The Role of Organizational Infrastructures in Sharing Tacit Knowledge: A Case Study in Tehran University

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Abstract: Today the organizational knowledge is known as a major and valuable capital for organizations. Finding a way to distribute and sharing knowledge, especially the tacit knowledge in people is a critical and a major way to use knowledge and considering the problems related to gaining this knowledge. This paper studies about role of six infrastructural intra-organizational factors: organizational culture, organizational structure, organizational management, human resources, organizational processes and knowledge portals-in achieving the tacit knowledge throughout the knowledge management process according to Nanoka-Takeuchi model. The study tool is 24-questioned, questionnaire made by the researcher with 0.829 Cronbach alpha reliability and the statistical samples are taken from 65 experts and collegians in Tehran University who are selected with simple accidentally method. The research method is taken from descriptive survey with an amount of 0.858 in studying KMO index and Bartlett test. Considering the factor loading average 0.77 for whole frame it is concluded that the studied infrastructures have a direct and effective role in achieving tacit knowledge. The importance of this paper is identifying effective factors of every organization for extracting the tacit knowledge that leads to use this worthwhile organizational knowledge, efficient use of organization's intellectual capital, increasing speed of decision making, reduce time, improving the performance in repetitive trends.

Key words: Knowledge Management, Explicit knowledge, Tacit knowledge, Nanoka-Takeuchi model, Organizational Infrastructures.

INTRODUCTION

Using words such as knowledge work and knowledge organization, Peter Drucker informs development of a new type of organizations governed by mind power rather than arm power. According to this theory, in future those societies should expect development and progress with more knowledge sharing about natural resources. Knowledge is a potential resource which discovers other resources and makes organizational data eternal and everlasting. Training knowledge power is the only way for stable development and making treasure (Taghipanahi, 2008). Some papers in the field of tacit knowledge are as follows:

Mohammad Hassanzadeh's research titled "Infrastructural Barriers in Applying Knowledge Management in Iran" which examines the present problems based on 6 infrastructure factors (organizational strategies, organizational systems, human resources, finance, information technology, communication and organizational culture). The results show that the studied organizations which are a representative of state collection are not in a favorable state to manage knowledge (Hassan Zadeh, 2007).

A major part of the knowledge that organizations are trying to gain, is embedded tactically inside people and organization employees and thereby, they cannot be attained and saved easily (Norouzi, 2009). Brooking believes that "merely 20 percent of people`s knowledge is used for intra-organizational purposes." The organization try to gain people`s knowledge and creating knowledge from it to confront such issues (Kogut and Zander, 1992). While rare organizations produce the whole required knowledge and other organizations must resort to make use of outside resources such as suppliers, clients, universities, consultants and even competitors which will be a hardly attained considering the complex and tacit nature of the most precious knowledge (Hassan Zadeh, 2007).

Consequently, considering the benefits of knowledge management and achieving tacit knowledge such as competitive benefits, a better use of mental assets, flexibility, the speed of decision making, organizational improvement, preparing the ground for creativity and innovation and its importance and necessity in organizations as well as the available obstacles on the way of sharing tacit knowledge, evaluating and investigating the effective factors on achieving and sharing tacit knowledge which will be pointed out further, is a necessary and unavoidable.

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Knowledge:

Knowledge includes the ideas and taught, understanding and lessons taught during the time (Barton, 1995; Nonaka and Takeuchi, 1995).

Explicit Knowledge:

Explicit or evident knowledge is the recognizable, understandable, gained, deciding and usable knowledge. The explicit knowledge of a person includes the perception and skills which are easily written and taught (Nonaka and Takeuchi, 1995).

Tacit Knowledge:

Tacit knowledge is the knowledge that saved in the person's existence. It affects the view point, mentality, values, feelings and personal actions. This knowledge is also called experience, reflection and introversion gained by personal and inside processes. This knowledge is in two forms: personally and organizationally and documenting them is too hard (Nonaka and Takeuchi, 1995; Rashman *et al.*, 2009).

Nanoka-Takeuchi Model:

Japanese management researchers Nanoka and Takeuchi greatly affected basics of knowledge management. Considering the convergence of tacit and explicit types of knowledge, they have created a model which has been known in their name, based on this classification. Based on this model, to transfer and converse these two types of knowledge, the following stages must be performed in different stages of the organization (Nonaka and Takeuchi, 1995).

1. Socialization (tacit-to-tacit): Transferring tacit knowledge of a person to another person. To perform this process effectively, there must be a common culture and group work capability among people. The group gathering is held to explain their experiences that lead to share the tacit knowledge.
2. Externalization (tacit-to-explicit): Changing tacit knowledge to explicit knowledge. In this case, the person can present his/her knowledge to others in framework of orderly matter-seminar or training workshop. Intra-group dialogues for answering questions and apprehension from events are the activities in which these types of changes happened.
3. Combination (explicit-to-explicit): At this stage, the move is from personal explicit knowledge toward group explicit knowledge and saving it.
4. Internalization (explicit-to-tacit): At this stage, the explicit knowledge is gained and established within the organization. Also people who pass this stage lead to create new personal explicit knowledge which is the same as achieving new tacit knowledge from the explicit explicit knowledge.

Passing the four above stages must continue thereby continuously, while stabilizing knowledge within the organization, each stage perfects the previous stage and result in cresting and producing new knowledge. Most researches have shown that internalizing has the first rank in the field of knowledge management, socializing, externalizing and binding stand in next ranks respectively. Highest average of internalizing among all knowledge management factors show the high desire of managers to exchange explicit knowledge with tacit knowledge. Low level of socializing average within knowledge area indicates that managers do not have a great interest to share and exchange their tacit knowledge and their personal experience with others. In another words, it is assumed that sharing knowledge with others causes to lose the knowledge and obstacle their elevation. Reversely, the interest of members to cooperation and challenging in knowledge-creating process in the organization is regarded the base of cooperation, integration and creating of new knowledge (Afrazeh, 2007).

2. Research Process:

The researchers have tried to investigate the level of effect and relation of some organizational infrastructural factors: organizational culture, organizational structure, organizational management, human resources, and information technology infrastructure and the procedural factors of knowledge assets and knowledge portals in disseminating, sharing and achieving tacit knowledge based on Nanoka-Takeuchi model (Marrison-Saunders and Baily, 2009). Six main factors which evaluated in this research are: organizational culture, organizational structure, organizational management, human resources, knowledge transfer organizational processes and knowledge portals. The reasons for selecting these factors are their major role in achieving and distributing knowledge and their key place in organizational infrastructures. Tehran University is chosen to investigate the role of these factors, because of possessing experts and teachers of knowledge management.

Methodology:

This paper is organized from the viewpoint of research execution through description and surveying, i.e. first, the effective organizational infrastructures and basic factors in knowledge management were recognized and then a proper model for knowledge management process was selected, using library research method and

looking in papers and resources related to Iranian identity as well as non-native models. Later, using the 24-questioned researcher-made questionnaire in Likert scale, the required information was gathered through sampling the society members. Also, considering the use and adjustment of adopted model and testing it in the present state of knowledge management in Iran, this research is considered practical and usable.

Research Statistical Samples and Setting:

The samples are taken from Tehran University. The required sample is selected by simple accidentally method among knowledge management experts and collegians in Tehran University. As a whole, based on Morgan table, 212 samples are required for this research, but because of research costs, a few number of experts in this field and the obstacles pertaining to access to the samples, finally 65 experts are examined.

Validity and Reliability of Research Questionnaire:

In order to examine the Validity of research questionnaire, constituent Validity method is used which is certified in 98% certainty level. Also, to investigate the reliability of data, Cronbach test is used which is certified at the level of coefficient 0.829.

Analyzing Data:

This paper tries to answer the following questions and will clarify the relation between the afore-mentioned infrastructure factors based on Nanoka model.

1- Does organizational culture directly affect the tacit knowledge?
2- Does organizational structure directly affect gaining the tacit knowledge?
3- Does organizational management directly affect gaining the tacit knowledge?
4- Do human resources directly affect gaining the tacit knowledge?
5- Do organizational processes directly affect gaining the tacit knowledge?
6- Do knowledge portals directly affect gaining the tacit knowledge?

The research results are analyzed after examining KMO index which is resulted to 0.858 in this research and using Bartlett statistical test for the studied statistical sample, considering the above-mentioned research questions. Considering the previously mentioned statistical test results and approval or rejection of research theories and based on the Factor Loading average of 0.77 for the whole framework it is concluded that the studied infrastructures have a direct and effective role in gaining tacit knowledge. In each infrastructural investigated factor, suggestions are made to simplify achieving and sharing tacit knowledge.

3. Research Results:

Role of Organizational Culture in Achieving Tacit Knowledge (Average of Factor Loading of 0.71):

In an organization with the culture of establishing mutual cooperation between people, crating mutual cooperation, open setting within the organization, proper bonus system, learning from mistakes and humanitarian viewpoint among people, achieving tacit knowledge in simplified.

As a whole, based on statistics and sampling in the research questionnaires, the Factor Loading of direct effect of organizational culture on achieving tacit knowledge was 0.71 on average which supports the first research question. This factor includes six components; all have a great affect on tacit knowledge and achieving it. Table 1 shows the average of Factor Loading of the answers about Direct Effect of Organizational Culture on achieving Tacit Knowledge. Analyzing the results indicates that:

Table 1: Direct Effect of Organizational Culture on Achieving TacitKnowledge.

Component	Factor Loading Level
Total effect	0.71
1- Mutual Cooperation Among People	0.78
2- Existence of Trust Among Mutual People	0.76
3- Creating an Open Setting within the Organization	0.56
4- Proper Bonus System through Disseminating Personal Knowledge	0.89
5- Learning from Mistakes	0.51
6- Humanitarian Viewpoint among People	0.76

1- The Factor loading of the first component is 0.78 on average. Cooperation among people intensifies cooperation and coordination in exchanging information and knowledge by the current organizational systems, performing affairs in groups, feeling of dependency by people to the organization and prepares the ground for simplifying achieving and exchanging tacit knowledge.

2- The Factor loading of the second component is 0.76 on average. The necessity of mutual trust means certainty about inter-personal cooperation in case of familiarity with the required information by each party, existence of mutual respect and trust to take part in group working which is known an effective factor in building better relation and transferring tacit knowledge among people.

3- The Factor loading of the third component is 0.56 on average. Existence of open organizational setting results in feeling relief and safety among people for talking about their ideas, existence of honesty, enough consideration by management to employee's ideas about work problems, persuading the people to suggest new ideas by the management, preparing the ground for expressing idea which results in knowledge dissemination.

4- The Factor loading of the forth component is 0.89 on average. Proper bonus system, while sharing tacit knowledge, increases motivation and efficiency and includes the proportion of received bonus level with people's work, existence of effective bonus mechanism within the organization in performing creating and disseminating knowledge activities which are all effective factors in simplifying dissemination of tacit knowledge.

5- The Factor loading of the fifth component is 0.51 on average. Existence of learning from mistakes feeling is another effective factor in achieving tacit knowledge. In another words, reviewing the defeats as an instructive resource, analyzing the causes of organizational missions defeats and providing solution, experiencing different methods of performing work without fear from punishment simplifies this process.

6- The Factor loading of the sixth component is 0.76 on average. Existence of humanitarian viewpoint inclines people to disseminating their tacit knowledge without expecting to amend the service and giving value to sharing personal knowledge with others, without any expectation to amend the service.

Role of Organizational Structure in Achieving Tacit Knowledge (Average of Factor Loading of 0.81):

Organizational structure is effective in simplifying the attainment and sharing tacit knowledge with its characteristics such as being non-formalizing, non concentration, open communication channel.

Generally, based on statistics and sampling in the research questionnaires, the Factor Loading of direct effect of organizational structure on achieving tacit knowledge was 0.81 on average which supports the second research question. This factor includes three components which all have a great affect on tacit knowledge and achieving it. Table 2 shows the average of Factor Loading of the answers about Direct Effect of Organizational Structure on Achieving Tacit Knowledge. Analyzing the results indicates that:

Table 2: Direct Effect of Organizational Structure on Achieving TacitKnowledge.

Component	Factor Loading Level
Total effect	0.81
1- Non-Formalizing	0.78
2- Non concentration	0.8
3-Presence of Appropriate Communication Channel Among Employees	0.85

1- The Factor loading of the first component is 0.78 on average. Non-formalizing, i.e. performing affairs in a pleasant way for people, high organizational capacity in choosing the way work is performed by people which helps to create a better and more free relation between people and simplifies achieving tacit knowledge.

2- The Factor loading of the second component is 0.8 on average. Less organizational concentration prepares the ground for making group decisions, their liberty in performing occupational duties, free performance of units in affairs such as evaluation, employment, firing and providing bonus, thereby, helps people to attain and transfer tacit knowledge.

3- The Factor loading of the third component is 0.85 on average. Existence of effective communication channels results in giving value to talking colleagues to each other, minding informal meeting among employees and existence of informal communications among people which all result in simplifying tacit knowledge attainment.

Role of Organizational Management in Achieving Tacit Knowledge (Average of Factor Loading of 0.738):

Organizational management is fundamental step toward executing knowledge management which , prepares the required facilities in a way for gaining tacit knowledge. Factors such as understanding the importance of change, training people, supporting senior managers and cooperation of employees, making change interesting for people are some related factors with organizational management which are effective in achieving tacit knowledge.

As a whole, based on statistics and sampling in the research questionnaires, the Factor Loading of direct effect of organizational management on achieving tacit knowledge was 0.738 on average which supports the third research question. This factor includes five components which all have a great affect on tacit knowledge and achieving it. Table 3 shows the average of Factor Loading of the answers about Direct Effect of Organizational Management on Achieving Tacit Knowledge. Analyzing the results indicates that:

Table 3: Direct Effect of Organizational Management on Achieving TacitKnowledge.

Component	Factor Loading Level
Total effect	0.738
1- Understanding the Importance of Change by People	0.76
2- Proportional Training with Change to People	0.56
3-Support of Senior Managers from Change	0.78
4- People`s Cooperation in Making Change	0.89
5- Change Attraction for People	0.7

1- The Factor loading of the first component is 0.76 on average. Understanding the necessity of change capable the organization to early recognition of necessity of change in working models, great interest and capability in recognizing problems related to knowledge exchange and dissemination and regarding the required attempts for making the necessary changes for better achieving the tacit knowledge.

2- The Factor loading of the second component is 0.56 on average. Training people includes providing the necessary trainings to get informed of changes, investment in training employees, holding training courses and familiarity of people with new technologies which decreases the required charges for disseminating tacit knowledge.

3- The Factor loading of the third component is 0.78 on average. These factors are including support of senior management from change results in precise familiarity of managers with knowledge management; management commitment in stabilizing knowledge management; the interest and inclination of managers to execute knowledge management and persuading all people to disseminate tacit knowledge.

4- The Factor loading of the forth component is 0.89 on average. Employees cooperation knowledge about initiation and development of knowledge management in the organization, being aware of the positive effect of knowledge management on their work, enough knowledge about executing knowledge management results in simplifying tacit knowledge achieving.

5- The Factor loading of the fifth component is 0.7 on average. Change attraction in people and believing in the value of knowledge sharing, belief in making better relations with people, motivating for cooperation in knowledge dissemination results in simplifying knowledge achieving and disseminating tacit knowledge.

Role of Human Resources in Achieving Tacit Knowledge (Average of Factor Loading of 0.873):

People`s verbal skills, creativity and capability to create knowledge and instructiveness of people is a major factor in simplifying tacit knowledge attainment and dissemination.

As a whole, based on statistics and sampling in the research questionnaires, the Factor Loading of direct effect of human resources on achieving tacit knowledge was 0.873 on average which supports the forth research question. This factor includes three components which all have a great affect on tacit knowledge and achieving it. Table 4 shows the average of Factor Loading of the answers about direct effect of human resources on Achieving Tacit Knowledge. Analyzing the results indicates that:

1- The Factor loading of the first component is 0.87 on average. Making cooperation, strong verbal skills in people simplifies tacit knowledge achieving through providing mutual relation and making mental flood in people. Thereby believing in verbal relation is an important channel and mechanism in exchanging tacit knowledge.

2- The Factor loading of the second component is 0.85 on average. Creativity and knowledge creation capability results in making use of creative and new methods for the advancement of affairs, creativity and innovation in people reception, capability of executing people`s theoretical knowledge in daily activities, instructiveness and learn ability, people`s interest in learning new issues and thereby facilitates achieving tacit knowledge.

3- The Factor loading of the third component is 0.9 on average. Being learner mentality makes the necessary basis for inclining people to dissemination of their knowledge, receiving the required guidance by others, tendency toward group working, person`s interest in group working, persuading work groups and having adequacy, necessary experience and capability in performing affairs which will all have a direct role in tacit knowledge attainment and dissemination.

Table 4: Direct Effect of Human Resources on Achieving TacitKnowledge.

Component	Factor Loading Level
Total effect	0.738
1- Understanding the Importance of Change by People	0.76
2- Proportional Training with Change to People	0.56
3-Support of Senior Managers from Change	0.78
4- People`s Cooperation in Making Change	0.89
5- Change Attraction for People	0.7

Role of Organizational Processes in Achieving Tacit Knowledge (Average of Factor Loading of 0.665):

Organizational processes proportional to disseminating tacit knowledge has the following characteristics: knowing merit and professional capabilities of people, determining the gap between the current knowledge and the knowledge required by people, availability of saved knowledge, making knowledge sharing setting.

As a whole, based on statistics and sampling in the research questionnaires, the Factor Loading of direct effect of organizational processes on achieving tacit knowledge was 0.665 on average which supports the fifth research question. This factor includes four components which all have a great affect on tacit knowledge and achieving it. Table 5 shows the average of Factor Loading of the answers about Direct Effect of Organizational Processes on Achieving Tacit Knowledge. Analyzing the results indicates that:

Table 5: Direct Effect of Organizational Processes on Achieving TacitKnowledge.

Component	Factor Loading Level
Total effect	0.873
1- Strong Verbal Skills in People	0.87
2- Creativity and Knowledge Creating Capability	0.85
3-Instructiveness of Employees	0.9

1- The Factor loading of the first component is 0.72 on average. This component helps to know the capability of expert people, using them in affairs and better use of their tacit knowledge.
2- The Factor loading of the second component is 0.57 on average. Determining the gap between the current and the required knowledge, can lead to use the tacit knowledge of professional and persuade people to exchange and sharing their knowledge.
3- The Factor loading of the third component is 0.51 on average. Availability of knowledge is the final stage in knowledge achieving and sharing and is a bridge for people to transfer the tacit knowledge.
4- The Factor loading of the forth component is 0.86 on average. Appropriate setting is a factor preparing the ground for disseminating tacit knowledge.

Role of Knowledge Portals in Achieving Tacit Knowledge (Average of Factor Loading of 0.85):

Creating knowledge centers, moving and employing professionals and experts- where knowledge is concentrated in only a part of organization- help to knowledge dissemination. As a whole, based on statistics and sampling in the research questionnaires, the Factor Loading of direct effect of knowledge portals on achieving tacit knowledge was 0.85 on average which supports the sixth research question. This factor includes two components which all have a great affect on tacit knowledge and achieving it. Table 6 shows the average of Factor Loading of the answers about Direct Effect of Knowledge Portals on Achieving Tacit Knowledge. Analyzing the results indicates that:

Table 6: Direct Effect of Knowledge Portals on Achieving TacitKnowledge.

Component	Factor Loading Level
Total effect	0.665
1-Knowing People's Merit and Professional Capability	0.72
2- Determining the Gap Between the Current Knowledge and Knowledge Required by People	0.57
3- Availability of the Saved Knowledge Appropriately to People	0.51
4- Creating Proper Setting for Knowledge Dissemination and Sharing	0.86

1- The Factor loading of the first component is 0.85 on average. Creating such centers gives a more formal state to achieving tacit knowledge and increases its probability.
2- The Factor loading of the second component is 0.91 on average. Moving experts' lead to sharing their tacit knowledge and using this knowledge, better decision making or even emerging creativity.

Conclusion:

This paper tries to study the effective factors in achieving tacit knowledge based on organizational infrastructure factors. This paper overcomes the problems of extraction the tacit knowledge by identifying the great factors of organization about it. By this research, every organization can use its intellectual capital, utilization of human knowledge, reduce time, cost in decision making about everything. According to the sampling results and Factor Loading of organizational culture, organizational structure, organizational management, human resources, knowledge portals and the whole in collection is 0.71, 0.81, 0.738, 0.873, 0.665, and 0.85. So you can conclude that above agents has straight relevance in achieving the case study. So it is suffice that organizations prepare the reasonable situation for above traits.

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