STRATEGIC KNOWLEDGE MANAGEMENT, INNOVATION AND PERFORMANCE

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ABSTRACT

Challenge can balance organizational innovativeness and flexibility with the disciplines that turn innovative pursuits into tangible business advantage. Our aim is to spread knowledge involving a certain subject of the results of knowledge management (KM) strategies on firm's innovation and incorporated in performance. This study consisted of 195 Iranian organizations and structural equations modeling, results show that both KM strategies influences on innovation and organizational performance directly and indirectly. Thus, one of the main final decisions of our research is that KM has been found as a significant mechanism to increase innovation and incorporated in performance. In addition, both codification and personalization strategies have a positive influence on financial results. Managers can use these findings as a dispute to negotiate with and influence to stakeholders about the goodness of performing KM projects. Our research can contribute to professional, since it furnishes organizations with new perception and findings which managers can translate into their own companies. Our final decision may help academics and managers in designing KM strategic schedules in orderto obtain higher innovation, effectiveness, and efficiency and profit capacity.

Keywords: Knowledge management, Strategy, Innovation, Performance, Iran

1. Introduction

Challenge can balance organizational innovativeness and flexibility with the disciplines that turn innovative pursuits into tangible business advantage. However, the mere act of processing knowledge itself does not guarantee strategic benefit (Zack, 2002); instead, knowledge has to be managed. Skyrme (2001) explains knowledge management (KM) as 'the clear and systematic management of important knowledge – and its related procedure of creation, organization, dispersion, use and utilization KM doctrines have been studied and executed in every organizational training and declaration (Kebede, 2010). This difference has donated to the rapid advance of the field, but also to a lack of merging of ideas and terminology (Clarke & Turner, 2004). In this situation, there are several challenges to determining; KM as a separate systems (Kebede, 2010).From a viewpoint, firms are observing the importanceof managing knowledge if they want to remain competitive (Zack, 1999) and grow (Salojrvi, Furu, & Sveiby, 2005). According to Storey and

Barnett (2000) reporting failure rates of over 80%, due to diverse reasons, such as an over focus on IT, inappropriate KM strategies, or ignorance of KM consequences, many KM systems have been unsuccessful. Now that technologies executed to increase knowledge sharing have grown up, researchers and professional are able to express on the factors of their success or failure (Hall & Goody, 2007). Besides, a deviation in the PR actioner's view on KM and the academic viewpoint is already evident (Clarke & Turner, 2004), and an increasing feeling of disappointment in managers due to their in capacity to encourage organizational knowledge. In spite of all advances in these viewpoints, the result has been an inconceivable body of knowledge and many managers do not know which variables can improve KM schedules success (Moffett, McAdam, & Parkinson, 2002). There is not a clear model about the variables which KM may have a significant influence on KM schedules on innovation and incorporated in performance have been analyzed in works (Choi, Poon, &Davis, 2008). Few studies test the link between knowledge and performance (Tseng,

2008), thus existent a research gap on how and under which circumstances KM enterprises lead to better results. Besides, organizational knowledge plays an important role in innovation procedure. Thus, the aim of present study is to contribute to the advance of KM research from a strategic point of view and spread knowledge involving a certain subject whether KM directly or indirectly can be translated into better organizational performance, through an increase on firm's innovation. Specifically, we suggest and test a model that links two KM strategies (codification and personalization) and their results on innovation and on financial and non-financial performance. Our final decision, based on an empirical study consisted of 195Iranianorganizations and structural equations modeling may help academics and managers in designing KM strategic schedules in order to obtain higher effectiveness, efficiency and profit capacity.

2. **Strategic KM**

Strategic KM relates to the procedure and substructure firms employ to obtain, create and share knowledge for developing strategy and making strategic decisions (Zack, 2002), thus linking KM strategy to business strategy. A firm's knowledge strategy describes the approach an organization and its knowledge resources and abilities to the rational necessity of its strategy, thus reducing the knowledge gap existent between what a company must know to carry out its strategy and what it does know (Zack, 1999). A similar definition is provided by Bierly and Daly (2002), who state that "the set of strategic choices addressing knowledge creation in an organization including firm's KM strategy, which furnishes the firm with guidelines for creating competitive benefit". Both definitions are considerate the convenience of clearly managing knowledge with a clear knowledge strategy. However, the KM

strategy is adopted not in a conscious way (Garavelli, Gorgoglione, & Scozzi, 2004). Salojrvi et al., (2005) suggested that the whole organization must share a common KM direction because KM is central to their capacity to grow and contest. An essential element is the balance firms should observe between examination and utilization (March, 1991), i.e. between the creation, finding or getting of knowledge and its purification, reutilize or a focus on efficiency in knowledge resource management. They conclude that more forceful knowledge strategies, highlight by more innovative firms, cause higher financial performance. In a similar way, Zack (1999) suggested two directions: resisting change vs. forceful. Hansen et al.'s (1999) symbolism of knowledge strategies differentiates between personalization and codification of knowledge. This classification is based on the distinction between tacit and clear knowledge, and the distinct use of IT (Martini & Pellegrini, 2005). In the codification strategy knowledge is extracted from the person who developed it, made independent of that person, and reutilized for various purposes, while the personalization strategy focuses on conversation between individuals (Table 1).This research focuses on the KM strategies symbolism by Hansen et al. (1999) because, first, their work is well-known and accepted in the field of KM, and has been used for other studies (464times cited by November 2010, according to ISI Web of Science by Thomson Corporation). Second, it includes prior significant classifications (examination vs. Utilization by March (1991) or human direction vs. system direction by Choi and Lee (2003)) and relates to the distinction between tacit and clear knowledge (Davenport & Vlpel, 2001). Third, the ideas of personalization and codification of knowledge are easily understood by academics and professionals. However, Hansen et al.'s (1999) classification has also been disapproved due to its inconsistency

Table 1

Codification and personalization KM strategies.

	Codification	Personalization
Economic motivation	Knowledge reutilize	New explanations and knowledgedevelopment
Knowledge managed	Explicit	Tacit
Focus	Person-to documents	Person-to-person
Use of IT	ITinvestment: connecting people and reusable knowledge	Simplify IT investment promote dialogue and tacit knowledge sharing
Main tools	Decision support systems	Mentoring groups Video

	Document repositories Knowledge maps Workflow	conferencing , E-mail Discussion forum
Human resources Management	E-learning, Rewarding the use of and contribution to databases	Mentoring Rewarding knowledge sharing with others
Advantages	Economies of scale Time savings No need ofreinventing the Wheel Quicker and wider access and distribution of knowledge	Flexible and adaptable Knowledge Improvements in task quality Improvements in clients image Management of un -codificable knowledge
Disadvantages	High cost Codified knowledge loses richness	Unwillingness to share Inappropriate culture

Source: Hansen et al. (1999), Alvesson and Karreman (2001), Hansen and Haas (2001), and Inuzuka and Nakamori (2004).

of unite codification and personalization (fixed in the middle), stating that companies who attempt to excel at both

strategies risk failing at both. The embedded the middle situation is an example of the focused viewpoint in KM strategy (Choi & Lee, 2002, 2003). Choi et al. (2008) find that strategies directed to clear knowledge (systems or codification) or to tacit knowledge (human or personalization) are non-complementary with regards to organizational performance, thus supporting Hansen et al.'s (1999) idea about the danger of being fixed in the middle. Our research is based on the classification by Hansen et al. (1999) and on the focused viewpoint suggested by those authors and empirically tested in Choi et al. (2008) regarding the non-complementary of codification and personalization.

3. Results of strategic KM

We aim at analyzing KM influences on incorporated performance. Specifically, probably results of KM on innovation and firm's results (financial and non-financial) are studied.

3.1. Influences of strategic KM on innovation.

The innovative attempts include the search for, and the finding, testing, and development of new technologies, new products or services, new production procedure, and new organizational structures. Innovation is about performing ideas (Borghini, 2005). Literature (Damanpour & Evan, 1984) describes innovation in terms of its nature, as a main component, a new structure or administrative system, a policy, a new plan or program, a new production procedure, a product or service new to the company, which has been obtained or created internally. Innovation procedure favorably depends on knowledge (Gloet &Terziovski, 2004), specially

on tacit knowledge (Leonard & Sensiper, 1998). New and valuable knowledge is created and transform into products, services and procedure (Choy, Yew, & Lin, 2006), by converting general knowledge into specific knowledge. A KM system that expands the creativity envelope is thought to improve the innovation procedure through quicker approach and movement of new knowledge (Majchrzak, Cooper, & Neece, 2004). Also, effective KM is an important factor when sending out new products. In this sense, present paper supports that one of the factors influencing innovation function in organizations is knowledge and its management. Organizational interest in KM is excited by the possibility of resulting from benefits, such as increased creativity and innovationin products and services (Darroch, 2005; Moffett et al., 2002). In fact, knowledge contributes and producing innovation (Borghini, 2005). That is why innovation is seen as the area of greatest bribe from KM (Majchrzak et al., 2004). Darroch (2005) furnishes empirical evidence to support the view that a firm with a capacity in KM is also probably to be more innovative. Also, Massey, Montoya-Weiss, and O'Driscoll (2002) suggested a real company who executed a KM strategy and obtained improvements on innovation procedure and performance, while Swan, Newell, and Robertson (1999) compare the influence on innovation of different KM schedules executed in two organizations. Thus, there are a close link between the organization's knowledge and its function to innovate and create (Borghini, 2005). Both codification and personalization can increase incorporated in innovation. Swan et al. (1999) state that it is largely examination through knowledge sharing that allows the development of innovation since it focuses on tacit knowledge, whereas Majchrzak et al. (2004) suggest a positive influence

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of clear knowledge reutilize (which codification strategy is based on) for fundamental innovation. We assume the following:

H1. Codification KM strategy increases innovation.

H2. Personalization KM strategy increases innovation.

3.2. Influences of strategic KM on organizational performance

Earlier conceptual research state that KM can improve incorporated in performance and competitiveness (Holsapple & Jones, 2004, 2005). KM schedules are successful when incorporated in performance is enhanced. Therefore, it is essential to measure KM contribution to performance (Tseng, 2008), especially when there is at present no convincing research on the relationship between KM strategy and firm performance (Yang, 2010). Incorporated performance is multidimensional idea and believes firm's position regarding to competitors. An extensive view of incorporated performance believes not only a financial viewpoint but also others which allow supervision value creation. With this focus some methodologies have been developed, being the most popular the Balanced Scorecard (Kaplan & Norton, 1996).Some works recognize the influence of strategic KM on different dimensions of incorporated performance (McKeen, Zack, & Singh, 2006). However, most of them focus on hard financial outcomes(cost, profit, etc.) to evaluate KM (Vaccaro, Parente,&Veloso,2010), while overlook soft non-financial outcomes such as operating costs, shorten lead-time, and differentiate products (Sher & Lee,2004); developing new services (Storey & Kahn, 2010); improving its capacity to attract, train, develop, and retain employee (Thomas& Keithley, 2002); and improving coordination attempts (Wu & Lin,2009).KM systems performance should unite financial and nonfinancial measures (Tseng, 2008; Wu & Lin, 2009), since different dimensions of performance are affected by KM strategy. Existent literature in the field, however, does not provide a clear model about the real influence of KM on performance (Choi et al., 2008).We suggest that the influence of KM strategy on firm performance should be better studied by analyzing different dimensions of incorporated performance. Three dimensions will be used to value KM contribution to incorporated performance: (1) financial performance, which surround market performance (profit capacity, growth and customer satisfaction); (2) procedure

performance, which refers to quality and efficiency; and (3) internal performance, which relates to individual abilities (employees' qualification, satisfaction and creativity).A strategic policy is necessary to obtain those competitive benefits and to improve performance (DeTienne & Jackson,2001; Salojrvi et al., 2005).However, the influence of each KM strategy (codification and personalization)on performance maybe different. By grounding on the Knowledge-based view of the firm (Grant, 1996), some studies (Storey & Kahn, 2010) mention that personalization strategy, focused on managing tacit knowledge, may be more valuable in improvement competitiveness than codification strategy which is mainly involved about clear knowledge. Other works (Keskin, 2005) find, however, that the influence of clear directed KM strategy is higher than the tacit direction on firm performance. Those oppose results may be explained by the fact that earlier research show clearly that both KM strategies may improve incorporated performance differently. Managing codified knowledge saves time (Haas & Hansen, 2007) and enhance coordination attempts (Wu & Lin, 2009), while personalization strategy enhance quality (Ofek & Sarvary, 2001), signals capability to clients (Haas& Hansen, 2007), and enhance capacity to innovation (Wu & Lin,2009). Based on these and other studies, it is hypothesized that KM strategies positively contribute to firm performance directly:

H3. Codification KM strategy has a direct influence on incorporated performance.

H3a. Codification KM strategy has a direct influence on financial performance.

H3b. Codification KM strategy has a direct influence on procedure performance.

H3c. Codification KM strategy has a direct influence on internal performance.

H4. Personalization KM strategy has a direct influence on incorporated in performance.

H4a. Personalization KM strategy has a direct influence on financial performance.

H4b. Personalization KM strategy has a direct influence on procedure performance.

H4c. Personalization KM strategy has a direct influence on internal performance.

Earlier research state that KM can improve incorporated performance and competitiveness indirectly through higher organizational capacity to innovate (Gloet & Terziovski, 2004; Yang, 2010) and higher organizational capacity to creativity (Lee & Choi, 2003). Following Vaccaro et al. (2010) and Yang (2010), we consider a mediatory variable between KM strategies (codification and personalization) and performance, that is, innovation. According to the prior discussion, and considering that both academics and professional state that innovation function lead to competitiveness (Braganza et al., 1999), we assume the following:

H5. Codification KM strategy has an indirect influence on incorporated performance through an increase on innovation function.

H6. Personalization KM strategy has an indirect influence on incorporated performance through an increase on innovation function.

Fig. 1 shows the research model and the hypothesis that will be tested in the present paper.

4. Methodology

The model shown in Fig. 1 is tested through a survey among Iranian companies. The sample consists of 195 firms in the west of Iran. The sampling procedure is based on random sampling, with regards to firm size and activity sector. Particularly, it aims at symbolize firms with at least 7 employees operating in specific sectors (textile, food trading, trading, and services to companies). The study assumes an error of 4.9% for p – q - 50and a confidence level of

95.5%. After having contacted 230 firms, 210 companies were interviewed and 195 valid responses were obtained from different industries (response rate 80%). A structured questionnaire consisting of close-ended

H4a. Personalization KM strategy has a direct influence on financial performance.

H4b. Personalization KM strategy has a direct influence on procedure performance.

H4c. Personalization KM strategy has a direct influence on internal performance.

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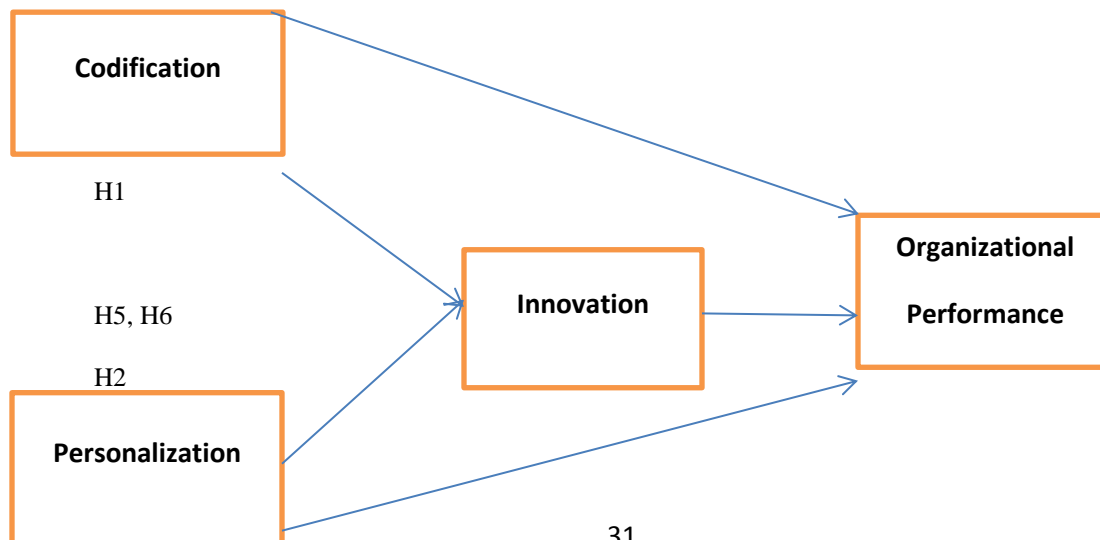
Fig. 1. Conceptual modelquestions was developed. Pretest for the instrument was examined by 5 professional (CEOs of five companies) and 5 academics in this area, including translation, wording and structure. Face-to-face surveys with the CEOs were conducted. CEOs were targeted as key informers because they must be the KM leaders (DeTienne et al., 2004)and the ones who are used to doing it in Iranian firms (Tena &Ongallo, 2004). Following other investigations (Tseng, 2008), informer were promised to achieve a summary of the results if they were interested in this study. Ninety percent of respondents requested the free-of-charge report with the main final decision of the research, thus signaling the high interest of interviewed companies in KM and research (Table2)

Table 2

Sample description.

Size	Sample (%)
7–49 employees	76.3
50–199 employees	20.5
>200 employees	3.2
Age (%)	
After 2011	33.9
2002–2011	33.5
Before 2002	32.6
Sector (%)	
Textile	10.0
Food trading	24.0
Services to companies	17.0
Other products distribution	13.3

Studied companies are mainly SMEs. Organizations have been divided in 3 homogenous groups, based on the year of their substructure. Range limits for firm's age are determined by 2002 and2011.The variables of this research are measured using multi-item scales tested in prior studies. Items for KM strategies are based on Choi and Lee (2002, 2003). Innovation scale is based on Lee and Choi (2003). Finally, performance measures are based on Choi and Lee Table 3

(2002, 2003). Regarding the reliability of the measures, we conducted a confirmatory factor analysis (CFA) for each one of the constructs using LISREL 8.7 (Jreskog & Srbom, 1996). Measurement model shows high reliability and validity of the scales (Table 3).

Table 3

Confirmatory factor analysis (CFA).

	Mean	SD	Items	Alpha Cronbach	Eigen-value	Lowest t-value	SCR[a]	AVE[b]
Codification	2.1862	.912	3	.812	2.497	10.88	.812	.531
Personalisation	2.5669	.788	3	.782	2.372	10.63	.791	.494
Innovation	2.0959	.905	2	.803	1.379	10.98	.811	.687
Financial performance	2.2814	.803	2	.729	1.566	9.97	.737	.488
procedure	3.9918	.643	3	.670	1.440	9.98	.680	.489

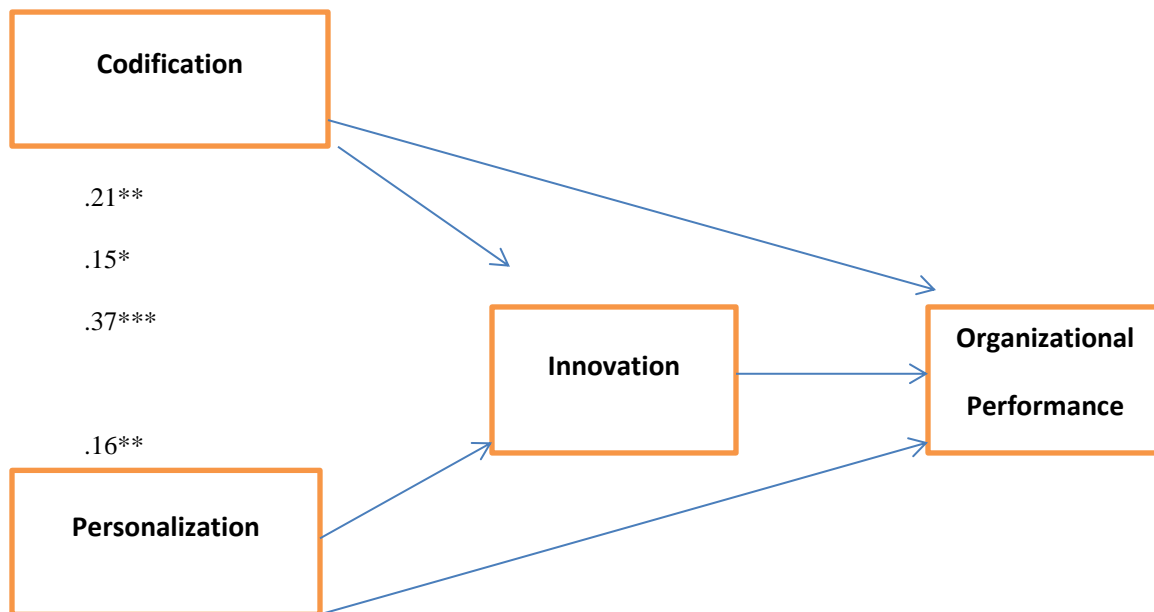| performance								
Internal performance	2.3997	.659	2	.738	1.593	9.99	.749	.501

$x^2(125) = 326.05$

GFI = .92, CFI = .93, IFI = .93, RMSEA= .066, RMR= .055.

a Scale hybrid reliability.

b Average variance extracted.

Cronbach's alpha is above .70, level suggested by literature (Hair, Anderson, Tat ham, &Black, 2001). Scale hybrid reliability indexes are higher than .70, as suggested by other studies, and average variance extracted is above .50, minimum value suggested by Fornell and Larcker (1981). As may be observed from Table 3, measurement model shows proper indexes of goodness-fit: a non-significant x2, GFI, CFI and IFI above.90, RMSEA below .07, and RMR between .05 and .06.CFA (Table 3). Moreover, the 3 dimensions performance found here (financial, procedure and internal) are also alike different components of different rational Capital models. And the structural model presented in Fig. 1 is tested using Lisrel 8.7 (Jreskog & Srbom, 1996). Using structural equation modeling, all the paths can be estimated at once. In Fig. 2 results from structural model estimation are presented and in Table 4 indirect and total influences of the different paths are

detailed. As learnt from exploratory factor analysis, CFA confirms the existence of 3 dimensions in the performance variable: financial, procedure and internal performance. The idea that incorporated performance has a multidimensional nature consisting on financial and non-financial measures is coherent with earlier research. Specifically, our financial dimension performance is similar to financial viewpoint suggested in the Balanced Score Card (BSC) by Kaplan and Norton (1996), as well as the model of effectiveness based on rational goal by Quinnand Rohrbaugh (1983).Procedure dimension in our measure performance unites customer and internal viewpoints of the BSC and the internal procedure model byQuinn and Rohrbaugh (1983). Finally, our internal dimension performance is similar to learning and growth viewpoint by Kaplan and Norton (1996).

.21**

.15*

.37***

.16**

Table 4 Indirect, direct and total effects.

Indirect effects	
Codification performance	.07*
Personalization performance	.08***
Innovation financial performance	.32***
Innovation procedure performance	.28***
Innovation internal performance	.20***
Direct effects	
Codification innovation	.15*
Personalization innovation	.16**
Codification performance	.21**
Personalization performance	.34***
Innovation performance	.37***
Total effects	
Codification performance	.25***
Codification financial performance	.13***
Codification procedure performance	.11***
Codification internal performance	.11***
Personalization performance	.42***
Personalization financial performance	.23***
Personalization procedure performance	.22***
Personalization internal performance	.18***
Innovation financial performance	.31***
Innovation procedure performance	.23***
Innovation internal Performance	.19***
Performance financial performance	.54***
Performance procedure performance	.44***
Performance internal performance	.33***

* p < .10.

** p < .05.

*** p < .01.

5. Results and discussion

Results show that both KM strategies (codification and personalization) influences on innovation and organizational performance, thus supporting H1–H4. Also, KM strategies indirectly (through an increase on innovation capacity) influence performance (supportH5andH6), thus strengthen the total influence of KM strategies performance. So, from findings the conclusion shows that KM is an important mechanism for companies to be more innovative, efficient and effective. Although strategic KM increases innovation (H1 and H2), there is difference regarding the influence of each KM strategy. This finding does not support Hansen et al. (1999), and Alvesson and Karreman (2001) research, according to the research, personalization strategy is motivated by new explanation and innovations, while codification strategy is based on the economics of existent knowledge reutilize. Also, Leonard and Sensiper (1998) claim that social interaction, as an example of personalization strategy is especially important for innovation procedure and Wu and Lin (2009) have recently reported that enhanced capacity to innovation was carry out on the personalization approach and enhanced coordination attempts on the codification. Instead, our analyses indicate that both personalization and codification approaches positively influence on incorporated in innovation. This means that organizations may focus on both IT and abilities of human resources in order to increase innovation and (every dimension of) performance. This finding is coherent with Vaccaro et al. (2010) and similar to the Inuzuka and Nakamori (2004) who

do not find performance differences depending on KM strategy (codification or personalization), but they do find that performance/cost ratio is much higher for personalization than codification. Our results can also be compared to Gloet and Terziovski's (2004). A deeper analysis of results emphasizes that KM strategies have a clear influence on different performance dimensions (H3a–c and H4a–c). Specifically, it can be observed that both codification and personalization may have a higher influence on financial performance, followed by procedure performance and internal performance. Managers can use this finding as a dispute to negotiate with and influence to stakeholders about the goodness of performing KM projects. Similarly, McKeen et al. (2006) have also found that KM practices (without considering codification and personalization distinction) positively influence customer intimacy, product leadership and operational excellence, thus improving financial performance. Regarding financial performance, Vaccaro et al. (2010) report a positive influence of KM on financial performance directly and indirectly through an increase on innovation outcomes, while Zack, McKeen, and Singh, 2009) find no direct influence of KM on financial performance. Vaccaro et al. (2010) who find an indirect contribution of KM to financial performance through improvements of new product performance and findings from Yang (2010) predict that the relationship between KM strategy and strategic performance will be positive when procedure innovation is high. As well as, a positive influence of innovation performance (financial, procedure and internal) has been found. Our findings show that strategic KM may have an influence on financial performance higher than on other dimensions of performance. Although literature suggests that attempts supported by ICT are easier to implement and/or better managed, than enterprises that require human intervention and/or human component to succeed (Kruger & Johnson, 2010), our results indicate that KM strategies focused on either technologies or people are effective and efficient in improving incorporated performance (Carolina Lopez et al; 2011) .The indirect influence of KM strategy on firm performance through an increase on innovation function (H5 and H6) is also supported. This finding is coherent with recent literature.

6. Decision

Our research shows the codification and personalization strategies on innovation and performance, developing prior researches in the field of KM where the link has been suggested quite often, but with scarce empirical support. Thus, one of the main final decisions of our research is that KM has been found as a significant mechanism to increase innovation and incorporated in performance. In addition, both codification and personalization strategies have a positive influence on financial results. Managers can use these findings as a dispute to negotiate with and influence to stakeholders about the goodness of performing KM projects. Our research can contribute to professional, since it furnishes organizations with new perception and findings which managers can translate into their own companies. By now, firms executed enterprises distrust the importance and utility of doing so, overlook what KM really is useful and helpful for, and without understanding the results KM schedules could have (Moffett et al., 2002). Now, enterprises can learn about the positive influence of KM and KM strategy on innovation and performance. Specifically, companies know that with a clear KM strategy they can be more innovative, obtain better financial results, improve procedure and develop human resources' abilities. And, in turn, those benefits encourage the link innovation performance. Thus our limitations: first, the sample was obtained from the west of Iran. In this sense, findings may be guessed to other Iranian areas and other countries, since economic and technological development in west of Iran are similar to other countries. However, in future research, a sampling frame that unites firms from different countries could be used in order to provide a more international viewpoint to the subject. Also, it may be interesting to analyses companies in different periods of time in order to observe their advances in KM and the existence of a KM implementation. As well as, in the future we will attempt to consider objective measures for performance, such as ROA or ROI, and intermediate outcomes of strategic KM, such as learning outcomes (DeTienne et al., 2004) or knowledge performance regarding knowledge creation, accumulation, sharing, and utilization (Tseng, 2008). At the beginning, different levels of formalization and KM strategy are expected over time. Finally, organizational learning (OL) is recognized as a key issue on strategic management. However, a detailed analysis of OL exceeds the purpose of our research.

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