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« Knowledge management in health crisis situations: Which responsiveness during the proliferation phase of Covid-19 »

Abstract:

In the era of the coronavirus pandemic. Organizations have re-considered their strategies to develop response plans in the face of a changing environment. Hence the demand for knowledge management mitigates the risks inherent in the Covid 19 crisis. The objective of this article is to demonstrate, based on an exploratory qualitative study conducted within Moroccan organizations in the Souss Massa region, that the use of knowledge management dimensions is necessary to improve knowledge management processes. The main result of this research is to propose an adapted model of knowledge management, which will allow organizations to improve their processes in times of crisis.

Keywords: Knowledge, Knowledge management, health crisis, integrative dimensions

INTRODUCTION

The coronavirus crisis is part of a new type of health crises as several health institutions claimed, health professionals had been clearly warned about SARS, MERS, H1N1, Ebola... However they were unable to predict the effects and source of this new pandemic.

Managing a pandemic is a complex task. However, unlike other natural disasters, pandemics are devastating and their effects can be actively attenuated by managers, through fair and timely decisions. Timely decisions are critical to managing the spread of the pandemic, and the effectiveness of these decisions depends on the ability to create, share, collect, transfer and develop knowledge, through a process of knowledge management in the context of a health crisis (Bdeir et al. 2013; Viner et al. 2020).

In Morocco and like every other country, organizations found themselves in a difficult situation and in front of tough problems to manage. This virus has caused economic failures: starting with the drop of tourism revenues which constituted a very important part of the national revenue, and on the other hand the suspension of many industrial activities (automotive, luxury ...).

In the face of such disruptions, we will study and discuss research on the issue of knowledge management in crisis situations. However, research on this subject has been discontinuous, with a corresponding temporal focus on past epidemics. It is mainly concentrated on medical journals. This article therefore aims to provide roadmap to fill this gap, by representing existing literature on knowledge management during a pandemic crisis.

To fill the gap, we will try to answer the following research question: How does knowledge management approaches improve knowledge management processes in times of health crisis?

The response to this question, will lead to the enrichment of knowledge in the field of knowledge management. We are going to use an exploratory approach to target organizations that have previously implemented a management or knowledge management approach. In order to fill existing research gaps and future directions capable of conducting research and supporting organizations, and policy makers, to deal with a pandemic crisis.

In the following sections we will present a literature review about the emergence of knowledge management, its dimensions and its importance within organizations in a period of health crisis. We will then discuss the main findings of our work, its limitations, and the theoretical and practical implications of our research.

I. LITERATURE REVIEW

1. CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

The analysis of the literature review shows the importance of knowledge management in crisis situations. The first section, represents the theoretical bases of knowledge management and its emergence, the second section, represents the link between knowledge management and health crisis. But before developing these two components, we should also clarify its integrative dimensions.

2. The emergence of knowledge management

Knowledge management is a fertile domain of research and an archaic practice (Prusak, 2001) although this knowledge was up for debate in philosophy and epistemology since the time of Plato and Socrates... Yet the interest in its creation, acquisition and diffusion in organizations as a management science is merely recent (Birkinshaw 2001). It contributes to the evolution of resistance capacities in organizations by allowing them to anticipate the damages and the shock or to mitigate their effects As a result of the elements already aforesaid.

Voltaire already described it in his tale "L'homme aux quarante écus" where new ministers stated in their preambles that we should only tax the land, for everything comes from land, up to the rain, therefore only the fruits of the earth owe taxes in order to fill the kingdom's funds. An expert suggested that we create tax intelligence or a "everyone would hasten to pay, no one would want to look foolish" "this seems brilliant" the minister shouts: 'I exonerate you immediately!'. This plausible speech imagined by Voltaire already tackled the question of intelligence appreciation and valuation and thus the question of knowledge in a turbulent environment.

By soaking up the knowledge related to its environment, organizations could imagine original and innovative solutions in front of unusual situations and shock. In this context, setting up offensive mechanisms to identify, capitalize, diffuse and create knowledge could become an opportunity for change and innovation, especially for practices concerning organizations as it was stated in the theory of resources (R. Grant, 1996; J. Spender, 1996 ,Nonaka, 1994; Sharp, 2006; Du Plessis, 2007), knowledge is the main source for the competitive advantage.

The major question today is not whether knowledge management is a topic suitable for the circumstances, but rather to demonstrate the efficiency within organizations (Bounfour, 2003) during a period of health crisis, to make a distinction between knowledge, of data and information remains necessary. For instance, M.Zack (1999) defines data as some sort of observations and facts, and information as an accumulation of organized info related to a certain context.

However, we now have a number of Knowledge Management maturity models that define and clarify the role of knowledge management for value creation such as the model of Tan et al (1998), CRAI model (Oluikpe, 2012), SECI model (Nonaka and Takeuchi, 1995) and "Intellectual Capital Concepts" (Edvinsson and Malone, 1997). Carrillo and Coll (2003) claimed that Knowledge Management has deepened its concerns about organizational performance.

3. The dimensions of knowledge management

Managing and administrating one's knowledge, is building a context suitable for creating and transferring knowledge based on the recommendations of Edvinsson & al. (1998) to encourage the organic concentration of knowledge, redundancy and the diversity of expertise, thus it seems necessary to build a frame of reference from projects of knowledge management and deduct in the literature review four dimensions considered to be essential in our model: the strategic, cultural, technological, and structural dimensions.

- **Cultural dimension:**

Organizations face many obstacles which make it a challenge to ensure a pro-active sharing of the knowledge base of their employee. Furthermore, more obstacles persist during the implementation of a knowledge management program making it extremely difficult to create a successful knowledge management program especially when the values it supports do not align with the culture of the organization. Thus, culture represents values, beliefs, and doctrines that share the individuals belonging to the same organization, with the set up in the organization of tools with strong cultural power based on the culture of sharing knowledge.

According to Donald Marchand (1999), individuals would be encouraged to create and transmit their knowledge base to increase information flow and solve the issue of loss of power. This would be achieved through the development of the trust level that each individual grants the other, and the improvement of the technological infrastructures as a base to capture this knowledge. We could deduct that the creation and transfer of knowledge are susceptible to be easily implemented in organizations creating a context integrating a cultural and managerial component.

- **Technological dimension:**

The information systems in organizations have always been traditionally interpreted and considered as a support utility (Prax, 1997) measured by the extent, number and quality of the data base (Fahey and Prusak, 1998). Thus in order to facilitate the diffusion of knowledge in terms of sustainable development, the organization should create capitalization tools and share experience.

This however, should not be limited to the mere purpose of treating data but to constitute a communication facilitator, that is a participative and collective coupling which brings sense to the constructed knowledge (Prax, 1997). To sum up, the use of technological tools promotes the creation and transfer of knowledge in order for it to be easily integrated within the organization in a context that encompasses the other multidimensional components: organizational, human, cultural and managerial, and technological.

- **Structural dimension:**

The structural dimension is equally as important as the other dimensions since it helps support the other components. It translates into the existence of structures and transversal modes of organization and in terms of the strategy followed; the issue of knowledge management could become the topic of a specific function in the organization or one of its entities.

It translates into the set-up of teams dedicated to knowledge management, generally led by a Chief Knowledge Officer responsible for coordinating the practices previously detailed. As to conclude, the establishment of transversal structures promotes the creation and transfer of knowledge. This creation and diffusion of knowledge is susceptible to be implemented in organizations creating a context that integrates the structural component.

- **Human dimension:**

The human dimension shows the distribution of tasks and expertise in the organization. The human capital is in fact the actor and producer of knowledge management (M. Robertson and G. Hammersley, 2000; F. Soliman and K. Spooner, 2000). Thus, H. Scarbrough and C. Carter (2003) as well as F. Blacker (1995) advocate for the integration of man management in knowledge management, which remains very partial and has been taken into account in the evaluation process.

In fact, we notice an evaluation level that is very low in specific skills required in the process of knowledge management; only consulting companies explicitly integrated the issues of knowledge management in their evaluation process and valuing individuals. This makes us question the role of the human capital in the process of knowledge management. We think, like H. Scarbrough and C. Carter (2003) have stated, that knowledge management practices do not operate independently, but they are rather connected and require a relatively high level of compatibility and a precise coordination. Thus, the creation and diffusion of knowledge is susceptible to be implemented in organizations creating a context integrating the human component.

4. The theoretical foundations of a pandemic crisis

For several years, Epidemics have started to become recurrent and represent major risks for the global economy. For this purpose, the occurrence of the COVID-19 pandemic poses real managerial challenges for organizations.

The unpredictable and brutal nature of pandemic crises pushes theorists to equate them with the concept of catastrophe. (Bdeir et al., 2013) reproaches that the pandemic is a typology of natural disaster but with some differences from the others, which has been expressed in management models and approaches, including knowledge management.

Models argue that the risks of a pandemic may interrupt the management of the pandemic crisis. (Daigne, 1991; Roux-Dufort, 2003) claim that any organization moves in an uncertain environment and may one day find itself confronted with an emergency situation that requires good practices to be controlled.

According to (Roux-Dufort, 2008), it is the way in which the crisis is perceived that determines the expected risks. Ivanov (2020) characterizes epidemic risks in three elements: first, its unpredictability, second, the disruption it generates, the ripple effect of the disruption, and finally, the long-term duration of its effects. Management problems and unprepared leaders are often the causes of crises that threaten not only management, but also the survival of the organization.

5. Knowledge management in a sanitary crisis

Since the beginning of the health crisis caused by COVID-19, public and private organizations had reviewed their crisis management practices, especially knowledge management. The context characterized by risks of amplitude has shaped the way knowledge management was perceived, which remains crucial due to the pessimistic state of the world economy (Krauss et al., 2010). Process re-engineering seems to be essential, hence the need for organizations to be proactive in increasing the scope of knowledge management.

When the COVID-19 pandemic crisis started, the interaction between individuals became complicated within organizations, this lead to a lack in the reliability of knowledge resources and a reduction in knowledge needed to orchestrate an effective response to the crisis.

To face such peculiarities, Knowledge Management has undergone a crucial transformation through the strengthening of integrative dimensions capable of improving knowledge management processes.

At the same time, it has also become one of the tools of crisis management, especially since the economic situation that has emerged represents a number of relevant challenges, particularly around the availability, accessibility and reliability of information emanating from the environment.

Most of the literature that treats the issue of knowledge management in crisis situations refers firstly, to the work of (Plax, 2012), which suggests that knowledge management optimizes its processes by capitalizing and re-using existing knowledge and expertise. On the other hand, (Eriksson et al., 2009) points out that modelling and simulation represent two key approaches to knowledge creation. This means that knowledge is created on the basis of multidimensional models and hypotheses capable of irrigating knowledge within organizations.

In fact, modelling and simulation can be seen as tools for understanding and managing the process of knowledge management in times of crisis. Its realization requires the implementation of systems based on integrative dimensions developed to support and improve the processes of knowledge creation, storage, research and identification, transfer and integration. (Kidd, 1994) emphasizes the need to make better use and especially an excellent combination of human skills, knowledge and experience in order to be able to integrate and develop the knowledge that results from it, Kidd (1994) refers to the possibility of being able to adjust human capacities to strategic perspectives through the development of skills in the shortest possible time. This presents itself as a model of knowledge management adequate in times of health crisis.

However, the knowledge management dimensions are explanatory variables of its performance, Each dimension affects knowledge management processes in one way or another , especially in crisis situations where are classified into four categories such as, technological, human, organizational and cultural according to their characteristics. The factors identified are relevant to all types of crises and are common to all phases.

The integrative dimensions are a major concern in the organization's knowledge development, especially as they aim to categorize knowledge according to the needs of stakeholders. They provide information quickly and efficiently to human resources in order to ensure the continuity of the tasks for which they have been hired and trained. In this case, the frequency with which knowledge is shared among stakeholders expresses the agility of organizations in the face of the health crisis.

Previous empirical studies show that knowledge management allows organizations to gather reliable information in times of uncertainty. The pandemic provides evidence that the process of systematic knowledge sharing helps organizations improve their responsiveness. In contrast, knowledge assessment and updating suggest clear evidence

on the evolution of relevant knowledge, thus allowing for projection into future scenarios and the improvement of organizational memory, despite the evolution of knowledge in times of health crisis, which presents both advances and setbacks.

Knowledge management retains three key capabilities for organizations in times of crisis: (i) better information management, (ii) mobilization of a rapid response through integrative dimensions, understanding of the environment based on prior knowledge modelling and scenario simulation and (iii) the development of learning from collaborating platforms. The organizational capacity linked to knowledge management processes is expressed at the level of individual behaviors that are aware of the critical nature of the situation. This organizational agility is also evident in the development of business continuity plans.

II. Methodological Research

The objective is to present our empirical research based on an exploratory qualitative approach. After a presentation of the field of exploration, we justify the choice of techniques and methods of processing and analyzing qualitative data. In fact, within the framework of our research, the literature related to KM practices in times of crisis appears to be limited. This qualitative study will especially allow us to complete our theoretical framework of these practices in times of health crisis.

The information needed to answer the problem is held by the managers of KM in chosen organizations in the Souss Massa region. Based on our professional contacts, we set up meetings with ten managers in ten organizations in the city of Agadir, over one month. Noticing that after 8 interviews we were no longer collecting new information, we stopped collecting data in the spirit of theoretical saturation (Glaser & others, 1986).

In qualitative research, we can distinguish between several kinds of data collection: individual interview, group interview, participant or non-participant observation and document collection, (Gavard-Perret, Gotteland, Haon, & Jolibert, 2008). The semi-structured individual interview is the mode of data collection that we favoured in our research. We conducted and recorded ten semi-structured individual interviews with an average duration of 30 minutes.

Regarding the processing and analysis of qualitative data: The data collected was processed through vertical and horizontal analysis. Thus, to ensure a certain constructive trait for our work, we only treated the answers by themes and sub-themes, with a sequence that is consistent with our theoretical contributions, on which we will expose with homogeneity both the answers of our target.

Methodology of interviewing	Duration / interview period	Themes	Content analysis methods
The interviews were managed through a semi-structured interview guide composed of 4 themes from our literature review and interactions with our target audience	Duration: 30 minutes on average. Period: Between March - June 2020	Theme 1: Perception of knowledge management and strategies of the actors. Theme 2: Management processes in times of health crisis Theme 3: Dimensions and integrating framework of Knowledge Management in times of crisis Theme 4: Management Knowledge Practices and Organizational Learning.	Thematic Content Analysis

Table 4: Summary of the methodological approach mobilized

III. RESULT AND DISCUSSION

The anchoring of knowledge management importance as a source of competitive advantage in times of competition and crisis derives its legitimacy from the theory of knowledge creation through the Japanese Ba process and the model of Nonaka and Takeuchi (1997) which presents knowledge as a source of competitive advantage.

Theme 1: Organizational Perceptions and Strategies

The health crisis has shown that cooperatives and associations do not have a real knowledge management strategy, but rather a classic knowledge management process. At this level, all of the managers interviewed consider that they apply knowledge management practices which are more likely to be considered by members and which have remained informal because of the lack of resources. However, the process has remained dependent on the will of each member, using virtual communities to facilitate the exchange and sharing of information, despite the cessation of activity.

The observation, which almost all respondents put forward that "we are still far from a real knowledge management strategy but we are conscious of the importance of this approach, especially in times of crisis" this statement confirms a willingness to gradually

integrate this approach, through temporary actions, which incarnates that the knowledge management strategy is not yet formal in the majority of associations and cooperatives interrogated.

On the other hand, globally the companies interviewed confirm that knowledge management is a major necessity to guarantee the smooth running of their projects. Indeed, the respondents argue that the sustainability of the organization depends essentially on the expertise produced and shared by their human resources. This was affirmed by the following statement: "We are in a period of crisis, the mobilization of knowledge produced by human resources constitutes a powerful lever to limit the inherent risks related to the cessation of our activity".

Moreover, public institutions listed that they have already begun to implement a knowledge management approach, as the respondents criticized that the administrative modernization plans already adopted, have succeeded in advancing the importance of the knowledge management process, and then optimize the costs related to unexploited knowledge.

Theme 2: Knowledge Management Processes in Periods of Sanitary Crisis

- **The processes of structuring and capitalizing knowledge in times of sanitary crisis.**

The exploration, identification and creation of knowledge in cooperatives and associations during the sanitary crisis has been intensified by using video calls, video discussions, Emails, digital platforms. The use of ICTs has therefore allowed them to acquire the necessary information for the continuity of their activities, representing an important asset for third sector organizations.

In the same perspective, the process of structuring and capitalization of knowledge has also seen some major changes, by abandoning traditional tools and replacing them with virtual storage-spaces. Allowing for a better consolidation and preservation of the information collected.

The process of structuring and capitalizing of knowledge in private companies has witnessed some remarkable transformations, which do not differentiate themselves from those cited by third sector organizations. Except that, a minority of companies have made recourse to their basic infrastructures, notably based on the verbatim statement of one of the respondents: "we have relied on ERP, platforms that were already implemented before the crisis". This observation was reinforced by the following statement: "we have

encountered no difficulties since we were already prepared for such situations with an emergency plan to deal with the risks of the environment”.

For the public sector, the respondents reproached that during the health crisis, the identification and the knowledge creation were based on basic technological infrastructures to optimize the time to counter the impact of the crisis.

- **Knowledge Processes in Times of Sanitary Crisis**

In times of a health crisis, the cooperative and NGO members interviewed have started to use new tools, word processing software and virtual storage spaces (Google-drive). In their speeches, they advocate that "we have moved towards collecting knowledge in virtual spaces to help the community members to save their data".

For Private companies, a part of the respondents said that they have remained loyal to their traditional approach to implementing knowledge, since the crisis has not impacted them. This was confirmed by this statement "in fact, our society as an important economic actor was not affected by the containment". However, companies affected by the crisis have reproached that the knowledge implementation approach has known changes through the use of restructuring and digitalization in order to ensure the sustainability of knowledge application.

In addition, public sector organizations interviewed confirmed that the process of knowledge translation has been reorganized by mobilizing a mixture of traditional and modern tools. They suggested that "we have tried to use knowledge management tools that meet the needs and challenges of sharing and using the identified information".

- **Processes for evaluating and updating knowledge in times of health crisis**

All the cooperative and associations managers questioned consider that the process of evaluating and updating knowledge has become very important in the era of the health crisis, even though the evaluation and updating tools are still dependent on the efforts of members "each member makes a weekly individual evaluation of the information and expertise shared, but does not update it because of time constraints and the absence of a formalized knowledge management strategy".

For companies, the importance of explicit information in this period of crisis has led to an accelerated evaluation of the information collected and produced, in order to be able to be reused for specific purposes (decision making, coordination...). Indeed, the companies interviewed stipulate that the approach to evaluating and updating information has become more critical considering its imperative nature in contingency plans.

For the public sector, the managers interviewed consider that in the era of the health crisis, the processes of evaluating and updating knowledge have been changed. At this level, a prior surveillance system has been set up to evaluate and update the knowledge that is constantly being produced in order to capitalize it.

Theme 3: KM's dimensions and integrating framework in times of crisis

The vast majority of managers at the cooperatives and associations which were interviewed consider that the technological dimension was the most decisive in times of crisis. The use of technological tools has been intensified, particularly for interactive applications: "digital solutions have allowed us to save time and optimize costs in identifying, sharing and even capitalizing on knowledge". At the same time, a minority of respondents also recognize that the human dimension is the most dominant "we were all in solidarity to ensure the continuity of our activity, we hold daily zoom meetings to share information and expertise so that everyone can better carry out their tasks while teleworking".

For companies the technological dimension represented an immense potential with the human and organizational dimension to ensure the continuity of knowledge management processes in times of health crisis. Indeed, the establishment and maintenance of knowledge management processes required the coexistence of all three dimensions simultaneously, a fact reinforced by the respondents' statements: "We relied on several dimensions to transfer information to employees within the company so that they could ensure the proper conduct of teleworking".

Theme 4: Knowledge Management Practices and Organizational Learning

The majority of the interviewees noted the lack of resources allocated to this dimension, "Fortunately, we have profited a lot from the free digital solutions that have allowed us to exchange and share expertise". However, a minority of the actors interviewed reconfirm that these freely available digital solutions remain insufficient, as they do not allow knowledge management in a structured way but through separate and random actions specifically social networks, which could result some problems.

For companies, knowledge management practices have been a kind of strength to resist the risks inherent to the crisis. Respondents reproached that these practices that manifest themselves in knowledge management have provided a database to take advantage of. In fact, the majority of respondents emphasized that "the knowledge produced about COVID 19 before and during the crisis allowed for better responsiveness, which is manifested in companies' reactive action plans.

Knowledge management practices / strategies	knowledge management allowed actions during the health crisis	Dimensions and integrating frame	KM Strategies
Private Sector (Companies)	Codify knowledge Operatories. Support feedback on past experiences	Primacy of the technological dimension over the organizational and human dimensions.	Coding strategy
Public Sector enterprises and public institutions, local authorities	Virtual contacts encouraging. Encourage feedback between countries	Dominance of the technological, and human dimension	Codification, Customization and collaboration Strategies
Non-Merchant Sector cooperative, Associations)	Facilitate the exchange and sharing of knowledge. Encourage virtual contact with stakeholders.	Focusing on the human and cultural dimension.	Customization and collaboration strategy

Table 7: Summary of knowledge management strategies and actions implemented by organizations in the COVID19 period

We built our study around many objectives, firstly we found the importance of knowledge management as a strategy within organizations in the private, public and non-profit sectors. Through interviews with managers, practitioners, administrators and employees, which like us were asking about the knowledge management process, its application and requirements. On the other hand, during our research and interviews with the individuals mentioned above, we have noted the importance of the connection between the actions implemented during this period, their framework integrators and the adopted strategies to carry out this knowledge management approach.

Although the knowledge codification strategy is the most commonly used by private sector companies, giving priority to the technological dimension and information systems which are already established within the organization, has enabled them to adapt easily to this crisis context. Through the implementation of a set of actions such as the return on experience of companies in foreign countries.

On the other hand, we found that cooperatives and associations operating in the non-market sector adopt a strategy of customization and collaboration, since the financial resources to implement ERPs and ICTs are insufficient compared to those of large private sector structures.

From there comes the alternative of focusing on the human and cultural dimension to promote knowledge exchange. In contrast, public sector organizations adopted both customization and codification strategies at the same time, enabling the exchange of knowledge based on new information technologies and virtual exchanges simultaneously.

Organization	Knowledge management process	Marked dimensions :	Tools mobilized
Private Sector (Companies)	Identification, updating, transfer and capitalization	Technological, human, organizational	<ul style="list-style-type: none"> - Intranet and ERP - Software for the preparation, processing and text analyzing - The scheduling tools (Google calendar, Outlook, MS Project) ; - Internal and external expert networks (using phone calls, video discussions, Emails);
Non-Merchant Sector cooperative, Associations	Creation, adaptation, transfer, diffusion.	Human, technological	<ul style="list-style-type: none"> -virtual storage spaces - Social networks - websites and applications
Public Sector companies and public institutions, local authorities	Identification, creation, evaluation, transfer, updating, capitalization	Organizational, human, technological	<ul style="list-style-type: none"> - Intranet network - Institutional websites and mobile applications - Electronic mail (Gmail) - Interactive software (Google-meet, Zoom...); - Internal and external expert networks - Virtual spaces (interactive databases.) - Good practice guides for knowledge translation - Databases and data warehouses ;

Table 7: General synthesis of knowledge management tools used by organizations in periods of COVID 19.

To conclude, from the theoretical and empirical study, we can affirm that previous studies, recognize the importance of the knowledge management problematic in a crisis context, but these researches do not concretely study how this articulation takes place. Our approach is based on an alignment between knowledge management and integrative frameworks in order to constitute a specific process of knowledge management in crisis contexts. In order to partially fill this gap, we propose to identify the various dimensions that integrate and promote a common management of knowledge processes in times of crisis. We therefore seek to provide elements of response to the following question: what are the dimensions on which Moroccan organizations can rely to manage knowledge in a period of health crisis?

Altogether, we hope to have provided to managers a presentation of the different levers to facilitate joint knowledge management in times of extreme crisis, as well as to have improved the understanding of the role of knowledge management dimensions in the knowledge management process in the era of health crisis. In addition, to bring some actions of answering to the knowledge management question. We consider that the complementarity between the codification and personalization of knowledge allows us to resolve the permanent tension that exists between a diachronic logic characterized by a regular monitoring of the crisis and its evolution over time and a synchronic logic known for its intermittent, momentary character. In fact, the knowledge personalization strategy, which is largely based on synchronic learning, with daily practices in times of crisis (structural reconfiguration, virtual meetings), which are also based on the logic of codification and diachronic learning (rules and procedures and manuals of response procedures, integrated information system).

The context of the health crisis has therefore revealed, firstly, the absence of the main actors who can provide the knowledge required (absence due to teleworking, etc.). As a result, the logic of codification based on the technological dimension complements the logic of knowledge personalization. Indeed, codification allows the exploitation of knowledge independently of the individuals who had initially developed it before at the stage of knowledge personalization. Although this period is marked by significant efforts in the increased reutilization of information already collected, its modeling and storage.

The major lessons highlighted during the health crisis are that individuals still favor the informal and face-to-face communication (knowledge personalization strategy). Some verbatim support this observation: "Our approach has enabled us to highlight four dimensions that ensure adapted knowledge management in a crisis context.

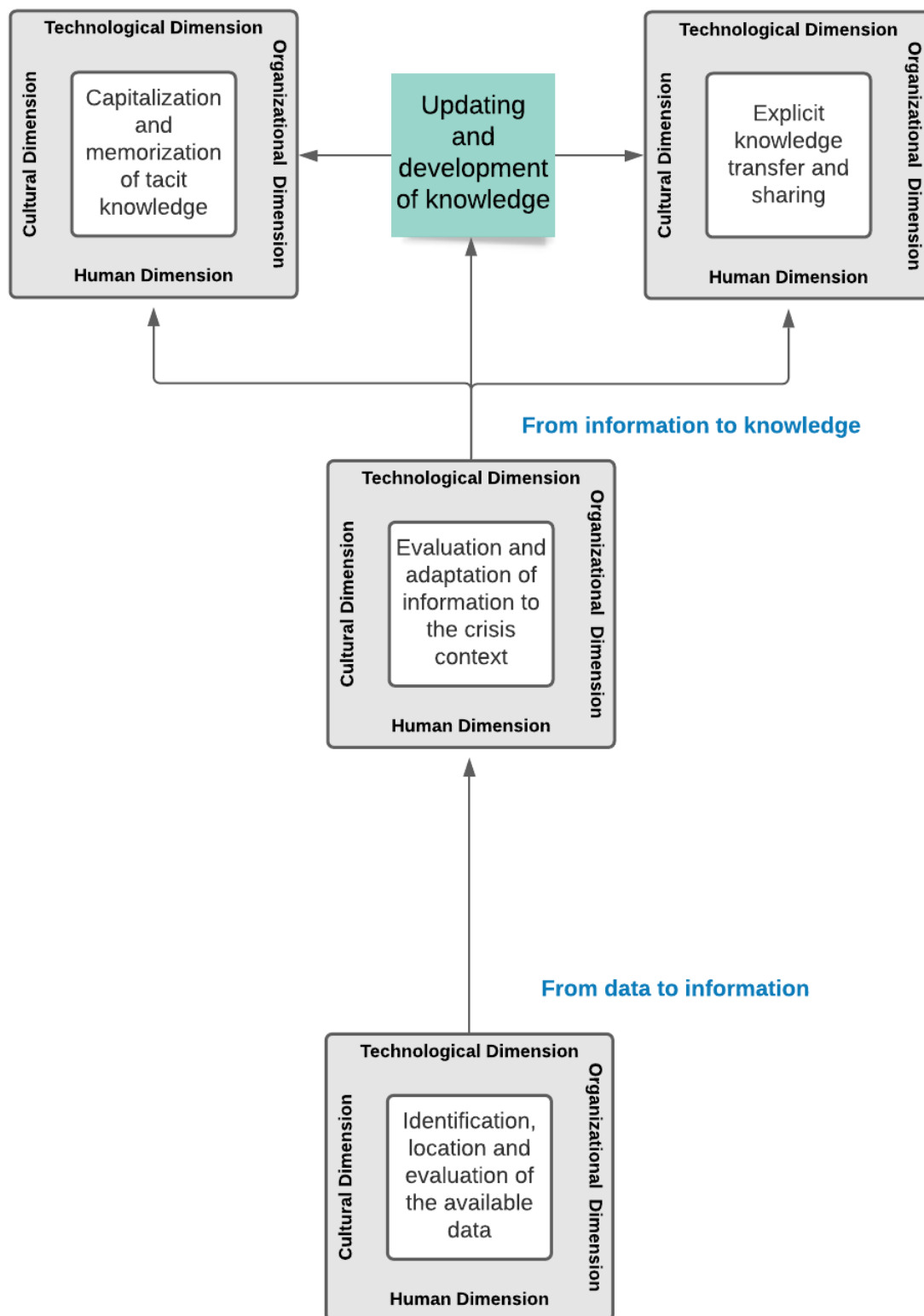


Figure 3: Proposed Knowledge Management Model in Times of Crisis

IV. RESULTS DISCUSSIONS :

The managers which we met indicated that knowledge management will allow their organization to act in changing contexts, particularly the health crisis, where the high level of risk requires the appropriation of a knowledge management approach. In this sense, Liker and Meier even claim that management today is nothing more than knowledge management. This led us to many findings, such as the existence of a knowledge management approach within organizations, which was not formally declined in all of the cases studied. As well as the variability of knowledge management processes that differ from one organization to another. We also find that the organizations interviewed in the public and private sectors have tried to mobilize their technological infrastructures (information systems, knowledge storage...) to exploit the available information. On the other hand, organizations in the third sector have tried to use their cultural values to strengthen the sharing and capitalization of knowledge. At this level, a great deal of maneuvering has been given to the human aspect, which has tried to mobilize each individual in the procedures for managing knowledge. An observation that is similar to the humanitarian approach to knowledge management proposed by Nonaka and Takeuchi. As for the process of knowledge management in times of health crisis, the extreme situation undergone truly disturbed its procedures and required its reconfiguration, referring to the work of (Knight; 1998).

At this level, vast majority of the managers we interviewed from various organizations were reoriented towards the creation of knowledge from virtual spaces (virtual meetings at a distance, mailings, social networks...), which were called upon to support interactions between individuals to produce the necessary knowledge. Moreover, an act that remains dependent on the BA space a notion that allows the conversion of knowledge evoked in the theory of Nonaka and Takeuchi (1997).

The sharing and transfer of tacit and explicit knowledge in times of crisis has become increasingly clear, the process of evaluation and updating in this regard has required the use of many methods to verify the reliability of knowledge prior to sharing and capitalization. However, the respondents' verbatim statements point to the difficulty of this stage in the production of trusting interpersonal relations. Although the link between the knowledge dimensions and the knowledge management process. This observation is explained by the extreme health emergency.

Conclusion

In conclusion, the concept of knowledge management remains complex and dependent on the willingness of the actors to work together to manage knowledge. In this regard, the context of the health crisis has allowed more or less a formalization of individual knowledge into shared expertise. In fact, the primacy of the human dimension for economic purposes has led to a redefinition of qualified organizational memory as the result of the dynamic interactions of the members of an organization. This context has also revealed a consideration of methods for evaluating and rapidly updating knowledge given the constraints associated with this situation.

However, in the results obtained, a number of obstacles have been identified, making knowledge management more difficult: the low level of IT equipment and staff training. Consequently, organizations need to opt for modern tools to develop and stimulate the creation and sharing of knowledge at different levels.

On the theoretical side, our research is an attempt to fill the lack of empirical work seeking to analyze the perception of the importance of knowledge management in times of health crisis. Our preliminary results generally confirm the postulates of the literature and previously established research, especially those of Nonaka.

In this regard, the results of our research show that the health crisis has led to improved knowledge management. Indeed, these results show that the knowledge management process has undergone profound changes.

However, there are some limitations to our research. Knowledge management is a complex issue and our approach does not claim to be complete or conclusive. Our results are related to the perception of "tacit" knowledge management, whereas "implicit" knowledge is diverse and multidimensional but is not taken into consideration in our study.

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