

## **“Culture and business strategy as antecedents of strategic knowledge management”**

### **ABSTRACT**

*Present paper focuses on organizational culture as a key element to overcome most of common difficulties when implementing Knowledge Management (KM) programs. This research considers organizational culture as an antecedent of KM. On the one hand, this investigation aims at finding the organizational culture most appropriate to main KM strategies. On the other hand, the paper has intended to ascertain the role of business strategy in the relation between culture and KM strategy. Through an empirical study with 310 companies and using hierarchical regression analysis, a significant link has been found between organizational culture and KM. Based on organizational culture typology proposed by Cameron and Quinn (1999), the antecedent function of organizational culture on KM is confirmed. Hierarchical culture has an influence on KM strategies, whereas market culture does not contribute to strategic KM. Adhocracy culture is especially appropriate for codification, while clan culture better fits with personalization, and also with codification just when it associates with a deep strategic business approach. Thus, results also show a moderating role of business strategy in the relation between culture and KM strategy.*

**Keywords:** *Knowledge Management, Knowledge Strategy, Organizational Culture, Business Strategy.*

## **INTRODUCTION**

Nowadays, firms are noticing the importance of managing knowledge if they want to remain competitive. Companies have a need for explicitly managing their intellectual resources and capabilities (Zack, 1999). Skyrme (2001) defines Knowledge Management (KM) as 'the explicit and systematic management of vital knowledge - and its associated processes of creation, organization, diffusion, use and exploitation'. This conceptualization concerns about three basic ideas. Firstly, organizations need to have a clear attitude and constant effort to KM. Secondly, companies have to focus on managing core knowledge (both explicit and tacit) due to limited resources. Finally, KM is a process composed by a set of different knowledge activities, which need to be properly manager.

From academic perspective, diversity of intellectual antecedents of KM field as Economics, Sociology, Psychology and Philosophy has led to a set of contributions featured by a lack of integration (Prusak, 2001). As a result, there is not a clear model about the factors that may enable or disable companies to adopt KM or about the variables which KM may have a significant impact on. On the other hand, from practice perspective, many companies everywhere are beginning to actively manage their knowledge and intellectual capital (DeTienne, Dyer, Hoopes & Harris, 2004), although many KM systems have been unsuccessful (Tsui, 2005; Schultze & Boland, 2000), with Storey and Barnett (2000) reporting failure rates of over 80%. In spite of all advances in these perspectives, the result has been an incomprehensible and confusing body of knowledge, so that many managers do not still know which variables can improve KM programs success (Moffett, McAdam & Parkinson, 2002).

After focusing efforts on KM information technology applications, practitioners realized the importance of the human dimensions of KM initiatives (Park, Ribiere & Schulte, 2004). Literature highlights the fundamental role of organizational culture in successful KM

implementation. Culture is perceived as an antecedent of strategic KM. Thus, the main objective of this research is to analyse the type of organizational culture that contributes the most on strategic KM. On the other hand, the paper intends to ascertain the role of business strategy in the relation between culture and KM strategy. Present work begins with a review of literature about key concepts: strategic KM, organizational culture, and business strategy. Next, research model is presented, followed by methodology used. Results are detailed and discussed later.

## **LITERATURE REVIEW**

### **Strategic Knowledge Management**

Also called KM strategy (Hansen, Nohria, & Tierney, 1999; Hahn & Subramani, 2000; Choi & Lee, 2002; Liao, 2003), perspective (Garavelli, Gorgoglione, & Scozzi, 2004), approach (Earl, 2001; Nicolas, 2004), orientation (Lee & Choi, 2003) or style (Choi & Lee, 2003), a firm's knowledge strategy describes the overall approach an organization intends to take to align its knowledge resources and capabilities to the intellectual requirements of its strategy (Zack, 1999), thus reducing the knowledge gap existing between what a company must know to perform its strategy and what it does know. Currently, literature advocates the convenience of explicitly managing knowledge with a clear and definite attitude. For instance, Zack (1999) states that business organizations are realising that to remain competitive they must explicitly manage their intellectual resources and capabilities. A firm must take a global and consistent vision when managing its knowledge and selecting the KM tools to be implemented. The whole organization must share a common KM orientation.

A better understanding of the concept and implications of KM strategies can be achieved through a review of the most important contributions. An essential element is the balance firms should observe between exploration and exploitation (March, 1991), i.e.

between the creation, discovery or acquiring of knowledge and its refinement, reuse or generally speaking a focus on efficiency in knowledge resource management. Bierly and Chakrabarti (1996) label firms according to the way they manage knowledge. They conclude that more aggressive knowledge strategies, featured by more innovative firms, cause higher financial performance. In a similar way, Zack (1999) proposed two orientations: conservative vs. aggressive. The latter is frequently more concerned about exploration. In Table 1, Choi and Lee's (2003) review of KM strategies is presented. They conclude in a distinction between a system-oriented and a human-oriented approach. System orientation emphasises codified knowledge, focuses on codifying and storing knowledge via information technology and attempts are made to share knowledge formally. On the contrary, human orientation emphasises dialogue through social networks and person-to-person contacts, focuses on acquiring knowledge via experienced and skilled people and attempts are made to share knowledge informally. Codification/personalization distinction fits in system/human Choi and Lee's orientation. So, a broader perspective of main KM strategies may be achieved with correspondences included in Table 1.

**Table 1.** KM strategies

<b>AUTHOR</b>	<b>SYSTEM-ORIENTED</b>	<b>HUMAN-ORIENTED</b>
<b>Hansen, Nohria and Tierney (1999)</b>	<b>Codification</b>	<b>Personalization</b>
<b>March (1991)</b>	Exploitation	Exploration
<b>Bohn (1994)</b>	Pure procedure	Pure expertise
<b>Bierly and Chakrabarti (1996)</b>	Exploiters	Innovators, Explorers
<b>Jordan &amp; Jones (1997)</b>	Explicit-oriented	Tacit-oriented
<b>Zack (1999)</b>	Conservative	Aggressive
<b>Swan, Newell &amp; Robertson (2000)</b>	Cognitive model	Community model
<b>Earl (2001)</b>	Technocratic	Organizational, Spatial
<b>Schulz &amp; Jobe (2001)</b>	Codification	Tacitness
<b>Choi &amp; Lee (2003)</b>	Systems-oriented	Dynamic, Human-oriented

Source: Adapted from Choi & Lee (2003)

Hansen, Nohria, and Tierney's (1999) typology of knowledge strategies has become the most supported and referenced one (more than one hundred times cited by March 2006).

Their classification distinguishes between personalization and codification of knowledge. The codification strategy focuses on codifying knowledge using a ‘people-to-document’ approach: knowledge is extracted from the person who developed it, made independent of that person, and reused. Codification firms invest heavily in Information Technologies (IT). This strategy allows many people to search for and retrieve codified knowledge without having to contact the person who originally developed it, since knowledge is stored in documents, manuals, databases, electronic repositories, and so on. That opens up the possibility of achieving economies of scale in knowledge reuse and, consequently, business growth. Hence, codification creates intellectual capital, by converting individual knowledge into structural capital. On the contrary, the personalization strategy focuses on dialogue between individuals, not knowledge objects in a database. Knowledge is transferred in brainstorming sessions and one-to-one conversations. It is a person-to-person approach where knowledge is shared not only face-to-face, but also by electronic communications, thus building networks of people.

Hansen, Nohria, and Tierney’s (1999) distinction of codification and personalization strategies is similar to exploration vs. exploitation typology proposed by March (1991). Both classifications are corresponding in that codification is related to exploitation, whereas personalization refers to exploration of knowledge. Moreover, both typologies are alike in that firms should not attempt to implement and excel at both strategies. Rather, companies should use one KM strategy primarily and use the second to support the first (Smith, 2004). Specifically, Hansen, Nohria, and Tierney (1999) recommend an 80-20 split.

## **Culture**

Organizational culture is believed to be the most significant input to effective KM and organizational learning in that corporate culture determines values, beliefs, and work systems

that could encourage or impede learning (knowledge creation) as well as knowledge sharing (e.g., Alavi & Leidner, 2001), and ultimately, decision making (Schein, 1990). Therefore, an organization's culture should provide support and incentives as well as encourage knowledge-related activities by creating environments for knowledge exchange and accessibility (Janz & Prasarnphanich, 2003).

Managers are becoming more aware of the problems created by having a corporate culture inconsistent with KM programs (DeTienne et al., 2004), since culture is a major impediment to KM initiatives (DeTienne et al., 2004; Park et al., 2004; Hendricks, 2004; Benbya & Belbali, 2005). Literature states that companies aimed at achieving KM objectives should align them to organizational culture (DeLong & Fahey, 2000). Besides, it may be more effective to align the KM system with the organizational culture than to attempt to change its culture (Park et al., 2004). Similarly, McDermott and O'Dell (2001) recommend companies to build their KM approach to fit their culture, and find that, however strong the commitment and approach to KM, corporate culture is stronger. Thus, organizational culture must be considered as an antecedent of KM and not as a result.

Diverse researchers have intended to list cultural characteristics that enhance successful KM. An effective corporate culture for KM consists of norms and practices that promote the free-flow of information among employees and across department lines (DeTienne et al., 2004), challenge people to share knowledge throughout the organization (Moffett et al., 2002), value creativity and continuous improvement (Benbya & Benbali, 2005) and reward knowledge sharing (Hislop, 2003). Moreover, a culture of confidence and trust is required to encourage the application and development of knowledge within an organization (Moffett et al., 2002). Park, Ribiere and Schulte (2004) empirically find high positive correlations between knowledge sharing and cultural attributes, such as team oriented work, working closely with others, sharing information freely, trust and support of

employees. Thus, cultural differences play a significant role in KM approach (Leidner, Alavi & Kayworth, 2006).

There is no clear consensus of an organizational culture definition. However, many researchers in the area have adopted Schein's (1990) three dimensional view of organizational culture – consisting of assumptions, values, and artefacts. Given that values are considered to be so central to understanding an organization's culture and they are also seen as a reliable representation of organizational culture, the measurement of organizational culture has typically focused on values (Jones, Jimmieson & Griffiths, 2005). Indeed, Quinn and his colleagues used the notion of values to develop the Competing Values Framework (CVF) of organizational culture. In their book *Diagnosing and Changing Organizational Culture*, Cameron and Quinn (1999) designed a validated instrument for diagnosing organizational culture and management competency as well as a theoretical framework for understanding organizational culture. Four organizational cultures have been defined. *The Clan culture*: an organization that focuses on internal maintenance with flexibility, concern for people, and sensitivity to customers. *The Adhocracy culture*: An organization that focuses on external positioning with a high degree of flexibility and individuality. *The Hierarchy culture*: An organization that focuses on internal maintenance with a need for stability and control. *The Market culture*: An organization that focuses on external positioning with a need for stability and control. The cultures are mapped on two dimensions on the competing values framework. “One dimension differentiates effectiveness criteria that emphasize flexibility, discretion and dynamism from criteria that emphasize stability, order and control. The second dimension differentiates effectiveness criteria that emphasize an internal orientation, integration, and unity from criteria that emphasize an external orientation, differentiation and rivalry” (Cameron & Quinn 1999).

**Figure 1:** Types of Organizational Culture (Cameron & Quinn, 1999)



### **Business Strategy**

Hansen, Nohria, and Tierney (1999) defend that a company's KM strategy should reflect its competitive strategy. Many academics have tried to deal, both theoretically and empirically, with the need for companies to align knowledge and business strategies. Conceptual studies, such as those by Earl (2001), Snyman and Kruger (2004), Wong and Aspinwall (2004) or, more recently, Danskin, Englis, Solomon, Goldsmith, and Davey (2005), conclude that a firm's KM strategy should be closely aligned with its business strategy. Besides, some authors have empirically analysed this issue. For instance, Zack (1999) studied five case companies and asserted that competing successfully on knowledge requires aligning strategy to what the organization knows. Case study research has been also applied by Du Plessis and Boon (2004), O'Dell, Wiig, and Odem (1999), and Garavelli, Gorgoglione, and Scozzi (2004), in order to study the link between KM strategy and the direction of the business. Finally, Nicolas (2004), with a 92-company survey, draws the conclusion that organizations have to link the strategic dimension with knowledge creation. Since practitioners need direct help in the integration of KM with business strategy (Grover & Davenport, 2001), our

research also tries to provide recommendations so that firms could adopt the most appropriate practices and strategies in alignment with their business and idiosyncrasy.

## **MODEL**

The main objective is to ascertain the importance organizational culture may have on the success of strategic KM. After literature review, to align KM to culture is thought to be easier than changing culture (Park et al., 2004). Basing on Cameron and Quinn's (1999) classification of organizational culture, present paper will analyse those cultures which contribute the most to different KM strategies.

In spite of the importance of culture on KM and the relevance of the work by Cameron and Quinn (1999), so far, few studies have used their model with the purpose of analysing the effect of each type of organizational culture on KM. Hendricks (2004) does take into account the model proposed by Cameron and Quinn (1999) to link culture and knowledge sharing. Specifically, Hendricks (2004) states that adhocracy (he called it entrepreneurial culture) is an open culture where innovation, individual initiative and independence, key features in companies who manage knowledge, constitute the norms. Author also highlights that in clan culture, employees prefer teamwork and face-to-face meetings as means to share knowledge, as posited in the personalization KM strategy. On the contrary, hierarchical culture (Hendricks (2004) called it bureaucratic) has a closed, formalised nature and hinders personal knowledge sharing in favour of normalization and codification for internal communication. Lastly, Hendriks (2004) considers that market culture enhances competitive behaviours (even among colleagues), going against KM philosophy.

Other works highlight cultural features which benefit or hinder KM, without considering Cameron and Quinn's (1999) model. For instance, Delong and Fahey (2000)

state that in a company where norms support individual ownership, people are encouraged to refuse to share their knowledge. Recently, Leidner, Alavi and Kayworth (2006) have proven, through a case study of two firms, that a bureaucratic, individualistic culture favours behaviours contrary to KM and oriented to codification, whereas a bureaucratic, innovative and cooperative culture enables participation and knowledge sharing among employees by creating virtual communities, approach similar to personalization strategy.

Based on previous discussion, the following hypothesis is posited:

*H1: Organizational culture is an antecedent of KM strategy. Differences are expected to exist in the influence of different cultures on the two KM strategies: codification and personalization.*

Also, business strategy is crucial in a company's KM efforts. Although many researchers have theorized about the existence of that strategic alignment, there is still a lack of empirical studies to confirm it. In addition to test the influence of business strategy on each KM orientation, the present paper also aims at testing its moderating role in the impact of organizational culture on KM strategy. For instance, Delong and Fahey (2000) focus on the culture and business strategy in KM stating that a company's norms supporting individual ownership will encourage people to refuse to share their knowledge, even as the organization pursues a business strategy whose success requires individuals to share what they know. Thus, business strategy is expected to affect the influence culture has on KM strategies.

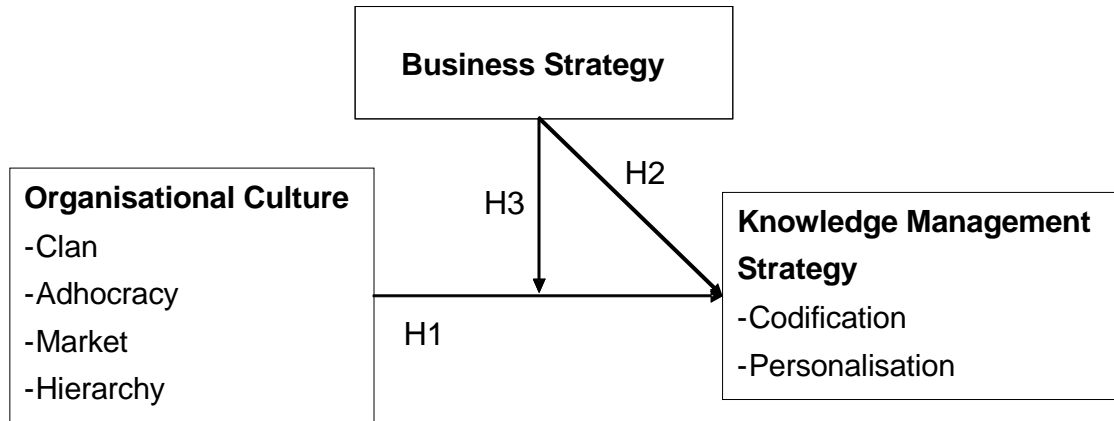
Based on previous discussion, the following hypotheses are posited:

*H2: Business strategy influences on KM strategy.*

*H3: Business strategy plays a significant moderating role in the impact of culture on KM strategy.*

Figure 2 shows graphically the research model and summarised the two propositions that will be tested, with an exploratory approach, in the present study.

**Figure 2: Research model**



## METHOD

### Sample and data collection

The target population consists of firms in the Region of Murcia (Spain), with at least 10 employees. 310 valid responses were obtained from different industries. The study assumes an error of 5.4% for  $p=q=50$  and a confidence level of 95.5%. A structured questionnaire consisting of close-ended questions was developed. Face-to-face surveys with the CEOs were conducted in May 2005. Table 2 shows characteristics of the sample. Studied companies are mainly SMEs. Organizations have been divided in 3 homogenous groups, based on the year of their foundation. Range limits for firm's age are determined by 1992 and 1981.

**Table 2: Sample description**

<b>Size</b>	<b>Sample (%)</b>
10-49 employees	71,3
50-249 employees	24,5
>250 employees	4,2
<b>Sector</b>	<b>%</b>
food and agriculture	34,5
textile	11,6
food trading	24,2
services to companies	14,5
manufacturing	3,2

other products distribution	11,9
<b>Geographical distribution</b>	<b>%</b>
1 location	71,2
More than 1 location	28,8
<b>Age</b>	<b>%</b>
after 1992	33,9
1981-1991	33,5
before 1981	32,6

## Measures

*Organizational Culture.* Culture is measured through the Organizational Culture Assessment Instrument developed by Cameron and Quinn (1999) which assesses six key dimensions of organizational culture (Dominant Characteristics, Organizational Leadership, Management of Employees, Organizational Glue, Strategic Emphases and Criteria of Success). Cameron and Quinn (1999) use a response scale in which individuals divide one hundred points among alternatives. This is known as an ipsative rating scale and its primary advantage is that it highlights and differentiates the cultural uniqueness that actually exists in organizations. When the Likert scale is used, respondents tend to rate all quadrants high or all quadrants low. Less differentiation occurs. On the other hand, ipsative response scales do not produce independent responses, thus preventing researchers from the application of certain statistical analyses based on the assumption of independence. In a Likert format, each response is assumed to be independent but Cameron and Quinn (1999) question themselves about the appropriateness of Likert scale to assess the four types of organizational culture since they may not be independent. However, Quinn and Spreitzer (1991) and Yeung, Brockbank, and Ulrich (1991) are among the researchers who used a Likert response scale and analyzed the culture data using standard statistical procedures. In this research a Likert scale will be used (Appendix A) so as to apply traditional statistics tests. Items marked with an asterisk are eliminated after validity and reliability analysis.

*Business strategy:* From the work by Hussin, King, and Cragg (2002), a scale was created to measure business strategy (Appendix A). Eight items were included in the questionnaire and, based on reliability and validity tests, the first item was found to some extent confusing for interviewees and the last item was also deleted to improve the scale quality. Once the measurement instrument has been depurated, a cluster analysis is carried out in order to put companies into diverse groups depending on their strategic approach. Different strategies are not found. Instead, results indicate that all items are grouped in a unique factor and the resulting variable is called business strategy focus.

*Strategic KM:* in order to measure KM in the questionnaire, the scale proposed by Choi and Lee (2002, 2003) was considered. It gathers different organizational initiatives for managing corporate knowledge. The scale consists of eight items (Appendix A) and allows researcher to distinguish the strategic approach a company follow for KM, since the first four items of the scale collect evidence about initiatives for knowledge codification, whereas the last four items of the scale are practices for personalization KM strategy.

### **Reliability and validity**

The validity of the construct is established by relating a measuring instrument to a general theoretical framework in order to determine whether the instrument is tied to the concepts and theoretical assumptions they are employing. In order to obtain evidence of construct validity, convergent validity and discriminant validity are assessed. For the first one, the item-to-total correlation is examined. The lower limit is 0.4. Discriminant validity is checked by a factor analysis. Each variable must have a factor loading in a single factor over 0.5. The results (Table 3) confirm that each construct is unidimensional and factorially different and that all items employed for operationalizing a particular construct load on a single factor. The

reliability is the accuracy or precision of a measuring instrument, that is, the extent to which the respondent can answer the same or practically the same value each time. The internal reliability was assessed by calculating the Cronbach's alpha. It can be also observed that acceptable values are obtained in all cases. Relatively high values of reliability and validity imply that the instruments used in this study are adequate. All the measures used in this study are reported in Appendix A.

**Table 3:** Statistics for reliability and validity tests

Measures	Items	Mean	SD	Reliability (Cronbach alpha)	Convergent validity (correlation of item with total store- item)	Discriminant validity (factor loading on single factors)
Codification	4	3,389	0,921	0,819	0,602; 0,580; 0,642; 0,745	0,774; 0,757; 0,811; 0,878
Personalization	4	3,769	0,797	0,789	0,570; 0,727; 0,550; 0,557	0,771; 0,874; 0,745; 0,748
Business strategy	6	4,054	0,661	0,770	0,525; 0,450; 0,600; 0,566; 0,460; 0,700; 0,613; 0,731; 0,723; 0,647; 0,544	0,722
Clan	5	3,748	0,751	0,840	0,660; 0,673; 0,726; 0,528; 0,644	0,798; 0,807; 0,846; 0,678; 0,782
Adhocracy	6	3,461	0,691	0,776	0,564; 0,482; 0,548; 0,452; 0,564; 0,727; 0,653; 0,706; 0,620; 0,724; 0,543	0,709
Market	5	3,338	0,776	0,792	0,496; 0,641; 0,579; 0,544; 0,599	0,667; 0,797; 0,744; 0,720; 0,765
Hierarchical	5	3,957	0,586	0,686	0,429; 0,452; 0,438; 0,478; 0,444	0,646; 0,658; 0,679; 0,713; 0,664

## DATA ANALYSIS AND RESULTS

Companies in the sample are characterised according to their KM strategy. As shown in Table 3, personalization strategy is more frequent (3.769) in companies than KM strategy oriented to codification (3.389). ANOVA tests have been performed in order to link KM strategies with characteristics of firms. Analyses show a positive relationship between KM strategies and two variables, namely firm size and industry. It may be observed from Table 4 that following codification knowledge strategy is associated to firm size. Companies with 50-249 employees resort to codification significantly more often than organizations with less than 50 workers. This finding confirms that implementing a codification knowledge strategy requires a minimum dimension for the company. However, firm size does not make any difference in terms of personalization strategy.

**Table 4:** ANOVA test results for KM Strategy and Size

	10-49 employees (n=221)	50-249 employees (n=76)	>250 employees (n=13)	F	Sig.
Codification	3,30	3,63	3,54	3,795	0,024
Personalization	3,74	3,84	3,90	0,688	0,503

Regarding industry where companies operate (Table 5), firms providing services to others are the most advanced in KM, both through personalization as well as through codification. On the contrary, the most backward sector is a traditional, low knowledge-intensive industry, as it is the case of textile industry. Organizations in traditional sectors but with great dynamism in the geographical area of the firms analysed (food and agriculture, and food trading) show a definite behaviour. Those organizations focus their knowledge efforts on personalization strategies.

**Table 5:** ANOVA test results for KM Strategy and Industry

	food and agriculture (n=107)	textile (n=36)	food trading (n=75)	services to companies (n=45)	manufactur ing (n=10)	other products distribution (n=37)	F	Sig.
Codification	3,48	3,03	3,17	3,67	3,33	3,59	3,552	0,004
Personalization	3,82	3,28	3,81	4,04	3,53	3,74	4,239	0,001

The main objective of our empirical study is to assess the extent to which organizational culture and business strategy affect or condition the implementation of a certain KM strategy. In order to test the propositions posited previously, hierarchical linear regressions have been used for each KM strategy. In Model 1 different organizational cultures are independent variables and KM strategy is the dependent variable. In Model 2, business strategy is added in the regression as an independent variable. Finally, in the last regression the interaction between business strategy and different cultures is also included in the model. To avoid multicollinearity among variables, they were centred on the mean. The correlation matrix of all indicators is shown in Appendix B.

Concerning regression analysis for codification KM strategy (Table 6), the main result is that it has been found a significant influence of culture on codification approach (R square is 23.9%). Including business strategy in Model 2 significantly improves the explaining power of independent variables on dependent one. A similar result is found in Model 3 when interactions between cultures and business strategies are also included. Those findings confirm hypotheses about codification KM strategy.

A deeper examination of the impact of different culture types shows that the most appropriate ones are, by order of importance, adhocracy and hierarchy. The analysis of interaction effects reveals that clan culture is positively linked with codification strategy only when the firm has a clear business strategy focus. Conversely, the influence of hierarchical culture decreases as business strategic orientation increases.

**Table 6:** Hierarchical regression on codification KM strategy

<b>Codification KM strategy</b>	Model 1	Model 2	Model 3
<i>Independent Variables</i>			
Clan	-0,005	-0,004	-0,048
Adhocracy	0,360***	0,294***	0,298***
Market	-0,032	-0,040	-0,039
Hierarchical	0,231***	0,200***	0,229***
Business strategy (BS)		0,162***	0,176***
Clan X BS			0,168**
Adhocracy X BS			0,037
Market X BS			0,046
Hierarchical X BS			-0,142*
<b>F</b>	23,959***	21,063***	12,779***
<b>R<sup>2</sup></b>	23,9%	25,7%	27,7%
<b>ΔR<sup>2</sup></b>		1,8%***	2%*

Note: p<0.1\*; p<0.05\*\*; p<0.01\*\*\*. ΔR<sup>2</sup> is the incremental variance explained between each model

Concerning personalization KM strategy (Table 7), it has been also found a significant influence of culture on personalization approach (R square is 26.8%). Including business strategy in Model 2 significantly improves the explaining power of independent variables on dependent one. A different result is found in Model 3 when interactions between cultures and business strategies are included. Those findings confirm all the propositions about personalization KM strategy, except for the moderating effect of business strategy.

A deeper analysis of the impact of different culture types shows that all of them positively contribute, although the following order may be established: hierarchy, clan, adhocracy and market. When including interaction effects in the model, the influence of adhocracy culture disappears, keeping the others equal. To some extent, business strategic orientation plays a mediating role in the impact of adhocracy culture on personalization KM strategy. The lack of moderating effects (Model 3 in Table 7) also supports the mediating effect just discussed.

**Table 7:** Hierarchical regression on personalization KM strategy

<b>Personalization KM strategy</b>	Model 1	Model 2	Model 3
<i>Independent Variables</i>			
Clan	0,185***	0,185***	0,163**
Adhocracy	0,142**	0,097	0,086
Market	0,120*	0,114*	0,125*
Hierarchical	0,205***	0,183***	0,209***
Business strategy (BS)		0,111*	0,109
Clan X BS			0,109
Adhocracy X BS			0,047
Market X BS			-0,086
Hierarchical X BS			-0,018
<b>F</b>	27,900***	23,219***	13,558***
<b>R<sup>2</sup></b>	26,8%	27,6%	28,9%
<b>ΔR<sup>2</sup></b>		0,8%*	1,3%

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Note:  $p < 0.1^*$ ;  $p < 0.05^{**}$ ;  $p < 0.01^{***}$ .  $\Delta R^2$  is the incremental variance explained between each model

## DISCUSSION

With the objective of helping managers in adopting and maintaining appropriate KM programs, the present research focuses on organizational culture, which is a key element to overcome common difficulties. On the one hand, investigation aims at finding the organizational culture most appropriate to main KM strategies. On the other hand, the paper has intended to ascertain the role of business strategy in the relation between culture and KM strategy. In general terms, a significant link does exist between organizational culture and KM strategy, and it is only in the case of codification KM approach that business strategy plays a moderating role. Only hierarchical culture has an influence on both codification and personalization KM strategies, regardless of business strategy focus. It may be also reminded that hierarchical culture is the most frequently used in surveyed companies. That is, environments featured by stability, respect to norms, efficiency and managers acting as coordinators are the most favourable to overcome common barriers to KM. A similar result was found by Park, Ribiere and Schulte (2004). From a survey research, they empirically tested that rule orientation, as an example of hierarchical culture, has a positive correlation with KM profile. Besides, Leidner, Alavi and Kayworth (2006), advise companies to enhance a dominant bureaucratic culture as the best way to leverage KM. Nevertheless, our results also indicate that in the case of codification strategies the positive influence of hierarchical culture decreases as business strategic orientation increases.

Environments associated to clan culture and featured by teamwork, loyalty, development of human resources and managers acting as mentors positively contribute to personalization KM strategy, and also to codification approach only when a clear business strategic orientation exists. Similarly, Hendriks (2004) considers that clan culture is good for

knowledge sharing, especially through personal meetings, face-to-face (personalization strategy). As well, other studies have proved that clan culture behaviours, such as working closely with others, team oriented work and trust, improve KM success (Park et al., 2004).

Adhocracy, featured by dynamism, individual risk taking, innovation, leadership and managers' entrepreneurship, specially relates to codification strategy. This result was not found for personalization orientation. The reason of that unexpected finding may be obtained support in the literature reviewed here. According to Hendriks (2004), adhocracy culture, independent and individualistic, where members prefer to be related to the system rather than to a person, is not person-oriented; instead, adhocracy is oriented to tasks, so that this type of culture is expected to hinder KM through personalization and to enhance codification for managing knowledge. However, one must be cautious when adhocracy culture is predominant: some of its behaviours, such as risk taking, being innovative and being individualistic, may prevent companies from succeeding in KM (Park et al., 2004).

Finally, market culture, featured by result-oriented environments, competitiveness, winning, aggressiveness, and market share increasing has hardly influence on KM and only in the case of personalization strategy. Also, Park, Ribiere and Schulte (2004) obtained a similar result and drew the conclusion that being competitive, aggressive and result-oriented is detrimental for KM success. In this kind of context, employee resistance to knowledge sharing is due to the view of their expertise and knowledge as a source of power and work stability (DeTienne et al., 2004), that are critical for workers. Market culture is so oriented to results and contract rules that knowledge sharing will be only enhanced if employees are explicitly rewarded for doing so (Hendriks, 2004).

Regarding business strategy, it has been found to influence on both KM strategies and to play a moderating role only in the case of codification strategy, being positive for clan culture' effect and negative for hierarchical culture' effect. In the case of personalization KM

approach, business strategy plays a mediating role in adhocracy's effect, that is, the influence of adhocracy culture on personalization strategy must occur through business strategy.

From results, it may draw the conclusion that hierarchical culture is always an appropriate antecedent of KM, although its impact on codification strategy decreases as business approach increases. Conversely, market culture is not favourable to KM, since it has no impact on KM strategy. Adhocracy culture is especially suitable for codification approach, as clan culture is for personalization, and for codification if it is associated with a business strategic orientation. In terms of KM strategies, codification is positively related to flexible environments oriented to outside the company, specifically linked to innovative cultures. The influence of inside-oriented cultures on codification strategy depends on business strategic approach. When the latter is high, clan culture enhances codification strategy; when business strategic approach is low, it is hierarchical culture the one that does enhance codification strategy. Concerning personalization, the key element is the requirement of inside-oriented cultures, both those focusing on stability (hierarchical culture) and also those focusing on flexibility (clan culture).

These results need further reflection because codification is theoretically linked to standardization, and personalization to innovation. In surveyed firms, SMEs mostly, codification strategy seems to be most appropriate for companies facing flexible environments where standardization is a form to make relevant knowledge explicit and reusable. SMEs should then choose personalization where a clear internal framework exist, allowing individuals to share knowledge, whether for the stability derived from the norms or the resort to teamwork.

Although the nature of business might indicate a particular knowledge strategy emphasis -as Hansen, Nohria, and Tierney (1999) have argued- other factors come into play that could influence the choice and effectiveness of knowledge use following such a decision.

According to Scheepers, Venkitachalam, and Gibbs (2004) the organization's political and cultural contexts represent an important influence on the choice of strategic pathway. A small firm where the workers are in close proximity could decide to prioritize codification despite their nature of business, since the workers may already be able to draw on each other's personal expertise and skills.

## **CONCLUSIONS**

In summary, present research states the significant contribution of organizational culture to strategic KM. Based on Cameron and Quinn's (1999) typology and on data from a survey with 310 firms, it has been found that hierarchical culture is the most common and, also, the most favourable to KM and its strategies, both to codification and to personalization. On the contrary, market culture is the least appropriate, because it only contributes, in small proportion, to personalization strategy. Regarding other types of organizational culture, adhocracy helps codification and clan culture enhances personalization.

Examining obtained results from the perspective of KM strategies, personalization is the most widespread and used one by organizations inside-oriented where internal frameworks allow individuals to share knowledge, by respecting stated norms or by working in teams. Codification strategy seems to be most appropriate for companies facing flexible environments where standardization is a form to make relevant knowledge explicit and reusable. Specifically, larger companies in our study with flexible organizational cultures, namely adhocracy and clan, choose codification strategy.

The second objective of our research refers to analyse the moderating role of business strategy on the link between organization culture and KM. The influence of culture on codification strategy is moderated by business strategic orientation, thus decreasing the impact of hierarchical culture on codification approach and increasing the relevance of clan

culture. Besides, findings prove that companies with higher business strategic orientation also show higher KM strategic orientation. Thus, business strategy is both a direct and also an indirect antecedent of KM.

Besides, the present work also proves the validity of the Competing Values Framework proposed by Cameron and Quinn (1999), using Likert scales, not detecting any statistical problem. From reliability and validity tests, scales have been depurated, by dropping certain items, in order to measure every type of organizational culture, thus improving their psychometric properties.

In order to provide recommendations to practitioners, this research shows the current situation of SMEs with respect to organization culture and implemented KM strategy. By using the measurement scales proposed in the present study, organizations may have the opportunity to diagnose their culture and think about the most appropriate KM strategic approach.

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## **APPENDIX A: MEASUREMENT SCALES**

(\*) Deleted items

### **Organizational Culture**

YOUR ORGANIZATION is mainly

- a) As an extended family. People seem to share a lot of themselves (\*)
- b) A very dynamic entrepreneurial place. People are willing to stick their necks out and take risks
- c) Results oriented. People are very competitive and achievement oriented.
- d) A very controlled and structured place. Formal procedures generally govern what people do (\*)

MANAGEMENT STYLE is characterised mainly by

- a) Teamwork, consensus, and participation.
- b) Individual risk-taking, innovation, freedom, and uniqueness.
- c) Hard-driving competitiveness, high demands, and achievement.
- d) Security of employment, conformity, predictability, and stability in relationships.

SHARED VALUES among employees are mainly

- a) Loyalty, mutual trust and commitment.
- b) Commitment to innovation and development, and emphasis on being on the cutting edge
- c) The emphasis on achievement and goal accomplishment, aggressiveness and winning theme
- d) Formal rules, policies and maintaining a smooth-running organization

ORGANIZATION'S SUCCESS is mainly based on the basis of

- a) The development of human resources, teamwork, employee commitment, and concern for people
- b) Having the most unique or newest products and being a product leader and innovator
- c) Winning in the marketplace and outpacing the competition, being the leader of the competitive market
- d) Efficiency. Dependable delivery, smooth scheduling and low-cost production are critical

ORGANIZATIONAL LEADERSHIP is mainly considered to exemplify

- a) Mentoring, facilitating, or nurturing
- b) Entrepreneurship, innovating, or risk taking
- c) A no-nonsense, aggressive, results-oriented focus (\*)
- d) Coordinating, organising, or smooth-running efficiency

STRATEGIC EMPHASIS is mainly on

- a) Human development
- b) Facing new challenges
- c) Achieving dominant positions in the marketplace
- d) Permanence and stability

## Business Strategy

Please indicate the extent to which you agree with each statement as best reflecting your company's business strategy: We attempt to be head of our competitors

1. By cheaper pricing of our products and services (\*)
2. By quality products and services rather than price
3. By ensuring that our products and services are distinctively different from our competitors
4. In introducing new products and services
5. By offering a wide range of products and services
6. By improving the efficiency of our production process
7. By providing quality service to our customers
8. By expanding into new markets (\*)

## Knowledge Management Strategy

Please indicate the extent to which you agree with the following statements: In our organization

1. Knowledge (know-how, technical skill, or problem solving methods) is well codified in my company
2. Knowledge can be acquired easily through formal documents and manuals in my company
3. Results of projects and meetings should be documented in my company
4. Knowledge is shared through codified forms like manuals or documents in my company
5. My knowledge can be easily acquired from experts and co-workers in my company
6. It is easy to get face-to-face advises from experts in my company
7. Informal dialogues and meetings are used for knowledge sharing in my company
8. Knowledge is acquired by one-to-one mentoring in my company

## APENDIX B: CORRELATION MATRIX FOR INDICATORS

(n=310)	1	2	3	4	5	6	7
1. Codification	1						
2. Personalization	0,495***	1					
3. Business strategy	0,382***	0,345***	1				
4. Clan culture	0,315***	0,419***	0,342***	1			
5. Adhocracy culture	0,447***	0,413***	0,527***	0,528***	1		
6. Market culture	0,299***	0,356***	0,393***	0,299***	0,639***	1	
7. Hierarchical culture	0,385***	0,436***	0,406***	0,602***	0,475***	0,442***	1

\*\*\* Correlations are significant at  $p < 0.01$