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Selection Of A Knowledge Managment Model For The Regional Center Of Management For Productivity And Innovation Of Boyacá -Crepib-

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Abstract

In the current context, Knowledge Management (KM) is considered as a key element for the organizations, providing them all resources to innovate and to keep a step ahead in its field, because it can capture, frame and spread both experiences individual and collective in the working staff. These elements grant competitive and sustainable advantages in the demanding global environment. However, some companies are facing some difficulties due to an inapprop[1]riate knowledge management, it limits its capacity to reach objectives and goals. This the case of the Regional Center of Management for Productivity and Innovation of Boyacá (CREPIB), that despites of enroll a highly qualified team, it doesn't have an effective KM model. In this sense, the objective of this study is to select a KM model that fits the needs of the CREPIB. It entails research with a mixture approach, in it identified that the success in an organization is based on the capacity of the working staff to integrate new and existing knowledge, this is becoming a key element to reach the corporate objectives. For this reason, it concludes that it is necessary to bond KM models that allow to increase growth and organizational survival.

Key words: *Knowledge Management, Model, Organizations, CREPIB.*

Introduction

Knowledge is recognized like a pivotal component in the contemporary business field, it is vital to the success and evolution of the organizations. From the perspective of Medrano y Suárez (2002) y Rivero (2002), it is relevant that the companies analyze their organizational subsystems to identify the key concepts to making strategic decisions, the development of products and provision of services. The integration and effective application of new emergent knowledge also results essential to reach the corporate goals.

By the other hand, knowledge acquisition, especially all related to the abilities of the 21st century, should be considered a priority to the organizations. All the internal activities of the companies should be led until the end. However, as stated by Davenport and Prusak (2001), and Sánchez (2014), it is not enough that the companies acquire or generate knowledge. In consequence, it is fundamental to have the ability and wisdom needed to apply it in an effective way in the organizational processes.

Taouab and Issor (2019) stress that optimum management of knowledge in the organizations require the implementation of integrated models that are aligned with the

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missional objectives, that also facilitate the generation of the processes and procedures focused on the continuous betterment. Thus, although the knowledge is there, if the organizations do not have with the appropriate human source and potential of knowledge, if it is not framed in a knowledge model to manage these knowledges, it is possible that will not be taken advantage in the best way and to some extent they do not have the expected outcomes.

The global academic tradition inherent to knowledge management, shows that in the most developed countries, most organizations have held KM models to provide answers to global requirements. However, Karakus and Aydin (2016) states although there are standardized models to knowledge management, these are conceptualized and explained the processes, they privilege theorization, for this reason, it is required that organizations make actions focused to adapt the models according to the needs. From the perspective of Briceño and Bernal (2010), in Colombia the knowledge management in some organizations have adopted American models, for this purpose, this situation is unfortunate, because these models had been designed following the requirements of the American enterprises, and they are not settled under the Colombian business sector conditions.

In the light of the above, the purpose of this study is to examine knowledge management carried out by CREPIB, in order to identify the accurate model to satisfy the specific needs of this institution. Based on this, it is underlined the importance to select an optimum knowledge management model, with the achievement to reach organizational goals in an effective and efficient way.

Literature Review

The literature review in this research allows the reader to understand and interpret the object of study. Therefore, through the conceptual and theoretical references outlined, deeply explain the topics inherent to knowledge management, and particularly to some models used in organizations for its application.

Knowledge Management

Knowledge management stands out as a fundamental element to get success in the current environment for the organizations. Several researchers had been offered diverse conceptualizations in this vital process. For instance, from the perspective of Avendaño and Flores (2016), knowledge management acquires a fundamental role in the company to facilitate knowledge appropriation that circulates in the organization, the purpose is to support decisions that launch the corporate progress. To get it in this effective way, it is necessary to adopt a structured and systematic approach that allows us to recognize, create, sustain and assess the available knowledge. This approach guarantees the optimization of resources and getting most benefits, it means financial performance and an exponential growth.

According to García (2014) and Villasana et al. (2021), knowledge management represents evolution and continuous development concepts. Although its definitions can vary, it is globally recognized as a central process in the organizations. Knowledge management seeks to understand, adjust and reinterpret tacit and explicit knowledge that circulate in the corporate environment. The objective is to consolidate new knowledge that enhances innovation in the organizational processes, leading the creation of new products, services and production strategies.

The relevance of knowledge management

Knowledge management is considered in the corporate environment as a fundamental basis to get success in the global market. According to Vitale et al. (2020), its right management not

only consolidates a well-framed, efficient and innovative organization, even though it facilitates interchange of knowledge between the organization members, allowing new knowledge creation. This transformation process influences directly the betterment of processes and products, to open new opportunities to expand the markets.

In this context, knowledge management, as stated by Artiles and Pumar (2013), reveals itself as a strategic resource to enhance innovation, productivity of human resources in the organizations. The interchanges of intellectual goods allow the companies to potentiate over their competitors when they capitalize efficiently available knowledge. For this reason, the relevance in the knowledge management in the corporate environment is not only in the capacity to capitalize intern knowledge, but also in the ability to anticipate and adapt to market changes, to contribute to sustainable growth and competitiveness of the organization in a dynamic and globalized environment.

Models for knowledge management

Models for knowledge management are essential in the organizational context, as states López (2001). Those models allow us to analyze the business reality to determine if they have accomplished their goals, and also, to identify the necessary actions for their achievement.

From the perspective of González et al., (2014) models for knowledge management are guidelines or principles that allow the organizations to grow continuously. However, it should be emphasized that as such they cannot be fully replicated, because each organization has singularities that difference between others, for this reason, it requires to adjust those models taking as referent the needs of the enterprise, if it is not in that way, it is possible that tend to experiment integrating models, the organizations could be limited in the achievement of their projections and goals settled.

On the other hand, it is pertinent to indicate nowadays exists a variety of models to corporate knowledge management. However, literature review allows to establish there are most of them had been adopted by the organizations are SECI model and Hypertext Model by Nonaka y Takeuchi (1995), also Knowledge Practices Management Consulting (KPGM) by Tejedor and Aguirre (1998), Knowledge Management Assessment Tool KMAT stated by Andersen (1999) and the technological integration model by Kerschberg (2001); each one of these models from their particularities to be adapted and requirements of the corporates can allow to reach established projections.

- **SECI Model**

Organizational knowledge management approach according to Nonaka and Takeuchi (1999), is focused in the tacit and explicit integration of the knowledge, it means the combination of creative knowledge that members develop in their quotidian activities. It is fundamental to highlight in SECI knowledge management model, the tacit and explicit knowledge transfer carries out through four distinctive phases:

- **Socialization (from tacit to tacit):** In this way, to transform knowledge allows us to interchange experiences through mental schemes, observe quotidian routines, imitation and practice. Those activities privilege mobility knowledge from tacit to tacit based on experience.
- **Externalisation (from tacit to explicit):** In this phase of knowledge transfer, seeks to create new concepts, metaphors, analogies, hypotheses or models, generated from collective dialogue and reflection of the team-work and members of the organization.

- **Combination (from explicit to explicit):** The following phase of transfer allows to systematize the concepts bring to dialogue and reflection, there the individuals are able in a solidarity way, to share knowledge mediated by technological tools documented in actions of this process such as meetings, conversations by phone, communication networks, among others. These interactions and continuous feedback between tacit and explicit are interpreted as the new knowledge acquired.
- **Internalisation (from explicit to tacit):** This is the final phase of transformation, where individuals and organizations add the tacit and explicit knowledge through experience socialization. This means that they approach meaningful learning from a holistic approach "learning by doing", which states that the apprehensions achieved are internalized when the knowledge gained is realized through communication in formal documents such as manuals, telling life stories to facilitate transfer of explicit knowledge to other people, this reaffirms processes and good corporate practices starting a new spiral of creating knowledge.

It is essential to point out that knowledge management SECI model proposed by Nonaka and Takeuchi (1995), it is based on six essential pillars, there are:

- **Creation:** It should be defined that personnel transfer knowledge through observation, imitation and capacitation.
- **Structuration:** To organize knowledge, moreover, to share and incorporate it inside the corporate processes.
- **Transformation:** It is necessary to re-structure knowledge as a tangible element, for instance: product, prototype, model, among others.
- **Transfer:** Spread out knowledge produced inside and outside of the corporate environment.
- **Storage:** It is necessary to have knowledge in a printed or physical way then to be used.
- **Incorporation:** It should recognize knowledge as an appreciable and strategic asset.

Generally speaking, SECI model developed by Nonaka and Takeuchi (1995) states that in the organizational context there exists implicit knowledge bound to individual and personal experiences, which are accumulated over time. Although this intangible asset exists, their use may be hindered by the difficulty that some members of the organization face when trying to externalize their knowledge. As a result, this implicit knowledge is not going to be expressed as well as they are able to by corporate employees. In this context, SECI model is focused on giving strategies to facilitate tacit knowledge socialization, allowing its transformation in explicit knowledge, at the same time, enhancing the generation of new knowledge, it is translated into the knowledge spiral as the authors mentioned.

- **Hypertext Model**

This model was stated by Nonaka and Takeuchi (1999), it entails the fusion between bureaucratic and organic systems, the first one is focused in the activities that are developed inside the organization, because of that it is conceived from a mechanist nature; the second one, has a flexible nature it looks for reaching a harmonious performance in the organization, because it bonds each area that integrates the organizational links. It is fundamental highlight that the hypertext model it is constituted by three layers, that are constituted a spiral of knowledge, it allows that organizations have enough tools to face the global requirements, from the authors Huamán and Ríos (2011) the layers are going to be explained:

- **First Layer "Project Team"**

This layer bonds members from different areas inside the organization, its purpose of this layer is to socialize knowledge, therefore it is consolidated innovative ideas that are oriented to reach successful corporations. Thus, it looks for socializing and exteriorizing knowledge, which carries out that it does not exist hierarchically, it means from whatever area of the organization could bond existent knowledge in order to reach the continuous betterment of the organization.

- **Second Layer "Knowledge basis"**

In this layer of the hypertext model are selected the knowledge to determine tacit and explicit knowledge of the organization, to reach it is necessary that are carrying on some processes like data capturing, organization, processing and storage. In this sense, business entities use organizational culture, corporate vision, and it is really relevant information and communication technology; the hypertext in this layer plays a fundamental role that articulates harmonious the efficiency and stability entailed in the bureaucracy to reach out creativity and allow new knowledge creation.

- **Third Layer "Business System"**

In this layer of hypertext model is going to be a posteriori of the second one, it is oriented to carry out the accurate knowledge to the workplace of the official member of the organization, which distribute to hierarchical level through interiorization and combination, given place to bureaucracy characteristics that at the same time allow the efficiency in the organizational processes taking a base knowledge. Likewise, in this stage, it generates the possibility to create new projects to produce a spiral that allows the continuous creation of knowledge.

Globally, the hypertext model allows that human resources inside of the organizations can distribute in each one of its layers, to generate new knowledge, it contributes to having enough tools to support making decisions to face global requirements. Moreover, this model integrates aspects of the bureaucratic and organic theories, carrying out the consolidation of competent authorities and with the capacity of adaptation to permanent challenges that represent business spheres (Zapata, 2006).

- **Knowledge Practices Management Consulting Model (KPGM)**

Knowledge Practices Management Consulting Model stated by Tejedor and Aguirre (1998) take as a fundamental pillar learning and organizational performing, taking into consideration the first one, as a key factor to reach out the results in the corporations, therefore it bonds all the elements that integrate the organization: leadership, culture, organizational structure, attitudes, team-working, learning mechanisms, among others. In this model, knowledge is managed through four specific processes:

- **Knowledge acquisition:** In this process, knowledge is derived from the organization learning, it means, the experience storage that had been collecting and at the same time allow implementation of knowledges in different situations.
- **Indexation, Filtering and Linking:** Specifically, this process is focused on classifying knowledge, integrating and interconnecting with different subsystems of the organization, to reach out the purpose it usually is used as database manager.
- **Distribution:** In the distribution of knowledge, it looks for the wholeness of official members in the organization access to the knowledge to emerge from the experiences, through the interchange of ideas that contribute to new knowledge.

- **Application:** This is the last process, it has as a purpose to carry out the performance of knowledge acquire in such a way what impact positively the organizational processes to offer better products or services.

In general terms, the Knowledge Practices Management Consulting Model is recognized as one of the most relevant, because it is framed in continuous learning as a strategy to strengthen the organizational performance, beyond of this it is to enable it to endure along the time and are aligned with the global market demands.

- **Knowledge Management Assessment Tool (KMAT) Model**

The Knowledge Management Assessment Tool (KMAT) Model is oriented to diagnose knowledge in the organization then evaluate possible needs that exist related to knowledge that require internal knowledge management of processes. From the perspective of his creator Andersen (1999), knowledge should be appropriated, adapted and transferred once it is incorporated singular aspects of the organization, due to in all moment it enhances for innovation to reach out this purpose it is necessary to take into consideration four specific elements: culture, leadership, technology and measurement (Alfaro and Alfaro, 2012). The Knowledge Management Assessment Tool (KMAT) Model to knowledge management integrates six processes: identification, creation, collection, adaptation, application and spreading; likewise, five factors that promote knowledge operalization:

- **Leadership:** It refers to the way how the organization guides business, from knowledge that is part of the appropriate knowledge constructed from the experience.
- **Measurement or Quantification:** It refers to the intellectual capital and its knowledge, therefore identifying needs to enhance them.
- **Culture:** It entails organizational context and the aptitude and availability of the human talent according to teaching and the appropriation of new knowledge.
- **Technology:** It is related to software and applications that allow knowledge management in a corporate environment.
- **Processes:** They are related to internal mechanisms of localization, transmission and knowledge acquisition (Andersen, 1999 cited by Lopera and Quiroz, 2013).

The Knowledge Management Assessment Tool (KMAT) Model allows to manage knowledge, that based on Andersen (1999), this is a cyclical process which should be centered in paying special attention on human talent and the way that they appropriate from external knowledge and its experiences originated in the corporate, which carries out to plan accurate strategies to reach out the maximum potential of knowledge, in this case, it is necessary to integrate creation, appropriation, storage, transmission and interpretation of knowledge in a bidirectional way, It means, from people to the organizational and from the organization to the people. For this reason, this model of knowledge management is aligned with management and experiences that arose globally entrepreneurial and allows to generate a collaborative environment to facilitate knowledge transfer capitalized to be applied in whatever required situation.

- **Technology Integration Model**

This model was stated by Kerschberg (2001) is focused, specifically, on the integration and technology use as a support to knowledge management, since that existent knowledge heterogeneity is framed by “layers” in which knowledge, its management and emerged data are presented; this model establishes the need to bond technology as a clue strategy of knowledge interchange, even though when in an information society predominate technology as way to communication that allow interconnection between different subsystems inside the

organizations. Based on judgment's author, the movement of knowledge in this model follow some specific processes, as are established:

- **Acquisition:** Human Talent's knowledge is appropriate because it is validated by using the following techniques: interviews, focal groups, case studies, compasses and among others ways of socialization.
- **Refinement:** Once knowledge is apprehended it is condensed between metadata by using internal and external sources adding technology usage.
- **Storage and Recovery:** In this process all information is stored in such a way that it will be recovered in real time by whatever user, to get it, it is codified by using concepts or key words.
- **Distribution:** with the purpose of allowing spread out knowledge it used some communication channels as emails, chats, corporative portals, among others.
- **Presentation:** This process is looking for tacit knowledge, in order to transform it into explicit one and the subjects that belong to the organization can be appropriated and used in whatever time they need it.

Materials and Methods

The approach through is focused on this research, it corresponds to qualitative method, because it analyses holistically the plus of experiences in a community or environment that allows its social construction and who those are permeated by values, perceptions and meanings that an individual experiment with along the study (Galeano, 2004). Those experiences allow to determine what is the impact inside of a community; Therefore, based on the qualitative approach it seeks to recognize the arguments, reflections and perceptions that employees of Regional Center of Management for Productivity and Innovation of Boyacá "CREPIB", have about the relevance of the management knowledge models as a key factor to the organizational betterment.

The scope of this study is framed in the descriptive method, which Danhke (1989) stated where researchers can detail phenomena, situations, contexts and events that are surrounding the study object. Therefore, it is precise to detail how they are and how they manifest. Finally, the study design is constructed in action research method as noticed Ferrance (2000), this methodology allow that participants look into their own practices in a carefully and systematic way, with the purpose of transform the reality that face individuals, it is from the formulation of strategies oriented to solve problems that entail the study object.

- Unit of Study

The participation of individual of this study for this research, it is focused on five members of the Regional Center of Management for Productivity and Innovation of Boyacá "CREPIB", which have the following positions: (1) an assistant researcher as 1 and half year of labor history, (1) young researcher with 3 years of experience, (2) researchers of 5 and 18 years of experience and (1) leader of "CREPIB" group with 18 years of activities in this Institution.

The sample selected is catalogued as no probabilistic in which the participants are chosen by the researcher according to the issue founded, therefore, the researcher has the required information. However, the selection of them is not dependent on probability, because of that it is a sample that is selected with an intention and based on convenience, reuniting the characteristics that the researcher considers relevant itself through sampling by judging understood as the selection of the elements that respond with researcher objectives.

- Study Categories

It is a study oriented from the qualitative approach articulated on an action research design based on that it formulated study categories to analyze the study object of this research. In table 1, it is represented in detail in those categories.

Table 1 Study Categories: Facilitating Variables of Knowledge Management (KM)

Category	Description
Organizational Culture	In this category, the analysis of values, beliefs, customs and traditions are oriented and transmitted by the members of a corporation, as an organizational culture it enhances the creation and socialization of knowledge, it implies the existence of shared values that promote cooperation and sharing ideas.
Organizational Structure	In this category, the analysis of principles as hierarchy, leadership and communication are oriented in how those elements have an impact on Knowledge Management (KM) processes to determine patterns and frequencies of communication between human resources, it allows making decisions and new ideas implementation.
Leadership	Leadership in knowledge management implies to have a solid comprehension of the human resource, about processes, systems and business principles that have impact on the corporate decisions. Leaders of knowledge are responsible to enhance learning and cooperation culture, at the same time, promote the creation and sharing knowledge in the full organization. In this sense, through this category it seeks to analyze those aspects.
Human Resources Policies	Human resources policies are rules and guiding formal principles established by the organization to hire, qualify, assess and reward the members of a team. These policies should be aligned with the organizational strategy and oriented to attract, develop and hold human talent to generate added value to the organization. Thus, the study of this category seeks to analyze those aspects.
Technology	This category seeks to analyze digital abilities or competences that the sampling individuals have in a detailed way, also technological tools that are used in KM and its impact on the organizational performance.

- **Research Process Stages**

This research process is framed in three stages according to the achievement of the objectives.

- **First Stage – Characterization**

This stage was oriented to identify the difficulties that the members of CREPIB had to manage accurate knowledge to allow its use for making decisions, thus analyzing the categories previously formulated.

- **Second Stage – Selection of the Knowledge Management Model**

In this stage, specifically were examined around sixteen models proposed by diverse researchers to knowledge management, it was focused on the assessment of facilitating variables of Knowledge Management (KM) with the purpose to establish which model is the best to adapt to the "CREPIB" organization.

- **Third Stage – Validation of the selected Model**

It was the last stage of the study, once the model was selected, then was assessed the criteria of the organization to knowledge management and verified if it incorporates them to be validated and adopted.

Results

The results of this research are derived to the fulfillment of the objectives and the development of each one of the stages stated in the methodological design.

- **Characterization Stage Results**

In this phase of the research was useful to determine the needs of the Regional Center of Management for Productivity and Innovation of Boyacá "CREPIB", refers to the adoption and implementation of a model that guarantee efficacy in the knowledge management which it analyzed the study categories based on the information provided by the informers. Likewise, they were taken into account the competences (abilities/aptitudes) to characterize knowledge management at an organizational level.

According to the study categories: Organizational culture, organizational structure, leadership, human sources policies and technology, based on the arguments and reflections of the sampling individuals it was possible to establish the fundamental need to implement a model of KM which allow CREPIB to create, structure, transform, transfer, storage and incorporate the knowledge gained from the organizational context to reach out goals and objectives formulated.

The following paragraphs present the analysis of each category proposed for this study.

– **Study Category: Organizational Culture**

This examined study category is focused on Organizational Culture in CREPIB. Based on the analyses of answers of the interviewees, it is identified a firm sensation of belonging between organization members, which is manifested in their commitment and responsibility focused on projects and activities planned. In this is remarkable ethic and respect, fundamental elements to recognize and value individual work inside of a common benefit framework.

However, the interference reveals a closer confirmation to group-works that to team-works, it shows the carelessness of effective collaboration that feedback all processes. It is essential to promote meetings that facilitate socialization of advances, experiences and results, additionally, to implement documentation tools that register this process as a built-in transfer of knowledge.

Some of the relevant answers of the interviewed stuff are the following ones:

- **Interviewee 1:** Related to organizational culture, our team-work is focused on values application in order to accomplish mission and vision of CREPIB, nevertheless, what it refers to management knowledge it is missing to implement efficient communication channels to reach out an accurate transfer of the knowledge that could be used in the best way to projects management.
- **Interviewee 4:** Even though all the staff enhance the optimum results consolidation, when we manage projects, some of the difficulties are highly represent in knowledge management and its orientation, sometimes, it limits the execution of the objectives, due to if there is going to present eventuality of someone of our participants it could be affected in the projects management process.
- **Interviewee 5:** In my experience as a CREPIB staff, I had recognized that we do not have an interaction process to give accurate feedback with the other members of the

team, usually, new knowledge and practices are shared in an informal way and o a few occasions are documented, in a huge measure. It is caused because there is missing a formal institutionalization of a knowledge management model to facilitate an effective transfer of it between all human talent staff.

Based on the interviewees' answers they highlighted the need to establish efficient channels of communication to knowledge management, also, it is important to overcome individual limitations that could affect the shared execution of objectives. Moreover, it underlines that missing an interaction and feedback between the members of the staff, it cannot allow an effective transfer of knowledge and the positive labor practices in the organization. Also, the analysis reveals a strong commitment with the values and institutional objectives, but also points out the need to better manage and transfer knowledge mechanisms. The absence of formal structures and accurate communication channels limit the human talent potential and difficult to reach out organizational goals. Likewise, it is necessary to implement strategies that enhance cooperation, communication, knowledge storage, with the purpose of the organizational culture betterment and the optimization of the results projects in CREPIB.

- **Study Category: Organizational Structure**

Based on the analysis of the answers given by the interviewees in the survey, it was found that internal processes monitoring in the organization is developed in an informal way when a research project or a consultancy starts and ends. This monitoring is done through planning of work meetings when they are registered by using minutes, also, they prepare action plans of betterment. The deliveries are a detailed report of the projects, which should contain (operative manual, schedule and budget). Some projects present external audits that allow the corresponding monitoring of the carry out processes. In this sense, the responsibility and control are taken by high executives and leaders that are leading projects.

Some manifested appreciations provided by the interviewees are the following ones:

- **Interviewee 2:** To monitor all processes for all projects, it requires an active participation of the main researchers, co-researchers, leader of CREPIB team and young researcher too. Unfortunately, 90% not even the main researcher remembers important dates and accorded commitments, therefore, these tasks are taken by the young researcher. However, this in its freshman quality does not count with required expertise. This situation leads to failure, because there is no control over all and be in charge of the rest of tasks, as a result, the consequences are reflected on the unfulfillment and wrong time delivered of reports, this situation is frequently up to now.
- **Interviewee 4:** it supposed that with betterment plans, minutes monitoring of projects made it accomplish the required needs… but these tasks have not been done regularly, they are done when the alerts are in red and need to be accomplished … As a member of CREPIB I have perceived that goals are reached and can accomplish the plans in a random way, but there is not a real and tangible control over the processes.
- **Interviewee 5:** Each team manages the projects and has an independent structure of working, in some moments we tried to establish work areas, however, activities depend on the projects and their scopes. This is a complex process; I understand that all functions of each professional are limited by working in the contractual processes and related to CREPIB are done as a voluntary action and do not depend on orders under the contract of services agreement that had been signed.

Based on the referents of the interviewees, it could be perceived the frustration about to be in charge of functions that are no specified in their contracts, it has an effect on the efficacy and efficiency accomplishing contractual assigned activities, under the rigorous monitoring and feedback provided by the contract supervisors; Of course, based on the lack of clarity and monitoring, the stuff should work with the tools that are available for them. Sometimes they have to face it alone. As a consequence, it shows the need to better the companionship and tutoring for an accurate development of the labor routines, this disposition enhances the commitment of the members.

The reflections that come from the interviewees manifest the need to incorporate inside the organization a democratic and flexible structure, it means, one that is hierarchical, with rigorous processes that allow a companionship guided to democratize and assign collaborative activities. In the same way, they recognized the need to design elements that allow monitoring, redesign and assess processes carried out in CREPIB, not only in a random way, or because it is the latest time of delivering reports that provide compelling information about the activities that had been done to be incorporate in routines as a way to lead processes under tested experience, avoiding possible failures presented in other projects and consultancies.

- **Study Category: Leadership**

The CREPIB crew expressed the relevance to convene idoneous personal to face the requirements of the research projects and consultancies done: it means, that not only the calls are estimating the measurement of team-working, these are determined according to the professional profiles required based on the individual abilities that the professional has in the area to be hired. Therefore, some members manifest difficulty and are demotivated to face their assigned activities, because there is no clarity about the roles and profiles they should be performing. It causes exhaustion, it is commonly triggered because the demand is not the same for all of them. In the same way, it limits learning, because it is gained on the go, without using the previous knowledge gained along the years of experience.

Based on the information provided by the interviewees they refer the following:

The feedback in the articulated projects under the research lines is provided by the leaders of the project and the meetings with the team-works too. The process is carried out through partial and full reports that are uploaded in Google Drive, where it shows betterment alternatives, restrictions and progress.

Based on these situations the interviewees refer the following:

- **Interviewee 2:** Lack of monitoring. The organization CREPIB gives all freedom to the researchers taking into consideration their abilities, but there is not taking into account that each project requires new things and there is not a continuous guide to validate the processes.
  Lack of clear activities: “This is work for the young researcher” this is a quote that is repeated every single day in CREPIB, the worst part is that these activities have not been registered in a contractual way, it is assumed as a fact. The accomplishment of those extra activities avoids the accurate development of the “real activities that should be done”.
  Personal demotivation: The main idea is “why I am always in charge of” or “why am I monitoring and being more exigent than other than me”. It carries out that as a

manager member that manages projects could be demotivated and sometimes, we are going to be affected psychologically…"

- **Interviewee 3:** Team-works are conformed according to the reference terms in the callings, agreements (covenants) or alliances …
- **Interviewee 4:** In the CREPIB presents a paradox in between tacit and explicit knowledge management because when there are individual projects, in my case, I should do all the tasks without any companionship or tutoring, but when it is about a macro-project, it counts with all support of a huge professional staff, based on my personal opinion, I think it should not present this situation, because some members of CREPIB should learn "by themselves" along the ride: This is a process that had sill worked but it has some lacks when happened "I cannot stand or I do not understand what I have to do?

Reflected on the appreciation of the interviewees it allows us to infer that the leadership refers to even if a professional does not have the required experience, but he/she has the time to do it is assigned activity, because the organization is adapted according to the requirements to the clients following the business lines offer by the Center. In the same way, to conform team-workers are taking into account the kind of bonding/hiring and the labor affinity. Nevertheless, it shows the lack of a functions manual that collects all the proper activities that correspond to each line of research. It means, that could have an effective systematization according to the project or consultancy had been developed and it is relevant to register as a vital intangible asset in the KM to try to formulate and guide in detail projects and consultancies.

- **Study Category: Human Resources Policies**

The 5 members of the CREPIB that were interviewed consider it is necessary to build a procedure manual in administrative, research and consultancy services that allow to have a clear working route to execute diary routines.

Some opinions manifested in their answers are the following ones:

- **Interviewee 1:** Sometimes I have found some procedures that I do not know how to deal with or how to do a regular procedure, and personally, I have had to ask who has more expertise. Because of that, having a clear procedure manual avoids making some mistakes in the execution of some procedures …
- **Interviewee 2:** In general, I think that there is not a structured procedure of induction, in my case, I learned by doing the development of projects hand to hand with the project's leaders…
- **Interviewee 5:** The learning is an individual process, some occasions, you can learn by working and you can perceive a difficulty, there is missing a processes and procedures structuration to develop routinary activities…

In this sense, the sampling members interviewed consider that the advisory and how it is going to be planned in a manual that registers the procedures under the gained experiences along the years, it allows the CREPIB members to have the most effectivity according to planning, execution and assessment in the projects and consultancies. Also, this formation element is a way to track the processes in the Center. However, those should have some analytic grids that allow to establish the strong points, and at the same time, should be better in routines and activities performed by the members of the Center. As it was mentioned, it is imperative to design and elaborate a manual which contains relevant functions that develop the organization in its administrative and procedures too, such a way of support in the

companionship to the director of CREPIB and its researchers' leaders, because it should be an articulated work in order to know what are their functions and where could be solved in its doubts and requirements of team-working.

– **Study Category: Technology**

The CREPIB has disposed some resources to keep the information in the cloud in virtual repositories in Google Drive, handled by the project's leaders; also, it used Asana Platform to coordinate members team-working, at the same time, the webpage Web.www.crepib.org.co which is used as a tool that allows the diffusion of made projects, mission, vision, and among others. On the other hand, the physical file is presented in the (SGI) Research Management System of the Universidad Pedagógica y Tecnológica de Colombia.

Related to technological tools used to keep the information the interviewees mention the following statements to do knowledge management:

- **Interviewee 1:** In my particular case, I use Google Drive repositories, there is not too much information in a physical way, so I usually don't use this kind of files. I know that CREPIB has a system information software, but personally I haven't used it yet because I haven't been trained to use it…
- **Interviewee 2:** The tools that I used to use are digital like journals and electronic books, in order to record results and full process of knowledge there is a software, but I haven't used it yet, so all the knowledge of my investigations are in my computer …
- **Interviewee 4:** There are some files that register processes, articles, books and passbooks that inform results of research and intervention. Unfortunate, at least in my case, I perceive this knowledge as a dispersed one, less structured and because of that I don't use it. Currently, I believe and repeat, those are individual processes…

The CREPIB members recognize the existence of a software to keep information, however, they do not use it because they haven't been trained yet to take advantage of this resource. Also, they manifest their personal retrieved way to keep information in their own personal documents in their computers; in consequence, transfer and systematization of information is not accurate and the participants re-affirmed as useful in order to facilitate processes.

Consequently, from their personal assumptions they consider that it is necessary to implement a system to identify information that should be classified and how to keep the relevant one. It should have qualified personal that allow filters following the needs of each line of business of the Center. In concordance, it is vital to spread out which are the most relevant criteria or characteristics of the projects, in such a way every member can be able to recognize what they have done, what it does and what it will do, with the purpose to optimize their resources.

- **Results Stage – Knowledge Management Model Selection**

Based on the emergent results of the characterization stage, it showed that knowledge management in CREPIB organization presents some irregularities that limit an efficient development in their projects and consultancies; the stuff of this organization recognize that it is a result of haven't adopted yet and standardized a KM model that allow to respond to the activities and characteristics developed in this organization.

In order to face the established dilemma, the authors of this research analyzed sixteen models proposed for diverse researchers for doing knowledge management, this analysis was focused on the assessment of some facilitated variables of KM, with the purpose to establish which model is the best and could adapt to the CREPIB needs. Then, it establishes four of those sixteen models to adjust the requirements of this Center. Finally, to chose the model to be implemented was implemented an assessment grid framed in a Likert scale with the purpose to asses some aspects of the models: SECI and Hypertext, Knowledge Practices Consulting Model (KPGM), Knowledge Management Assessment Tool Model (KMAT) and Integration Technology Model.

In concordance to get the validation of each one criterion that entails each model was used a Likert scale from 1 to 5, where 5 is the highest assessment and 1 is the lowest, each member / interviewee who answered the instrument (interview) was identified with the letter P. The results are presented in Table 2.

Table 2 Results of the assessment of the 4 KM models

Models	**Criteria**	**P1**	**P2**	**P3**	**P4**	**P5**	**Sum of criteria**	**Ponderation (sum/number of participants)**
SECI and Hypertext Models (Nonaka and Takeuchi, 1995)	Components and Processes	**3**	**5**	**5**	**5**	**5**	**23**	**4,6**
	Organizational Culture	**3**	**5**	**3**	**5**	**5**	**21**	**4,2**
	Organizational Structure	**3**	**5**	**2**	**5**	**5**	**20**	**4**
	Leadership	**4**	**4**	**3**	**5**	**5**	**21**	**4,2**
	Human Resources Policies	**3**	**4**	**2**	**5**	**4**	**18**	**3,6**
	Technology	**2**	**4**	**3**	**5**	**5**	**19**	**3,8**
Total Percentage								**30%**
Knowledge practices Management Consulting Model (KPGM) (Tejedor and Aguirre, 1998)	Components and Processes	**4**	**2**	**4**	**4**	**3**	**17**	**3,4**
	Organizational Culture	**4**	**3**	**4**	**5**	**3**	**19**	**3,8**
	Organizational Structure	**4**	**2**	**4**	**4**	**5**	**19**	**3,8**
	Leadership	**4**	**5**	**4**	**4**	**4**	**21**	**4,2**
	Human Resources Policies	**4**	**4**	**2**	**3**	**3**	**16**	**3,2**
	Technology	**3**	**4**	**5**	**3**	**2**	**17**	**3,4**
Total Percentage								**26%**
Knowledge Management Assessment Tool Model	Components and Processes	**3**	**2**	**4**	**4**	**4**	**17**	**3,4**
	Organizational Culture	**4**	**2**	**3**	**4**	**5**	**18**	**3,6**

(KMAT) (Andersen, 1999)	Organizational Structure	**4**	**2**	**3**	**5**	**4**	**18**	**3,6**
	Leadership	**3**	**3**	**3**	**5**	**4**	**18**	**3,6**
	Human Resources Policies	**3**	**2**	**2**	**5**	**5**	**17**	**3,4**
	Technology	**2**	**1**	**5**	**3**	**1**	**12**	**2,4**
Total Percentage								**24%**
Integration Technology Model (Kerschberg, 2001)	Components and Processes	**4**	**1**	**2**	**3**	**3**	**13**	**2,6**
	Organizational Culture	**3**	**2**	**3**	**3**	**1**	**12**	**2,4**
	Organizational Structure	**3**	**1**	**2**	**5**	**3**	**14**	**2,8**
	Leadership	**3**	**2**	**3**	**3**	**2**	**13**	**2,6**
	Human Resources Policies	**4**	**3**	**2**	**3**	**2**	**14**	**2,8**
	Technology	**3**	**3**	**5**	**3**	**1**	**15**	**3**
Total Percentage								**20%**

Note: This table shows the assessment of KM models selected by CREPIB crew.

The data analysis from the assessment results of these four models of KM (Knowledge Management) reveals that the Hypertext Model proposed by Nonaka and Takeuchi (1995) reached the highest level of validation and placed it in first place with a 30%. This criteria assessment confirms the applicability of the model, because it shows a highest level of accomplishment in the different areas as: components and processes (4.6), organizational culture (4.2), leadership (4.2) and organizational structure (4). However, technology has got (3.8) and human resources policies (3.6) received the lowest assessment, although still keep a high level of accuracy.

In second place, Knowledge Practices Management Consulting Model developed by Tejedor and Aguirre (1998) was accepted by CREPIB crew with a percentage of 26% of acceptance. The criteria were assessed following the next values: leadership (4.2), this item has the highest assessment, while the rest of them showed a middle rate of applicability with values of (3.8) for organizational culture, organizational structure and technology, and (3.6) for human resources policies, components and processes.

The third place was occupied by the Knowledge Management Assessment Tool (KMAT) by Andersen (1999), the CREPIB crew had an acceptance of 24%. The most of the criteria were considered as a middle applicability, with ponderations of (3.6) assigned to organizational culture, organizational structure and leadership, and (3.4) has got the item of components and processes and human resources policies. However, technology received a lower assessment corresponding to (2.4).

Finally, the Integration Technology Model formulated by Kerschberg (2001) had the lower grade of acceptance with an average of 20%. Technology was the only criteria assessed with a lower level with (3), while the rest of criteria received lower scores: organizational structure and human resources policies (2.8), components and processes and leadership (2.6), and organizational culture (2.4).

Based on the previous results and the needs identified along the diagnosis stage of the CREPIB case, we can conclude that the Hypertext model based on the SECI model of Nonaka and Takeuchi (1995) is the most appropriate to the Knowledge Management development. This model is remarkable for its capacity to generate knowledge and encourage organizational learning between all members of the organization. Thus, this model satisfies current needs of CREPIB that is focused on formulation and development of projects that impact the enterprise environment, research and consultancy oriented to regional development.

- **Results Stage: Selected Model Validation**

The last stage of this research is focused on validate the hypertext model selected by the CREPIB crew, for this reason were taken into account the organizational criteria inherent to knowledge management, particularly, processes and procedures proposed by Nonaka and Takeuchi (1995), through a Likert scale assessed by the members of the Center whom assess the following criteria (See Table 3).

Table 3 Scale for the consolidation of results of the processes and procedures of the knowledge management following Hypertext Model

Processes	**Procedures**	**P 1**	**P 2**	**P 3**	**P4**	**P 5**	**Sum of assessment of procedures**	**Ponderation (sum/number of participants)**
Stage 1 **Create Socialization (tacit to tacit)**	To define labor profiles and assign tasks according to the organizational needs.	**4**	**4**	**5**	**4**	**4**	**21**	**4,2**
	To plan and execute induction to new workers.	**2**	**3**	**4**	**2**	**2**	**13**	**2,6**
Tacit knowledge is developed through innovation processes, learning and execution of tasks, research projects and consultancies. It is defined as knowledge transfer of personnel through mental schemes, routines	To establish multidisciplinary and self-management teams (team-working).	**4**	**3**	**4**	**3**	**3**	**17**	**3,4**
	To manage and share gained knowledge along its development through learning communities.	**3**	**3**	**3**	**2**	**4**	**15**	**3**
	To select key personnel internal and external with expertise in each one process	**4**	**4**	**4**	**3**	**4**	**19**	**3,8**

observation, practice imitation.	carried out in the CREPIB.							
	To conform team-works to solve inconveniences that arise along the execution of the processes.	**3**	**3**	**3**	**2**	**4**	**15**	**3**
	To expose and register ideas that help to the betterment of the processes.	**4**	**2**	**3**	**2**	**3**	**14**	**2,8**
	To identify new knowledge and the existent one (internal and external) generated in CREPIB.	**3**	**3**	**4**	**1**	**2**	**13**	**2,6**
	To plan and do activities to enhance the betterment in internal processes.	**4**	**3**	**4**	**1**	**2**	**14**	**2,8**
	To elaborate knowledge maps to guide the processes.	**2**	**2**	**3**	**1**	**1**	**9**	**1,8**
	To design a pilot program to implement a KM system.	**3**	**2**	**1**	**3**	**1**	**10**	**2**
Total Sum of Ponderation								**32**
Total Percentage that represents (32/11) =2,90 5 equivalents to 100%= (2,90*100) /5								**58%**
Stage 2 **Structuration**	To register feedback provided from the experiences of the workers.	**2**	**3**	**3**	**2**	**3**	**13**	**2,6**
Then to capture knowledge, it is necessary to identify these elements by their valuable characteristics	To design and implement creation and knowledge management plans with clear objectives and goals.	**2**	**2**	**3**	**2**	**3**	**12**	**2,4**

for CREPIB. It refers to those which encourage the continuous betterment and constitute the institutional memory, also, generate concrete knowledge and allow developing new services or processes.	To identify and categorize knowledge according to purposes: areas, processes, activities, among others.	**3**	**2**	**4**	**3**	**3**	**15**	**3**
	To describe knowledge (objective, scope, involve results, learnings, among others) then do systematization.	**4**	**2**	**4**	**4**	**2**	**16**	**3,2**
	To assign to generated knowledge key words to be associated with other knowledge in order to be optimized.	**4**	**3**	**3**	**2**	**2**	**14**	**2,8**
	To select and implement forms which visualized content from institutional platforms (PDF, MP4, XLX, among others).	**4**	**1**	**3**	**2**	**2**	**12**	**2,4**
	To establish rules, protocols and procedures for KM, which be listed ahead:							
	Internal communication plans.	**3**	**1**	**3**	**2**	**4**	**13**	**2,6**
	Action plans: phases, tasks, monitoring, costs, among others.	**4**	**3**	**3**	**3**	**3**	**16**	**3,2**
	To define development a Schedule for the KM process.	**2**	**1**	**2**	**2**	**2**	**9**	**1,8**
	Rules for assessment and monitoring.	**3**	**1**	**2**	**2**	**2**	**10**	**2**
	Rules of access and restrictions of knowledge usage.	**3**	**2**	**2**	**3**	**3**	**13**	**2,6**

	Corporate Security – Information Computing Security Policies (Computing insurances).	**3**	**3**	**2**	**2**	**3**	**13**	**2,6**
Total Sum of Ponderation								**31,2**
Total Percentage that represents (31,2/12) =2,6 5 equivalents to 100%= (2,6*100) /5								**52%**
Stage 3 **Transformation Exteriorization (Tacit to explicit)** Knowledge is created in the previous two stages, it is used by the CREPIB members to develop new processes, prototypes, models, research projects and consultancies in order to solve problems and the betterment of decision-making. The application of the generated and registered knowledge will allow new learning and innovation that benefit the CREPIB.	To create new knowledge to continue internal and external processes in the organization.	**5**	**3**	**4**	**3**	**4**	**19**	**3,8**
	To create new services from figurative language, analogies (to establish a comparison without being needed to change concepts itself) and metaphors (directly replaces the real concept with which it is compared). It is to enrich business lines.	**4**	**3**	**3**	**3**	**4**	**17**	**3,4**
	To look, select and use knowledge to the development of its labor in the organization.	**5**	**4**	**5**	**4**	**3**	**21**	**4,2**
Total Sum of Ponderation								**11,4**
Total Percentage that represents (11,4/3) =3,8 5 equivalents to 100%= (3,8*100) /5								**76%**

Stage 4 **Transfer** **Combination between (Explicit to Explicit)**	To manage change, organizational culture and encouragement management to facilitate knowledge transfer.	**4**	**3**	**4**	**2**	**4**	**17**	**3,4**
	To promote collaborative work in its area.	**5**	**4**	**5**	**2**	**4**	**20**	**4**
It is submitting reports or writings based on the combination of other written resources which allow systematizing concepts from knowledge mediated by technological tools.	To identify actions that will be executed to share knowledge, for instance: meetings, discussion forums, seminars, discussions, among others.	**4**	**4**	**5**	**2**	**5**	**20**	**4**
	To encourage CREPIB team to generate new knowledge by using workshops, discussion forums, among others.	**4**	**4**	**4**	**3**	**5**	**20**	**4**
	To Schedule regular working meetings to interchange information.	**4**	**3**	**4**	**2**	**3**	**16**	**3,2**
	To train CREPIB team to acquire and develop new knowledges and abilities.	**4**	**4**	**5**	**1**	**3**	**17**	**3,4**
	To make training and awareness about the relevance of transferring knowledge.	**4**	**4**	**4**	**2**	**4**	**18**	**3,6**
	The head boss used to ask for supporting data to the betterment of	**4**	**4**	**4**	**1**	**2**	**15**	**3**

	the processes that occupied its daily activities.							
	CREPIB team generates data that document good practices that allow KM in this organization.	**3**	**3**	**3**	**1**	**2**	**12**	**2,4**
Total Sum of Ponderation								**31**
Total Percentage that represents (31/9) =3,4 5 equivalents to 100%= (3,4*100) /5								**68%**
Stage 5 **Storage** The information is stored in a database which enriches the knowledge management system selected by the CREPIB (organizational memory). Also, the supporting files represent each knowledge, by using this system the CREPIB will find and use what it has been stored.	Establece el proceso de almacenamiento del conocimiento, repositorio o sistema de información (Internet/Intranet).	**4**	**3**	**3**	**3**	**3**	**16**	**3,2**
	Define e implementa herramientas TIC que permitan almacenar y compartir los conocimientos, experiencias y lecciones aprendidas.	**4**	**4**	**5**	**2**	**4**	**19**	**3,8**
	Establece redes de comunicación en la organización.	**4**	**4**	**5**	**2**	**3**	**18**	**3,6**
Total Sum of Ponderation								**10,6**
Total Percentage that represents (10,6/3) =3,5 5 equivalents to 100%= (3,5*100) /5								**70%**
Stage 6 **Incorporation**	To use new and existing knowledge generate in the CREPIB.	**5**	**5**	**3**	**3**	**3**	**19**	**3,8**
Interiorization **(Explicit to Tacit)**	To consult previously to a coordinator (mean researcher or boss of the project) to execute	**5**	**5**	**5**	**3**	**5**	**23**	**4,6**

When knowledge is in formal documents, manuals, life stories, they are transferred to the individual to be interiorized and could modify their own knowledge. It means learning by doing by using knowledge instruments built with written documents, manuals, among others.	specialized activities.							
	To consider there are limitations to perform previously acquired knowledge.	**3**	**5**	**1**	**4**	**5**	**18**	**3,6**
	Based on the experience and acquired knowledge practices, giving new ideas and suggestions to the steering committee around the execution of activities.	**3**	**5**	**4**	**3**	**4**	**19**	**3,8**
	To monitor, control and assess KM in all its stages previously outlined.	**2**	**3**	**3**	**2**	**3**	**13**	**2,6**
	To asses action plans, betterment opportunities detected in KM processes.	**2**	**3**	**3**	**2**	**3**	**13**	**2,6**
	To identify opportunities according to construct new products or services according with the business lines from the usage of the generated knowledge in CREPIB.	**3**	**4**	**5**	**2**	**4**	**18**	**3,6**
Total Sum of Ponderation								**24,6**
Total Percentage that represents (24,6/7) =3,5 5 equivalents to 100%= (3,5*100) /5								**70%**

Related to Stage 1. Knowledge Creation, CREPIB crew consider that even if there is taking into account all staff members to transfer knowledge, it is developed as an autonomous way according to the particular needs. Therefore, it is necessary to enhance knowledge communities that allow team-work. Globally, for the Stage of knowledge creation it is recommended to make actions in procedures that had got lower ponderation to reach out a

continuous betterment, it could be done through the creation of a corporate plan that is the base of implementation of the hypertext model.

In Stage 2. Structuration. Based on the results analysis, it shows that even if inside of CREPIB create knowledge, it is also vital, to manage its planification and implementation, being specific about the principal data, moreover, it is fundamental to establish key words to do in a meticulously description about knowledge that allow to conform in an accurate way the institutional memory.

In Stage 3. Transformation. Based on the assessed items, it infers that the organizational knowledge is applied in CREPIB, because it is utilized by the staff and taken into account in the development of research projects and consultancy. Nevertheless, it demonstrates a lower motivation in order to construct new knowledge because there are no rewards or economic bonus as a part of retribution based on the proposed innovations.

In Stage 4. Transfer. It is inferred that in CREPIB crew are shared, speeded out and communicate the knowledge generated in the internal and external environment. However, it required the staff to have accurate training about the information (Software – Hardware). Also, guide them in how it should be an appropriate transfer of knowledge.

In Stage 5. Storage. In CREPIB define and implement ICT tools that allow storage and sharing of knowledge. At the same time, they establish networks to communicate and they use a digital repository when they condense finished knowledge in its work routine. In spite of that, even if it has an institutional memory, it is necessary to manage new and existing knowledge through a nourished database creation with the required support. It will allow them to organize in an accurate way for looking and using knowledge, according to the requirements of the daily activities inside the organization.

In Stage 6. Incorporation. The data analysis reveals that in the CREPIB the new and existing knowledge is used to develop diary labors that enhance new ideas and suggestions to the executives to the execution of activities. There are recognized limitations in the performance of practical knowledge acquired. However, it recommends designing some tables (grids of evaluation) where there are condensed positive and negative experiences, also, individual and team-work too that are developed in CREPIB.

It is fundamental highlight that in CREPIB they are no assessment action and betterment opportunities plan, it is detected in procedures of KM. It reveals that exist an absence in the system of KM incorporation, due to it requires to asses action plans and follow the labors to identify continuous betterment opportunities. In this sense, it recommends to do a pilot test to allow a monitoring of daily routines.

In general terms, CREPIB crew evaluated the process and procedures in knowledge management in a favorable way, which validated the hypertext model as accurate for KM in this organization. In spite of this viability, it is necessary to better aspects related to transfer, storage and incorporation of knowledge, due to these are aspects evaluated with lower punctuations.

Discussion

Knowledge Management is consolidated as a core base in the development and competitiveness of the organizations in the current corporate environment, it is characterized by its dynamism and globalization (Benavides and Pedraza, 2018). In this context, the selection of an accurate

knowledge management model presents a fundamental stage to guarantee success in the implementation of strategies directed to maximize the advantage of intellectual resources of the organizations (Díez and Zúñiga, 2011). Specifically, in the case of the Regional Center of Management for Productivity and Innovation of Boyacá (CREPIB) the attention is focused on identifying an accurate model that wrap up needs and particular characteristics.

A detailed assessment of the different models of knowledge management has revealed that there are many diverse approaches, each one with their own virtues and limitations. Among the models that were analyzed highlighted SECI model, Hypertext model of Nonaka and Takeuchi (1995), Knowledge Practices Management Consulting (KPGM) model stated by Tejedor and Aguirre (1998), Knowledge Management Assessment Tool (KMAT) model proposed by Andersen (1999) and Integration Technology Model by Kerschberg (2001).

The Hypertext Model stated by Nonaka and Takeuchi had emerged as the most accurate option to respond to the needs of the CREPIB staff. This model is relevant because of its holistic approach, integrating individual and organizational aspects and at the same time in the knowledge management (De Freitas and Yáber, 2014). Additionally, its basis is knowledge generation through social interaction and the combination between diverse sources of information. It is an accurate election for an Institution as CREPIB, who is looking for innovation and cooperation between members.

It is vital to highlight that the selection of a knowledge management model should not be arbitrary; it should be based on a meticulous analysis of specific characteristics and needs of the organization (Galindo, 2018). Moreover, it is crucial that the chosen model should be adapted to the particularities of the institution to enhance a learning culture and cooperation in internal and external environment (Avendaño and Flores, 2016).

In this sense, the study suggests that CREPIB has to take proactive actions to mitigate risks associated with the implementation of a new knowledge management model. These actions should include capacitation session meeting and sensibilization oriented to the employees, the establishment of incentives to promote collaboration and active participation, in order to assign appropriate resources to support, maintain and implement the selected model.

In general terms, the appropriate selection of a knowledge management model represents a crucial step to get success in whatever organization, including the CREPIB. Who selected two models SECI and Hypertext de Nonaka y Takeuchi (1995) as the best one that supply its needs in CREPIB, who is significantly advanced to the creation of a focused organizational culture on knowledge and innovation.

Conclusions

This study has highlighted the relevance of knowledge management as an essential component for progress and competitiveness in the organization in the contemporaneous corporate environment. Through the assessment of several models of knowledge management, it looks to identify the most accurate for the Regional Center of Management for Productivity and Innovation of Boyacá (CREPIB).

Then, in a detailed analysis of the different knowledge management models, it could be concluded that SECI and Hypertext models formulated by Nonaka and Takeuchi (1995) stand out as the best option for CREPIB. This model is characterized by its holistic approach and its capacity to integrate individual and organizational aspects in knowledge management. Moreover, its emphasis is related to the knowledge creation between social interaction and the

mixing of different sources of information. For this reason, it is a powerful tool to enhance innovation and cooperation inside the organization.

The Hypertext model chosen for CREPIB offers a series of benefits and opportunities. In first place, it allows an effective knowledge management and facilitates creation, structuration, transformation, transfer, storage and incorporation of knowledge between the staff of the organization. In second term, it increases operative efficiency and stimulates innovation and creativity. Moreover, the social approach of this model promotes collaborative and continuous learning culture, it contributes to developing the personal and professional background of the employees. For this reason, it has been chosen SECI and Hypertext models for CREPIB, it represents a relevant step to carry out organizational progress. To take into account inherent advantages of these models. The organization is positioning to face challenges in the future and keep its competitiveness in a dynamic and more and more exigent market.

These conclusions reinforce the relevance of a careful selection of a knowledge management model and emphasize specific benefits from SECI and Hypertext models offered to CREPIB looking for organizational excellence.

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