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Research Article

The Technological Dimension of knowledge Management: which effect on the Competitiveness of the Tunisian Companies? Case of the Services Sector

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Keywords

Knowledge Management, information and communication technologies, Competitiveness, innovation, environment.

Abstract

This article explores the approach of knowledge Management through information and communication technologies (ICT) which has revolutionized the business relations, the reporting methods and the flexibility concepts. It is a determinant approach in the quest ofcompetitiveness. It seeks to answer the following question: how much can the technological factor influence knowledge managementpractice, which is considered a source of competitiveness. In order to answer the previous question, we have conducted a quantitative research based on the investigation technique containing a questionnaire developed and conducted with a sample of TunisianCompanies belonging to the services sector. The results testify a relation of direct dependence between knowledge management and innovation, as being the crux of competitiveness. Moreover, the research analysis shows that competitiveness is a multi-dimensional result and that knowledge management is a mediator variable playing an indirect role in reinforcing the direct relationship existing between the technological dimension and the company competitiveness. The practical contribution is summarized in a presentation to thecompanies' executives in charge of the technical solution service in order to ensure a better capitalization, sharing, new knowledgecreation and a better understanding of the success conditions of the approach consisting in the adaptation to their external environment.

Introduction

In order to meet the future needs, the companies must base their competitiveness on knowledge management, it is the age of competitiveness based on knowledge (Nonaka, 1994; Ermine, 2003; Harvey, 2011; Barbaroux, 2012). The manner of detaining this knowledge differs from one company to another and from one sector to another (Paillard, 2002), especially, towards the environment change which has became a constant. This environment evolution affects the management process, the business relations and the reporting methods (Dube and Pare, 1999; Bergeron, 2000). Thereby, the question here is to know whether the traditional methods of management are still valid. The answer is negative, of course, since the acceleration of the rhythm of information and communication technologies (ICT) requires the implementation of a modern knowledge management. The technological dimension of knowledge management makes it possible to use the tools of knowledge sharing (Mohamed and al., 2006) in a resources allocation process. In short, it is at the core of the knowledge management practice and the codification support (Ruggles, 1998; Alavi and Leidner, 1999; Briant and Heutzmann, 2003; Benoit and al., 2007; Samuel, 2010; Deltour and Roussel, 2010). Knowledge management is "a set of concepts, methods and technologies enabling the members of an organization to work together in a path defined by the company, in order to establish the connection between the available information, knowledge production and theskills' development. The association of competitiveness to the knowledge management practice is relative to the capacity of the companies to guarantee a durable competitive advantage, through distinctive skills, enough developed innovation processes and a better environment adaptation. Being competitive causes a great capacity to control their competitors, to present the know-how in the products and the services available on the market and to cooperate, with other companies, in the intensive activities in knowledge (Schiuma, 2012; Wang and al., 2011).

The important position, nowadays, of knowledge management in the companies' foundation renders mandatory the comprehension of the success conditions. Hence, the interest to assess the moderation effects of the external environment on the direct relationship between knowledge management and the company competitiveness, are often ignored.

This research falls under a theoretical prospect and seeks to answer the following problematic:

"How far can the technological factor influence the practice of knowledge management, which is considered a source of competitiveness". In order to answer the previous problematic, we have adopted a quantitative approach based on the investigation technique containing a questionnaire developed and conducted with a sample of the Tunisian companies belonging to the services sector.

The first section of the article exposes the theoretical framework through analyzing the various concepts of knowledge management, ICT, and competitiveness. The second section presents the quantitative research methodology. In the third section, we are going to introduce the principal research results, to discuss them in conjunction, while proceeding back and forth between the empirical and the theoretical observations (Charreire and Durieux, 2003).

I. Knowledge management and the companies' competitiveness: complex connections

The connection between knowledge management and the companies' competitiveness is problematic and complex. The purpose of this section is to define the concept of knowledge management, its objectives, and to highlight the contributions of such management to the companies' competitiveness.

I.1. Definition of knowledge management

A vast research area (Bruneau and Pujos, 1992; Langdon, 1998; Epingard, 1999; Foray, 2000; Knauf, 2010) tends to define knowledge as a resource and a cognitive asset likely to be codified, stored and shared in the organization (Habib, 2010). Actually, this knowledge, whether individual or collective, (Bruneau and Pujos, 1992) must be managed. Numerous studies were interested in knowledge management (Tisseyere, 1999; Jacob and Pariat, 2002; Michel, 2001; Dupuich-Rabasse, 2008; Sandhawalia and Dalcher, 2011; Barbaroux, 2012; Schiuma, 2012). In a broader approach, knowledge management is a set of organization methods and technologies aiming at creating, collecting, organizing, storing, sharing, using and transferring knowledge within the company; materialized knowledge through internal and external documents, but similarly in the form of intellectual capital and of experiments held by the collaborators or the experts of a field (Reix, 1995).

In order to increase and accelerate knowledge valorisation, Ballay (1999) proposes a knowledge management system made up with four stages; namely the interaction (work group, discussion, sharing), the integration (tests, operational processes), the capitalization (protecting, codification, accounting, standardizing, maintaining, reactivating) and the transmission (training, tutoring). In this research we retain knowledge management as the set of concepts, methods, and technologies allowing the collective development and use of the shared knowledge. It is an approach, a new leveraged effect for the development of the organizations and a new use of technologies (Tisseyere, 1999).

I.2. Objectives of knowledge management

In order to be able to consider the subject of knowledge management and its objectives, we shall first distinguish its tacit aspects from its explicit aspects. This distinction is result of Polany and can be the founder of a new approach of knowledge production in the organization and its management. It was subsequently widened in 1987 by Winter.

Explicit or codified knowledge: It is a formalized knowledge, transmissible via a formal language with a systematic language, using a code.

Tacit or embodied knowledge: It is a knowledge fixed in the actions, the use and in the application in a specific context. It can take diverse forms like, the expertise, the skills, and the know-how. It is difficult to be measured.

In fact, knowledge whether tacit or explicit must be managed, in order to realize the three following objectives:

Knowledge capitalization: It aims at analyzing knowledge, developing it, maintaining it and storing it safely so that it does not depreciate (Ballay, 1999; Ermine, 2003).

Knowledge sharing: it is a fundamental result of knowledge management, with which it is often confused (Deltour and Roussel, 2010; Knauf, 2010; Harvey, 2011). The strategic watchword is "passing from individual to collective intelligence".

Knowledge creation: This creation is strongly related to permanent innovation. The strategic watchword is "innovating to survive" (Nonaka, 1994; Wang, Su and Yang, 2011; Barbaroux,2012).

On the basis of this literature, we have retained that knowledge management is a process to capitalize, to share and to create new knowledge. Consequently, we have recognized the measurement difficulty of this intangible resources management. Within this framework, the theories advance, that this management can be measured by the managers' perception degree towards this practice, as well as its various aspects. This management exists when the organization sets up

measurements to create and capitalize knowledge in order to achieve its goals, then to share this knowledge between the members of the organization and finally to apply this knowledge to create value (Ramirez, 1999; Gold et al., 2001; Ermine, 2003; Ferraressi et al., 2012).

I.3. Contributions of Cognitive Resources Management to competitiveness

According to the approach developed by Grant (1996), the competitiveness of a company, basically, depends on the diversity and the strategic value of the specific knowledge which it holds on its capacity to efficiently integrate the knowledge acquired by the individuals. The company must define a knowledge base, i.e., to assess its strengths and its weaknesses and the ranges to be reinforced (Boblin and Brenner, 1996). This common base makes it possible to make a living memory accessible to everyone (Bounfour, 1998). It is regarded as an essential leverage in the development of the competitive advantages. The competitiveness of the companies is based, thus, on their capacity to combine and coordinate their practice around the knowledge heritage which must be managed as best as possible. This practice of knowledge management is determining in the race for competitiveness (Knauf, 2010; Wang and al., 2011; Schiuma, 2012) allowing the company to draw a durable competitive advantage (Barney, 1991).

The theories of knowledge management have focused on the direct relationship between knowledge management and innovation (Hatchuel and al., 2001; Denervaud and Chatin, 2009; Attour and Ayerbe, 2012; Sandhawalia and Dalcher, 2011). This management aims at combining the knowledge acquired by the individuals, in order to create and to apply new knowledge and to improve the innovation process (Harkema and Browayes, 2003). At this level, Yann De Kermadec (2001) proposes that knowledge management is simultaneously, at the core of innovation and that it's nourished by innovation. Innovation is an endogenous and cumulative technological creative process (Ermine, 2003): it is a new major criterion of competitiveness.

II. The approach of knowledge management through the introduction of ICT: what

effects on competitiveness?

In order to reach competitiveness and to guarantee a significant and durable advantage compared to competition, each company must master technologies which are regarded as fundamental leverages for each sharing activity of knowledge.

II.1. ICT at the service of the knowledge management

The technological dimension of knowledge management aims at developing new expertise, to enrich the individual and the collective intelligence and to provide, thereafter, prompt responses to the organization problems. In order to analyze this dimension of knowledge management Alavi and Leidner, (1999) have conducted a research with 50 executives who have introduced, and implemented a system of knowledge management. Three perspectives on knowledge management have emerged: the first perspective is based on information. The second prospect is based on technology (which associates knowledge management with the technological tools: Intranets, Datawarehousing, expert system) and the last prospect is based on culture.

In the same context Kalika (2006) introduces that Intranet becomes, for the French companies a reliable support to knowledge management which allows knowledge sharing and transfer. In order to be aware of their environment, the companies have implemented a strategic foresight system to grasp opportunities and to avoid market risks. It is a way to test the

position of the company, as well as its relevance on the market. According to Bonivard(1998), the foresight consists in "organizing the collection, the selection and the sharing of the suitable information to optimize strategic decisions of the company". It is about any signal

detected following the company environmental monitoring and being able to give anticipatory answers to strategic questions (Lesca and CHaron, 1995). Decision making can be done through two applications; namely Datawarehouse which indicates the base in which information is stored and Datamining which corresponds to the integrity of the techniques and the methods, allowing the acquisition of exploitable knowledge. It is, therefore, possible to foresight the tendencies and the future behaviours of the considered customers according to their previous behaviours and their standard attitudes, in order to guide the decision makers in their choices.

In order to broaden the application field of strategic foresight, the concept "economic intelligence" has emerged. It is, gradually, required, by the effort provided by the company to mobilize its knowledge and its skills as a source of competitive advantage. We retain, in this article, the economic intelligence as being "the whole of the coordinated actions of research, processing and sharing, with the objective of exploiting the useful information to the economic actors to allow them to determine the markets they are going to penetrate, the customers' segments to be targeted and to better understand the operation of market participants" (Jacobiak, 1998). Consequently, the economic intelligence constitutes, to some extent, "the infrastructure" of an economy based on knowledge (Guilhon 2003) while using knowledge management as a tool and, even, a base of its approach. In what follows, we are going to present a table which summarizes the various technological tools of knowledge management.

Table 1: The technological Tools: key variables in a knowledge management approach.

Technological tools	Authors
Intranet Network	**Ruggles (1998), Alavi & Leidner (1999), Briant & Heutzmann (2003), Kalika (2006), Benoît & al (2007)**
Datawarehouse & Datamining	**Ruggles (1998), Alavi & Leidner (1999), Sher & Lee (2003)**
Technologies relating to the operational processes	**Huang & al (2003), AMABILE & GADILLE (2006), Deltour & Roussel (2010), Samuel (2010)**
CRM	**Langdon (1998), Alavi & Leidner (1999), Sher & Lee (2003)**

II.2. Value chain transformation and the competitive advantage development

In his work dedicated to the concept of value chain Porter (1991) develops the generic strategies and proposes an identification diagram of the sources of competitive advantages

(value chain) making it possible to construct and to maintain durable competitive advantages. This author, define the strategies of differentiation and trivialisation of the products, but he does not seem to have widened his analysis with the role and the importance of technology as a general process which requires a strategy change (Langdon, 1998). This boosting effect of technology seems to be one of the major forces leading to the replacement of the industrial model by the age of knowledge.

Information technology is a strategic dimension on which the companies can transform the rules of the competitive game to their own profit. This technology is characterized by its generic aspect, because it applies to all the sectors whatever they were. By introducing these technologies at the level of competitiveness, the balance of the competitive forces is therefore modified. They can be used to fight against the rivals of the same industrial sector and to be a development element of consumer loyalty. The automation of the companies, especially in the activities of data processing and manufacturing, has significantly reduced the power of the labour force, since it decreases the dependence of the company to its suppliers. The massive use of information technologies can prevent the entry of new stakeholders in the industry. This kind of obstacles exists in the industry branches, which the principal operations consist in data processing. Data processing technology, in general, and information systems, in particular, can affect the purchaser decision in substituting a product by another, by affecting the product quality/price ratio. This can be realized through price reduction, the improvement of the offered service or through the supply of new uses.

III. Research methodology

In what follows, we are going to expose, the empirical methodology conducted in our study. The objective is to familiarize with the knowledge management practice within the Tunisian company and to understand, how the "ICT" factor can influence it and determine at the same time its behaviour regarding the competitiveness quest.

III.1. Data collection

The adopted empirical methodology is an exploratory methodology characterized by the flexibility of the used methods, to look further into the subject and to acquire an overview (Evrad and al., 2003). The objective of this study is to familiarize with knowledge management practice within the Tunisian companies and to understand the "ICT" factor which can influence and determine these companies' behaviour of these to achieve competitiveness.

The most appropriate empirical technique of investigation to our study is that of questionnaire investigation. The choice of this technique is said to the significant number of the companies which are going to question and to the number of the items measuring the variables of our conceptual model. First, a pre-test has been launched with 20 companies operating in a rapidly changing sector to purify the proposed items in our questionnaire and to test the influence degree of the variables, then, we have proceeded, a principal investigation to analyze the knowledge management practice which aims at capitalizing, sharing and creating new knowledge and to study its impact on competitiveness with 154 Tunisian companies.

III.2. Reasons behind the choice of the industry branch

We have chosen in our investigation the companies belonging to the services sector which are the most affected by the technological changes and which are the most condensed in knowledge "the more the activity integrates a significant portion of services, the more the strategic nature of the is perceived in the companies (…). Particularly, there are three sectors, which are properly equipped in the field of knowledge management: namely telecommunications and IT services, the financial and real estate activities and the business activities (…) knowledge management increasingly becomes common at the companies
where the service dimension is an integral part of the core business" (Kalika, 2006).

III.3. Degree of ICT equipment of the surveyed companies

The data-collection made it possible to collect a sample of 99 companies; they are private companies, small and average sized companies which are established on one site in Tunisia, and operating on the local as well as the foreign market.

Table 2 summarizes the development of ICT within the surveyed companies and table 3 summarizes their investment reasons in these technologies.

Table 2: Availability of the technologies' equipments

Internet (showcase websites)	Intranet (e-mail)	ERP (RH)	EDI	SCM	CRM	Data warehouse
85%	90%	61%	58%	35%	77%	64%

Table 3: ICT Perception

Costs	Necessity	Business requirement	Mode	Means to be different
6%	60%	22%	0%	8%

IV. Research results

In this section, we are going to present the principal results of the explanatory analyses of the research and to discuss these results in order to make a comparison between the obtained results and the previous studies.

IV.1. ICT: Assistances at the level of knowledge sharing and knowledge management

The Tunisian companies should invest in ICT which offer important potentialities to create knowledge with a high added value. The analysis of the direct dependence results has allowed us to validate the importance of the technological factor for the implementation of knowledge

management practice through Intranet which has a direct impact on this approach, primarily on the capitalization, the sharing and the creation of innovating knowledge which makes it possible for these companies to be pioneers in their sector and to be, significantly, different from their competitors. These results contribute in validating the works of Ruggles (1998), Briant and Heitzman (2003), Kalika (2006) and Benoit & al. (2007), according to whom Intranet represents a reliable knowledge management support.

Moreover, the adoption of the knowledge management approach is connected to the presence of an Electronic Data Interchange (EDI), an Enterprise Resource Planning (ERP), and the Supply Chain Management (SCM) for a better knowledge sharing. This retained knowledge reflects the competitive qualities of each company, whether they were basic, advanced or innovating, and are themselves related to the implementation of a Customer Relation Management (CRM) application and, also, to the call centers. These applications aim at gathering all the dispersed customers' information, personalizing the relation with these customers and, thereafter, maximizing the turnover thanks to an optimal management of the customer portfolio. This, especially, requires specialist teams to manage knowledge and to share it among the company members. These results contribute in validating the previous studies of Langdon (1998), Ramirez (1999), Kalika (2006) and Mullenders (2009), according to whom CRM availability facilitates knowledge sharing.

IV.2. The use of ICT; competitiveness factor of the Tunisian companies

Nowadays, the companies develop the use of ICT in order to conceptualize new services, to conquer new sources of raw materials, and to manufacture new products through the implementation of an Intranet network, to share all the information concerning the various partners of the productive system, and by the adoption of an ERP in order to automate the exchanges between the company and the companies with which it reports, which aim at increasing the effectiveness and the quality of the decision-making process, which allows knowledge sharing and integration. In fact, investing in ICT either to be distinguished or by business requirement is strongly related to the presence of a budget granted to research and development, which constitutes a splendid innovation potential for the companies envisaging it. Nevertheless, a significant number of the sample i.e. 67% of the companies does not benefit from it because the creation of a research and development department requires a heavy budget; however they devote only a budget inferior to 5 thousand dinars. The use of ICT seems to have positive effects on the creation of intensive activities in knowledge and the rise of highly qualified employment which are reported, similarly, the acceleration of the innovation rhythm. The results contribute in validating the works of Haour (1999), Kalika (2006), Benoit & al. (2007), Denervaud and Chatin (2009) and Pavia (2010) concerning the direct relation between ICT and innovation.

The study of the questioned companies as for the potential gains of the optimal use of ICT is the costs' substantial reduction. This result makes it possible to validate the works of Pilat D (1998), Foray (2000), Faucheux & al. (2010) and Alaoui (2010). The development of ICT has a positive effect on the strategies development: the analyzed results demonstrate that 45.5% of the companies seek specialization based on "blocks" of knowledge and competence fields which they manage and on which they found their positions.

IV.3. Knowledge management: a challenge of the new competitiveness

The study of the relation between the dependent variables made it possible to draw three conclusions concerning the effect of knowledge management on competitiveness:

Efficiency related to knowledge management practice:

The objective of the knowledge management approach is to contribute to tangible and encrypted results which are reflected in costs reduction. Knowledge management is an innovation source. To fulfill the requirements of the market in terms of innovation, the questioned companies have implemented a practice of knowledge management through two actions: Knowledge capitalization (in order to save the collective memory and the collective knowledge to integrate them, subsequently, in the productive system what makes it possible to draw significant competitive advantages) and the creation of new knowledge which refers to the improvement of the creative action before the actors in order to engage in the improvement of the innovation process.

If the innovation is conditioned by the capitalization and the creation of knowledge within the companies, these two actions are dependent from the implementation of the qualifying teams which devote time and specialize in knowledge management. These results contribute to validate the works of Schiuma (2012) and Barbaroux (2012), according to which knowledge management is an approach, which is at the core of innovation and which helps the companies to remain competitive on the market.

The lack of the knowledge management integration in the company strategy

The Tunisian companies do not integrate knowledge management in their strategies what can be a hindrance against knowledge sharing. Within this framework a clear reporting of the vision of the direction, regarding the importance of knowledge sharing in the organization

strategy is beneficial (Harvey, 2011). This requires the development of leadership in order to manage and to report the advantages of information sharing and the organizational structure supporting knowledge circulation. The ICT do not constitute, therefore the determining factor for a better knowledge management.

IV4. ICT contribution in the improvement of the companies' competitiveness via the mediator effect of knowledge management

ICT contribution in the competitiveness of the Tunisian companies is related to the adoption of a knowledge management approach. Indeed, the conducted mediation test has highlighted the importance of the "knowledge management" variable, as an approach which has objectives (challenges) of new knowledge capitalization, sharing and creation. The analysis of the research results demonstrates that competitiveness is a multidimensional result which affects at the same time the costs, the market shares, the product quality and the services, the innovation, the qualities and the quantities of the know-how of the products and the services supplied on the market, the creation (disappearance) of jobs and the development or the decay of the new strategies.

The investment in ICT makes it possible for the Tunisian companies to reduce their costs via the effects of indirect knowledge management. It is a determining practice allowing the reduction of the company costs (tangible result) through the incorporation of Intranet networks and, particularly, the use of ERP techniques. The present businesses require the Tunisian companies to follow the movement and to invest in ICT to increase their market shares. This increase is, indirectly, supported by the process of capitalization, sharing and innovating knowledge creation. With this intention, the used technologies are SCM and CRM solution to supply the customers with a better quality personalized and specific products, which enable them to be different. In other words, the know-how which is present in the products and the services intended for the market is, indirectly, dependent to the equipment investments through the systematic management of the cognitive process. CRM allows the personalization of the offer through presenting fields of knowledge and know-how (that the companies manage) to the customers, in order to incorporate in specific products and services. These companies must integrate these technologies in their production system in order to conceptualize new services and to improve, thereafter, their innovation system what ensures a significant and durable competitive advantage for the company. Knowledge management aims, therefore, at combining the knowledge emanating from the market in order to create and to apply new knowledge with the objective of improving the innovation process. These results contribute to validate the works of Guilhon (2003), Boutelitane and Boder (2005), Benoit & al. (2007), Pavie (2010), Faucheux & al. (2010) and Denervaud and Chatin (2010) on the importance of the technological factor in stimulating innovation through knowledge and their management processes.

IV.5. The external environment: a regulator of the relation between knowledge

Management and competitiveness

The consideration of the external environment effect of the Tunisian company allowed us to study the legal, cultural and technological framework.

Adaptation to the legal environment

The legal environment refers to the set of the legal instruments and the legislative measures which encourage investment in ICT and the protection of the intellectual property. These legal reforms encourage the implementation of institutional strategies in terms of telecommunication. They encourage the investment in knowledge and, particularly, the practice of knowledge management, since they are based on ICT what makes it more efficient and more responsive. The results of this research demonstrate that the presence of an adequate legal framework is a facilitator which reinforces the direct relationship between the knowledge management approach and the competitiveness of the Tunisian company. An adequate adaptation of the company to its legal environment enables it to track an effective practice of knowledge management based on the technical tools supporting the introduction of new production processes, within the company, and the opening of new opportunities what encourages the company to concentrate on the intensive activities in knowledge and to develop new strategies in order to be more competitive.

Adaptation to the cultural environment

The cultural environment refers to the development degree of the net culture and the incarnation degree of the knowledge management practice in the culture of the company. The research results demonstrate that the development of the Net culture (the technical dimension) is determinant to improve the quality of the company knowledge, which conditions the positioning of the latter on the market. The investment in ICT helps the managers to introduce new production processes and to create new knowledge, able to determine the future of the company as a Leader Company or Company risk. Second, the incarnation of knowledge management practice in the culture of the Tunisian companies is a regulating variable initially supporting the improvement of the innovation and the creativity process and second, the information transfer and knowledge sharing between the various members of the company. These results contribute to validate the works of Ferrarressi & al (2012) which demonstrate that knowledge

management contributes to the development of new strategies and the improvement of the innovation process. It must belong to the daily life of all the companies and must be based on an organizational culture, which makes it possible to be aligned with the strategic objectives of the organization and to create considerable tangible results.

Adaptation to the technological environment

The technological environment reflects, at the internal level, the foresight system implemented by the Tunisian companies and, at the external level, the set of the infrastructures and the policies related to the technologies implementation by the government, which facilitate the exploitation of new applications to meet the needs of knowledge based economy. These two variables are necessary to lead the knowledge management process. The implementation of a foresight system, by the Tunisian companies, is favorable to the improvement of the direct relationship between knowledge management and the company competitiveness. A foresight system is an unavoidable technique to collect and to retain information and knowledge about the market to better manage it through seizing opportunities and outwitting the arising threats. Thereby, the collected knowledge is advanced and specific, which makes it possible for the company to operate in the same activities of its competitors, but, similarly, to get distinguished by its innovation system.

The public authority encourages the companies through placing at their disposal infrastructures and policies facilitating the investment in ICT, which are determinant means to improve the company competitiveness. These companies must use new technologies to develop a knowledge management practice serving the innovation process. Thereby, other intensive industry branches in knowledge are being created by the Tunisian companies, which increase their market shares and reinforce, thereafter, their competitive positions.

Conclusion

The analysis of the technological dimension of knowledge management enabled us to highlight the advantages of the use of technologies to create high added value knowledge. This management is an essential practice for, not only, the protection and the development the knowledge retained by the Tunisian companies but, similarly, for the costs reduction (particularly the design costs) and for the improvement of the innovation process.

The research analysis demonstrates that competitiveness is a multidimensional result and that knowledge management is a mediation variable which plays an indirect role to reinforce the direct relationship between the technological dimension and the competitiveness of the company.

The results, similarly, demonstrate that 88% of the surveyed Tunisian companies adopt a knowledge management approach as a systematic management of a cognitive process for the capitalization, the sharing and new knowledge creation. Nevertheless, the lack of leadership in the benefits reporting associated with the sharing practices, i.e., the lack of competent and qualified specialists to manage knowledge represents an organizational obstacle against knowledge sharing. The second is an individual obstacle; it is the lack of time to manage knowledge: this practice is perceived as an additional charge.

The practical contribution of this research is summarized in the presentation to the company executives of the services of technical solutions and technological equipments, which allow them to digitalize their companies and which are, themselves, supports for knowledge management, allowing a better competitiveness all with proposing the success conditions of this practice. Taking into consideration this research, ICT play a principle function in the improvement of the companies' competitiveness. It is obvious that it is very difficult to precisely assess the return on investment of these technologies on the company because of their interactive effects on the various determinants of the company competitiveness.

However, our research contains bound limits, mainly, at the level of the choices and the difficulty of the measurement of the management variables of the cognitive process. Consequently, other measurements could have been taken into consideration in order to study the manner of capitalizing, of sharing and of creating knowledge. The obtained results should not be generalized since our study relates only to one industry branch.

In order to overcome these limits, other studies can be conducted to enrich our research and which can cover a large number of variables, using other factors such as the human factor and/or the organizational factor which can influence the knowledge management practice and which play a role in the company competitiveness. It could be similarly, interesting to conduct a comparative study with other countries similar or different to Tunisia and to recommend further studies covering the same subject but covering all the sectors; a multi-sector study to generalize the results and to compare the knowledge management practice in various industrial branches.

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