

# An Investigation into the Relationship between Organizational Infrastructure and Knowledge Management Strategy

Meisam Najjaran<sup>1</sup>, Alireza Ma'toufi<sup>1\*</sup>, Kambiz Esmaeilnia Shirvani<sup>1</sup>, Ali Farhadi Mahalli<sup>1</sup> and Rasoul Jafarian Kykanloo<sup>2</sup>

1- Department of Management, Gorgan Branch, Islamic Azad University, Gorgan, Iran

2- Department of Management, Jajarm University of Applied Science and Technology, Iran

*Corresponding author:* Alireza Ma'toufi

**ABSTRACT:** The present study aims to indicate the relationship between organizational infrastructure and knowledge management strategy in the educational organization of Golestan province. The present research enjoys an applied, survey, descriptive, field and correlation method. The statistical population of the study includes 208 staff working in education organization of Golestan province, out of which 136 individuals are selected using Morgan Table. Three questionnaires and some organizational and library documents whose reliability are calculated as 0.904 and 0.894, respectively using Cronbach's Alpha are also employed to collect data. The validity of these research instruments are also verified based on content method. Having employed Spearman test, this study reveals that there is no significant relationship between organizational infrastructure and knowledge management strategy at 95% level of significance and with  $R=0.161$  in the first method as well as in the second method with  $R=0.127$  and at 95% level of significance. However, the results of Wilcoxon T-test indicate that there is a significant relationship between arguments of the primary hypothesis in the first method at 99% level of significance and with  $R=-10.412$  as well as in the second method at 99% level of significance and with  $R=-10.293$ .

**Keywords:** Knowledge Management, Organizational Infrastructure, Organizational Structure, Hypertext Structure.

## INTRODUCTION

Human being has followed an evolutionary procedure since his creation and this is manifested in his subjective and objective works. Events such as "Thought Revolution" in Renaissance (creation of new post-nature and fall of scholasticism (the school of acquiring from others' findings and middle ages research method) and proposing a new method for leading logic, namely cartesianism), advent of industry and machine revolution, postindustrial and electronic era and then, knowledge and information age. Therefore, the evolutionary procedure of human being is a constant, long-term and gradual process implying relativity in science. It is believed to be traditional-building process pointing to the fall of industrial civilization and rise of modern civilization. This modern civilization creates a profound revolution in the presumptions, method of thinking, formulas, ideologies and dogmatic rules of organization. Thus, our organizations have entered a chaotic, variable and speedy period resembling a horrible front made by warm and cold weather to change two seasons of the year. But, how can one miss these environmental changes? Undoubtedly, knowledge and information, as two powerful tools, can really work. Considering the above-mentioned critical situation, however, knowledge and information sound like an optimistic (Pollyanna) dream. This tool is the result of the self-regulating power of the evolutionary procedure of human being motivated due to the need and found the way to treat. As pathology, of course, considering the organizations and communities accentuating knowledge and wisdom is the same as talking about a utopia which can eventually sink organizations in an ocean of information. Therefore, providing the groundwork, infrastructure and reasons appropriate for today's world and manage knowledge intrinsically and internally is of great importance and may

lead to a learning and knowledge-creating organization, not an organization depended on using other organizations' knowledge and sunk in to the ocean of information. This requires a change in the method of organizational thinking towards creative tension, even to the deepest internal layer of staff, i.e. spirituality. However, in which organization can one provide the infrastructures to achieve the above-mentioned preferences? Undoubtedly, the answer is an organization whose goal is to teach the appropriate method of creating and distributing knowledge as well as a suitable method of thinking. Such an organization has permanent effect on the society, not affected by it and seeks to form personal and behavioral strategies of a nation using cultural standards and factors since an individual's childhood. Scholars, therefore, believe that education organization can play such critical roles in the society.

### **LITERATURE REVIEW**

Modern management thinks of knowledge as an inexhaustible source and competitive advantage for organizations (Vasquez, 2000). Due to its complexity and multi-dimensionality, knowledge is believed to be a basis for philosophy of science and rooted in social and behavioral sciences, and is greatly emphasized in management and other behavioral sciences. Community and the knowledge environment caused by conditions of today's world is a content variable affecting organization's performance and efficiency. Therefore, an organization's survival depends on infrastructural dimensions consistent with conditions of today's world. Regarding the importance of knowledge management, many scholars and researchers of various fields including sociology, economics and management believe that fundamental changes have occurred in the society and these changes are knowledge-oriented (Sharifzadeh, 2008). Accordingly, our country and its organizations are subject to this obligation. Since the first part of the fourth economic, sociological and cultural development plan act of Islamic Republic of Iran puts emphasis to the wisdom-based national economic growth as it interacts with global economy and wisdom-based development mentioned in its fourth part, and knowledge-based development supposed to be the core basis of the fifth comprehensive development plan of the country, Iranian scholars has been motivated to conduct studies in this regard and eventually, render their findings to managers.

Investigating and identifying the organizational infrastructure is a comprehensive and multi-dimensional model to manage knowledge and create a learning organization, and its relationship with knowledge management direct managers of education organization, as an important educational organization, to confront a changing environment in a questioning and knowledgeable society and finally, results in improving its performance in the educational society and achieving its perspective and determining and worthwhile missions in training competent and skilled staff to develop country, and obtains a stable competitive advantage in the target segment in a large competition with their counterpart organizations in other countries to propose an Iranian-Islamic model in managing knowledge and provide technical and sociological infrastructures corresponding to it for other societies.

This study tries to present a long history of literature in knowledge management and its two major activities, i.e. creating and distributing knowledge as dependent variables and organizational infrastructure as independent variable.

Knowledge management: knowledge management is defined as a conceptual framework of the activities and perspectives used to develop and benefit from knowledge capital of an organization (Jonjoubson, 2008). McNabb (2007) believes that knowledge management is followed in organizations to enable them to create the maximum knowledge to ultimately find and apply innovative answers for old and new questions (McNabb, 2007). Debowski (2006) also points out that knowledge management is a process of identifying, gathering, organizing and distributing intellectual capitals critical to long-term performance of the organization. According to Malhotra (2005), knowledge management is producing, proposing, storing, conveying, applying and keeping the organizational knowledge (Malhotra, 2005). In other words, knowledge management is a systematic and organized attempt to apply knowledge in an organization to provide services for public and improve performance (Sharifuddin et al, 2004a). Turban (2003) believes that knowledge management is creating, storing and distributing knowledge so that it can be used in the organization. Hendli (2000) also says that knowledge management is a general description of the cultures, processes, infrastructures and technologies available in an organization which fulfills attracting, developing and optimizing the knowledge capital of the organization to eventually achieve strategic goals (Alvani, 2010).

Creating and distributing knowledge: an effective knowledge management is a management providing the groundwork for creating knowledge through employing appropriate processes, mental and intellectual context and suitable structures. Creating knowledge is a spiral process resulting from interaction between tacit and explicit knowledge. The interaction between these two types of knowledge directs the process of creating new knowledge

(Nonaka, 1998). Creating knowledge, as a result of social interactions including teaching and learning, may develop organization so that it consistently and effectively follow up with learning and should be coordinated with changes for their survival (Ma'navipour, 2010). There are two ways to solve common problems and brainstorming, i.e. personal and organizational. At the personal and team level, it is often as a result of social interaction, i.e. through training, learning by doing, joint problem solving or brainstorming. At the departmental or organizational level, innovation processes are typically aimed at creating new knowledge for products and services while improvement activities focus on internal processes and procedures. Creation can take place within the research & development function, through the establishment of expert groups, such as so-called Communities of Practice (European Committee for Standardization, 2004). Accordingly, knowledge is the major element in knowledge management and managers should focus on creating knowledge. However, knowledge is valuable when it is distributed and utilized (Alvani, 2010). Distribution of knowledge is communicating knowledge between individuals and organizations through formal and informal processes. Formal activities mostly focus on distributing explicit knowledge while informal ones emphasize distribution of tacit knowledge (Jonjoubson, 2008). The goal of this step is to transfer knowledge to an appropriate time and space, and with good quality. Thus, the aim of this step is to transfer knowledge to the right place, at the right time, with the right quality. This means that the knowledge arrives in the right context - i.e. where value is created. Sharing can take place in various forms. Knowledge can be added to databases or distributed via documents (European Committee for Standardization, 2004). Transfer of knowledge is related to the process of transferring advantageous knowledge from one person to another (Ladd et, 2002). Distribution of knowledge is a process in which individuals communicate their tacit and explicit knowledge to create new knowledge. Therefore, distribution of knowledge is a building block of innovation. Each process of distributing knowledge consists of two parts: gathering and introducing knowledge. Introducing knowledge can be defined as communicating with others depending on the personal intellectual capital (Gumus, 2007). Under such circumstances, the organization enjoys an atmosphere encouraging divergent thinking and avoiding a situation for its problems there is always one correct answer. In fact, this is a way to achieve a desirable level of organizational creativity defined, in Gilford's perspective, through divergent thinking (Sharifi, 2011).

Organizational infrastructure: In their model of knowledge creation, Nonaka & Takeuchi (1995), Nonaka & Konno (1998) and Nonaka, Konno & Toyama (1998) discussed "Ba", a key element means space, place, conditions and groundwork for creating knowledge, along with two other elements including SECI (socialization, externalization, combination, internalization) and knowledge assets. Regarding its concept, the element Ba is similar and compatible to the organizational infrastructures for managing knowledge in the organization.

In other words, the process of knowledge creation in this model (SECI) requires the key layer of Ba (Figure 1 & 2). In information technology (IT), infrastructure is servers systems, cables and other hardware as well as software supporting the performance of the machines on a network (Bergeron, 2003). While organizations are experiencing rapid growth and globalization, computer networks are useful to create and distribute knowledge. Human resource, as a key component of knowledge management, may create new infrastructure (Probst et al, 2006). Therefore, organizational knowledge creation is related to many systems and processes which are a combination of organizational infrastructures. The most applicable infrastructures used in organizations are managerial, technical

and social (debowski, 2006). Gold, Malhotra and Segars (2001) consider the effective knowledge management from perspective of organizational equipment, and point out that an organizational infrastructure includes technology, structure and culture as well as a procedural structure of knowledge consisting of acquiring, transferring, applying and storing it as a prerequisite for effective knowledge management in the organization (Bray, 2007).

Sharifzadeh&Budlayi (2008) believe that creating infrastructures including wisdom strategies, knowledge-based organizational structure, training knowledgeable human resources, knowledge-oriented organizational culture and IT are necessary for establishing an integrated system of knowledge management. Tan & Hung (2006) also suggest that infrastructures such as culture, IT, human resources and organizational structure are related to the process of knowledge management. Sharifuddin, Iksanand & Rowland (2004) introduce infrastructures such as organizational culture, organizational structure, technology and political strategies in their model. Many studies have examined the infrastructures of knowledge management. The results of one European-wide company survey asking about the major success factors for knowledge management indicate that organizational structure is one of the most important infrastructures of knowledge management (European Committee for Standardization, 2004).

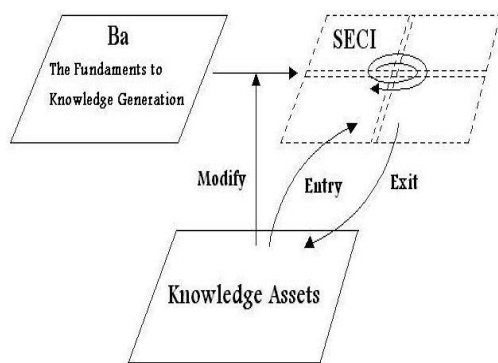


Figure 1. three layers of the process of knowledge creation: includes SECI, Ba and knowledge assets

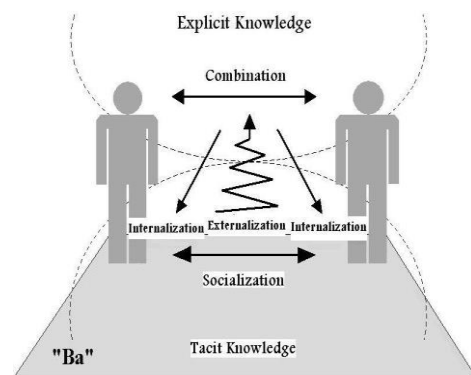


Figure 2. Ba and knowledge conversion (Nonaka et al, 1998)

Organizational structure: the internal structure of an organization may encourage or discourage knowledge success. To deal effectively with knowledge, organizations have to adopt an appropriate organizational structure (Sharifzadeh, 2008). Rebernikand Sirec, (2007) believe that tacit knowledge is effective when it is settled down in a special organizational structure and culture, and a collection of working processes (AdamHamza, 2008). Centralization rate, formalization and the way information flows among units are important structural aspects whose conditions and characteristics directly influence knowledge creation, transfer, storage and use (Sharifzadeh et al., 2008). As mentioned in management encyclopedia, (2000), organizational structure is a method organizing individuals and occupations to implement organizational duties (Sharifzadeh, 2008). Robbins, (2008) suggests that organizational structure explicitly explain how duties are allocated, who reports to whom and what formal strategies and interactive patterns must be met. He also mentions that organizational structure is an organizational component consisting of complexity, formalization and centralization (Robbins, 2008).

Organizational structure is of great importance in utilizing technical structure. Although, organizational structure is the planned logical reasoning of individuals' duties and internal parts of organization, organizational components often involve unintentional and unexpected outcomes preventing collaboration and distribution of knowledge among organizational boundaries. For instance, those structures promoted the individual behavior in situation,

sections and duties to store information which can prevent effective knowledge management are encouraged. In fact, optimizing the distribution of knowledge in a functional situation may decline the distribution of knowledge among organizations. Importantly, organizational structure has to be designed for flexibility to enable staff to enhance distribution of knowledge among internal boundaries of organization and supply chain (Tan et al, 2006). To create an effective knowledge, an organizational structure supporting the process of knowledge creation is required. A modern organizational structure introduced by Nonaka et al, (1993) and Nonaka & Takeuchi (1995), and called hypertext organization (non-sequential and complex network whose elements are interrelated- this term is mostly used in IT and computer sciences) is the most appropriate structure for creating an effective knowledge. For the most part of twentieth century, organizational structures have fluctuated between bureaucracy and working group. Simon, (1947) and Weber, (1922) maintained that bureaucracy structure is relied on classifying human resources and hierarchal distribution of authority and responsibility. To direct routine tasks efficiently, bureaucracy is appropriate when the situation is stable. But, when bureaucracy faces rapid, fundamental and uncertain change, it fails to fulfill its tasks appropriately.

Therefore, organizations with bureaucratic organizational structure confront many difficulties in creating knowledge since they have not made any attempts and are not aware of their needs (Dierkes, 2001). In traditional functional structures, communications are vertically directed, but that complex and unstructured knowledge widely communicated between regional functional individuals and groups would not be directed. Debowski, (2006). According to Gouldner, (1954); Merton, (1940) and Selznik, (1949), the bureaucracy costs consist of internal resistance, troublesome regulations and procedures, sectionalism, preventing personal innovation, reduction in the sense of responsibility in staff and the problem of how to achieve goals appropriately. However, working group is a flexible, compatible, dynamic and cooperative organizational structure. It is a formal group consisting of various experts from various sections to fulfill a difficult function based on a temporal subject. Nevertheless, the organizational structure of the working group has many weakness points since its particular nature relying on the constant and extensive use of knowledge is not appropriate to be used in an integrated organization. Once various small working groups are combined with each other, the organization fails to achieve its goal and perspectives in the organizational level.

Thus, a self-organized working group is more effective in creating new knowledge. A knowledge-creating organization has to follow either the efficiency of a bureaucratic organization or the flexibility of a working group organization. As mentioned before, Nonaka et al, (1993) and Nonaka & Takeuchi, (1995) introduced a hypertext organization. The key factor in designing a hypertext organization lies in coordinating time, space and resources to eventually achieve necessary varieties. As depicted in figure 3, a hypertext organization embodies an organization in three layers including knowledge base, administrative system and project team.

The lowest layer of a hypertext organization is knowledge base involving either tacit knowledge depending on the procedures and organizational culture or explicit knowledge created in terms of documents, archive system and computerized data bases, etc. This layer acts the same as archive of academy of the organization to create knowledge. The second layer is administrative layer generated by a formal, hierarchal and bureaucratic organization in an identifiable situation and with an excellent performance. In a multifaceted space and with a weakened link, the highest layer, namely project team layer attempts to identify the share of self-organized project team in creating knowledge with respect to the common perspective of organization.

Therefore, hypertext organization obtains many forms depending on the perspective. The creation of organizational knowledge is a dynamic cycle of information and knowledge moving through those layers transversely. The staffs working in project team are selected from various parts and functions of administrative layer. According to the organization's perspective introduced by senior management, they (staffs) use the interaction of knowledge creation and other project teams. A team's function is completed and staffs descend to the lower layer, namely layer of knowledge base and created and acquired knowledge assets. Having classified, documented and indexed new knowledge, they come back to the second layer, i.e. administrative system and get engaged in daily activities till the call for another project.

Therefore, it is necessary to create a fundamental design for hypertext organization depending on the cyclic movement of the organization's staffs. It is noteworthy that such a structure with such logical strategies is a well-developed groundwork for creating and distributing organizational knowledge and is necessarily related to these categories.

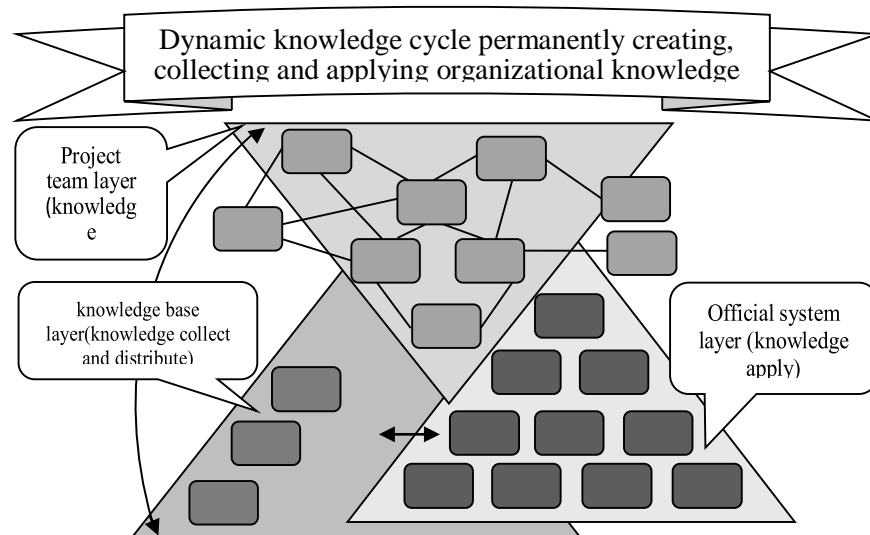


Figure 3. The hyper text organization

The characteristics of the organizational structure of this study is derived from those introduced in Robbins (1990): complexity, formalization and centralization

Complexity: refers to the rate of differentiation in the organization. Horizontal differentiation points to the amount of horizontal differentiation among unit. On the other hand, vertical differentiation indicates the depth or height of organizational hierarchy, and geographical differentiation refers to the rate of differentiation among units, equipment and human resources (Robbins, 2008). Lin(2008) defines complexity as the way or method of differentiation of staffs engaged in the working activities (Lin, 2008).

Horizontal differentiation points to the differentiation among units based on the situation of organization's members, the nature of their functions, education and the training they have received. One can conclude that various organizational occupations requiring expert knowledge and scientific skills (academic and educational organizations) may make organization more complex since individuals' distinct job positions may slow down communications and can cause serious problems for managers in coordinating their activities.

Vertical differentiation: organizational complexity increases as vertical differentiation increases too. It is noteworthy that this can be a potential factor in confounding the communications making coordination between personal sections of management and supervision of operational activities of senior managers difficult. Geographical differentiation: according to the above definition, versatile locations increase organizational complexity. Although computer has improved the potential to obtain information and communication among others, but its complexity still increases. In large organizations;(such as education organization with vice-presidents, various vertical and horizontal departments resulted from different specialties including research vice-president, extracurricular vice-president, sanitation department, family counseling department, public participation department and many other departments, and many other special distributions such as Taha association, institute of education, personnel selection department, etc), one can expect mutual relationships among these three elements.

Generally speaking, however, these three elements cannot be realized together. For instance, colleges (and generally, educational departments due to the varieties mentioned above and content thesis and antithesis followed by structural synthesis) involve low vertical differentiation and geographical distribution but high horizontal differentiation. Therefore, communication is the most important factor influenced by complexity and is used to create and distribute knowledge effectively in the organization due to the mutual impacts of knowledge management activities on each other.

Lin(2008) pointing to the benefits of communications among units in consistent with unstable environments as well as complexity, as a factor disturbing these communication systems hypothesizes that "high complexity of a structure is likely to result in little advantages in distributing knowledge among units". Literature indicates that there is an inverse relationship between complexity, creation and distribution of knowledge. This is not an indirect relationship resulted from the initial effect of complexity on communication and organizational coordination while a direct relationship can be found in this regard. It is noteworthy that communications are indispensable part of the

effective process of knowledge management. In fact, this is a two-way effect and the processes of knowledge management are likely to cause complexity. Bergeron (2003) states that when knowledge management increases work levels or results in the greater complexity of the processes, it loses its intrinsic value. Therefore, facilitating communications is of great importance in the knowledge-based organizations (Sharifzadeh, 2008).

**Formalization:** refers to the amount of standardization of organizational jobs (Robbins, 2008). Lin (2008) defines formalization as restricting methods including bylaws, regulations, internal procedures and other formal norms of organization set on the activities. If a job involves high formalization, its incumbent has the least freedom of action. It is believed that individual's freedom of action has an inverse relationship with planned behavior by organization. Therefore, standardization and use of organizational written regulations may decrease the effect of staffs' opinions on the work to be done. On the other hand, low formalization in structure allows the members to communicate with each other to create and distribute knowledge (Sharifzadeh, 2008). Many studies have suggested a negative relationship between formalization and process of knowledge creation (Kuang, 2010). External accelerating demands are largely considered as formalization decreases (Lin, 2008).

**Centralization:** refers to extent to which decision making is concentrated at a single point in the organization (Robbins, 2008). Lin, (2008) also defines centralization as the ways of distribution of decision making power in the organization. Centralization is related to the location of control and decision making authority in the organization (Lee, 2003). Many studies have suggested a negative relationship between centralization and process of knowledge creation (Kuang, 2010). In knowledge-based organizations, knowledge and control of duties is in the hand of staffs, not senior managers. Centralized structures prevent intersectional relationship and sharing ideas since their communication channels are slow and time-consuming. Staffs voluntarily contribute to the process of creating and sharing knowledge (Sharifzadeh, 2008).

In decision making process, each manager can process a small amount of information. Therefore, if he receives information more than his capacity, it will lead to the accumulation of the information. To avoid such a disaster, making some decisions has to be assigned to others and spread the decision making throughout the organization, but not at a single point. This dispersion and transfer is called decentralization. Decentralization intensifies the reaction of the organizations towards environmental changes since information process does not follow organizational hierarchy. Therefore, decision should be made by those closer to the topic of discussion. Additionally, decentralization may result in using more information in decision making process (Robbins, 2008).



Education organization, the statistical population of the research, aims to train the human resources of other organizations and the society as a whole. Such an organization tries to create, distribute, store and use knowledge more than other organizations. It employs knowledge to promote and improve its performance to ultimately achieve its goal. In this situation, one of the most useful strategies to be used is knowledge management. It is noteworthy that creating certain infrastructures such as appropriate organizational structure is necessary to apply knowledge management successfully. Various studies suggest that creating, distributing, storing and using knowledge are four essential activities of the spiral structure of knowledge management in a general model (Newman, 2000). Regarding the significance and current situation of the education organization in implementing knowledge management strategy, creation and distribution of knowledge is considered. Therefore, the question raised here is if there is any significant relationship between organizational infrastructure and knowledge management strategy?

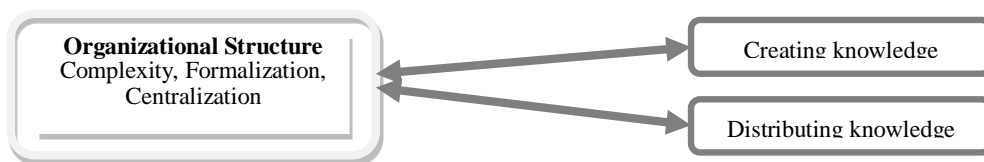


Figure 4. conceptual model

The goal of this study is to investigate the relationship between organizational infrastructure and knowledge management strategy in education organization of Golestan province.

## MATERIALS AND METHODS

The present research enjoys an applied, survey, descriptive, field and correlational method. The statistical population of the study includes 208 staff working in education organization of Golestan province, out of which 136 individuals are selected using Morgan Table. Three questionnaires are used to gather data and SPSS software is also employed to examine the relationship between variables and test the research hypotheses. The data collection tools are three researcher-made questionnaires the same as those introduced in Sharifuddin et al (2004) but they are modified and localized with respect to the social and cultural conditions of the research field (Sharifuddin, 2004b). The validity of these research instruments are verified based on content method. The internal consistency method, a type of structural validity, is also employed to verify the validity of the second questionnaire. According to the definition, a test is structurally valid whose scores are related to concepts and structures of the theory (Seif, 2008). To evaluate the validity of the measurement tool, therefore, researcher pays attention to either the theory or the measurement tool designed based on it (Mehregan, 2006). In the present research, the internal consistency of the second questionnaires confirmed by calculating the scores obtained from 30 respondents participating in the pre-test.

## RESULTS AND DISCUSSION

### FINDING

Out of 208 staffs working in the education organization 196 staffs are male and 12 staffs are female. Also, 22 staffs have diploma degree or under diploma, 16 staffs have associate degree and 170 staffs have under graduate and graduate degree.

To test the research hypotheses, Spearman test and Wilcoxon T-test are used and in each of them two methods are followed. Accordingly, in the first method, the results of the first questionnaire and those of some parts of the third one in the secondary hypotheses with the results of the third questionnaire in the main hypothesis are compared. In the second method, the results of the second questionnaire and those of some parts of the third one in the secondary hypotheses with the results of the third questionnaire in the main hypothesis are compared.

The first secondary hypothesis: there is a significant relationship between elements of organizational structure (formalization, centralization and complexity) and knowledge creation in the education organization of Golestan province.

The results of the first and second methods indicate that Spearman correlation coefficient between elements of organizational structure and knowledge creation is 0.218 and 0.181 respectively. Therefore, there is a significant relationship between elements of organizational structure and knowledge creation at 99% level of significance in the first method and at 95% level of significance in the second method. Regarding Wilcoxon T-test, the results of the first and second method reveal that Spearman correlation coefficient between elements of organizational structure and knowledge creation is -10.420 and -10.385 respectively. Therefore, a significant relationship was found between elements of organizational structure and knowledge creation at 99% level of significance in the first method and at 95% level of significance in the second method.

Table 1. investigating the relationship between elements of the organizational structure and knowledge creation (First method)

		Knowledge creation	
elements of the organizational structure	Spearman	C.C	0.218**
		Sig	0.009
		N	144
	Wilcoxon	C.C	-10.420 <sup>a</sup>
		Sig	0.000
		N	144

Table 2. investigating the relationship between elements of the organizational structure and knowledge creation (second method)

		Knowledge creation	
elements of the organizational structure	Spearman	C.C	0.181 <sup>†</sup>
		Sig	0.030
		N	144
	Wilcoxon	C.C	10.385 <sup>a</sup>
		Sig	0.00
		N	144

The second secondary hypothesis: There is a significant relationship between elements of organizational structure (formalization, centralization and complexity) and knowledge distribution in the education organization of Golestan province.

The results of the first and second methods indicate that Spearman correlation coefficient between elements of organizational structure and knowledge distribution is 0.103 and 0.183 respectively. Therefore, no significant relationship was found between elements of organizational structure and knowledge distribution at 95% level of significance in the first method, but a significant one was observed at 95% level of significance in the second method. Regarding Wilcoxon T-test, the results of the first and second method reveal that Spearman correlation coefficient between elements of organizational structure and knowledge distribution is -10.328 and -2.186 respectively. Therefore, a significant relationship was found between elements of organizational structure and knowledge distribution at 99% level of significance in the first method, but no significant relationship was observed at 95% level of significance in the second method.

Table 3. investigating the relationship between elements of the organizational structure and knowledge distribution(First method)

Knowledge distribution			
elements of the organizational structure	Spearman	C.C	0.103 <sup>**</sup>
		Sig	0.220
		N	144
	Wilcoxon	C.C	-10.328 <sup>a</sup>
		Sig	0.00
		N	144

Table 4. investigating the relationship between elements of the organizational structure and knowledge distribution(second method)

Knowledge distribution			
elements of the organizational structure	Spearman	C.C	0.183 <sup>*</sup>
		Sig	0.028
		N	144
	Wilcoxon	C.C	-2.186 <sup>a</sup>
		Sig	0.029
		N	144

Research main hypothesis:There is a significant relationship between organizational infrastructure and knowledge management strategy in the education organization of Golestan province.

The results of the first and second methods indicate that Spearman correlation coefficient between organizational infrastructure and knowledge management strategy is 0.161 and 0.127 respectively. Therefore, no significant relationship was found between organizational infrastructure and knowledge management strategy at 95% level of significance in the first method and at 95% level of significance in the second method. Regarding Wilcoxon T-test, the results of the first and second method reveal that Spearman correlation coefficient between organizational infrastructure and knowledge management strategy is -10.412 and -10.293 respectively. Therefore, a significant relationship was found between organizational infrastructure and knowledge management strategy at 99% level of significance in the first method and at 99% level of significance in the second method.

Table 5. investigating the relationship between organizational infrastructure and knowledge management strategy (First method)

knowledge management strategy			
elements of the organizational structure	Spearman	C.C	0.161
		Sig	0.055
		N	144
	Wilcoxon	C.C	-10.412 <sup>a</sup>
		Sig	0.00
		N	144

Table 6. investigating the relationship between organizational infrastructure and knowledge management strategy(second method)

knowledge management strategy			
elements of the organizational structure	Spearman	C.C	0.127
		Sig	0.129
		N	144
	Wilcoxon	C.C	-10.293 <sup>a</sup>
		Sig	0.00
		N	144

### CONCLUSION

According to the literature and the results of testing the main and secondary hypotheses of the research, there is a significant relationship between organizational structure, knowledge creation and distribution as well as knowledge management strategy. Therefore, the findings of the present study indicate that the organizational infrastructure with different volume and size is related to knowledge management strategy. Accordingly, these two groups of variables affect each other in an interactive circle and the direct and indirect relationship among them is always of great importance. Also, the relationship between these variables suggests that organization is required to provide an appropriate organizational infrastructure to ultimately benefit from permanent advantages of the knowledge management. Knowledgeable staffs require flat structures, transparent processes, strong common

values and an effective balance between individuals and society (Debowski, 2006). Organizational structures are usually not created as appropriate to meet the needs of knowledge management. Geographical and functional barricades developed in the history of the organization are likely to make the effective distribution of knowledge difficult or impossible. The domain of the knowledge distribution should be consistent with organization form. However, an ideal structure is hard to find. Structures and systems are always a compromise among conflicting goals. For example, decentralization results in freedom of action and is likely to have positive effects on the development of internal knowledge. Nevertheless, the independence of an organization's sections may decrease the transparency of the property of the knowledge distributed throughout the world and eventually, restrict their application. Therefore, decisions about structure can be inconsistent with their impacts on the fundamental elements of the knowledge management (Probst et al., 2006). Many scholars like Robbins, (2009) have pointed to the inconsistency among the ideas on factors using to choose an appropriate organizational structure.

## REFERENCES

- Adam H & Eldin S. 2008. Competitive Advantage Via A Culture Of Knowledge Management: Transferring Tacit Knowledge Into Explicit, *Journal of Knowledge Management Practice*, 9(2).
- Alvani M. 2010. *General Management*, Thran, Ney Publication, 39<sup>th</sup> edition.
- Bergeron B. 2003. *Essentials of Knowledge Management*, Published by John Wiley & Sons, Inc., Hoboken, New Jersey.
- Bray D. 2007. *Knowledge Ecosystems: A Theoretical Lens for Organizations Confronting Hyperturbulent Environments*, Emory University Atlanta, GA, U.S.A.
- CEN (European Committee For standardization). 2004. *European Guide to good Practice in Knowledge Management - Part 1: Knowledge Management Framework*, Ref. No.:CWA 14924-1:2004 E.
- Debowski S. 2006. *Knowledge Management*, Sydney & Melborn, John Willey & Sons Australia Ltd.
- Dierkes M & Antal AB. 2001. *HANDBOOK of Organizational Learning and Knowledge*, Published in the United States by Oxford University Press Inc., New York.
- Gumus M. 2007. The Effect Of Communication On Knowledge Sharing In Organizations, *Journal of Knowledge Management Practice*, 8(2).
- Jonjoubson L. 2008. An Integrated Knowledge Management Model for Community Enterprises: A Case Study of a Rural Community Enterprise in Thailand, School of Information Management, Faculty of Commerce and Administration, Victoria University of Wellington.
- Kuang P. 2010. and Ian Marshall. Internationalisation of Chinese Higher Education: Application Of Knowledge Management To Analysis Of Tsinghua University, *Journal of Knowledge Management Practice*, Vol. 11(1).
- Ladd D & Ward M. 2002. An Investigation Of Environmental Factors Influencing Knowledge Transfer, *Journal of Knowledge Management Practice*, August.
- Lee H & Choi B. 2003. Knowledge Management Enablers, Processes, and Organizational Performance: An Integration and Empirical Examination, *Journal of Management Information Systems*, 20(1), 179-228.
- Lin WB. 2008. The effect of knowledge sharing model, *Expert Systems with Applications*, 34, 1508–1521.
- Malhotra Y. 2005. Integrating knowledge management technologies in organizational business processes: getting real time enterprises to deliver real business performance, *Journal of Knowledge Management*, 9 (1), 7-28.
- Ma'navipour D, Ghomashchi F & Parviz S. 2010. an investigation into the relationship between managers' creativity and organizational learning of personnel working in private factories in Garmsar City, *Journal of New findings in Organizational and Industrial Psychology*.
- McNabb D. 2007. *Knowledge Management in the Public Sector a Blueprint for Innovation in Government*, New York, ME, Sharpe Inc.
- Mehregan M & Zali M. 2007. Seeking the techniques of determining the validity in managerial researches, *Journal of Management culture*, 4 (14), 7-28.
- Newman B & Conrad K. 2000. A Framework for Characterizing Knowledge Management Methods, Practices, and Technologies, *Proc. of the Third Int. Conf. on Practical Aspects of Knowledge Management (PAKM2000)*.
- Nonaka I & Konno N. 1998. The Concept Of "Ba": Building A Foundation For Knowledge Creation, *California Management Review*, 40(3), Spring.
- Probst G, Raub S & Romhardt K. 2006. *Knowledge Management*, Translated by Ali Hosseinihah, Tehran, Yastaroon Publication, First edition.
- Robbins S. 2008. *Organizational Theory: structures, designs, and applications*, translated by Alvani, M & Danaeifard, H. Tehran, Safar Publication. 25<sup>th</sup> edition.
- Seif A. 2008. *Evaluation, Measurement and Educational evaluation*, Tehran, Dowran Publication.
- Sharifi N & Ganji H. 2011. comparing the share of cognitive intelligence, creativity and emotional intelligence in predicting academic achievements of students in different academic levels, *Journal of New findings in Organizational and Industrial Psychology*.
- Sharifuddin SO, Iksan S & Rowland F. 2004a. Benchmarking Knowledge Management in a Public Organisation in Malaysia, *Benchmarking: An International Journal (BIJ)*, 11(3), 238-266.

- Sharifuddin SO, Iksan S & Rowland F. 2004b. Knowledge Management in Public Organization: a Study on the Relationship Between Organizational Elements and the Performance of Knowledge Transfer, *Journal of Knowledge Management*, 8(2), 95-111.
- Sharifzadeh F & Boodlayi H. 2008. *Knowledge Management in Administrative organizations*, Tehran, Jihad daneshgahi Publication-AllamehTabatabaei Unit, First edition.
- Vasquez M & Gomez G. 2000. *Knowledge Management Systems Assessment: A Conceptual Framework and a Methodological Proposal*, Paper submitted for IAMOT, Conference on Technology Management, Track – Knowledge Management.