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The Study of Knowledge Management Infrastructures in Islamic Azad University from Faculty Members' Point of View (Case Study)

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Abstract

Today, organizations have realized that knowledge is one of the most important and clearest indicators of survival in a competitive world. Therefore, more than anything, staffs as the owners of knowledge and the most important capital of organization have been considered. Knowledge management as a tool that can gather existing knowledge, discipline and diffuse in all departments of organization is important. Accordingly, the present study aims to study the infrastructure of knowledge management from the perspective of faculty members at Islamic Azad University of Tabriz. The research method is descriptive and statistical population consisted of 460 people in Islamic Azad University of Tabriz from faculty members' point of view which among 70 people were selected as sample. To collect data, a researcher made questionnaire was used; to check the validity of the opinions of experts and specialists and to assess reliability, Cronbach's alpha was used. In order to analyze the data, statistical test of Friedman and t test and to provide graphics of infrastructure status, radar chart is used. The results show that knowledge management infrastructure in studied organizations are relatively favorable.

Keywords: knowledge management, knowledge management infrastructure, statistics student

1. Introduction

The current organization, in order to survive even for a decade, must continuously change, but change is not enough. Change should be based on collect appropriate data from internal and external environments and convert them into knowledge. According to Lopez (2005) knowledge and organizational capabilities are forms of strategic assets that promote long-term goals of the organization in terms of competitiveness and environmental requirements and have strategic application in dynamic environments. Conversion of mental knowledge (implicit) to recorded formal knowledge (explicit) is one of the key objectives of knowledge management that reduces the risk of loss of valuable knowledge of organization due to loss of staff and reduces the risk of organization memory loss when manpower is adjusted (Lopez, 2005, pp. 662-663). The most essential feature of 21st century is the emphasis on knowledge and information. Unlike previous organizations, today, organizations have advanced technology and require the capture, management and exploitation of knowledge and information in order to improve the performance of organizations. Knowledge is a powerful tool that can change the world and create innovation possible. The importance of knowledge in today's complex global environment cannot be ignored. Organizations that know how acquire, distribute and manage information effectively, are leaders of their industry. We are moving towards an era when competitive advantage not only is achieved through access to information, but also more importantly through the creation of new knowledge (Davenport & prusak, 1997). Leitner and Warden (2003) believe that societies move towards a knowledge based economy where knowledge is the most important element is to create value in organizations. Emerging revolution in information technology and the rapid advancement of technology has revolutionized the pattern of global economic growth. Today, due to competitive conditions, knowledge as the most important capital is replacing financial and physical capitals. Therefore, for many developed countries, knowledge management is a symbol of competition and a factor to achieve power and the development (Chen et al., 2004). Knowledge-based business environment requires new organizational approach that includes intangible assets such as knowledge and competency of human resources, innovation, customer relations, organizational culture, systems, organizational structures and etc. In fact, knowledge management has now a structured position for companies and organizations and increasingly added

its importance and role. Studies have conducted in this field show that in Great Britain, 80% of large organizations have benefited from knowledge management and 96% from remaining 20% will implement knowledge management in the next 5 years. A similar investigation for 200 largest companies in America show that 82% of these companies has benefited from knowledge management, 50% have dedicated budget and personnel to knowledge management and 27% have knowledge management posts (Shaw, 2001). However, knowledge management in our country is one of the most controversial topics that addresses in the scientific community and public. The fact is that different and complex interpretations and definitions of knowledge management have led to less common understanding of all its aspects. Given the above, the objective of this research is to study of knowledge management infrastructure in Islamic Azad University of Tabriz from faculty members' point of view.

2. Research Literature

Knowledge management is an interdisciplinary business model that deals with all aspects of knowledge includes creation, encryption, sharing, and using knowledge to enhance learning and innovation in the context of company. Knowledge Management deals with both using current organizational tools and technological method tools including the production of new knowledge, gain valuable knowledge from external sources, use of this knowledge in decision making, importing knowledge in processes, products and services, the encoding of information in the documents, software and databases, facilitating knowledge development, knowledge transfer to other parts of the organization and ultimately measure knowledge assets and the impact of knowledge management (Leonard, 1990). Although knowledge management is widely used in a variety of institutions and organizations, provide a single definition for it is very difficult. Through the study of different definitions of knowledge management, knowledge management could be "the process of creating, disseminating and applying knowledge to achieve organizational goals." In another definition, knowledge management is organizational structures and technologies used which assists people in order to share and apply their knowledge to meet their goals. Thus, in recent years, the "Knowledge Management" has become a critical issue discussed in the business literature. "Scientific communities" and "business communities" both believe that knowledge-based organizations can maintain long-term advantages in terms of competition (Kalseth, 1999). The concept of knowledge management system of organization can give us more complete understanding of knowledge management and its basic elements. Organizational knowledge management system is a system that improves and enhances organizational learning through the exchange and dissemination of the knowledge (whether implicit or explicit). This system is a complex combination of technological infrastructure, organizational structures, organizational culture, knowledge, and individuals. Technological infrastructure are tools of information technology (including hardware, software, and protocols), which can provide electronic versions of organizational knowledge and facilitate the exchange and transfer of knowledge. Organizational structure is methods which in organization employees are organized within organizational groups and teams (formal or informal), interact with each other, and follow a set of roles and objectives in relation to organization strategy. Organizational culture includes common values and norms, ethics and behavior and action within the organization. Knowledge includes all kinds of organizational knowledge (implicit or explicit) that is available in organization or employees' opinion. Finally, individuals are all stakeholders inside and outside the organization. Among all these elements, employees are the most important and most essential elements of organizational knowledge management system (Meso & Smith, 2000). Thus, human individuals in the organization are considered as the main element in organizational knowledge management. In this regard, information technology and appropriate technology are considered as a tool to support of human interaction and the processes coordination between organizations and facilitating the flow of knowledge and its application. In other words, in effective implementation of knowledge management processes, human interactions and communication is important. The more an organization can increase effective interactions among their employees, and within organizational units and groups, the more the possibility of creating new knowledge in the organization, transfer and exchange of knowledge between individuals of organization, and thus effective management of organizational knowledge. In other words, one of knowledge management requirements is creation and development of such a culture in organization that encourages and facilitates the communication and interaction (Gooijer, 2001). Implementing any programs and activities needed a series of factors and infrastructure to guarantee its success. After a review of different resources, we observe that several factors have been identified by experts in this field. For example, Donoghue, Harris & Weitzman (1999) emphasize that effective knowledge management requires a combination of elements, including technology, human resources, organizational culture and organizational structure. Stanosky & Baldanza (2001) introduced organizational culture, organizational structure, information and communication technology, leadership, education and learning as basic infrastructure and factors to implement knowledge management. Choi (2000) introduced high-level management leadership, low organizational stress and information systems

infrastructure as the most important elements and factors in the success of knowledge management. Chief Information Officers (CIO) (2001) considered three elements of individuals, processes and technology as infrastructure factors affecting on implement knowledge management process in the public sector. Lee & Lee (2006) introduced four technical, structural, cultural and individuals factors as infrastructural factors. Zaim et al. in addition to introduce technology, organizational culture and organizational structure as the most important elements in the implementation of knowledge management, consider intellectual capital as a fourth element. The following is a brief description of each of the elements of knowledge management (mentioned above).

1) **Organizational Culture factors:** Culture is a collective programming of ideas that separated members of one human group from another; the culture of a human society has the role that personality plays. Cultural issues are often the main obstacle to the sharing and transfer of knowledge in organizations.

2) **Organizational Structure:** the process of organizing and include system of relationships that are formed informally and approved formally and govern the actions of individuals who are interdependent to achieve common goals.

3) **Human Resources:** today, everyone knows the role of human resources its increasing importance in development. In today's rapid and full of competition world, what lead to competitive advantage in organizations is high quality, creative and dynamic human resource (Grover & Danvenport, 2001).

4) **Processes:** knowledge management is a strategic process aimed to distinguish competitive advantage of competitors. Knowledge management process should include determine and identify the knowledge, skills, knowledge acquisition, selection, storing, distributing knowledge, use and measure the progress of knowledge management.

5) **Technology:** Knowledge management uses information technology as a powerful tool to improve its processes. Information technology plays an important role as a field for ownership of knowledge management in creating, developing processes of knowledge management. New technologies can facilitate the integration of dispersed knowledge and led to most actions in the shortest time (Stanosky & Baldanza, 2001; Lee, 2006).

6) **Financial Resources:** the measurement of intangible assets to determine the effectiveness of knowledge management activities is necessary. An effective knowledge management requires organizations to focus on its knowledge assets and capabilities (Chou & Yaying, 2005).

Various studies have been conducted in relation to knowledge management. Below are some of the studies.

Zavavi et al. (2011) in a study examined the factors that have hindered the knowledge sharing. These factors include lack of self-efficacy that represents individual factor in knowledge sharing; lack of facilities of information and communication technologies that represents the technical factor, and lack of encouraging organizations to demonstrate organizational factors that hindered the sharing of knowledge. The relationship between these factors was assessed by correlation test. The findings indicate there is a negative relationship between these three factors and knowledge sharing behavior and organizational encouraging that is the most effective factor. Vashit, Kumar and Chandra (2010) in a research studied how researchers of universities and research centers in India understand the barriers and facilitators of knowledge management. For this purpose, gathering knowledge, creating knowledge and dissemination of knowledge from three aspects of individual, social, organizational and technical investigated. Results show that researchers are mostly involved to personal and social-organizational aspects of knowledge management rather than technical aspects. Individuals and their interactions lead to the creation of knowledge and help its flow. Marco and Art (2009) argue that the creation and transfer of knowledge, requires a specific structure within the organization. Internal structure can encourage or inhibit knowledge management. Transfer and creating knowledge requires an organizational culture in which individuals and groups are willing to cooperate and respect to in their mutual interest, share their knowledge with each other. Scott (2008) introduced knowledge-based and knowledge-center organization as an organization which in the process of creating knowledge and sharing of knowledge in the internalized and as a way of conduct is acceptable. Monaco (2008) expressing the importance of research in the area of Knowledge Management in Universities believes that, despite popular knowledge management in the field of trade and economy, management still has not found its place in the universities. However, having research centers, universities have considered as sources of creating knowledge and must be regarded as the pioneer in the application of knowledge management. Abdullah et al. (2008) in a study investigated the implementation of knowledge management system in higher education institutions and state universities of Malaysia. Results show that the lack of awareness among users during the implementation and use of knowledge management system that it is because of the lack of understanding some of the applications and technologies. The term of framework for knowledge management system emphasizes on increasing awareness about system and recognition of benefits of knowledge management.

In addition, results have shown that encourages and rewards are critical to the success of knowledge management system implementation. Astet (2007) in this research has conducted to determine the level of knowledge grown in organizations, concluded that knowledge is in moderate growth. Imgarda (2007), Professor of Communications of University, in his PhD thesis studied "Knowledge Asset Management: Global and Local Knowledge" and has shown that the level of knowledge management in most organizations is very low and most of them are at level 3 (i.e. the knowledge in the organization is restricted to classification and limited use). Prakasan et al. (2006) in a study entitled “the analysis of database for study the background of knowledge management in nuclear research center of India” stated that, the first step is to determine the focus of organization on knowledge management and 6 levels were considered for knowledge management in organizations. The results of this test showed that organizations have no great potential in knowledge management and are on a continuum from levels 1 to 5. Hoffman et al. (2005) in their study entitled “social capital, knowledge management and continuous superior performance” showed that organizations with high levels of social capital have greater capabilities in knowledge management than organizations with low levels of social capital. Agbo (2004) argues that knowledge management and intellectual capital in organizations are the key factors for success and innovation and effective management of knowledge assets include a holistic approach and educational programs should reflect the nature of innovation and dimensions knowledge management as very complex social processes. As noted above, the transfer of information and knowledge in macro and micro level between individuals and organizations depends on individuals that accelerate and facilitate this transition. As a result, all the factors that encourage or inhibit interpersonal relationships, will effect on the exchange of information between individuals. For this reason, the importance of trust-based communication and interactions between people in the development and application of knowledge is emphasized. The more an organization can increase effective interactions among their employees, and within organizational units and groups, the more it can effect on information exchanges between individuals of organization, and thus effective management of organizational knowledge (Bhatt, 2001). The process of communication development and technological significant progress has caused knowledge considered as a contemporaneous multi-faceted actor. Accordingly, management knowledge for many leading organizations is considered as the symbol of competition and the factor to access power and pursuit. Since the higher education system in each country undertook major responsibilities in the areas of economic social, political, cultural and educational development and growth in society, thus each of the educational institutions need to effort to survive in the market to acquire knowledge. On the other hand, knowledge-based business, require an approach that includes an organization's intangible assets, such as knowledge and competencies in human resources, innovation, customer relations, organizational culture, procedures and organizational structure. Therefore, knowledge management is a systematic issue that its successful implementation requires a holistic and comprehensive view of the factors involved that manpower is one of the factors. Compliance with the ethics from human resources helps to better implementation of knowledge management. Attention to the role of knowledge management in an organization changes from one hand and the need for human resource management in the implementation of knowledge management on the other hand, led to researchers study the role of knowledge management and its use in the case of the Islamic Azad University of Tabriz. Based on the theoretical foundations expressed and the combination the various views of knowledge management theorists, the conceptual model of research have shown in Figure 1.

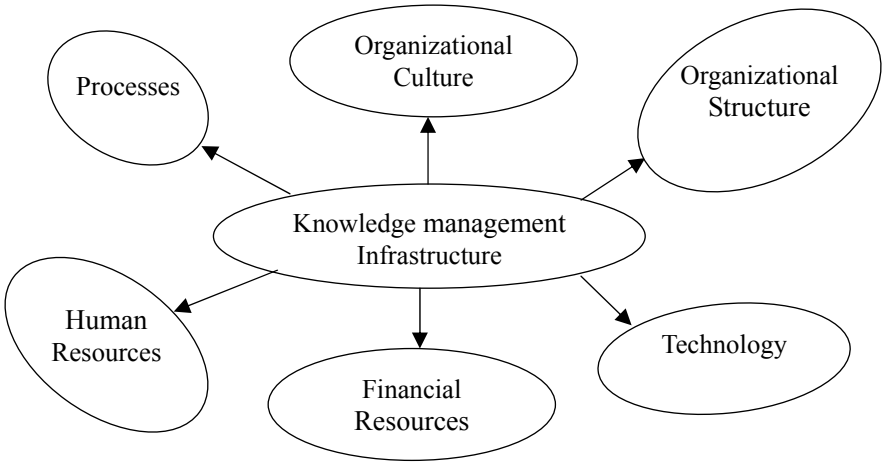

Figure 1. The conceptual mode of research

According to the conceptual model, the research question is that, from the perspective of faculty members at Islamic Azad University of Tabriz, what condition are infrastructural factors of knowledge management including processes, human resources, technology, finance, organizational culture and organizational structure? To review and answer the question variables in Table 1 have been operationally defined.

Table 1. Components and operational definition of knowledge management infrastructure

Organizational culture	Organizational structure
Resistance in access to new knowledge	Learning and inter-organization and intra-organization communication
freedom to perform duties	Managers consider to the training of human resources
Appropriate culture for knowledge sharing	Easy communication with authorities
Collaboration between research teams	Using knowledge as a key to success
Creativity and design new ideas	processes
Welcoming the detection of latent knowledge	Laws to document the experiences
Technology	laws to encourage people to use knowledge
Use of internet	Creating teams
Use of E-mail	Knowledge unit
Join Specialty discussion groups	Human resources
Updated infrastructure for information and communication technology	Familiar with Knowledge based on experience
Development of Broadband of Internet	Teamwork skills
Use of intranet	Use of updated technology
Financial resources	New solutions based on previous studies
Funding facilities to attend conferences	Willingness to share knowledge
Budget allocation for education and research activities	Having the ability to promote a culture of knowledge sharing
Continuing education courses	Having the ability to use of information technology skills
Documentation facilities and storytelling	
Allocation of credits and incentive	

3. Methods and Materials

Table 2. The results of Cronbach's alpha coefficient

Knowledge management infrastructure	Cronbach's alpha coefficient
Organizational culture	0.83
Organizational structure	0.85
Human resources	0.91
processes	0.78
Technology	0.75
Financial resources	0.83

This study is applied according to its purpose, but based on research method is a descriptive study. The statistical population of the research includes faculty members of Islamic Azad University of Tabriz that are 460 people. Using the formula of determining Sample size in equation (1) 70 people are selected as the sample (In this equation, using upper and lower bounds of each item σ=0.67 is obtained. Also, $Z_{.025}$=1.96 and e=0.15). In order to collect data, a researcher made questionnaire was used. The questionnaire contains 32 questions that measure different aspects of knowledge management infrastructure. According to table 1, to measure Organizational culture, 6 questions, Technology, 5 questions, processes, 4 questions, Organizational structure, 4 questions and

processes, 4 questions have been specified in the questionnaire. The validity of the questionnaire was evaluated based on content method and its reliability is studied in order to check the internal consistency of the research questions by calculating Cronbach's alpha coefficient (Table 2).

$$n = \frac{NZ_{\alpha/2}^2\sigma_x^2}{e^2(N-1)+Z_{\alpha/2}^2\sigma_x^2} \quad (1)$$

Finally, using simple random sampling, statistical sample were selected and after collecting the data, using t-test, the status of the infrastructure application was examined.

4. Research Findings

First, data collected and summarized and then their normality has studied. To test the normality of the data obtained, Kolmogorov-Smirnov test was used (Table 3).

Table 3. The results of Kolmogorov-Smirnov test

Variable	of Kolmogorov-Smirnov Z	Significance level (sig)
Organizational culture	1.226	0.099
Organizational structure	1.274	0.078
Human resources	1.356	0.051
processes	1.355	0.051
Technology	1.285	0.065
Financial resources	1.115	0.166

In data normality test, the null hypothesis is that the distribution of the data followed normal distribution and opposite hypothesis implies opposite case. According to Table 3, the significant level (sig.) for all variables were greater than 0.05. Hence, it can be said that the distribution of the data obtained from questionnaires is normal. For this purpose, the statistics of t-test was used for the tests (Equation 2).

$$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}} \quad (2)$$

In order to use t-test and because of five options for each item, the mean of statistical population for each of the variables is equal to 3. Therefore, to study the status of any utilization of the knowledge management infrastructure, H_0 and H_1 are as follows.

$$\begin{cases} H_0 & \mu \le 3 \\ H_1 & \mu > 3 \end{cases} \quad (3)$$

Finally, the results of statistical tests using SPSS are shown in Table 4.

Table 4. The results of the t test for assessing the status of infrastructure

Confidence interval of 95%		Mean difference with number 3	sig	Freedom degree	t	$\bar{x}$	variable
Upper bound	Lower bound						
0.6904	0.3239	0.5071	0.000	69	5.522	3.51	Organizational culture
0.8243	0.5257	0.6750	0.000	69	9.021	3.68	Organizational structure
0.4598	0.1116	0.2857	0.002	69	3.274	3.29	Human resources

Confidence interval of 95% Upper bound	Lower bound	Mean difference with number 3	sig	Freedom degree	t	$\bar{x}$	variable
0.3917	0.0941	0.2428	0.002	69	3.256	3.24	processes
0.3077	0.0542	0.1809	0.006	69	2.849	3.18	Technology
0.6789	0.2782	0.4785	0.000	69	4.765	3.48	Financial resources

The results of the status of infrastructure show that sig value for all variables are smaller than 5%. Therefore, in all variables, H_0 is rejected by reliability 95%; it means all tested variables are significant statistically. In addition, the confidence interval for the mean difference is indicating positive lower and upper limit which represents the mean is greater than tested value for all variables. In general, according to Table 4, it can be concluded that the situation of attention to infrastructure, organizational structure, and the factors of organizational culture, technology, human resources, financial resources, and processes at the Islamic Azad University of Tabriz is almost optimal. Finally, the mean score of these factors was evaluated using Friedman's test and the results show that the difference between applications of these factors is significant (Table 5).

Table 5. The results of Friedman's test

Average of scores	variables
6.16	Organizational culture
4.56	Organizational structure
3.85	Human resources
3.81	processes
3.57	Technology
3.21	Financial resources
118.936	Chi-Square
5	Degree of freedom
.000	Asymp. Sig.

Finally, using the radar chart, the status of using each of knowledge management infrastructures is depicted.

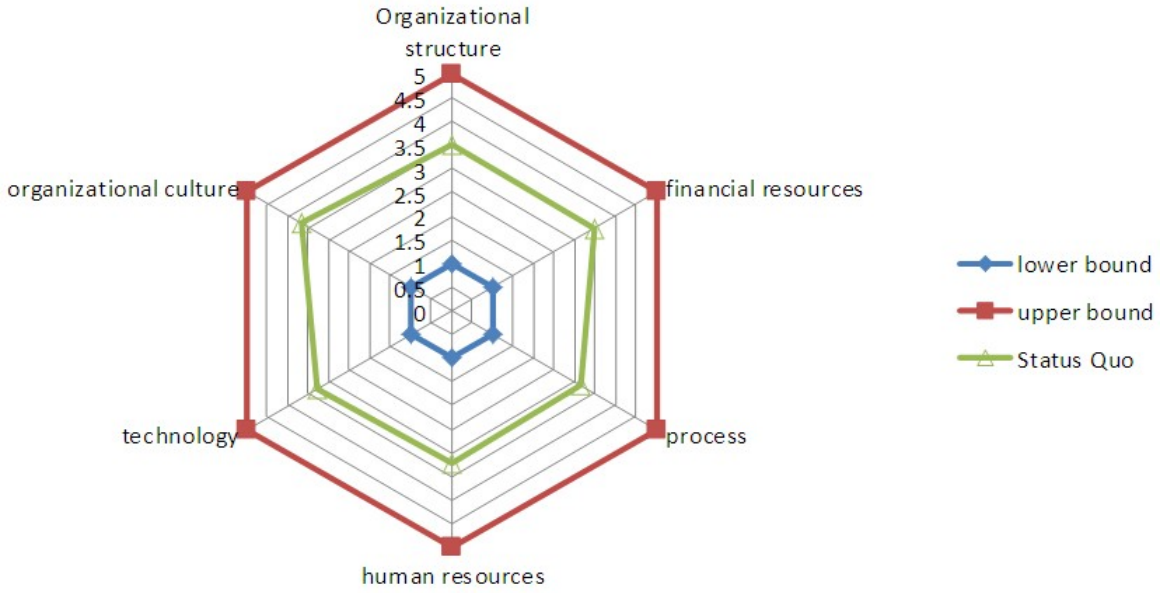

Figure 2. The radar chart for overall mean rating of infrastructure

As observed in the above figure, the status of organization for each infrastructure of knowledge management is compared with the desired state. In each of the infrastructure, the ideal state is that the scores obtained in the property are equal to 30. However, as seen in the chart, all of organization infrastructure is relatively close to the ideal state.

5. Discussion and Conclusion

In fact, in the past decades, most analyzes of knowledge management have conducted in the private sector, but now the great interest in research is on public organizations, such as universities and research centers. Focusing on public universities and research centers, knowledge management has found a great importance. Therefore, authorities should strengthen their role in the national innovation because the most important inputs and outputs of universities are subtle and only a small fraction of them have been identified. For this reason, universities and research centers have been forced to provide more transparent information for stakeholders (Liu, 2000, 281). Therefore, considering the issue of knowledge management in universities is important. Hence, this paper studies the status of the knowledge management infrastructure from the perspective of faculty members at Islamic Azad University of Tabriz. The results show that knowledge management infrastructure in Azad University of Tabriz is almost optimal. For this purpose, we compare the results of this study and other studies have been conducted. The background of literatures shows that studies of Vashit et al. (2010), Abdullah et al. (2008), Astet (2007), Imgarda (2007) and Prakasan et al. (2006) are consistent with findings of this research.

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