

Identification and Measurement of Key Success Factors in Sharing Knowledge from Employees' Point of View in Mellat Bank Branches in Ahwaz City, Iran

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ABSTRACT

Changes in procedures, organizational missions and structures and also in expert work force due to reasons like employees' retirement, promotion to staff positions and also transfer to other units and departments, will lead to loss of a large amount of knowledge and experience which has been achieved over many years and with a lot of cost and other employees will be deprived of them. Factors which influence on knowledge sharing should be identified, evaluated and developed in order to be able to convert knowledge and experience into competitive advantage and sharing them. The present research deals with identification and measurement of key factors of success in sharing knowledge in Ahwaz city Mellat bank branches from employees' point of view. Research methodology is descriptive-correlation. Respondents included 112 employees who worked in Mellat bank branches in Ahwaz city. They were selected by means of random sampling method. Measurement was carried out by means of a questionnaire with 50 questions on human, organizational and technical factors which were designed based on 5-point Likert scale. Apparent and content validity were used to investigate validity and reliability was tested by means of Chronbach's alpha ($\alpha=0.78$). In inferential analysis section, structural equations modeling method was used to test the conceptual model of the research. SPSS 16 was used for data analysis. Research results showed that factors influencing on knowledge sharing can be analyzed in three categories, human, technical and organizational. Human factors included collaboration, responsibility, experience, and expertise, and organizational factors included organizational structure, organizational culture, managerial styles, organizational necessities and technical factors included technology of distribution and spread, network infrastructure, and storage technology (documentation). Finally, results showed that there is significant and positive relationship between human, organizational and technical factors and knowledge sharing among Mellat bank branches in Ahwaz.

KEYWORDS: procedure change, competitive advantage, knowledge sharing, Mellat bank branches of Ahwaz city.

INTRODUCTION

Employees' behavior and what is inside their minds are important in knowledge sharing process and is considered as an effective factor in successful implementation of knowledge management. Sharing values, information and systematic approaches are embedded in knowledge sharing concept and provides individuals with awareness of knowledge and educational needs (Kim and Ju, 2008). The number of individuals who can easily share their knowledge with others is small. This is while knowledge about knowledge sharing can result in new opportunities and innovation within an organization and brings new capacities. Organization and individuals can have a better performance because if latent knowledge in individuals' minds is not able to be shared helpfully, it will fade away in individuals' minds and lose its helpfulness (Morena and Fernandes, 2004).

RESEARCH LITERATURE

Basic concepts of knowledge and knowledge management

Knowledge steps consist of three elements, data, information and knowledge (North and Klaus, 1999). Data is a set of realities about a phenomenon. Information includes organization, grouping and data categorization in significant models; and knowledge is information which is combined with experience, interpretation and thinking and ensures correct measure (Davenport, 1998). Knowledge is a mixture of experiences, values and new information. Knowledge is created and applied in its owner mind. Knowledge is embedded not only in knowledge storages and documents, but also it lies in working procedures, organizational processes, actions and norms. Knowledge is found in static and dynamic form. Knowledge is obtained from information and information is obtained from data. Conversion of information into knowledge is done by

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human. Knowledge is not clear and simple but it is a combination of several factors. It is fluid and also it has certain structures and it is virtual and intuitive (Akbarpour Shirazi, 2005).

Knowledge types

Michael Poulani (1964) categorizes knowledge into tacit knowledge and explicit knowledge:

a) Explicit knowledge: it is a rational, reasoned and objective knowledge. In other words, explicit knowledge is a set of procedures, instructions, software, documents, directions, reports, designs, rules, processes, quantities and goals of an organization. Explicit knowledge can be stored in documented and formulated form. Therefore, it can be transferred and distributed easily.

b) Tacit knowledge: it is mental, non- objective, cognitive and empirical knowledge which exists in individuals' minds and is achieved over time and through education and experience. Tacit knowledge is the place of experiences, ideas, insights and skills gathering. Tacit knowledge does not exist in documented and formulated form and it is limited to individuals' brains. Tacit knowledge is also known as latent or unclear knowledge. Tacit knowledge is of more importance than explicit knowledge. Investigations have revealed that employees' explicit knowledge constitutes almost 10 to 20 percent of organizational data (Saliz & Janz, 2003). Both kinds of knowledge are important for organization. A successful organization is one which tries to develop both kinds of knowledge (Randing, 2007).

Different classifications for knowledge types have been mentioned in table 1, according to Alavi and Lidner.

Table1: knowledge classification and its examples

Knowledge types	Definitions	examples
tacit	Knowledge in actions, experiences and participation in special texture	The best tool and method for dealing with customers
Tacit cognitive	Mental models	Individual beliefs on cause and effect relationships
Tacit technical	Technical knowledge applicable to personal work	Medical skills
explicit	Documented and generalized knowledge	Knowledge about many customers in a region
individual	Created by a person and his/her nature	Insights from complete project
collective	Created by collective actions of a group	Norms for group relationships
descriptive	Knowledge on what	Which medicine is suitable for a patient
procedure	Technical knowledge	How a special medicine is made?
causal	Knowledge about the "why" of something	Understanding why a medicine has effects?
conditional	Knowledge about the time of something	Understanding when a medicine should be prescribed?
relational	Knowledge about relationship between something with another thing	Understanding the relationship between a medicine and other medicines
applicable	Useful knowledge for an organization	The best experiences and frameworks of business

Knowledge management:

There is no unanimity on knowledge management definition and many definitions have been presented for it (Souri, 2006). Some of the definitions are presented below:

Petresh: knowledge management is achievement of proper knowledge for appropriate individuals in appropriate time and place, so that they can make much of the knowledge in order to reach organizational goals.

Macentach: knowledge management involves identification and analysis of necessary knowledge and lookknowledge sharing for multi-dimensional planning and development of knowledge capitals in order to finally satisfy organizational goals.

Malhotera (2004): knowledge management is doing right things instead of doing things right. Its emphasis is on effectiveness and not efficiency; efficiency without effectiveness results in organizational failure.

Daghfous (2003): knowledge management is the combination of processes like: management, control, creativity, encoding, distribution and imposition of knowledge power within an organization and its main goal is to make sure that whether a person in need achieves his/her necessary knowledge in appropriate time to make proper decisions or not.

Gotcho (1999) knowledge management is a commercial multi-disciplinary model with all knowledge aspects like creation, encoding, knowledge distribution and investigation of the fact that how these activities increase learning and innovation.

Afrazeh (2004) knowledge management is the process of discovering, achievement, development, creation, sharing, storing, evaluation and application of appropriate knowledge at appropriate time by appropriate person within an organization which is obtained through establishment of linkknowledge sharing among human resources, ITC and formation of an appropriate structure for achieving organizational goals.

Knowledge sharing

Employees' behavior and what is inside their minds are important in knowledge sharing process and is considered as an effective factor in successful implementation of knowledge management. Sharing values, information and systematic approaches are embedded in knowledge sharing concept and provides individuals with awareness of knowledge and educational needs (Kim and Ju, 2008). The number of individuals who can easily share their knowledge with others is small. This is while knowledge about knowledge sharing can result in new opportunities and innovation within an organization and brings new capacities. Organization and individuals can have a better performance because if latent knowledge in individuals' minds is not able to be shared helpfully, it will fade away in individuals' minds and lose its helpfulness (Morena and Fernandes, 2004). Knowledge is a combination of experiences, values and information and systematic approaches which provides a framework for evaluation of experiences and information. Polani (1997) classified knowledge into two categories: tacit and explicit knowledge. From one hand, explicit knowledge can be stored, classified and achieved easily and its transfer is formal and easy (Stenmark, 2000). On the other hand, tacit knowledge is embedded in individuals' daily mental actions. According to this classification, Nonaka and Kano defined knowledge management as a method for simplification and improvement of the process of sharing, distribution, creation and understanding of organizational knowledge (Nonaka and Konno, 1998). Davenport and Prusak (1998) also defined knowledge management as collection, distribution and efficient use of knowledge resources. Although some experts believe that knowledge is power, it seems does not have power on its own; but the part of knowledge people share with others is what brings power. If we liken knowledge of individuals' minds to gold which is inside a box, the value of that knowledge will be clear when it is shared with others. This is similar to when the gold owner opens the box and shows off the gold (Keshavarzi, 2007).

Knowledge sharing has also been defined as giving and receiving knowledge to and from others. In fact, knowledge distribution in an organization is a vital precondition for provision of information and experiences which can be used by the organization. An important question is that how can we facilitate knowledge sharing. Use of a clear language for knowledge transfer, assigning rewards for knowledge sharing, support of organizational culture for knowledge sharing and transfer can be useful. Effective knowledge management must be active in internal and external transparency increase. One of the devices is encoding and production of knowledge map. Knowledge map indicates necessary expertise and knowledge as well as their place in an organization (Beikzadeh Marzbani, Souri, 2010). Knowledge storage will guarantee the storage, on-time access, re-use and continuous synchronization of organizational knowledge. Competitive advantages for an organization are not accessible at any time. Organizational knowledge which is one of the competitive advantages of a organization must be updated, stored and safeguarded. Encoding is one of the methods of knowledge safeguarding as well as knowledge development and sharing.

The main goal of this research is to identify key factors of success in sharing knowledge in branches of Mellat Bank in Ahwaz city from employees' point of view and investigate relationship between them.

A review of previous studies and preparation of research theoretical framework

Kim Ju (2008), in a research conducted to investigate academic board members' attitude towards knowledge sharing and their collaboration level in knowledge sharing, found significant and positive relationship between the following factors: "inter-personal trust, open social relations among members, collaboration among members, motivating systems" and "knowledge sharing".

Hoof and Huysman (2009) investigated knowledge sharing in 6 public organizations. In this research, the influence of organizational structure, individual social relations, cognitive social relations, organizational culture and IT on knowledge sharing was studied. Results showed that presence of a flexible organizational structure, motivating organizational culture and widespread use of IT can have positive influence on individual and social cognitive relationships of individuals.

Rahman et al (2011) conducted a research titled "revision of factors influencing on knowledge sharing behavior" and dealt with applied factors influencing on knowledge sharing. The most important factors included organizational culture, organizational size, organizational conditions, technology and rewarding system. They showed that factors like occupational factors, stressful factors and the influence of each of them on knowledge sharing have not been studied it is necessary to have an understandable experience in order to be able to find relationships between these factors and knowledge sharing.

Rahnvar and Khavandkar (2008) investigated "the influence of knowledge sharing on IT services out-sourcing success" and found that "participation" and "organizational capabilities" are important in this process. They showed that there is not a significant relationship between knowledge sharing and organizational capability. This research which used questionnaire and correlation and regression coefficient showed that knowledge sharing influences on IT services successful out-sourcing, if it is accompanied by a mediating variable called "partnership".

Hakimi Tehrani (2010) conducted a research called "investigation of relationship between knowledge sharing and service quality of organizational departments (case study: Parsiyan Bank). In this research, relationships

between 5 dimensions of sharing ordinal knowledge, explicit knowledge, latent knowledge, technical knowledge, strategic knowledge and organizational service quality dimensions: tangible factors, reliability, responsiveness, guarantee and empathy were investigated. Research methodology was correlation-descriptive. Statistical population of the research included chairmen of departments, experts and users of Parsiyan Bank organizational units. Results showed that there is significant relationship between knowledge sharing and organizational service quality.

Pahlavani et al (2010) conducted a research titled "investigation and prioritization of cultural factors effective in knowledge sharing".

They showed that there is significant correlation between mutual trust, employees' communications, information system, rewarding system and organizational structure. These factors play important role in removing obstacles ahead of knowledge sharing.

Abili et al (2011) investigated the influence of some factors on organizational knowledge sharing in International Strategic Studies Institute. Results showed that employees' knowledge sharing is favorable in the organization and factors like age, experience, educational major, education level and organizational position did not cause any difference in knowledge sharing.

The present research tries to answer this question: "what are the key factors of success in sharing knowledge in branches of Mellat Bank in Ahwaz city from employees' point of view?"

RESEARCH METHODOLOGY

This research is an applied research. Its nature is descriptive and in terms of supervision and control type it is a field research and it is a correlation study in terms of relationship between variables. Statistical population of the present research included all employees of Mellat Bank branches in Ahwaz city which worked in two subcategories of current group and credits group. Volume of the population was about 200 people. 123 people were selected as sample members according to Krejcie & Morgan table (1970). Simple random sampling method was used for sampling. After preparation of a list of all employees and assigning code to them, they were selected by means of lottery. 112 people answered the questions completely and their questionnaires were selected for analysis. Field method was used for data gathering and questionnaire was used for data gathering. Content validity was used for investigation of validity. Experts, professors and commentators opinions in the field of knowledge management and librarianship and information were collected. After primary distribution of questionnaire, respondents were asked to answer to the questions and make comments on the clarity and simplicity of the questions. After gathering the questionnaires, ambiguous questions were eliminated and some items were added. Results verified different aspects of questionnaires. Cronbach's alpha was used to study the reliability of the questionnaire and the results have been summarized in table 2.

Table 2: results of Cronbach's alpha calculation

component	Number of questions	Chronbach's alpha coefficient
Knowledge sharing	4	0.76
Human factors	16	0.87
Organizational factors	18	0.87
Technical factors	12	0.86
Total questionnaire	50	0.92

Descriptive and inferential statistical analyses were used. In particular, Pearson correlation coefficient (due to normality of data) was used for analysis.

Research hypotheses are as follows based on research type and variables:

1. Key factors of human success have relationship with knowledge sharing in branches of Mellat Bank in Ahwaz city.
 - 1.1. Collaboration (tendency to share knowledge) has relationship with knowledge sharing.
 - 1.2. Responsiveness has relationship with knowledge sharing.
 - 1.3. expertise level has relationship with knowledge sharing.
 - 1.4. Personal experience has relationship with knowledge sharing.
2. Key factors of organizational success have relationship with knowledge sharing in branches of Mellat Bank in Ahwaz city.
 - 2.1. Organizational culture has relationship with knowledge sharing.
 - 2.2. Organizational culture has relationship with knowledge sharing.
 - 2.3. Managerial styles have relationship with knowledge sharing.
 - 2.4. Organizational necessities have relationship with knowledge sharing.

3. Key factors of technical success have relationship with knowledge sharing in branches of Mellat Bank in Ahwaz city.

3.1. Distribution technology has relationship with knowledge sharing.

3.2. Networks infrastructure has relationship with knowledge sharing.

3.3. Storage technology has relationship with knowledge sharing.

According to hypotheses proposed in the above, the following conceptual model is depicted in figure 1.

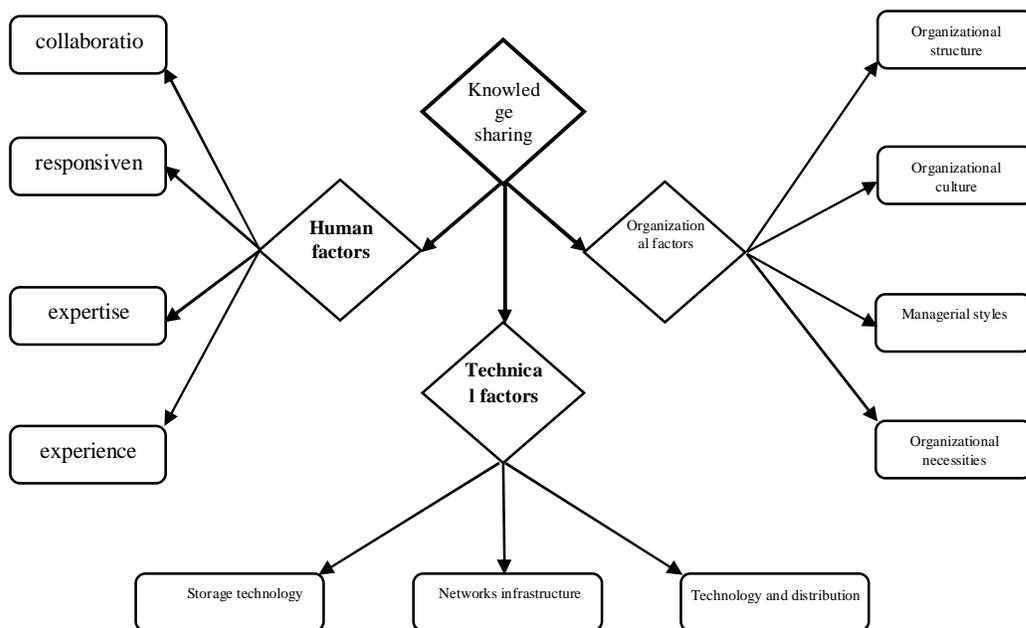


Figure 1: secondary model of conceptual model

Data analysis

Results of descriptive analysis

In this section, demographic information of the 112 respondents is investigated. 73.2% of the respondents were male and 26.8% were female. In terms of age distribution, 12.5% of the respondents were aged 20-29, 41.1% were aged 30-39, 24.1% were aged 40-49 and 22.3% of them were above 50 years. 19.6% of the respondents had associate's degree, 65.2% had bachelor degree, 12.5% had master degree and 2.7% had other education levels. 32.1% of the respondents had 1-10 years of experience, 38.4% had 11-20 years of experience, and 29.5% had 21-30 years of experience. Furthermore, 9.33% were chairman of deposit and service group, 2.31% were credits group chairman, 7.19% were accounting group chairman, 9.9% were financial group chairman and 3.5% were currency group chairman.

Results of inferential test

Data normality test

Normality of data was investigated in this section. Zero hypotheses is normality of data and Kolmogrov-Smearnov test was used in 5% error level. The results of this test have been presented in table 3 for testing abnormality of distribution of the points of 3 components. Considering the fact that significance level for each of variables is more than 5%, the hypothesis of normality of the points of all 4 components is verified.

Table 3: results of data normality test

factor	number	Kolmogrov-Smearnov test	
		Kolmogrov-Smearnov z	Significance level (p)
Knowledge sharing	112	1.03	0.23
Human factors	112	0.67	0.75
Human factors	112	0.71	0.68
Technical factors	112	1.06	0.20

Hypotheses test

In this section, we test the hypotheses which are based upon bi-variable relationships first. Since the measurement scale of the present research variables have been considered as continuous, Pearson correlation test was used.

First hypothesis and its subsidiary hypotheses

1. Key factors of human success have relationship with knowledge sharing in branches of Mellat Bank in Ahwaz city.

1.1. Collaboration (tendency to share knowledge) has relationship with knowledge sharing.

1.2. Responsiveness has relationship with knowledge sharing.

1.3. expertise level has relationship with knowledge sharing.

1.4. Personal experience has relationship with knowledge sharing.

Results of Pearson correlation test have been summarized in table 4. It is obvious that there is positive and significant correlation between human factor and knowledge sharing in employees ($r=0.582$, $p=0.001$). Furthermore, there is positive and significant correlation between 4 human factors and knowledge sharing in employees. Correlation coefficients of four factors: collaboration, responsiveness, expertise and personal experience were $r=0.520$, $r=0.577$, $r=0.363$, $r=0.311$, respectively. They are all significant in 0.05 levels. The first hypothesis and the subsidiary hypotheses 1.1, 1.2, 1.3, and 1.4 are verified.

Second hypothesis and its subsidiary hypotheses:

2. Key factors of organizational success have relationship with knowledge sharing in branches of Mellat Bank in Ahwaz city.

2.1. Organizational culture has relationship with knowledge sharing.

2.2. Organizational structure has relationship with knowledge sharing.

2.3. Managerial styles have relationship with knowledge sharing.

2.4. Organizational necessities have relationship with knowledge sharing.

Results of Pearson correlation coefficient test have been summarized in table 4. It is obvious that there is positive and significant correlation between organizational factor and knowledge sharing in employees ($r=0.487$, $p=0.001$). Furthermore, there is positive and significant correlation between four organizational factors: organizational structure, organizational culture, managerial styles, organizational necessities and knowledge sharing in employees. Correlation coefficients of the four factors are $r=0.21$, $r=0.385$, $r=0.530$ and $r=0.392$, respectively. All coefficients are significant in 0.05 level. Therefore, the second hypothesis and the subsidiary hypotheses 1.2, 2.2, 2.3, and 2.4 are verified.

Third hypothesis and its subsidiary hypotheses:

3. Key factors of technical success have relationship with knowledge sharing in branches of Mellat Bank in Ahwaz city.

3.1. Distribution technology has relationship with knowledge sharing.

3.2. Networks infrastructure has relationship with knowledge sharing.

3.3. Storage technology has relationship with knowledge sharing.

Results of Pearson correlation test have been summarized in table 4. It is obvious that there is positive and significant correlation between technical factor and knowledge sharing in employees ($r=0.530$, $p=0.001$). Correlation coefficients of the three factors are: $r=0.515$, $r=0.382$ and $r=0.437$, respectively. All coefficients are significant in 0.05 levels. Therefore, hypothesis 3 and all its subsidiary hypotheses 3.1, 3.2 and 3.3 are verified.

Table4: results of Pearson correlation coefficient test for hypotheses test

Independent variables	Dependent variable			
	Knowledge sharing			
	n	r	p	result
Total human factors	112	0.582	0.001	verified
collaboration	112	0.520	0.001	verified
responsiveness	112	0.577	0.001	verified
expertise	112	0.363	0.001	verified
Individual experience	112	0.311	0.001	verified
Total organizational factors	112	0.487	0.001	verified
Organizational structure	112	0.21	0.003	verified
Organizational culture	112	0.385	0.001	verified
Managerial styles	112	0.530	0.001	verified
Organizational necessities	112	0.392	0.001	verified
Total technical factors	112	0.530	0.001	verified
Distribution technology	112	0.515	0.001	verified
Networks infrastructure	112	0.382	0.001	verified
Storage and documentation technology	112	0.473	0.001	verified

DISCUSSION OF RESULTS AND RECOMMENDATIONS

Correlation coefficient test was used to investigate and analyze the hypotheses and the following results were obtained:

1. there is positive and significant correlation between human factor and knowledge sharing in employees ($r=0.582$, $p=0.001$). Furthermore, there is positive and significant correlation between 4 human factors and knowledge sharing in employees.

2. there is positive and significant correlation between organizational factor and knowledge sharing in employees ($r=0.487$, $p=0.001$). Furthermore, there is positive and significant correlation between organizational structure, organizational culture, managerial styles and organizational necessities with knowledge sharing in employees.

3. there is positive and significant correlation between technical factor and knowledge sharing ($r=0.530$, $p=0.001$). Furthermore, there is positive and significant correlation between "distribution and storage technology" and "knowledge sharing in employees".

11 dimensions were used in order to determine factors influencing on sharing knowledge in Mellat bank branches in Ahwaz city. These indices were selected based on literature review and interview with experts of this bank. Naturally, these indices have relationships with each other. Moreover, some of the factors act as introduction to other factors. Results helped with finding relationships among these factors.

With this basic assumption that knowledge sharing needs appropriate infrastructure in various organizational and technical dimensions and considering the results of the research, technical, human and organizational factors had the highest influence on knowledge sharing performance, respectively. Furthermore, evaluation of subsidiary factors in branches of Mellat Bank in Ahwaz city revealed interesting results. The organizational factor "organizational culture" is one of the most effective factors influencing on knowledge sharing performance. This indicates that organizational culture in IT management of the bank is a knowledge-based and knowledge-supporting culture. In such conditions, organizational culture contents can be strengthened by individuals, instructions, working procedure and computer devices. Therefore, it can be said that presence of a knowledge-based culture in an organization is a suitable platform for strengthening knowledge sharing performance. Organizational culture is therefore important in establishment of knowledge sharing performance and the bank branches should pay attention to organizational culture in order to be able to make knowledge sharing common. Obstacles ahead of knowledge management must also be removed. Results of this test correspond to the results of studies conducted by Brandet (2009), Kengez (2005), Lavson (2003), Rahnavard (2009) and Salavati (2006).

Because most people tend to keep their knowledge as a power source and as a guarantee for keeping their job position, they do not tend to share their knowledge with others. Therefore, it is necessary to promotion knowledge sharing culture within organizations. Results showed that considering the positive and significant correlation between human, organizational and technical factors and knowledge sharing, a strong organizational culture can lead to increasing tendency of sharing knowledge with others. Furthermore, presence of a flexible and non-bureaucratic structure which motivates informal groups' formations in an organization can provide an appropriate atmosphere for knowledge sharing. Development of technical factors provides faster and simpler access to knowledge. Positive correlation between human factors and knowledge sharing shows that collaboration and tendency to share knowledge and responsiveness and experience can have positive role in improvement of knowledge sharing activities in the bank branches. Establishment of a collaboration atmosphere can increase knowledge sharing through tendency to transfer knowledge because knowledge transfer does not simply depend on individual ability but tendency to knowledge sharing and responsiveness among individuals can have positive influences.

Use of IT and web can help with keeping, spreading and using knowledge which can improve collaboration and information exchange in the project. In the presented system, the implicit knowledge embedded in the project including: experiences, reasons, problems solutions, delays reasons, innovations and ... was placed in a knowledge management process including collection, forming and storing, spreading and updating. Use of experiences and knowledge sharing prevent from repetitive actions and reduce cost and time of projects.

According to the results of the present research, the following recommendations are presented: 1) considering the results of the research and positive influence of human factors on knowledge sharing, managers of Mellat bank branches in Ahwaz city are advised to provide requirements for collaboration and responsiveness in order to strengthen creativity and innovation and help with transfer and sharing; 2) considering the positive influence of organizational factors on knowledge sharing, managers are advised to provide a flexible and non-bureaucratic structure in order to motivate informal groups formation and informal networks development; 3) considering the influence of technical factors on knowledge sharing, managers are advised to provide equipment and facilities, budget, and access to knowledge. Furthermore, a system based upon implicit knowledge management should be provided using portal and web; 4) considering the positive influence of organizational

culture on knowledge sharing, it is recommended to strengthen organizational culture through increasing interactions and holding group sessions; 5) considering the positive influence of technology of distribution and documentation technology (storage) on knowledge sharing, it is recommended to form an appropriate platform for accessing knowledge bases and resources in the branches. Collection of knowledge through various resources and projects is also important; 6) managers should consider the obstacles and factors which motivate employees to share their knowledge; 7) increasing sense of responsibility among managers and experts in order to increase knowledge sharing tendency; 8) holding educational workshops for managers and projects experts on the way of sharing one's knowledge with others; 9) supportive styles of managers and use of material and non-material incentives in order to increase knowledge sharing tendency; 10) formation of an open organizational structure which facilitates knowledge flow.

In the end, some solutions for reduction or removal of obstacles and challenges ahead of knowledge sharing are as follows: 1) presentation of short-term achievements of knowledge managers to an organization

- 2) Holding successive workshops for synchronization of managers with knowledge sharing
- 3) Giving knowledge management responsibility to someone who has motivation and enough knowledge.
- 4) Activation of knowledge management committees in different departments under the name of elite associations
- 5) Payments and perks corresponding to knowledge performance of people
- 6) Appreciation of knowledge management experts and giving advantages to such employees
- 7) Designing and conduction of seminars, workshops and educational tours of knowledge management in a continuous manner.
- 8) Preparation of knowledge journals by personnel
- 9) Directing individuals' benefits towards organizational benefits in order to increase trust and commitment to system.
- 10) Establishment of knowledge request processes in order to animate knowledge creation, register, sharing and application processes.
- 11) Holding discussion sessions, brainstorming meetings, story-telling and statement of failures and successes.
- 12) Daily and weekly presentation of knowledge to software system
- 13) Designing and promotion of knowledge slogan and vision of the organization
- 14) use of oral techniques for knowledge sharing in groups and associations in order to break knowledge transfer barrier
- 15) use of techniques for increasing knowledge sharing skills in personnel
- 16) Measurement of cultural activities performance in knowledge sharing in personnel
- 17) Establishment of legal necessities within the framework of knowledge sharing-supporting instructions

Recommendations for future studies are: 1) conduction of similar studies in civil and industrial and other projects; 2) investigation of relationship between personal, organizational and technological factors and knowledge sharing in project-based organizations; 3) investigation of obstacles and facilitators of knowledge sharing in organizations and provision of solutions;

The most important limitations ahead of this research included: 1) negligence of respondents to research importance and participation in it; 2) receiving questionnaires and not answering to them; 3) non-collaboration of some of the employees of the branches with researcher; 4) lack of favorable access to information and resources in the field of knowledge sharing.

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