

Knowledge Management Model: A Process View

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Abstract. Knowledge is an indispensable resource for organizations to perform their tasks successfully and to innovate. Knowledge management is an integrated field of multiple disciplines that seek to exploit knowledge more efficiently. This paper analyzes the activities (and stages) of knowledge management. For this purpose, a survey of more than 2000 papers and thesis is presented, in which the proposed activities are analyzed. A knowledge management model is then presented that considers various perspectives: the individual perspective (associated with learning), repositories perspective (storage and retrieval), the team's perspective (sharing and dissemination) and the identification and creation and acquisition of knowledge. The knowledge management model proposed included these activities: learning, retrieval, representation & structuring, socialization, dissemination, identification, creation and acquisition.

Keywords: Knowledge Management · Process · Activities

1 Introduction

This article identifies the essential activities required for a Knowledge Management Model. It presents a theoretical framework on knowledge (Sect. 2) and knowledge management (Sect. 3). Section 4 provides a comparative analysis of various recognized knowledge management models, many of which were developed 20 to 30 years ago. The goal of this paper is to analyze recently proposed knowledge management models in the academic literature to obtain a more detailed understanding of the activities necessary for effective knowledge management and to propose a comprehensive knowledge management model. To accomplish this, a literature review was conducted following the methodology outlined in Sect. 5. The subsequent sections offer an analysis of the findings and suggest a knowledge management model. Finally, Sect. 10 presents the complete Knowledge Management Model.

2 Knowledge

Ackoff [1] propose a DIKW Hierarchy, in which each concept adds value to the previous one: data, information, knowledge and wisdom. Data is a simple observation of the state [2], a raw, simple and discrete fact [3]. Information can be defined as a function of

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data that makes sense of data in a context and return information; knowledge can be defined as a function of information that makes sense of information incorporating the insights [4]. The term "insight" represents the tacit implications behind Information Accordingly. The DIKW model was extended by Hey in to DIKIW by introducing a layer of Intelligence between Knowledge and Wisdom elements [5].

According to Davenport [2] the knowledge is a "mixture of structured experiences, values and non-contextual information that provides a framework for evaluating new experiences and information". Wiig [6] affirms that knowledge is the "integration and relationship of isolated information to develop new meanings". Martinez Marin and Rios Rosas [7] present four epistemological schools on knowledge: rationalism (knowledge has its origin in reason, it affirms that a knowledge is only really such when it possesses logical necessity and universal validity), empiricism (the only cause of human knowledge is experience), phenomenology (knowledge is the result of experience, of participation in the object of study) and hermeneutics (maintains that there is no objective, transparent or disinterested knowledge about the world is mediated by a series of prejudices, expectations and presuppositions).

3 Knowledge Management

Knowledge management (KM) is defined as "a managerial approach or emerging discipline that seeks in a structured and systematic way to take advantage of the knowledge generated to achieve the organization's objectives and optimize the decision-making process" [8]. Knowledge "is the most important strategic resource, and the ability to generate, acquire, codify, transfer, apply, and reuse it has become a substantial competence for obtaining a sustainable competitive advantage" [9].

KM is an integrated field of multiple disciplines that allows the development of initiatives in organizations [10]. According to [11], KM "from the social psychology of organizations lies in a process of social influence of collaborative groups around the transfer of implicit knowledge towards the safeguarding of tacit knowledge in order to take advantage of the experience and skills of talents and leaders in the face of environmental contingencies, or the risks and threats of the context".

KM can be analyzed from different views. A view is a representation of the system from the perspective of a specific set of related concerns, which suppresses details to provide a simplified model that has only the elements related to the concerns of the viewpoint [12, 13]. There are five KM views: 1) people, 2) organizational aspects, 3) activities and processes, 4) technology and representation, and 5) measurement [14].

This paper analyzes the activity and process dimension of knowledge management according to the method detailed in Sect. 5 [14].

4 Background

Straccia et al. [15] makes a comparison between knowledge management models, looking for similarities and differential contributions and identifying phases required for any knowledge management methodology. The work considers the models of Nonaka and Takeuchi, Wiig, Sveiby, Earl, Kerschberg, Bustelo and Amarilla, Mc Elroy, the CEN

Guide of Good Practices in Knowledge Management, Pons, KMC and K-TSACA and incorporates new models found in the Association for Computing Machinery ACM, the Institute of Electrical and Electronic Engineers IEEE, Directory of Open Access Journals DOAJ and Science Direct. After the analysis and terminology standardization process, the following phases have been found: identification, creation, acquisition, sharing, application, refinement, and validation. These phases can be considered in any knowledge management methodology.

Maulini et al. [16, 17] present a knowledge management model that proposes, in addition to the different stages, a first stage of preparing of the organization for the application of the model and a stage transversal to the whole model and of continuous execution: maintenance.

Among the works found in the search presented in this paper, [18] analyzes the knowledge management models of Wiig, Nonaka and Takeuchi, Kerschberg, Riesco, Paniagua and Lopez and Angulo and Negrón, compares the different stages and proposes 5 activities for knowledge management: creation or capture, structuring, storage, transfer and transformation and use. [19] analyzes similarities and differences between the phases of the knowledge management processes over the models of Wiig, Nonaka and Takeuchi, Davenport and Prusak, Meyer and Zack, Gupta and Govindarajan, Alavi and Leidner, Gold, Malhotra and Segars, King, Chung and Haney Evans, Dalkir and Bidiam, proposing a summary of 4 fundamental activities: generation, storage, transfer and application.

Nonaka and Takeuchi [20] proposed a knowledge management model known as "knowledge spiral" in which they present four fundamental activities: internalization, socialization, externalization and combination. In each of these activities the authors propose different ways of conversion between tacit knowledge (that which is difficult to express, formalize and share, very personal and subjective, derived from experience) and explicit knowledge (that which can be easily expressed and formalized, and is therefore acquired through formal methods of study).

Internalization implies the conversion of explicit knowledge into tactical knowledge, where a person acquires the knowledge, learns, and internalizes the knowledge, so these are operations that occur in the individual himself and must consider aspects of behavior and learning; these aspects will be discussed in Sect. 6.

Externalization implies the conversion of tacit knowledge into explicit knowledge and the fundamental aspect is the storage of knowledge in appropriate devices, giving rise to a repository perspective, which is dealt with in Sect. 7. Socialization is a process that involves thinking the organization collectively where diverse actors are sharing their knowledge; this collective organizational view is dealt with in Sect. 8.

5 Methods

A review of the literature in the Latin American (La Referencia, Redalyc, Scielo, SEDICI and SNRD) and English (ACM, DBLP, IEEE, Springer) bibliography was carried out using the sources and criteria specified in Tables 1 and 2. In La Referencia, Scielo and IEEE the keyword was used only in Document Title. In ACM was found in Abstract. For the others source was applied for all text.

Table 1. Search criterial

Criterial	Detail
Keywords in Latin American bibliography	"gestion del conocimiento"
Keywords in English bibliography	"knowledge management"
Period	2019–2021

Table 2. Specific search criterial

Criterial		Detail
Publication Type	La Referencia, SEDICI and SNRD	Master Thesis, Doctoral Thesis and Articles
Publication Type	Scielo, ACM, DBLP and Springer	Article
Publication Type	IEEE	Conference and Journals
Discipline	Redalyc	Computation, Engineering, Administration, Accounting and Information Sciences
Discipline	Springer	Business and Management

In the search, 2012 papers were found. From them, was selected which propose tasks or activities for knowledge management: 110 papers were selected.

Next, the terms found in the different activities were obtained. From the results, a detailed analysis of the terms and the meaning that each author gives to that term was carried out, understanding that the same term can have different meanings and that different terms can be used with similar meanings. Contributions from other disciplines outside knowledge management and management were included, including visions associated with psychology and education.

6 The Individual Perspective: Learning

To Alavi and Leidner [21] the knowledge transfer process occurs in several levels: between individuals, from individuals to explicit sources, from individuals to groups and from the group to the organization. The capacity to absorb knowledge is based on several dimensions: acquisition (which involves obtaining external knowledge, essential to the organization's operations), assimilation (is related to the ability to process, interpret and understand the acquired knowledge) and transformation (concerns the combination of already existing knowledge with the assimilated external knowledge). This definition of transformation corresponds to the one proposed by [22]: "the ability to internalize knowledge, by combining one's previous knowledge with the new acquired knowledge". The activities defined by the mentioned authors are part of the learning process according to the theories of the educational field. The following is an analysis of different

terms found in the literature search that can be related to the individual's perspective: internalization, learning, association, discovery and other terms such as acquisition or transfer when used with this perspective.

6.1 Individual and Organizational Learning

[23] includes individual learning as a stage of knowledge transfer. For the authors, transfer includes individual learning and organizational learning. [24] also refers to organizational learning without specifying concrete activities.

The term organizational learning is usually attributed to Peter Senge. For Peter Senge, intelligent organizations are those capable of effectively exploiting collective knowledge and increasing their capacity to adapt in a competitive environment [25, 26]. Team learning is part of the conditions required (which Senge calls disciplines) for the creation of these intelligent organizations, also known as organizational learning, which refers to "the ability to dialogue, recognize the obstacles to learning, develop the ability to discuss, solve problems, make decisions and transform by generating knowledge" [25]. For [27], based on Senge's notions, it is the "process through which people and organizations increase their capacity to produce and generate the results they want to generate". Also, for [28], the team must use the available knowledge to generate collective learning.

The concept of organizational learning began to be used in the 1960s with the publication of Cangelosi and Dill [29], when the authors proposed to observe learning processes within organizations to explain their capacity to adapt to a new market and social contexts.

Organizational learning is not so much a concrete activity of the organization and much less of knowledge management, but a set of notions, ideas and activities that lead to a way of managing organizations.

6.2 Internalization and Learning

Although authors such as [30] believe that knowledge is created through dynamic interaction between individuals and/or between individuals and the environment, they ignore the individual characteristic of learning and that interaction alone is not a producer of knowledge.

The concept of internalization is embraced from psychology, with debates about its interpretation [31], especially based on Vygotsky's ideas. For Vygotsky, internalization is not a transfer of information from the outside to the inside of the individual, but a process of inter-functional reorganization. Internalization is understood "as a process of transformation, of interfunctional reorganization, which results in the mastery of the sign and the formation of the internal plane of consciousness" [31]. Internalization is not an institutional action, but a process in the individual, analyzable from psychology and other disciplines that have the individual as a subject of study.

On the other hand, learning is "a process of relatively permanent change in a person's behavior generated by experience" [32] and implies a behavioral change or a change in behavioral capacity that lasts over time [33].

According to Santana, learning "is a relatively permanent change in behavior that is achieved through practice and with the reciprocal interaction of individuals and their

environment" [34]. Like the notions of internalization, learning is neither an institutional action nor an organizational process and therefore cannot be included in an organizational knowledge management process. Knowledge management processes must generate institutional conditions for internalization and learning.

6.3 Assimilation, Acquisition and Discover

Some authors present a stage called assimilation. For [35] this stage "relates to the routines, habits, and processes that allow firms to examine, understand, and make sense of external information; while the transformation dimension relates to firms' capability to develop, refine, combine, and integrate a set of external and internal knowledge".

Assimilation is a concept mainly developed by Piaget and "consists in the integration of external elements into the structure of the organism, whether they are already finished or in the process of formation. The process of assimilation affects behavior and organic life; no behavior, even new for the individual, constitutes an absolute beginning. It is always grafted on previous schemes and consists in assimilating new elements to structures already built, innate or acquired reflexes" [36].

For [37], knowledge acquisition is the identification and elicitation of data, the interpretation of this data, and the structuring and interlinking of this data [38]. In addition, knowledge acquisition can be defined as the development or creation of skills, insights, and relationships [39]. Knowledge is acquired through the combination of interactive and individual learning. [40] incorporate a stage called "discover" to refer to learning activities: "learners discover knowledge from practice or experience, or from data synthesis".

6.4 Summary About the Individual Perspective

From the concepts defined throughout this section, it can be stated that learning, internalization and other aspects mentioned are specific to the individual and cannot be defined as part of an organizational process of knowledge management. The obtaining of information by individuals for the realization of internalization and learning and organizational practices can be the subject of an analysis of the knowledge management process. These activities are presented in the Knowledge Management Model in Sect. 10. Therefore, in the next section, information storage and information retrieval by individuals is analyzed (Sect. 7), while socialization is analyzed next (Sect. 8).

7 Repositories Perspective: Storage and Retrieval

7.1 Storage and Retrieval

Persistence is the ability of a software to maintain the state beyond its execution and to allow subsequent executions to use the data generated in previous executions. The data generated during the operation of the software is stored for later retrieval. Persistence includes the following elements: persistence medium (the physical medium where data is stored), structure (storage format), database or repository (the files where storage

occurs), metadata (information about the data) and two processes relating persistence to its use: mechanisms to alter the repository by adding new data or updating it and mechanisms to retrieve the stored data. Persistence is sometimes also referred to as "persistent storage".

Most of the articles analyzed in this work present the storage stage, although they omit to make explicit reference to data retrieval and updating. Other authors define it with other terms: [28] calls it relating and defines it as "systematization of explicit knowledge in a knowledge platform" understanding as a result of the task the explicit knowledge in the knowledge management system.

It can be stated that the work that involves human activity is precisely the retrieval and updating of data, while the actual storage (or persistence) is a technical activity of computer tools.

Some authors refer to retrieval [41, 42] and consider it as a single stage called "knowledge storage and retrieval", while [43] identify two broad types of information retrieval: pull model and push model. Alavi and Leidner [21] say about pull and push model that: "two broad types of information retrieval are the pull model, which involves search and retrieval of information based on specific user queries, and the push model, where information is automatically retrieved and delivered to the potential user based on some predetermined criteria".

Some authors call it "coding" [19, 23, 44]. For example, [19] denotes coding as "creating models, documenting knowledge in manuals and books (more linked to storage) and coding in databases even though it does not specify more detail" based on concept "coding" from Wiig [6]. [45] includes within the storage phase the classification of information. These definitions lead to reflect on two aspects: the creation of models (in Sect. 7.2) and the classification of information (in Sect. 7.3).

7.2 Representation

A knowledge representation model "is a particular way of representing knowledge by using the knowledge and reasoning mechanism" [46]. The knowledge "must be represented in a way that allows information systems to actively process knowledge, rather than only to represent it, and thus to enable knowledge-based reasoning" [47]. For the SUNY Center [48], the knowledge representation is "structure used to store knowledge in a manner that relates items of knowledge to one another, and that permits an inference engine to manipulate the knowledge and its relationships."

Although many papers refer to storage, few articles mention the representation or modeling of knowledge representation. [49, 50] mention a stage called "codify" that refers to the representation or m-modeling of knowledge objects. [51] say that "appropriate models for representing knowledge objects in the organizational knowledge management system (OKMS) should be developed" and [52]: "knowledge representation may be in the form of publication, which is joint authoring, structuring, contextualizing and release of knowledge elements supported by workflows".

7.3 Structuring

These activities are called by different terms, being the most used: structuring, categorization and classification. All of them seek to optimize the way in which information and knowledge is stored (after the explicitness processes) so that its retrieval is more efficient and the information obtained is more likely to be useful.

Structuring is a term used by [18] that include classifying, describing and indexing data, information and knowledge, using standardized metadata. For [53] identification, classification and categorization are activities that seek to index and organize information, making it more accessible and offering optimal ways for its consultation. [54] call "combining and integrating knowledge" the quest to reduce redundancy, increase consistency and optimize efficiency by eliminating excessive volume. [55] presents a process of "conversion-oriented knowledge management" that refer to those processes oriented towards making existing knowledge useful. [56] proposes to include in the storage stage, as a first action, a classification subprocess that allows filtering whether the knowledge is relevant to the organization. For [57] it includes knowledge debugging.

Alvarez et al. [58] proposes information grouping activities at the time of its acquisition. He also proposes classification and indexing in knowledge organization activities. [28] proposes a cataloging activity. [45] includes within storage a sub-activity of classification of information and knowledge. [59] proposes that according to the classification and prioritization of knowledge, a unique identifier (code) is assigned to easily administer and manage knowledge. [52] calls "classification" the stage with this definition: "taxonomies, also called classification or categorization schemes, are considered to be knowledge organization systems that serve to group objects together based on a particular characteristic". Similarly, [60] proposes organizing data with tags. [61] proposes categorizing knowledge into five categories: "short term knowledge, basic organizational knowledge, written knowledge, spatial knowledge and digitized knowledge".

7.4 Summary About the Repositories Perspective

As described in this section, storage can be performed with an appropriate structure and representation. However, no reference is made to whether these activities must be performed prior to knowledge explicitness in storage (and by the knowledge worker) or if knowledge can be made explicit in an unstructured way and then, through specific techniques, its structuring can be performed. This allows categorizing knowledge as structured (that on which representation and structuring was previously performed) and unstructured. And to define that the conversion of unstructured knowledge into structured knowledge can be done by the worker who owns the knowledge or by a knowledge manager. These activities are presented in the Knowledge Management Model in Sect. 10.

8 The Team's Perspective: Sharing and Dissemination

Knowledge sharing between different actors in the organization is called by different terms depending on the work. [28] calls it expressing where "the learner and the knowledge expert perform knowledge exchange by constructing new ideas and expressing

what they have learned". [62] call it sharing but say that "his element could be named as knowledge dissemination"; [45] identified this stage as dissemination, too. [63] calls it as "socializing or sharing" and [64] includes socialization of knowledge as part of the acquisition stage. For [65] socialization is the process of sharing traditional knowledge through observation, imitation, practice and participation in a formal and informal community. Socializing implies "getting the target audience to appropriate a concept, understand it, assume it and mobilize actions and decisions. Thus, communicating to mobilize requires considering the opinions and points of view of those directly involved" [66].

According to [67]: "from social psychology, Arnett (…) proposes three types of objectives for socialization, of general scope to different societies and cultures: 1) impulse control, 2) preparation for occupying social roles and 3) internalization of meaning" These ideas can also be applicable to the organizational sphere as objectives of socialization.

As expressed above, [64] includes a socialization stage. However, it also defines a dissemination stage after storage. It is understood that this stage is associated with what other authors call "divulger" or "difundir", which seeks to maximize the scope of knowledge socialization. [68, 69] use the compound term "disseminar/compartilhar". For [66] diffusion, as propagation and dissemination of knowledge, is a possible socialization strategy.

Then, there are two ways of knowledge sharing: among knowledge workers through interpersonal communication strategies and from the work of the knowledge manager who summarizes, generates communications and disseminates among teams. These activities are presented in the Knowledge Management Model in Sect. 10.

9 Identification, Creation and Acquisition

9.1 Identification

According to [70] the identification phase aims to identify the intellectual capital that exists in the organization, the key processes and the critical knowledge held by experts. The creation of knowledge maps is proposed in this phase. [71] calls it knowledge audit. [54] includes in the knowledge access activity the search for the person who possesses the specific or necessary knowledge for a given situation. It is an activity that is preferably performed prior to the identification of a knowledge need, with the objective of having identified the possible sources of knowledge for a more efficient access when its use is required.

As stated by [72] the knowledge identification is a response to problems of knowledge location. [70] say that this stage aims to identify the intellectual capital that exists in the organization, the key processes and the critical knowledge possessed by the experts. To [59] "knowledge is identified through the area of human management in the organization, they are one of the most important and strategic areas, since they identify the skills, the competencies of key collaborators for the organization, in order to exploit such knowledge and skills for the benefit of customers and the organization".

Figueroa Ocoro calls "identification or capture" [73] to the classification of knowledge and information possessed by employees with respect to their skills, experiences,

strengths, practices and criticality, since not all knowledge is important to the institution to be classified. [74] calls it "identification and acquisition" [57] introduces the concept of knowledge assets. [24] calls it "search".

In agreement with [70, 75] states that the first step in knowledge management is the identification of the organization's key processes.

According to the sources surveyed, identification includes: determine the key processes, determine existing knowledge and its location, determine the knowledge needed, and identifying knowledge sources and their networks.

Knowledge sources can be internal or external. Although most of the works surveyed deal with the internal sources of the organization, external sources are also a concern of the literature and many articles that were found. [71] states that among these knowledge sources are workers, customers, suppliers, shareholders and competition as knowledge creators.

The processes of obtaining knowledge, both from internal and external sources, are discussed in the next sections.

9.2 Creation

According to [60] the knowledge creation depends on the method of generating new knowledge through the repositioning and integration of present knowledge to achieve goals such as the introduction of a new product or service development, or management enhancement in an organization. [76] says that this process refers to the ideas and actions undertaken towards the generation of new ideas or objects. To [77] the knowledge creation is the process of generating new knowledge for which the existing knowledge is a prerequisite and "it is described as the development of know-how, unique expertise and new activities within an organization".

Melo proposes, once the knowledge has been used, to apply it in other contexts or areas of the organization [78]. In this way, its applicability in different contexts could be evaluated and new knowledge could be generated. [18] includes an activity called "transformation and use" that includes not only the use of knowledge but also the transformation aspect as "the generation of new concepts, processes, models, methodology or anything that generates value". [54] includes it in the access to knowledge activity.

The mentioned articles refer to the creation of knowledge from previously existing co-knowledge in the organization.

9.3 Acquisition

From the works found and analyzed, it is not possible to identify a univocal use of terms for the activities associated with seeking and obtaining knowledge, both from internal and external sources, and the generation of new knowledge from previously existing knowledge. This section presents some of the concepts and terms found.

To Probst et al. [79], acquisition has to do with renewing the organization's knowledge by obtaining external knowledge. With a similar concept, [22] calls acquisition the transfer of knowledge from one organization to another, including an assimilation activity that allows the understanding of external knowledge in the company. [54] distinguishes the concepts of creation, when it comes from internal sources, and provision of

knowledge when it comes from external sources. For [54], acquisition includes activities related to the search, identification and access to new knowledge.

To [49] the acquisition, which mainly to gather and identify the valuable information in the organization. [55] says that "the acquisition of knowledge requires more than simply the sharing and collaboration of experiences, but also requires the organization to be able identify its importance or lack there-of". [76] refers to the process that covers the activities of the accessibility and collecting knowledge, including recognize, obtain, and amass knowledge (internal or external). For [81] the term acquisition implies the aptitude to recognize and attain new knowledge, which is crucial for effective organizational processes [82]. Primarily, employees acquire new knowledge from internal corporate sources such as colleagues and team members. To [35] the acquisition dimension of absorptive capacity is related "to routines for identifying and acquiring knowledge that resides outside of the firms' boundary". [62] say that "the formal inner knowledge of the firm, how to capture and get use of external knowledge and the link between both".

Given the impossibility to identify specific terms for the relationship with knowledge from internal and external sources, this paper chooses to call it acquisition (a term mostly used, and which differs from the creation proposed in the previous section) differentiating the origin: acquisition from internal sources and acquisition from external sources. The acquisition of knowledge from external sources can also be assimilated to the concept of "surveillance", which is discussed in the next section.

9.4 Surveillance

The causes that originate the incorporation of knowledge can be linked to the needs of the organization's own members regarding specific knowledge (which requires the search and identification of who possesses such knowledge) or through mechanisms of continuous search for new knowledge. The first case is covered in Sect. 7 with the concept of "retrieval"; the second can be related to the concept of surveillance.

Surveillance can be defined as "the systematic and organized effort by the company to observe, capture, analyze, accurately disseminate and retrieve information on the facts of the environment that are relevant to it because they may imply an opportunity or threat to it, in order to be able to make strategic decisions with less risk and anticipate changes" [83]. For [84] it is "the capture, analysis, dissemination and exploitation of information useful to the organization".

Zaintek [83] identifies four types of watch: technological, competitive, commercial and environmental. [85] classifies surveillance into 3 categories: technological, talent and knowledge. In the process described in this paper, the object of surveillance is knowledge, so it seems desirable to call this activity knowledge surveillance. However, this term is hardly used: a Google search on the term yields few searches. [86] incorporates this term as part of knowledge management processes, although it does not present its characteristics or details.

9.5 Summary

This section describes all the activities associated with the search and acquisition of knowledge. For this purpose, the following activities are performed: identification, creation and acquisition. The acquisition of knowledge from external sources is convenient to be done through knowledge surveillance. These activities are presented in the Knowledge Management Model in Sect. 10.

10 Knowledge Management Model

This article identifies the essential activities required for a Knowledge Management Model, incorporating the different concepts found and presented in previous section and considering the perspective of knowledge management as a discipline, but also to recognize the contributions that the field of education can contribute to it.

Learning and internalization is not a transfer of information from the outside to the inside of the individual, but an individual process that occurs in the mind of the learner as a process of inter-functional reorganization and generates change in a person's behavior generated by experience. Organizations must have the appropriate tools to be able to access the necessary resources to carry out such learning (with access to repositories and external sources) facilitating the tasks of knowledge acquisition and retrieval (see the individual perspective in Fig. 1). This learner is called knowledge worker, as it was called by Peter Drucker.

To achieve organizational learning, the learning individual must be socialized in the organization: for this purpose, socialization strategies can be carried out in the interpersonal exchange (for which spaces that allow it must be created) or through the work of a knowledge manager that summarizes knowledge, generates communications and disseminates them among work teams, and can also be disseminated outside the organization or to other remote teams (see the team's perspective in Fig. 2).

Except for socialization, the remaining proposed activities require considering a repositories perspective (see Fig. 3) for knowledge persistence. The representation and structuring are necessary activities for the optimization of knowledge persistence in order to maximize its exploitation. These activities can be performed previously to the knowledge explicitness in the storage (and by the knowledge worker) or it can be made explicit in an unstructured way and then, through of specific techniques, knowledge manager performs its structuring. Thus, knowledge can be persisted as unstructured knowledge or structured knowledge.

The fundamental objective of any knowledge management process is the application of existing knowledge and to achieve this, maximize the knowledge that is possessed. For this reason, activities related to obtaining new knowledge are very important. As presented in this work, the sources of knowledge can be both internal sources and external sources and for this, various activities must be carried out. Identification is one of the fundamental activities and includes: determine the key processes, determine existing knowledge and its location, determine the knowledge needed, and identifying knowledge sources and their networks. Once the sources are identified, it is possible to obtain knowledge from them. In the model presented, the knowledge gaining from external sources is called acquisition, and it can be carried out directly by the knowledge worker

or by the knowledge manager, proposing knowledge surveillance activities. Obtaining knowledge from internal sources has been called retrieval from the repository perspective and a knowledge creation process is proposed through the repositioning and integration of present knowledge to achieve goals. This perspective of obtaining knowledge is presented in Fig. 4.

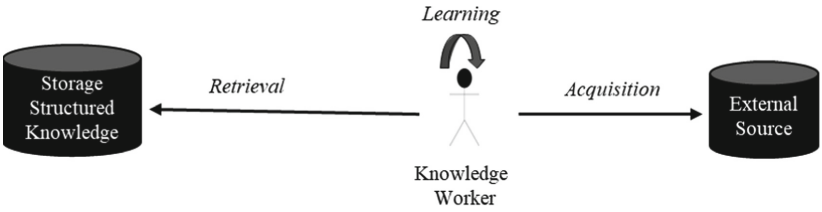

Fig. 1. Knowledge Management Model: The Individual Perspective

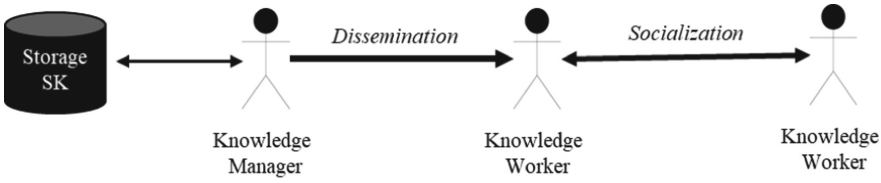

Fig. 2. Knowledge Management Model: the Team's Perspective

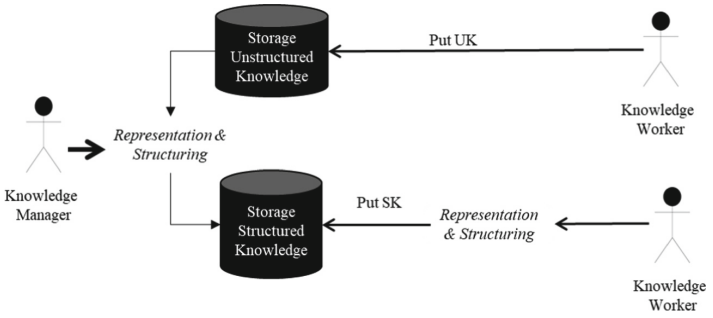

Fig. 3. Knowledge Management Model: Repositories Perspective

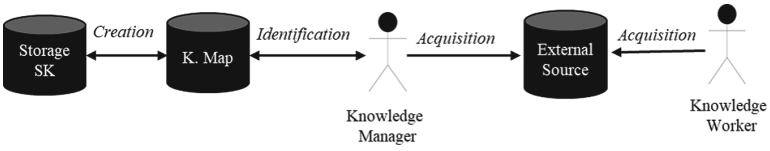

Fig. 4. Knowledge Management Model: Identification, Creation and Acquisition

11 Conclusions

Knowledge is an indispensable resource for organizations to perform their tasks successfully and innovate. Knowledge management is an integrated field of multiple disciplines that seek to exploit knowledge more efficiently. This paper analyzes activities in the knowledge management literature and presents a knowledge management model. The knowledge management model proposed included these activities: learning, retrieval, representation & structuring, socialization, dissemination, identification, creation and acquisition. The phases of preparation of the organization for the application of the proposed model, maintenance and evaluation have been excluded from the present paper; these activities will be addressed in future work of the research group.

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