

# The relationship between the sources of knowledge management and organizational performance

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**Abstract**— This research examines the importance of internal sources of knowledge and its relationship with organizational innovation and organizational performance. We did this research on a sample of 200 Tunisian companies operating in different sectors. Our study was built mainly on the basis of quantitative method. The empirical verification of the assumptions of this research has led us to confirm the relationship between external sources and organizational performance.

**Mots clés** — sources externes des connaissances, sources internes et performance organisationnelle.

**Keywords**— external sources of knowledge, internal sources of knowledge and organizational performance.

## I. Introduction

Internal knowledge is defined as "the body of knowledge that the company created within its borders. This definition includes the explicit knowledge, tacit knowledge and organizational learning that are stored in organizational routines, culture and strategy "(Crossan et al, 1999; Nonaka, 1994). In short, internal knowledge includes "the knowledge that resides in a firm, codified as patents, trademarks and copyrights, as well as the tacit knowledge of the business such as routines and culture."

Indeed, today's companies have become more interested in stimulating knowledge, which is considered the main asset. Consequently, the concept of Knowledge Management draws particular and considerable attention.

In addition, the concept of performance is still poorly defined, vocabulary specialists is no unanimous. Indeed, many researchers find it difficult to agree on its meaning. It is apparent, moreover, with several neighboring concepts such as efficiency and effectiveness. It remains that performance remains a medium that is often defined by criteria such as represented by the theorists and practitioners of the performance and its measurement built (Igalens et al, 2003; Wu, 2006).

The scarcity of work who is interested in studying the relationship between sources of knowledge management and organizational performance in Tunisian companies come and be the main motivation for this research.

Thus, we come to the end of the development of the problem of our research already referred to the following question:

How do we explain the relationship between sources of knowledge management, and organizational performance in Tunisian companies?

The objective of our research is to explain the relationship between the sources of knowledge management and organizational performance and to test a model which includes the relationship in Tunisian firms.

## II. REVIEW OF LITERATURE

### A. *The internal sources of knowledge management*

The internal knowledge is all the knowledge that the company has created within its borders (Loree, 2011).

Nonaka and Takeuchi (1997) challenge especially theorists of organizational learning, based on the work of Argyris and Schon (1978) show that companies can manage themselves a "single-loop learning" but that "the learning loop double" requires outside intervention. According to them, knowledge creating company is also able to change the basic rules of interaction between tacit and explicit knowledge.

#### *B. The external sources of knowledge management*

The external knowledge can be obtained outside the organization, for example in competitive markets or links to international organizations.

Indeed, it can support collaboration between different participants, lead, record and review ideas from internal and external sources such as suppliers, distributors, customers, competitors and employees (Awazu et al .2009, cited by Tayaran and Schiffauerorva, 2012)).

External sources of knowledge are less expensive and less risky, but at the same time, external knowledge cannot develop a competitive advantage (Garcia-Muina and al.2009, cited by Tayaran and Schiffauerorva, 2012)). Acquire knowledge through external collaborations allows individual companies to contribute to innovation. Therefore, external knowledge can influence organizational performance.

The role of external sources of knowledge as a capital of innovation has been pressed several times in the literature within a range of theoretical approaches.

In recent years, companies have increasingly relied on external sources in their process research and development to develop innovations (Calantone and Stanko, 2007, Linder et al, 2003).

Companies that broadly and deeply seek knowledge from external sources tend to be more innovative (Laursen and Salter, 2006).

External sources of knowledge are mechanisms to access external knowledge that can be crucial to innovation in society (Baum & Ingram, 1998; Duysters & Hagedoorn, 2002; McEvily & Zaheer, 1999; Powell Koput, & Smith-Doerr, 1996; Von Hippel, 1988, 2005).

Indeed, information from customers and suppliers is critical to the results of innovation. Similarly, Lelarge (2011, p.274) shows the direct role of external sources of information and knowledge on innovation.

For many authors, external knowledge is knowledge that contributes to the most promising innovations (Hargadon, 2003, Pawlowski and Robey, 2004, Jones 2006, p.13).

For example, Bell and Zaheer (2007) showed that external knowledge of customers and suppliers is positively affiliated with innovations. Organizational knowledge has been shown to be important for "generating innovation organizations" (Damanpour and Wischnevsky, 2006), and as a basis for the learning process leading to innovation (Lichtenthaler, 2009). Better access to integration and associated with a range of expertise built the base for the creation of innovations in the processing and exploitation of knowledge.

Backed companies competitive advantages depend largely on the speed in which they can integrate and apply current knowledge acquired from outside (Henderson and Clark, 1990; Kogut and Zander, 1992, Powell and al.1996).

The acquisition of internal sources of knowledge improves businesses understand how to differentiate between products that seem important.

#### *C. The organizational performance*

The presentation and improving of organizational performance remains a challenge for today's organizations. Certainly, it is a multidimensional variables are provided and are clearly relevant in Tunisian companies. Therefore, in contrast to several studies that determine organizational performance by only a general indicator of productivity or average sales, our measure of organizational performance

contains eight well maintained by the literature dimensions. These eight dimensions (sales, market share, profitability, efficiency, business growth, competitiveness, customer satisfaction and productivity.) Are important and appropriate considerations in different sectors. (Heppell, 2011).

### III. HYPOTHESES

Our research aims to diagnose the relationship between external sources of knowledge and organizational performance. As illustrated in the research model. See sentence in the article master.

#### A. The relationship between internal sources of knowledge and organizational performance

The internal sources of knowledge are the production and sharing of knowledge within the firm (Lee et al 1999).

The discussions focused on the importance of inter-organisational and network resources as a source of relationships, knowledge and sustained performance for companies. However, the internal network is potentially an equally important resource that personal networks within the business are often the first point of contact for employees.

According to studies by Soo et al (2002), professional service organizations revealed that employees depended largely on personal networks for information and knowledge.

There is a wide-range of research examining the role of internal transfer as a source of competitive advantage. Grant (1996, p.113) states the importance of understanding "the Organizational Processes through All which businesses access and use knowledge possessed by their members."

Argote and Ingram (2000) argue that "by integrating knowledge in interactions Involving people, organisms can perform both knowledge transfer and internal transfer of knowledge to the outside." This is Followed Consistently from Brown and Duguid (1991) the concept of "communities of practice" That Recognizes All which people are Often reliable to work, learn and innovate in informal communities that are

not generally recognized Organizational designs or job descriptions.

This is further reinforced by the experience Paulus and Yang (2000) suggests that the generation of ideas and sharing performed in a group environment leads to creativity and improved performance, as opposed to the generation of individual ideas.

Indeed, the use of intense collaboration Increases productivity. Improving the performance and Effectiveness Within The work team of a company, as well as through various ict services, is due to intra-firm cooperation (Sisco, 2008).

This year reinforced organizations today depend exclusively on internal knowledge to remain efficient and competitive.

Schroeder et al. (2002) demonstrated the relationship between internal knowledge and Organizational Performance.

H (1): There is a positive relationship between internal sources of knowledge and organizational performance.

#### B. The relationship between external sources of knowledge and Organizational Performance.

That previous research suggests companies create innovations using external knowledge, the goal to highlight the companies face difficulties in the acquisition and implementation of knowledge.

When organizations adapt knowledge management in general, the competitive advantage will be enhanced (Kirsch, 1997). As a result, thanks to the year effective way to promote knowledge management, the company can benefit from the long-term competitiveness.

All which several requirements exist with the use of external knowledge Will Strengthen or weaken either the performance of the company. In Particular, we believe that a high use of external knowledge has a negative effect on performance.

Many companies refer to acquire external sources of knowledge that essential for the improvement of new products and subsequently to market is performance. When companies enter new product, markets several Into-have a positive effect

on performance. When firms use external knowledge they will have greater have a greater absorption capacity.

Also, each company has trading Relationships with customers, suppliers and many others in their work environment and how structured thesis relationships will have a significant impact on the ease with all which knowledge flows in side and outside the firm (Kogut and zander, 1992; Winter, 1987). Also, firms use more external knowledge sources as significant to improve performance and to generate a competitive advantage (Liebeskind, 1996).

The crucial role of external knowledge sources can be traced in the literature on the resources and capabilities of firms (Wernerfelt 1984, Barney 1991, Conner 1991, Peteraf, 1996) resulting and in a knowledge-based perspective (Grant 1996). Bapuji et al (2011) show That Their Findings-have major implications for business managers to make decisions about Strategic Their product portfolios of companies and the extent to All which They use external knowledge.

On the other hand, research companies suggests that will greatly Benefit from the inside knowledge acquisition and Because The implementation of external knowledge is not easy task year, Especially Given the complex nature of various forms of knowledge and of organizational structures and systems That tends to complicate the transfer of knowledge (Cardinal and Hatfield, 2000; Darr et al, 1995; Irwin and Klenow, 1994; Lane and Lubatkin, 1998; Simonin, 1999; Szulanski, 1996).

Previous research (Ahuja and Lampert, 2001; Katila, 2002; Phene et al, 2006; Rosenkopf and Nerkar 2001) Focused on the impact of external knowledge on the nature of the innovations of a company, aim has not fully Examined how the use of external knowledge can affect the performance of a company.

Despite the considerable resources necessary to acquire and use external knowledge, companies depend on it for two Reasons hand. First, the establishments of knowledge Often

Involves That huge costs are beyond the capacity of any single organization to hire, especially in knowledge-intensive industries where standards and technologies are changing rapidly (Powell, 1998, Powell et al, 1996). In --other words, the Necessary resources for the establishment of knowledge can Hardly BE owned by a single organization.

The use of external knowledge Involves Many costs, Such as finding Appropriate knowledge bases, the selection of compete competing technologies, negotiation and monitoring and implementation of agreements (Kogut and Zander, 1996; Madhok, 2002). In addition, companies must assume the costs of formal care and informal networks to Identify and ao acquire knowledge (Soo et al., 2002). In addition, companies must to maintain knowledge enough to blind in identifying appropriate knowledge from outside the boundaries of the firm (Cohen and Levinthal, 1990). In addition, companies must devote resources to build structures and systems and maintain to acquire and assimilate external knowledge (Santoro and Gopalakrishnan, 2000).

Finally, external knowledge can reside in Areas of --other private companies, making it difficult to acquire (Matusik, 2002 Uzzi and Lancaster, 2003). As a result, the efforts of the acquisition and absorption of external knowledge are Sometimes Unsuccessful.

For a company uses it extensively that, external knowledge can Provide competitive parity, but not a competitive advantage (Barney, 1997; Gopalakrishnan and Bierly, 2001).

However, the mere access to external knowledge Regardless of whether it is willing-or reliable to Assimilate into ict and absorbed own knowledge base est aussi a determinant of performance (Grant and Badeu-Fuller, 2004).

Although previous work has not explicitly examined the relationship between the use of external knowledge and performance, empirical evidence shows That That companies focus on internal and external Solely learning-have lower than Those That Maintain performance balance between the two

(Bapuji and Crossan, 2004; Bierly and Chakrabarti, 1996). In short, "there is evidence to Suggest That Organizational units are more likely to Benefit from the inside knowledge of the external knowledge" (Argote et al, 2003).

The larger the company is open to external sources of knowledge, the more it has positive effect on organizational performance (Walcszuch et al., 2000).

Work has begun to verify that there is a positive relationship between external knowledge and organizational performance. Schroeder et al. (2002) showed that a positive relationship.

H (2): There is a positive relationship between external sources of knowledge and organizational performance.

#### IV. Research methodology and operationlization of variables

In what follows, we presented our sample research, data collection, validation and structure final questionnaire.

##### A. The sample

The sampling of empirical research phases an essential step to ensure that the population has been correctly identified. This is the first step of sampling process (Garrity et al, 2005). The parent population is the basis for determination of the sample to investigate. It can be defined as "all objects with the desired information to answer objectives of a study "(Giannelloni and Vernet, 1995, p 153).

For this study, the sample is composed of 200 companies: 90% in Sfax, 2% in Tunis, 2% in Monastir, 3% in Sousse, 1% in Mahdia, 1% in Ben Arouss et 1% in Elkef. We contacted 158 companies directly face to face, and only 42 companies by e-mail (Following the difficulty of obtaining a frame companies in the regions, we chose companies located in Sfax for a reason near Tunis and some companies that have been contacted by e-mail).

##### B. Data collection

The objective of the research, the nature of the variables and assumptions determine the choice of the method of data collection. Thus, data collection is performed through a questionnaire. The choice of this method of gathering information back to the fact that such a tool would of asking about the desired information; it therefore allows obtaining accurate information and the statistical processing to interpret thereafter (Ketele and Rogiers, 1996). Such features make the questionnaire an on appropriate tool for this search. The questionnaire consists of three parts:

- The first is devoted to issues related to characteristics of the firm.
- The second includes questions on the sources of knowledge management that it is internally and externally.
- The last part deals with questions about the organizational performance.

##### C. Operationalization of variables

- The internal sources of knowledge

The internal sources of knowledge are an independent variable. This variable was measured by six items . Respondents were asked to rate the importance of the potential of internal knowledge in society using a Likert scale with 5 points ranging from 1 = very poor to 5 = very high.

Based on the literature, this variable has been developed by several authors (Bierly and Chakrabarti (1996), Grant (1996), Nevis et al (1995), Zack (1999) so the items that will measure this variable are inspired (validated and used by) the work of Lee et al. (1999).

- The external sources of knowledge

The variable external source of knowledge is assessed by five items. They are developed by (Bierly and Chakrabarti (1996), Cohen and Levinthal (1990), Nevis et al (1995), Zack (1999) and validated and used by Lee et al. (1999).

The respondent expresses the degree of externalization of knowledge developed in the company. The assessment is made by the Likert scale of 5 points (1 = very low, 5 = high).

- The organizational performance

The organizational performance is a dependent variable measured by a Likert scale seven points ranging from 1 = not at all important to 7 = very important. This variable was measured by ten items (see Appendix 1).

Thus, studies have been used several measures of organizational performance. The dilemma which faced by researchers is not only one performance measure can fully explain all aspects of organizational performance. In order to address this problem, researchers have resorted to the use of multiple measures of organizational performance.

The measurement of performance depends essentially of the purpose and the context of the research. Some of the variables they propose to measure this concept include return on investment, sales, market share, the profitability, operational efficiency, business growth, competitiveness, the customer satisfaction and productivity.

Items 1, 2, 3, 4, 5 and 6 are used in the work of Premkumar and King (1994) and items 7, 8 and 9 are inspired by the work of Samson and Terziovski (1999).

## V. DATA ANALYSIS and INTERPRETATION OF RESULTS

### A. Data analysis

Our research is based on the use of two analytical methods namely the exploratory analysis (SPSS 18) and the confirmatory analysis (AMOS structural equation method).

#### A.1. The exploratory analysis

The application of PCA (Principal Component Analysis) on the variable "Internal sources of knowledge" has recognized a reliable factor and another unreliable. We also note that the contribution factor of each item to the formation of the factor is  $> 0.5$ ; it is considered good.

An initial analysis revealed two factors restoring 40,868% of total variance. A purification step as well as rotation "Varimax" were initiated to improve the structure and identify interpretability.

The reliability analysis of the factors indicates that the first factor is unreliable with Cronbach's alpha (0,521  $<$  0,6 so it is wise to eliminate it, and the second factor is reliable with an alpha (0,797  $>$  0,6).

For the variable "external source of knowledge," the result of principal component analysis with rotation "Varimax" shows that all the items measuring this variable, have commonalities ("the value of the variance a variable shares with all other variables considered" (Naresh M., 2007, p. 524)) greater than

except that item1 value (0,105  $<$  0,5) .So this item will be eliminated.

For this construct, this indicator records a value of 0.823. The ACP of these items, using varimax rotation, shows the existence of a single factor restoring 66,556% of the total variance of the original data.

This result is more popular with indices which are commonalities are greater than 0.5 except for items which Performance8 Performance7 and their equal (0,260 and 0,172) commonalities. So let's remove these items.

Varibales	Factorial contribution	Quality of representation
Interne 3	,789	,661
Interne 4	,793	,675
Interne 5	,804	,654
Interne 6	,707	,511
Alpha de Cronbach	<b>0,797</b>	
Variance totale expliquée %	<b>40,868 %</b>	

Parcimony	Absolute fit measures					Incremental fit			
	$\chi^2$ normé	RMSEA	RMR	AGFI	GFI	Vol. LI	CFI	NFI	
Values observed	2,300	0,081	0,062	0,907	0,857	0,927	0,945	0,908	
Externe 2	0.864		0.747						
Externe 3	0.774		0.599						
Externe 4	0.756		0.572						
Externe 5	0,838		0.702						
Alpha de Cronbach	<b>0,697</b>								
Variance totale expliquée %	<b>65,512 %</b>					<i>Rhò de Joreskog</i>	0,886	0,837	<b>0,924</b>
Performance 1	,718		,516						
Performance 2	,747		,558						
Performance 3	,887		,787						
Performance 4	,826		,682						
Performance 5	,868		,754						
Performance 6	,835		,697						
Alpha de Cronbach	<b>0,895</b>								
Variance totale expliquée %	<b>66.556%</b>								

**Table 1: The exploratory analysis of variables**

A2. The Confirmatory analysis

The Methods of Structural Equation is also used to check the validity of theoretical constructs, reliability, and validity of instruments measuring standard questionnaire.

Our analysis we will proceed subject to various fit indices referring to Roussel et al. (2002, p48). These indices are consistent with thresholds accepted and presented in the following table:

- The composite reliability

The value of reliability must be greater than 0.6 (and Yi Bagozzi 1988 cited by Akrou, 2010). In the following table, it is clear that the instruments show a fairly satisfactory level of reliability for all constructs (internal sources of knowledge,

external sources knowledge and organizational performance). This allows us to conclude that the reliability of the constructed and then move on to check their validity.

Variab les	Internal sources of knowledge	External sources of knowledge	Organizational performance
<i>Rhò de Joreskog</i>	0,886	0,837	<b>0,924</b>

**Table 3: The composite reliability**

- The convergent validity and discriminant validity

To test the convergent construct validity, it must be based on the approach and Fornel Larker (1981). The latter is used to calculate the average variance extracted (VME) to be greater than 0.5. Therefore, the following table shows that convergent validity is checked.

TABLE4  
THE CONVERGENT VALIDITY AND DISCRIMINANT VALIDITY

Variab les	Internal sources of knowledge	External sources of knowledge	Organizational performance
VME	0,459	0,615	0,623

The Discriminant validity can be measured, according to Fornell and Larcker approach (1981), by comparing the variance extracted (VME) for each built-squared structural link between the same and the other components built measurement model. Satisfactory discriminant validity implies that these values must be less than the VME.

The table 5 we can see that the discriminant validity is checked.

Table 5 : Study of discriminant validity

Verification of research hypotheses

Tested to confirm the hypothesis requires that the ratio coefficient is greater than 1.96 and that the probability of rejecting  $H_0$  ( $p$ ) is less than 0.05 with  $H_0$ : "There is no link between the explanatory variable and the dependent variable". The results for some of the assumptions of the search are shown in the following table:

TABLE 6  
VALIDATION OF ASSUMPTIONS ABOUT REGRESSION  
RELATIONSHIPS

	Estimate	S.E.	C.R.	P
External sources <-->organizational performance	,308	,066	4,661	***
Internal sources<-->organizational performance	,377	,062	6,055	***

*B. Discussion*

• **The relation between internal sources of knowledge and organizational performance**

The results of our research validate our first hypothesis. There is a relationship between internal sources of knowledge and organizational performance, with a correlation coefficient ( $CR = 6.055 > 1.96$  and  $p = 0.000 < 0.05$ ).

Pa against, other work namely Slater and Narver (1995) give more importance to internal sources of knowledge. These authors propose that effective managers use several internal sources to gain new insights into their business and their environment. In fact, companies can develop knowledge by

collecting pieces of information they get from other internal units.

	Internal Sources of knowledge	External Sources of knowledge	Organizational Performance
Internal sources of knowledge	0,459		
External Sources of knowledge	0,071	0,615	
Organizational performance	0,158	0,085	0,641

• **The relation between external sources of knowledge and organizational performance**

The results of the confirmatory analysis of our research has allowed us to validate our first research hypothesis with a correlation coefficient  $CR = 4.666 > 1.96$  and  $p = 0.000 < 0.05$ . Our research differs with several works such as Pedersen et al. (2002) showed the existence of a negative impact of external knowledge on organizational performance. This is shown that it is not only external knowledge that determines and influence organizational performance.

Overall, the work of Loree (2011) justified the use of external knowledge is not always a positive relationship on business performance. It seems that companies that benefit from the use of external knowledge are those who are not concerned with the implementation of market entry strategies for new products. So they increase the need for managers to be careful about the use of external knowledge that their company can not effectively absorb, especially when they pursue new entry on the market of strategies.

Therefore, the demonstration of the use of external knowledge is not always beneficial for businesses. Although it may challenge some thought patterns, managers can relate to that,



even using internal knowledge for new applications is not easy and is fraught with the complexity of knowledge transfer.

#### IV. CONCLUSION

It is widely recognized that knowledge is an essential element of strategic resource for a company to sustain competitive advantage. Thus, since knowledge is created and disseminated throughout the company, so it has the potential to contribute to the value of the company by improving its ability to respond to new and unusual situations (Choi, 2008).

The literature review showed that there is a relationship between the internal and external sources of knowledge and organizational performance.

Based on this approach, a conceptual model was constructed in order to relate the theoretical determinants from the literature.

In addition, these important theoretical considerations introduced to reveal an original conceptual model, adopting three levels of analysis, namely internal sources of knowledge; external sources of knowledge; and organizational performance, to address the problem of this research. This model posits that these two sources of knowledge management such as internal and external sources are influenced directly on the organizational performance of the company.

The empirical validation of this model is based on Tunisian companies operating in different sectors, using a quantitative approach. The results obtained through the interrogation of 270 companies in our research, test the causal structure of the overall research design and result in theoretical contributions, methodological and practices to be exposed.

The first contribution is theoretical order who is interested in the originality of our research is justified by the lack of research that processed the enrichment explanation of the problems connected between the sources of knowledge management and organizational performance.

The second contribution is a practical one that affects our investigative tool. Certainly, the research questionnaire developed from previous research can be used as operational assessment tool sources of knowledge management namely internal sources and external sources of knowledge and organizational performance in the company. It helped to have varied on different concepts. The research questionnaire could be used as information, comprehensive or partially, depending on the objectives set by the company officials. The second methodological contribution is the development of a set of scales valid and reliable measure. Indeed, on the basis of previous empirical work, we operationalized four variables (internal sources of knowledge, external sources of knowledge, organizational innovation and organizational performance).

Access to different methods of data analysis to approve the results is another methodological contribution of this research. Thus, our measurement scales have been validated by exploratory analyzes carried out in SPSS 18.0 and confirmatory analyzes carried out under the AMOS 20.0 software.

Therefore, the results confirmed the construct validity and reliability of the scales used by previous work.

We have, thus, resulted in valid scales having reliable characteristics. In addition, we tested the scales on our research variables on a sample of companies operating in Tunisia.

We also note the limitations of our study. Finally, we assign a set of reflections that we have shown as extensions and paths for future research.

The first limitation focuses on the empirical study of different businesses and also different sectors. Moreover, the fact to conduct a study in different industries helps control certain specific circumstances, especially in the organizational performance of the company, but limit the scope of the results, their extension to other contexts, and thereafter the external validity of the research.

On the other hand, we identify methodological problems, such as data collection. The fact that this research is based largely on the perception of different managers of enterprises, covered with a veil which prevents subjectivity, more, the possibility of generalizing the results. This approach could cause some bias since most of the data required to measure the variables are intangible in nature, and it would be difficult, even impossible, to collect objectively.

Highlighting these limits leads to provide pathways to new and relevant research to improve this field of investigation equal to many works in management science.

The first line of research that could be suggested is the improvement of the explanation of the two sources of knowledge. In fact, we have adopted two sources that are internal and external sources. It would be interesting to consider other sources such as tacit sources, sources explicit, etc.

The second line of research would examine the external validity of this work. Indeed, it would provide, as part of further work to re-check our model on a single industry, to check whether our results are generalizable or not. Thus, the use of research as a field operating on a homogeneity of private and public companies in a single industry with using the two sources of knowledge management, organizational innovation to improve organizational performance, and that undertaking on the significance of our

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