mind, without exploring their soul, without making them reveal their most deep secrets. This implies knowledge of the conscience, and the ability for detecting it (Foucault, 1982, pp. 212-214).

One of the main techniques of the pastoral power was the religious confession, vital to obtain a deep knowledge of the subjects: their intentions, aspirations, secrets ... The original objective of the pastoral power –and its confessional technologies associated– was the religious salvation. Of course, in the lay western societies, mainly, the religious salvation can had lost their traditional meaning, however Foucault points out that the pastoral power, like a way of power, still prevails, but in other ways:

We can see a change in its objective. This is not anymore a matter of people led to their salvation in the other world, but instead of that it has to do with guarantee it in this that world. And, in this context, the world salvation has different meanings: health, wellness- that is enough wealth, life status- security, protection against accidents. A set of “worldly” objectives pretends to occupy the place of the religious aims of the traditional pastoral... (Foucault, 1982, p. 215).

The origin of the legitimization of the active management of knowledge creation processes is in the calling to the secular salvation. Additionally, it is about processes that transcend the normal limits of the management, conceived as an aspect of the traditional relationships capital-work. Foucault traces the genealogy of this conception back to the old Hebrew, Greek and Roman civilizations. A key concept in the indicated topics is that the pastor:

I only want to show some typical topics of the pastoral power...The pastor call together, guides and lead his flock...that pastor call together are dispersed individuals. They come together when heard his voice: “I whistle and they congregate themselves”...In other words, the immediate presence of the pastor and the direct action make that the flock exist... the act of watching them is important. Become evident two aspects of the pastor devotion: in first place, he acts, works, exercises, for those who he fed and that are asleep; in the second place, that takes care of them, he pay attention to all and watch for everyone. He has to know their

flock as a whole and in detailed way. Apart from knowing where are the good pastures, the current laws and the order of the things, but he must know the particular needs of each of them...The power of the pastor implies to pay attention to each member of the herd (Foucault, 1982a, pp. 61-63).

The CEO's of the knowledge creation companies – in theory – express many of these features, because their role is to take advantage from both tacit and explicit knowledge, generated in the lower levels of the company, to obtain competitive advantages:

The basic function of knowledge agents, who are the company's CEOs, is the management of the whole creation process at company level...The officials of knowledge must be aware that their aspirations and ideals determine the quality of the knowledge that the company creates. It is a fact that the senior manager's ideals are important, they by themselves are not enough; they must promote a high degree of personal commitment for other members of the knowledge creation team. For that, is preferable an open and erroneous view, that is sensitive to a number of interpretations. A more erroneous view allows team members of the same company the freedom and autonomy to establish their own goals, creating on them more compromise to ascertain which really means the management ideals (Nonaka & Takeuchi, 1995, pp. 156-157).

The management of knowledge creation cannot be achieved by using the old technique of disciplinary/hierarchical management. Managing the "herd" of potential creators of knowledge involves a considerable number of classic foucaultian power/knowledge topics, particularly "subjectivation" –ways in which persons become themselves in subjects–, that was explained by Rabinow:

The third mode of Foucault's objectivation represents his more original contribution. We are going to call it "subjectivation". The process is systematically different from the other two modes...The dividing practices, roughly speaking, are domination techniques...The interaction between these domination modes and the diverse social scientific ways of classification, despite of the new clarity and the power given by Foucault in his analysis and historic studies, has been recognized by other thinkers...On the contrary, in the third mode, the "subjectivation", Foucault analyzes processes of self-education in which the person is immerse (Rabinov, 1984, pp. 10-11).

The creation process of tacit knowledge requires than the actors be dynamic self-educated to produce their own tacit knowledge, which can be transmitted, by different methods, to other company members for their commercial exploitation.

Let's begin with the ontological dimension. Strictly speaking, the knowledge is created only by individuals. A company cannot create knowledge without individuals. The company support individuals' creativity or provides the contexts for them can create knowledge (Nonaka & Takeuchi, 1995, p. 59).

However, to exploit such knowledge it will be necessary put it available for others in the company.

The explanation of how Japanese companies create new knowledge is limited to the conversion of tacit knowledge into explicit knowledge. To have an idea or personal premonition is a low-value issue for the company, unless that which is isolated can be converted into explicit knowledge (Nonaka & Takeuchi, 1995, p. 11).

The employee must accept to perform the self-education activities in different ways, both physical and cognitive, because tacit knowledge can be created in the two ways. This is essentially the subjectivation process identified by Foucault,

This self-education...it is carried out through different operation on the self-body of the persons, in their own souls, in their own behavior (Rabinov, 1984, p.11).

A part of the behavioral management requirements will be the “pastoral” function of turning isolated tacit knowledge into socialized explicit knowledge.

3.1.4 Knowledge creation processes

Nonaka & Takeuchi (1995) provide four models of knowledge “conversion”:

- *From tacit to tacit.* The described process for this conversion is the “socialization”, because tacit knowledge is acquired through experience and is possible to transmit it to other people; personal education is as important as anything in this cognitive process. This education occurs at a big extent by own initiative, and requires proper arrangements and pastoral incentives. It is important to point out that, in theory, the disciplinary procedures have no role, or very little, in this process.
- *From tacit to explicit.* The described process for this conversion is called “externalization”, and essentially consists in textually describing, at a big extent, the personal knowledge; although not always it will be possible to express directly this knowledge in prose or charts,

When we cannot find an expression for an image by deductive or inducement analytic methods, we have to use a non-analytic method. Therefore the externalization is, often led by metaphors and/or analogies (Nonaka & Takeuchi, 1995, p.65).

However, for this to be useful, this knowledge must be codified in a very precise language. It can be a considerable margin to encourage the critic research referred to this mode of speech.

- *From explicit to explicit.* This process describe like “combination”, in which any cognitive learning, mainly coming text sources –for example, databases–, falls under the paraph of “combination”. It is interesting the –politics- pretext from Lyotard (1984) of “giving to the audience free access to the memory and databanks”, because, it has been considered within the borders of the knowledge creating company. Discussing about the Kao company –in Japan–, Nonaka & Takeuchi point out the following:

For granting “the free access to the information”, computer systems has been introduced in all Kao company, with all the information filed in a database. Through this system, any person in Kao can access the databases included in the sales information systems, marketing, production, distribution, and the complete information network that includes all its offices in Japan. The unique feature of this system is that any member, without being of importance their job or the section that it belongs to within the company system, has full access to the database –except a limited amount of personal information. In other words, any person can access the rich explicit knowledge base that exists within the company system by this “free access to the information system” (Nonaka & Takeuchi, 1995, p. 172).

In certain way, surprisingly, the risk is perceived like a result of this politic, which indicates a considerable difference between this approach, where security and the “need of knowing” problems is essential, and the old “disciplinary” approaches for managing.

- *From explicit to tacit.* The described process for this conversion is the “internalization”, something that is difficult to describe. Nonaka & Takeuchi (1995) suggest “learning-by-doing” (p. 69-70). Once again the person is the center, because he learns to express formally in writings. The explicit operations in the person are the essential thing here, as is showed in:

An internalization example through “learning-by-doing” can be seen in Matsushita, when he implemented a policy in all the company to reduce the working day to 1800 hours in 1993...The objective of the policy was not to reduce costs, but innovating the way of thinking and managing by reducing working day, and to increase person’s creativity. Many departments were confused about how to implement that policy, that was clearly communicated like explicit knowledge...It was indicated to all the departments that it must experiment with the policy of 150 work hours during a month. Through an own experience the employees have to learn how it would be to work 1800 hours a year. An explicit concept, to reduce the work time to 1800 hours, was internalized through one-month experience (Nonaka & Takeuchi, 1995, p. 70).

In this way, the written prescriptions were internalized like person’s processes and activities. These four knowledge conversion modes explicitly involve operations on all the body and the mind. The adjustments in which they must occur hardly seem to be “disciplinary” companies of the past; however, there are strong traits that should be occurring subjectivation processes.

3.2 The interpretativist perspective

The knowledge cannot be located in a specific place because it has not independent existence of human experience and social practices (Schultze, 1998). Schultze argues that this approach, that can be observed in authors like Tenkasi & Boland (1996) and Brown & Duguid (1998), represent a perspective more subjective or intersubjective, because it considers that knowledge is generated continuously through social practice of communities. This approach inherits the features of the subjectivist perspective and is centered in supporting the social processes and structures in which is shared knowledge, and does not consider technology as a solution by itself, instead of that it considers it a support to the social activity of knowledge exchange (Venters, 2002). The features of the problem of the research problem in KM suggest adopting the interpretativist perspective. As Walsham (1995) points out, the interpretativist methods suppose that knowledge of reality is a social construction of human agents. To understand the KM problems inside a company and try to solve them, are processes strongly based on the opinions of the participants in the company. For this perspective the functionalism, based on the empiricist and rationalist approach, can be pertinent to know about the rational world, but they do not consider the role of the individuals as part of knowledge in social world. This is based on Immanuel Kant’s studies, in which is accepted that the mind it is not a passive *tabula rasa* or a blank leaf, but that actively participates in the organization of the sensorial experiences; the argument is that the direct knowledge of things by themselves –which Kant call “*noumena*”– is impossible. The *noumena* are not knowledge by themselves, but the understanding of that is achieved through the application of our a priori knowledge for creating cognitive phenomena to ourselves (Johnson & Duberley, 2000). The point of view here is that human knowledge is achieved through experience and that is “*intrinsically undetermined*” (Tsoukas, 1996; Davenport & Prusak, 1998).

This point of view also considers the work of Karl Marx –accepting that it is centered on the action instead of being centered on knowledge-, who observe the perception as an interaction between the cognoscente subject –subject- and that known –object-; and, particularly in which the truth is demonstrated in practice, which provides a tie between knowledge creation and action (Russel, 1967). Do not considers that knowledge exist *a priori*

awaiting to be acquired, through experimentation or by thought; instead of that, these approaches point out that it is required an interaction between the ego and the external world; which is evident in the Edmund Husserl work about phenomenology and, particularly, that of Martin Heidegger (Inwood, 2002). These perspectives point out that even the simplest learning consists of a complex social process; the individuals interpret the world and learn from it through these forms of social interaction (Daft & Weick, 1984).

The interpretativist perspective emphasize on the action inside practice. *"Work practice ... seems to be essential to understand the identity and knowledge acquisition when working"* (Brown & Duguid, 2001), and the meaning is created through action within a specific social context (Cook & Brown, 1999). A particular interpretativist KM model emphasize on the construction of knowledge, inside company, through an exchange social process in which knowledge is consecrated within their own company structures (Demarest, 1997). Once it has been incorporated to the organization, the knowledge it is disseminated through social processes (Demarest, 1997; McAdams & McCreedy, 1999, 1999a). This fact of emerging is a similar practice to the interpretativist work about KM of Orlikowski (2002), who presents knowledge as *"emergent from actions located and occurring that company members commit themselves to perform"*. Orlikowski suggest that knowledge is promulgated every day and each practice of persons, which suggest that the debate about knowledge must be intrinsically related to practice. In his work, the emphasis on practice indicates that knowledge must be seen like *"in a particular moment, that which have been made by practice"* with knowledge, and the practice must be considered like mutually constitutive.

This entire works suggest that an interpretativist approach for the management of knowledge must consider knowledge like an active object, because is like embedded in recurrent human practices (Venters et al, 2002). Transference of knowledge from one place to other does not mean that knowledge be an object that become mobile when is transmitted, codified or is offered like a basic service. On the contrary, knowledge becomes mobile like a product embedded permanently in all human activity within a social context (Venters et al., 2002).

When using an interpretativist approach is emphasized in the social nature of the creation of knowledge, which leads to approaches for its management that are centered on human interaction instead of being centered on information. Knowledge is considered like a continuous achievement (Kogut & Zander, 1996), and a process rather than an object (Spender, 1996). These approaches consider, within the KM interpretativist approaches, concepts like *"sense construction"* and *"practice community"*, because they are centered in social practices of creation and application of knowledge. Also is introduced the concept of *"thought on the action"*, aimed to conceptualize the creation of knowledge by thought on practice. Apart from that, they consider the communication role in KM through the concept of a company's dialogue.

3.2.1 KM Maturity model in the interpretativist perspective

The maturity models proposed from this perspective are of evolutionary nature, this is, consist of a number of stages in which the complexity level is increased from one to another searching for perfection; additionally, are considered like strengthen models that have operational conditions to satisfactorily maximize the changes in the companies. The maturity models, particularly these of evolutionary nature, are characterized by the presence of multiple optimal stages that normally refer to the development stages in the maturity model.

A proposal of this kind of models (Desouza, 2006) consists of five levels or stages to evaluate the efforts of the company in KM, whose maturity can be described in a progressive scale: predisposed, reactive, appreciative, organized and optimized. The four components of knowledge management that are assigned to the maturity scale are: sources, analytics, significant and action, This model is similar to that proposed in other disciplines, and the control of its cognitive dimension of learning is based on Bloom’s taxonomy (1956), whose points of view provide a valuable way of consider the semiotic for the study of KM.

This taxonomy uses value systems to control the personal behavior: penetrating, consistent and foreseeable; for which the proposed model basis starts from the affective and psychomotor dimensions of such taxonomy. The first is the way how humans share their feelings, values, opinions, enthusiasm, motivations and attitudes, as can be seen in Table 3; while the second one provide a point of view in which are not seen diverse objectives of learning but hierarchical levels, as described in Table 4.

These spheres provide a good point of view to study the maturity practice of the knowledge management in companies. The work of knowledge management, specially the maturity analysis of KM, can be beneficiated of the perspective proposed by Bloom in the affective and psychomotor spheres.

Reception	The individuals pay attention in passive way; they have the skill for listening and receiving emotional phenomena; without this level cannot be learning
Answer	The individuals participate actively in the learning process; not only react to stimulus, but they also react in some way, and assign value judgments to the phenomena
Valoration	The individuals can assign a value judgment to the objects, phenomena or to information
Organization	They are able to create and organize a value system; they develop the skill of assign priorities to contrast different values, solving conflicts between them and creating an unique value system
Characterization	They have a particular value or belief that now exert influence on their behavior, therefore it becomes a feature; they build character or personality

Table 3. Levels of the affective sphere by Bloom (1956)

Perception	It is the skill to use sensorial signals to guide the motor activity
Disposition	Is a disposition to act, where he is able not only of perceive environment signals, but also to plan action sequences to follow
Guided Answer	The individuals have the skill to follow a guided answer
Automatic Answer	They can present complex public answers
Conscious execution	They create new movement patterns to perform task in new environments

Table 4. Levels of the psychomotor sphere by Bloom (1956)

4. Operationalization of a maturity KM model exhibiting interpretativist traits

To summarize, argue and dispose of a KM operationalization model having interpretativist features it is proposed the following proposal:

1. In the *predetermined* level the company does not have a proper capacity to answer or to attend the information coming from external and internal environments. Some entities

inside him could be specialized to and for listening and answering to the environment's information, but they will be limited to the local level. The company lacks of proper competences in all the activities of the psychomotor sphere, because exist a poor perception and ignorance on the information sources. It can be possible that individuals or units have a proper management of these sources, but in the same way it can be within a very local environment. Because of the low perception capacity, the company will have difficulties to properly answer to the learning process. This is natural because the company, at this level, do not has the skill to develop mechanisms, complex public answers, adaptations or to participate in creations, and can exist entities, inside the company that know how to lead these activities, but this not meant that the company know how to do it.

2. In the *reactive* level the company answers to the external pressure to improve the knowledge management; for example, implement strategies to attend and answer the signals in a selected sphere. The company learns to manage in a better way the information coming from the selected sources. At this point, is possible to find the analogy with the perception that has a baby about the information coming from his parents: the baby starts to tune with their voices and gestures, but still is difficult to him to recognize the persons that does not belong to their surrounding family. At this level is expected that the company improve the perception, the disposition to act, and that show answers to the learning between the centers and the selected areas.
3. In the *appreciative* level the company start to give value to the need of establish interdisciplinary agreements and comprehensive analysis to achieve a better appreciation for the information sources, the used analysis for processing it and the meaning acts and of action management. The company starts to increase their range of perception, improves the disposition to act, and starts to maturate in its capacity to learn guided answers. This because now is connected by knowledge management activities through the entities, and start to develop mechanisms and instances limited to complex open answers. To develop these answers a company needs to have coordination of its knowledge management activities through entities.
4. In the *organized* level the company presents an organized architecture around knowledge: resource management, analytic management, significant management and active management; and it will be able of carry out all the activities: perception, disposition to act, guided answer, mechanisms, complex answers, adaptation and creation, which can be attributed to the presence of a holistic structure of knowledge management.
5. Finally, in the *optimized* level, are observed similarities between the personality and character construction concepts in the knowledge management. With the aim of operating this level, the company will benefit itself from the opening to continuous improvement, and will support on the practices and current skills of the different KM components. The company optimizes its ability for adaptation and creation. The objective is to decrease the time necessary to adapt to the environment changes, and increase the fluency and abilities coming from new actions, with the objective of being more proactive instead of being reactive.

In the Table 5 are described the levels and features of the operationalization of the proposed maturity model.

	Features			
Levels	Resources Management	Analytic Management	Significant Management	Active Management
Disposed	<p>The individuals, as agents, will have their own resources and the responsibility of managing the information they consider necessary to perform their tasks</p>	<p>There is no standard definition for the information objects; each agent will define the necessary objects. As a result the analytic opinions have low quality and will lack of portability. The generated analysis for each agent will be not harmonic or compatible.</p>	<p>Individual agents interpret the meaning, but is incomplete and usually do not is shared in an effective way with the other people. As a result of bad calibrated will be the necessity of company's knowledge generation and application.</p>	<p>Any action will be based on personal intuitive feelings, and there is no disposition for feedback aimed to the monitoring on the effectiveness of the action.</p>
Reactive	<p>With the objective of managing the convergence or the conflicts in the information, are created centers for managing the information and to start to standardize a management process of sources, by creating definitions and the mapping of their origins. As a consequence of local map creation the sources become integrated within the center. The member belonging to the center will have tools to retrieve the pertinent information for each center.</p>	<p>The centers will be standardized regarding to the procedures for the analytic regulation, the deployments, and the repository management. This contributes to the effective transformation of the information in the center.</p>	<p>The meanings are shared within the center, and a common language arises that is related to information. It is interchanged, compared, and actively debated -it is feed backed- with the aim of improving the planned indicators for the actions.</p>	<p>The regulated actions within the centers will be based on the meaning, which leads to a higher efficiency of the operations and allows flexibility at this level. At this moment, the feedback actions related to actions will be restricted to inside the center.</p>
Appreciative	<p>Alliances are formed between the center with the objective of promoting the integration and a source management more effective. The</p>	<p>The centers shares their analysis processes with other centers. The analysis is redefined, and its</p>	<p>The meanings are shared through functions. This process requires translators in order to agree</p>	<p>The alliances of the centers will generate wider ways of action-share experiences-and also will be able</p>

	definition of information, maps, and management efforts will widen the scope of the processes.	development is best understood. The analyzed information increases their scope. The analysis repositories grow and become more sophisticated as studied information volume increases.	about the syntax and the terminology. The members of different centers start to take into account external points of view in its work practices.	to see the reaction of the actions throughout a wider context-outside the same centers. This will result in an efficiency increase, in addition to changes in the effectiveness.
Organized	The company has developed a repertory that gradually increases talking about their interest sources. These sources will be mapped to examine its convergence and the conflicts in the emitted information. It is developed one standardized architecture to easy the information retrieval. The company will have an almost complete map of their interest sources, having the possibility of receiving information coming from these sources.	The company will be able of generate sophisticated analysis, based on a proper definition of the information and in the element classes themselves. It is conformed a company repository feasible to promote the reuse of all the analysis for the permanent feedback cycles.	The meanings generated in the analysis are deep and are shared with the company members. The company will be able of managing the company's language diversity and to promote the dialogue based on meanings.	The company will be able of designing unique actions supported on the new meanings. A repository will be created of the existent actions, which will ease the reuse of the existent knowledge. The actions' feedback process is effective, and will contribute to the evaluation of the actions.
Optimized	The company will commit itself to critically respect the new sources of information, to review the source inventories, and to periodically upgrading the information and the recovery mechanisms. The map of the sources is upgraded and it refines constantly to	The company is committed to search in a more effective way better methods to evaluate the analysis. The purpose is to rationalize the processes of generation and application of the analysis.	It will be put into operation mechanisms to ease the permanent review of the generated meanings. Furthermore, it will be a compromise to train agents with the objective of keeping their	The actions will be reviewed based on a schedule with the objective of keeping the company's operations updated and at the proper time. The metrics for evaluating the actions permanently will be upgraded,

	represent the changes in the company's internal and external environments.		skills upgraded, in the same manner the compromise to keep, as much as possible, the efficiency of the compatible mechanisms.	always thinking in executing them as soon as possible. The company will have a diverse repository of actions to take advantage, and it will be updated on a regular basis.
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Table 5. Operationalization of the maturity model of KM having an interpretative trait

5. Discussion and conclusions

There is no doubt that the selection of a KM management perspective depends on considering the knowledge as true facts about the world or considering it as a social construction. Although both perspectives can be epistemologically mutually exclusive, as is implicit in the analyzed literature, in practice the elements of one of them is used indistinctly by the other. Because of this, that really should matter is the way in which each perspective is introduced and is used to manage knowledge in the company. What is the practical meaning of this? In first place, you can adopt an approach through the appreciation and understanding of the “environment” in which knowledge management is planned; however, the construction of that knowledge is not trivial. Subsequently, you must select a set of methods and management techniques to implement any approach; this requires drawing a matrix that establishes relationships between the environment, the approach and the application method selected. Finally, the selection must be implemented for KM.

It is evident, in the functionalist perspective, that the knowledge creating company is, at least in theory, a “beast” very different to the disciplinary company. Much of the later Foucault subjects, about power and subjectivity, undoubtedly seem to be more adequate to analyze the effects of the power that use the knowledge creating companies, but it is necessary to doubt about whether these analysis can go beyond thematic conclusions. The most important examples given by Nonaka & Takeuchi (1995) are inside Japanese companies – most of the genealogic studies have been European.

Considering that the USA-based companies follow many social patterns seen in European companies, there is big similarities between North America’s history and Western Europe history at the genealogic/ideological level –very few genealogic materials is available in Japan. Until recent times there was not much cross fertilization exchange –of ideologies, social structures, etc.– among Europe, North America and Japan, despite that is worthy a review on the influence of United States of America –in Japan–, immediately after 1945.

However, that referred to the genealogy itself, which is with are formed the management styles and other things, is easily accepted by people. In this sense, is worthy to revisit many Foucault’s subjects, particularly those relative to subjectivation, when the management styles defended by Nonaka & Takeuchi are so ephemeral. But, is it that way? The knowledge management already shows many aspects of the current mode, which is a result of the established modern literature related to bad management. The analysis of the knowledge functionalist perspective is centered on the work by Nonaka & Takeuchi, precisely because if this become wider to consider the multiple approaches in the

knowledge management subject, available in the literature, probably must result impossible to make a serious analysis of all. Apart from that, much of the literature on knowledge management is centered on technology, particularly on IT, instead of management. At this point it is worthy to say that Nonaka & Takeuchi just include a wide debate on the Information Systems but there is nothing about IT in their whole 1995 book. Supposing that their work will be last –in this moment–, a technology-based approach seems to lose all homilies about the importance of tacit knowledge, especially its personal condition.

Additionally, on this respect it can be argued that the changes in the management, apparently defended by Nonaka & Takeuchi, can appear proposals for changes in the production relationships in the European and American companies, instead of being changes in the production (Adorno, 1968). Apart from that, is an illusion that these changes and ideas, proposed in the production relationships, be critically so substantive as to originate academic enthusiastic acceptances in North America and Europe, while really they are that because they are simple extensions/formalizations of the management techniques that have become stronger, at least since 1960's decade, and that can explain the enthusiasm demonstrated by the proposer of these ideas.

The interpretativist perspective seems to be more complex to implement and to model by using ICTs. However, the interest for taking it in this document is to share the object named knowledge based on the support, mapping, storage, understanding and dissemination, to support and to create the many possible activities performed by people through the application of their knowledge. The technological action based on this proposal ranges from the idea that technology can help to "manage knowledge" to the idea that the technologies and approaches for knowledge management can improve the different and complex activities of persons dedicated to create knowledge. These philosophies not necessarily can use different technologies or approaches, but, is different the way in which such technologies are designed and deployed. Curiously, as an interpretativist epistemic commitment it is suggested that any technology developed should be extensible and adaptable to the different actions taken by knowledge creators.

This approach is based on interpretative interactionism to recognize the natural perspective of knowledge. Evidently, seems to be that always have been ignored the complexity of the environment in which it is developed and the recurrent interaction between technology, organization and persons, therefore any knowledge management process originates itself in an organizational context through human, social and political interactions. However, because of the complexity and unpredictability of human behavior, strong questions arise about the effectiveness of the search for general laws capable of predicting that behavior. The evolution in the field of KM research and the development of interactionism reasoning emphasize more on the human issue, thus requiring more resources of the interpretativist perspective, in such a way that it offer to the different actors the means to understand and act in the reality.

The interpretivist perspective, suggest many of the authors referred and, in a number of industrial applications, is becoming the dominant paradigm. In the different practices, reality is observed as a subjective phenomenon, knowledge is considered as context-dependent, learning as a social practice that takes place between people, and has been established that knowledge cannot be stored indistinctly because it is determined by each specific situation. But, as mentioned above, from this perspective is difficult to manage, to measure and to understand the meaning of company learning. The interpretivist perspective puts these tasks on the shifting sands of relativism and contextualization. Relativism turns

measurement almost impossible because their constantly changing rules. If the situation or context is the key factor for knowledge, the learning should not be based on the foundation of truth but on the environment. The implications of this perspective include comprehensive concepts like business ethics and cultural morality; therefore, selecting this perspective is a task that must be taken seriously.

As a final comment, and, because the subject of knowledge management generates a huge amount of material coming from researchers and practice, it is suggested to continuously review the material in order to achieve the construction of a broader vision. Additionally, to have a minimum understanding on KM, it is suggested the review of some closely-related issues like person and company learning, communication processes, computer support to collaborative work, company changes and information systems.

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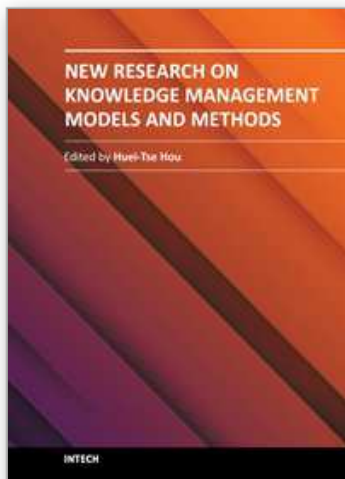
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Due to the development of mobile and Web 2.0 technology, knowledge transfer, storage and retrieval have become much more rapid. In recent years, there have been more and more new and interesting findings in the research field of knowledge management. This book aims to introduce readers to the recent research topics, it is titled "New Research on Knowledge Management Models and Methods" and includes 19 chapters. Its focus is on the exploration of methods and models, covering the innovations of all knowledge management models and methods as well as deeper discussion. It is expected that this book provides relevant information about new research trends in comprehensive and novel knowledge management studies, and that it serves as an important resource for researchers, teachers and students, and for the development of practices in the knowledge management field.

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