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Investigating the role of knowledge-oriented organizational culture and leadership as moderators on the effect of knowledge management on innovation

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Abstract

The goal of this study is an investigation of the moderator role of knowledge-oriented organizational culture and leadership on the effect of knowledge management on innovation. The type of this research is practical and its method is the survey. Questionnaires have been used to conduct the research. Its target population includes knowledge-based companies in Mashhad, which are located in the Mashhad Science and Technology Park and Growth Center of Ferdowsi University of Mashhad. According to a random sampling, 89 companies from 125 active knowledge-based companies were selected. Multi-Regression method was used to test the hypotheses. Findings show, although managing knowledge has a positive effect on innovation, when moderator variables like knowledge-oriented organizational culture and leadership are there to overcome human obstacles toward innovation and managing knowledge, the organization is able to reach higher levels of innovation.

Keywords: knowledge management, innovation, organizational culture, leadership.

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1. Introduction

In recent years, knowledge management has come to be recognized as a key tool to improve the function and effectiveness of organizations (Zack et al., 2009). Furthermore, the significance of knowledge in organizations has increased due to factors such as an increase in the speed of technological changes or the need to share the best method of doing different tasks (Mehta, 2008). In knowledge-based organizations and companies, knowledge is recognized as the most important strategic source to ensure the long-term existence of the organization and its success (Decapolis and Deeds, 1999).

Organizations use certain processes for managing knowledge. One of the most common processes is comprised of knowledge acquisition, knowledge storage, and knowledge sharing and knowledge exploitation. Knowledge acquisition includes extracting employees' implicit knowledge, extracting the explicit knowledge of the organization, expanding the existing knowledge in the organization and acquiring new knowledge from external sources. Knowledge storage includes editing, storing, organizing, retrieving the knowledge. Knowledge sharing includes distribution and exchange of knowledge among people, working teams and knowledge bases and finally knowledge exploitation pertains to the utilization of the acquired and collected knowledge.

Knowledge management is necessary conditions for the achievement to new results but not enough. That is why in this research, efforts have been made to evaluate the role of human factors like knowledge-oriented organizational culture and knowledge-oriented leadership which mediate the effect of knowledge management on innovation (Detienne et al., 2004; Mehta, 2008).

Ballinger and Smith (2001) mention that human behavior is the key to success or failure of knowledge management activities for the knowledge management, emphasizes the organizational culture, group work, organizational learning and sharing skills and experiences. Thus, two human factors are discussed in relations to the success of managing knowledge: knowledge-oriented culture and knowledge-oriented leadership. According to Shin (1985) culture leads to behavior control, consequently organizations need to create sets of values which affect behaviors and motivate the sharing of knowledge (Leidner et al., 2006). In addition, managers need to motivate their employees to pass along their experiences in the company voluntarily. In this case, facilitating and coaching roles of the management have to be developed (Yang, 2007) thus, if the organization expands the knowledge-oriented culture and follow as knowledge-oriented leadership, increase the effectiveness of knowledge acquisition, storage, sharing and exploitation activities on innovation (Donate and Guadamillas, 2011).

Innovation is the direct result of knowledge management and one of the main objectives of knowledge-based companies to achieve a competitive advantage (Nonaka and Takeuchi, 1995). In order to achieve more innovations through the knowledge management, these companies need to pay attention to human factors affecting the effect of knowledge management and innovation. Thus, the quintessential question of this research is: to what

extent knowledge-oriented culture and knowledge–oriented leadership moderate the effect of knowledge management and innovation?

2. Theoretical Framework and Research Background

Recent efforts in the science of management are after expanding the knowledge-based perspective of the organization so that it can take into account the creation, unification and implementation of knowledge as its philosophy (Nonaka, 1994). The knowledge-based perspective is based upon resource-based perspective which focuses on strategic assets as the main source of competitive advantage (Amit and Schoemaker, 1993). According to the knowledge-based view, knowledge is the most important strategic source since sources of knowledge are the background of forming the products and services (Zack et al., 2009).

Knowledge management involves the process through which knowledge is acquired and edited, shared among the members of the organization and implemented to innovate and improve the functioning of the organization (Zack et al., 2009). The strategy of knowledge management deals with the needs of the knowledge applied in the organization's business (Zack et al., 1999). The organization must satisfy these requirements through recognizing and evaluating its knowledge assets minding the environmental conditions in the organization's business (Grant, 2002). When the knowledge gap of an organization is identified, activities and knowledge management strategies must be expanded, in order to acquire or create a new knowledge and also used in the current dealings. At this point, one needs to pay attention to the required human resources to implement and support the knowledge management activities (Mehta, 2008). Human factors are known as supportive tools which are used by the organization to drive individuals to implement the knowledge management. Some of these human factors include: assigning the knowledge management roles and responsibilities, creating a cooperative culture, motivating people to cooperate in knowledge management and evaluating the knowledge management performance and educating the employees to do particular knowledge management tasks (Davenport and Prusak, 1998).

2.1. Knowledge-oriented culture, knowledge management and innovation

Culture is defined as the collection of certain rules, values and beliefs that common among the members of an organization (Schein, 1985). The concept of culture tied to the hidden and abstract aspects of the organization, like ideologies, beliefs, behaviors, and common values on one hand and visible elements like organizational methods, symbols, language, customs, and myths as concepts related to culture on the other hand (Alavi et al., 2005, p. 194).

Organizational culture and knowledge management studies focus on values which applaud and motivate activities leading to the creation and implementation of knowledge (Alavi et al., 2005). For instance, Ditin and Jackson (2001) point out that an environment stimulates individuals to share knowledge while it doesn't provide the necessary motivations, the knowledge sharing processes end up in failure. Gold et al. (2001) believe organizations which value for open environment and organization trust, are ready to expand the behaviors

through which the employees share their knowledge and ideas and drive the employees to become more innovative and responsive towards changes and new opportunities of the market quickly and easily. Delong and Fahey (2000) have identified many cultural values to push the employees toward creating, transferring and using knowledge in organizations. They believe while trust and cooperation makes employees to share their knowledge, value systems which magnify personal power and competition prevent employees from sharing knowledge.

Lee and Choi (2003) believe there is a positive relation between organizational culture as a set of values like cooperation, trust and learning and the improvement of the production of knowledge processes. Knowledge-oriented culture has also a positive effect upon the efficacy of knowledge management (Lee and Choi, 2003), indirectly, a moderator role as cooperative education and cooperation for more innovation (Janz and Prasarnphanic, 2003) and a moderator role in improving the effectiveness of knowledge management technologies (Alavi et al., 2005). Generally, the subject of all above mentioned studies is the way in which organizational culture influences the expansion of knowledge management and findings like improving the ability of innovation.

2.2. Knowledge-oriented leadership, knowledge management and innovation

The leaders of the organization play an important role in the management of knowledge (Nonaka and Takeuchi, 1995). In this role, the leaders focus on motivating the members of the organization to transfer knowledge voluntarily and use their talents and experience continuously in order to create organizational knowledge (Yang, 2007). A leader must help the development of knowledge management through the facilitating of knowledge sharing (Haas and Hansen, 2005). Van Krogh et al. (2011) divide their studies on the role of leadership in knowledge management, into two theories of leadership style and prescriptive theory in the leader's measures. The leader style theory holds that in supporting the knowledge management activities some styles are more effective than others, such as leaders with roles like an innovator, coach or expedition possesses features which have a positive relationship with sharing knowledge in organizations. Styles with strict policies and processes are less supportive of knowledge management than styles which are founded upon human interaction, interdependence, morale, integrity and rapport in the working environment (Yang, 2007).

2.3. Research Model and Hypotheses

The research model is shown in the figure 1.

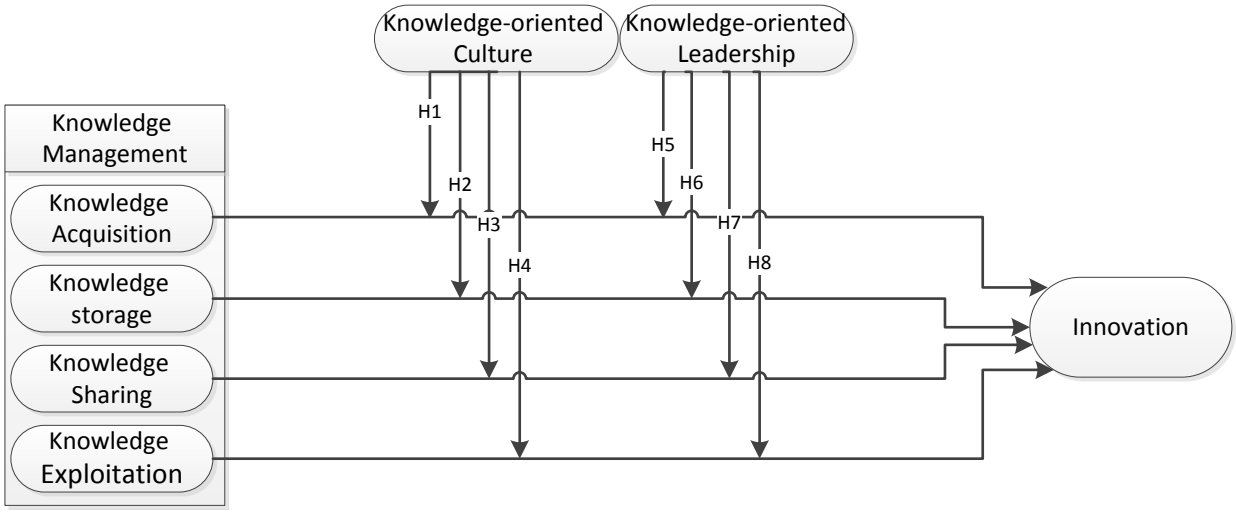

Figure 1- Research Model

In this research, the knowledge-oriented organizational culture are presented as a moderator in effect of knowledge management on innovation. Consequently, the following hypotheses are suggested:

Hypothesis 1: knowledge-oriented organizational culture, moderate the effect of knowledge acquisition on innovation.

Hypothesis 2: knowledge-oriented organizational culture, moderate the effect of knowledge storage on innovation.

Hypothesis 3: knowledge-oriented organizational culture, moderate the effect of knowledge sharing on innovation.

Hypothesis 4: knowledge-oriented organizational culture, moderate the effect of knowledge exploitation on innovation.

About the moderator role of leadership in the effect of knowledge management on innovation following hypotheses are presented:

Hypothesis 5: knowledge-oriented leadership moderate the effect of knowledge acquisition on innovation.

Hypothesis 6: knowledge-oriented leadership moderate the effect of knowledge storage on innovation.

Hypothesis 7: knowledge-oriented leadership moderate the effect of knowledge sharing on innovation.

Hypothesis 8: knowledge-oriented leadership moderate the effect of knowledge exploitation on innovation.

3. Research methodology

3.1. Sample

In this study, survey method has been used in collecting data. Knowledge-based companies have been selected for this research. The reason behind this choice is the importance of knowledge management in these companies (He and Wong, 2004). In addition, both types of innovations, meaning, process innovation and product innovation have a pivotal role in the activities and the creation of competitive advantage for these companies (Jansen et al., 2006). The target population of the research is the knowledge-based companies of Mashhad located in the Mashhad Technology and Science Park and the Growth Center of Ferdowsi University of Mashhad. The size of the sample is calculated based on Cochran formula and the resulted number was 89.

In order to collect data, a questionnaire was handed to the executive manager or the person with the most amount of information about the company. The question, based on 5-point Likert-type scale ranging from 1 (very high) to 5 (very low). The questionnaire is taken from Donit and Godamilas's research published in 2011 which is localized to match with the Iranian knowledge-based companies. Based on the random sampling scheme, 120 questionnaires were distributed among the sample after which 86 companies filled the questionnaires and handed them back, among which 2 questionnaires were not verified due to mishandling. Totally, 84 questionnaires were used.

3.2. The validity and reliability of research tools

In order to evaluate the formal validity of research tools, first, the questionnaires were pre-examined which helped the authors to increase the quality of questions and correct the dictation and meaning-related errors. Then, an experimental test was carried out to assess the clarity of the questionnaire. Later on, the questionnaire was given to two academic and practitioner experts. In order to assess the validity of the research tools and ensuring that all questions related to each variable are categorized correctly, a Confirmatory factor analysis was performed. In this process, first the Kaiser-Mayer-Olkin (KMO) test which is indicative of the accuracy of sampling and in the level of 0.05 must be 0.6 at the least, was carried out (Pallant, 2007). The result of this test is presented in table 1 are indicative of the acceptability of the test. The analytical result indicates that all the items tested are higher than 0.3. Therefore, after taking all these steps, the validity of the research tools is verified.

Table 1 –Kaiser-Meyer-Olkin (KMO) test

Variables	KMO	Bartlett's Test of Sphericity sig
Knowledge management	0.814	0.000
Knowledge-oriented culture	0.658	0.000
Knowledge-oriented leadership	0.748	0.000
Innovation	0.666	0.000

For the reliability, Cronbach alpha was used whose results are presented in table 2. The resulted amounts are indicative of the reliability of the research tools.

Table 2 – Reliability tests of research tools

Variables	Cronbach alpha
Knowledge management	0.849
Knowledge-oriented culture	0.798
Knowledge-oriented leadership	0.814
Innovation	0.701

3.3. Description of the data

The demographic data and descriptive statistics of the sample are presented in table 3 based on variables of the field of activity, the history of activity and the number of employees.

Table 3 – demographic information of sample

Variable	Indicator	Percent
Field of activity	Electronic & industry	14.3
	Computer & IT	36.9
	Industrial engineering & management	8.3
	Agricultural engineering & food industry	25
	Educational	4.8
History of activity	Less than two years	9.5
	Between two and five years	59.5
	Five to ten years	26.2
Number of employees	Less than five people	17.9
	Between five and ten people	60.7
	Between ten and twenty people	11.9
	Between twenty and fifty people	3.6

In table 4 the central tendency and measures of spread of independent, dependent, and moderator variables are presented. For central tendency, average, and for measures of spread, standard deviation were used.

Table 4 – distributional and central factors of variables

Variable	Mean	Standard deviation	Number
Knowledge acquisition (KAC)	3.9871	.44124	84
Knowledge storage (KST)	3.4087	.84803	84
Knowledge sharing (KSH)	3.1429	.78022	84
Knowledge Exploitation (KEX)	3.6587	.77438	84
Knowledge-oriented culture (KOC)	4.0660	.62828	84
Knowledge-oriented leadership (KOL)	3.8250	.58889	84
Innovation (INV)	3.6071	.61272	84

4. Research Findings

To analyze the data, SPSS software, version 21, has been used. The correlation matrix of all variables is presented in table 5.

Table 5 – Correlation matrix of variables

Correlations							
	KAC	**KST**	**KSH**	**KEX**	**KOC**	**KOL**	**INV**
KAC	1						
KST	.440**	1					
KSH	.481**	.726**	1				
KEX	.266*	.017	.367**	1			
KOC	.281**	-.025	.226*	.678**	1		
KOL	.183	-.017	.173	.379**	.469**	1	
INV	-.041	-.242*	-.201	.188	.094	.194	1
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

In order to examine the hypotheses of this study, the multiple regression analysis method has been used. The results of this analysis are presented in four formats in table 6.

Table 6 – the table of multiple regression

	Model1		**Model2**	
Variables	**St. coeff.**	**t_value**	**St. coeff.**	**t_value**
KAC	.287	.376	-1.275	-1.494
KST	1.576	1.454	.206	.169
KSH	-1.206	-.784	1.195	.853
KEX	1.081	.982	-.298	-.264
KOC	1.081	1.092	-.132	-.838
KOL	.205	1.718*	-1.041	-.790
KAC* KOC	-.422	-.291		
KST* KOC	-1.983	-1.496		
KSH* KOC	1.158	.589		
KEX* KOC	-1.136	-.708		
KAC* KOL			2.629	1.607
KST* KOL			-.290	-.195
KSH* KOL			-2.030	-1.137
KEX* KOL			.782	.500
F	1.940**		1.980**	
(%) R^2	24.7		25.1	
(%) Adjusted R^2	12		12.4	
(%) Increase in R^2	3.6		4	
Change in F	.848		.944	
Notes: Dependent variable: Innovation results; *Significant p, 0.1; **Significant p, 0.05; ***Significant p, 0.01				

Two models were constructed to examine the hypotheses. The first model in which knowledge-oriented culture (KOC) is added as a moderator to the model is meaningful and explains 12 percent of innovation variance. In this model, the numbers for the knowledge-oriented leadership (KOL) ($P<0.1$) is positive and meaningful ($P<0.05$). In the second model, "KOL" was added to the model as a moderator variable. This model is meaningful and explains 12.4 percent of innovation variance. Therefore, as is the case in some studies like that of Janz and Prasarnphanic (2003) and Alavi et al. (2005), the idea that knowledge-oriented culture and knowledge-oriented leadership in order to achieve more innovations, are taken as the support element and moderators of knowledge management variables are strengthened.

5. Discussion and conclusion

Different studies have been carried out so as to examine the moderating role of human factors on the effect of knowledge management on innovation. These studies indicate that knowledge management in order to achieve innovations is affected by the values and knowledge-oriented culture (Alavi et al., 2005; Donate and Guadamillas, 2010) and the method which leaders facilitate the process of knowledge management (Yang, 2007; Von Krogh et al., 2011). In comparison to prior studies, this study provides new evidence on the fact that knowledge-oriented culture and knowledge-oriented leadership moderate the effects of knowledge management on innovation. This study also participates in expanding the conceptual model to explain the relation among knowledge management, knowledge-oriented culture and knowledge-oriented leadership and innovation.

The findings of this study can bring important effects on managerial practices. This study shows that implementing knowledge management towards innovation successfully needs especial tools and methods to improve knowledge management, including knowledge acquisition, storage, sharing and exploitation. To achieve this goal, the organization needs some organizational culture values and knowledge-oriented leadership as strengthening human factors in this process. The leader has a vital role in creating organizational conditions and necessary infrastructures which improve and expedite knowledge management. They are responsible for constructing and preserving an organizational culture which defends the importance of knowledge management with a focus on human resources (Davenport and Prusak, 1998).

5.1. Suggestions

Managers must be meticulous in planning knowledge management strategies, but at the same time they need to pay attention to the expansion of human aspects of knowledge-oriented organizational culture and knowledge-oriented leadership in order to use knowledge management methods effectively. The role of managers in spreading the knowledge-oriented organizational culture and knowledge-oriented leadership is very vital and important.

In this research, common organizational factors for all knowledge management elements like knowledge acquisition, storage, sharing and exploitation were analyzed, but they may

need some special conditions to make complete use of each knowledge management factor and acquiring the desired result.

Future studies can delve deeper into the relation between knowledge management processes and different kinds of innovations like process innovation and product innovation, the technology innovation and organizational and administrative innovation, radical innovation and gradual innovation. Besides, the study at hand is put together based on the data the author himself has gleaned. Future studies had better make use of objective measurement of innovation, which is independently assessable and verifiable.

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