

A Knowledge Sharing Model for Iranian Educational and Research Organizations

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Abstract

Background/Objectives: The purpose of this study was examining the knowledge sharing model for Iranian educational and research organizations. Knowledge sharing is an essential process for the implementation of knowledge management. **Methods/Statistical Analysis:** This was a descriptive survey research. The knowledge sharing literature was reviewed, and 19 factors effective on the knowledge sharing performance were identified. The experts were consulted, and the factors were categorized into four categories of individual, institutional, cultural, and IT factors. To determine the effective factors, a questionnaire was then compiled and distributed among 20 knowledge management experts who had experience in educational and research institutions. The statistical analysis confirmed that all four categories had an effect on knowledge sharing. **Results:** The results of this study showed that the opinions of experts and experienced persons were employed in knowledge management. This sharing of knowledge was conducted wide to assess the readiness of educational and research and its results in order to plan projects and sharing of knowledge in the hands of authorities. **Conclusion/Application:** These findings can be considered as an initial framework for the assessment of appropriate educational and research organizations.

Keywords: Educational Organizations, Iran, Knowledge Management, Knowledge Sharing Model, Research Organizations

1. Introduction

Knowledge sharing is an essential process for the implementation of knowledge management. It occurs when a person is willing to help others and learn from them to develop new capabilities in the organization¹. Today, the use of organizational knowledge and sharing it effectively between the employees of the knowledge-based organizations has become a strategic resource for the organizations to achieve and maintain a competitive advantage². To achieve such an advantage, organizations are looking for models and strategies that enable them to improve knowledge sharing and help them achieve better positions. It has become a norm to refer today's economy as a knowledge-based economy. Knowledge is increasingly becoming "the" resource, rather than "a" resource for wealth generation. It is widely recognized

that knowledge is the critical asset to individual as well as organization to succeed in the increasingly competitive environment³. Thus, how to make use of knowledge in order to create the greatest value is becoming the central concern and debate in the new economy. Many researchers have attempted the issue by identifying the salient features of the knowledge-based economy and formulating various strategies to capture and create a new source of competitive advantage in the new society⁴. However, most studies related to the knowledge-based economy are confined to the structural challenges of the new economy, paying an excessive attention to issues such as knowledge management system, innovation and technological application. Very little investigation has ventured into the study of human behavior in the new economy, for instance, how people perceive the transition from production-based to knowledge-based

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economy, how ready are they in taking up new challenges, how individual views the sharing of their hard-earned knowledge asset, what motivated or discouraged them to involve in knowledge-based activities, particularly in the production, distribution and application of knowledge⁵. The aim of this study to was examine the knowledge sharing model for Iranian educational and research organizations.

2. Research Method

The present research is an applied study in terms of orientation, because it aims to apply the findings in order to improve knowledge sharing in training and research centers. In terms of strategy, this research is a descriptive-survey study and about data collection methods, it is a descriptive mix study. Research steps and the tests used at every step are shown in Table 1.

In experts poll step, it was attempted to select experts

who had an acceptable level of knowledge in the field of knowledge management in education and research and were familiar with such organizations. Due to limitations in experts' community, it was attempted to identify the available experts as much as possible. Some of them were selected as the sample by judgment sampling method and a questionnaire was sent to them.

3. Research Steps

3.1 Research Literature

Theoretically, knowledge sharing has been defined as an action in which the employers voluntarily disseminate their organizational information, ideas, recommendations, and skills in the organization³. Knowledge management emphasizes on the need to control and organize organizational knowledge as an asset for a firm and also controlling the knowledge creation and sharing as a key organizational feature. Knowledge sharing is basically to

Table 1. Research steps and the tests used at every step

The tests used / Data collection method	Title	Step
At this step, the basic concepts of knowledge management are defined. Then, different models and pattern of knowledge sharing are introduced by reviewing the valid scientific papers and their strengths and weaknesses are discussed.	Research literature review	1
At this step, previous studies and research on this field were reviewed in order to provide a list of factors, main criteria, and sub-criteria related to the conceptual model.	Identifying and studying the factors affecting knowledge sharing	
At this step, the factors extracted in the previous step were given to the experts to make their comment and views about them and then the factors of proposed model of knowledge sharing in training and research institutions were identified by using descriptive statistics techniques. Validity and reliability of questionnaire: Fuzzy logic was used for determining the validity of the questionnaire and face and content validity were confirmed based on the opinions and comments of experts. Cronbach's alpha test was used to assess the reliability of the questionnaire. Distribution normality test: Kolmogorov-Smirnov test was used for examining that whether the distribution of data is normal.	Development of conceptual design: 1- Providing the experts with the knowledge sharing components 2- Gathering the comments and doing the calculations 3- Final extraction of effective components of knowledge sharing 4- Development of conceptual model	
- Determining the sample size by Morgan Table - Reliability test (Cronbach's alpha) - Distribution normality test (Kolmogorov-Smirnov test) - Evaluation of demographic characteristics using frequency and circular charts - Evaluation of the average score of factors: A this step, after examining the factors and variables, the score of each factors was calculated by using the average score of variables in the studied organization. Then, the readiness level of this organization in the factors and variables affecting knowledge management was shown in in spider and column diagrams.	Assessment of the desired organization by the proposed model - Preparation of a questionnaire based on the model factors - Distribution of the questionnaires in Danesh Gostar Training and Research Institute - Statistical analysis - Providing recommendations	2

make knowledge available to others in an organization. Davenport defines knowledge sharing as a voluntary action and distinguishes it from reporting. Reporting involves exchange of information on some routines or structured forms. But, knowledge sharing suggests a deliberate attempt made by a person who participates in knowledge exchange, even if there is no compulsion to do so⁴.

3.2 Identification and Studying the Factors of Knowledge Sharing Model

After reviewing more than 50 valid papers on knowledge sharing and organizational readiness evaluation and 5 books on knowledge management and also enjoying the views of experts in knowledge management, the most important factors associated with the improvement of knowledge sharing were identified and classified in four groups of individual, organizational, cultural, and information technology factors (Table 2). For determining these four groups and finalizing the effective factors of knowledge sharing, the views and opinions of the experts and professionals of knowledge management in research organizations were gathered.

3.2.1 Individual Factors

Knowledge sharing, as one of the stages of knowledge management cycle, means to voluntarily share one's knowledge with others and having access to the knowledge of other at the required time. Bet believes that organizational knowledge is not stored in an organization itself, but it is stored in individuals of that organization. Knowledge sharing behavior reveals the tacit knowledge of the organization. On the other hand, behaviors of each person are originated from their intention and desire and the intention and desire to share knowledge is a function of their subjective and norms and attitude towards knowledge sharing issue². In this study, characteristics such as attitude, trust between individuals, motivations, unawareness, personal time, and interpersonal interactions were subsumed under the classification of "individual factors".

3.2.2 Cultural Factors

Effective sharing of knowledge requires a suitable cultural context. Previous studies show that organizational culture is one of the most important factors in promoting or

inhibiting knowledge sharing activities. Cultures of an organization involves the beliefs, attitudes, and common expectations which direct the behaviors in the absence of an explicit statute or instruction. In most organizations, the majority of managerial situations are such and culture can be a powerful source of identity, common purpose, and flexible guidance.

In organizational culture model, Dennison defines organizational culture based on four subcultures of involvement, adaptability, mission, and consistency. Involvement is formed based on formal and informal working groups. Individuals have the authority and initiative to manage their own works and are involved in organizational affairs and decision-makings. This subculture pays a special attention to training and empowerment of employers. Adaptability focuses on interaction with customers and internal and external integration of organization. Such organizations take risks and learn from their mistakes, so they have the capacity for experience and making changes. The subculture of mission is defined based on the organizational missions and tasks. In such organizations, the leader outlines a vision and the whole organization should pursue it. Consistency or stability is formed based on the agreement of the leaders and the followers. Activities in these organizations have been well coordinated and continuous and leader have enough influence on the behavior of employers. Studies have reported the high effect of involvement and adaptability on improvement of knowledge sharing activities in training organizations. In this study, the factors related to subcultures of involvement and adaptability were classified as cultural factors. According to the views of experts, champion project was added to this group of factors⁶.

3.2.3 Organizational Factors

Knowledge sharing activities aim to help organizations to achieve their objectives such as gaining competitive advantages and the influence of organizational capital on these activities is inevitable. Organizational factors such as organizational structure, procedures and rules, incentive systems, strategies, senior managers' support can directly or indirectly affect the knowledge sharing behaviors of employers. Organizational structure can determine the limits of relationships between individuals and working groups. Knowledge-based organization need or promote their intellectual capital in order to survive

and continue their activities. In other words, promotion of intellectual capabilities can ensure the long-term success of an organization. In order to promote intellectual capital, an organization firstly requires a systematic way of management⁷.

In some studies, cultural and organizational factors have been integrated into one group, but the present study assumes that culture is a factor that can form and guide the behaviors of employers in the absence of organizational guidelines. In this study, strategy, procedures, rules and regulations, and senior managers' support have been categorized as organizational factors. Financial reward or organizational motivation could be subsumed under the "rules and regulations", but it was taken into account as an independent factor as studies have shown that it is one of the most crucial factors for enhancing the sharing of knowledge.

3.2.4 Information Technology (IT) Factors

Table 2. Identification of the most important factors affecting knowledge sharing

Number	Group	Indices
1	Individual factors	Time Personal relations Trust Personal attitude Unawareness
2	Cultural factors	Adaptability Involvement Cultural integration
3	Organizational factors	Organizational structure Organizational resources Financial rewards Procedures and rules Management support Strategy
4	Information technology factors	Infrastructure Informational literacy Consistency and integration Knowledge management software

As well as knowledge sharing is an issue related to human, culture, and organization, it is also considered a technological issue. The primary role of IT is facilitation of knowledge sharing. Providing a safe, integrated, and consistent context helps employers to share their knowledge with each other more easily and get use of the

knowledge of their colleagues. Regardless of the type and size of organizations, knowledge sharing activities are dependent on information technology. In an interview with the executive directors of knowledge management system, Alavi and Lidner found that an integrated technical architecture is one of the most important factors of success⁴.

3.2.5 Providing the Experts with Knowledge Sharing Components

In order to identify the factors affecting knowledge sharing in research organizations, a questionnaire on factors extracted from the basic studies (Table 3) was prepared. The items were developed based on a Likert's five-point scale from very high to very low (5: very high, 4: high, 3: moderate, 2: low, and 1: very low). The respondents were asked to express their idea about the effect of each of the variables on improvement of knowledge sharing in research and training organization by selecting one of these five choices.

To confirm the validity and reliability of the questionnaire, its preliminary version was distributed among 5 experts of this field. After confirmation of the face and content validity of factors and items by experts, the initial questionnaire was distributed among 20 other experts and its reliability was obtained equal to 0.7 by Cronbach's alpha coefficient.

This questionnaire was based on 4 main hypotheses and 19 sub-hypotheses that are as follows:

Principal Hypotheses

- H₁: Relationship between of individual factors and improving knowledge sharing
H₂: Relationship between of cultural factors and improving knowledge sharing
H₃: Relationship between of organizational factors and improving knowledge sharing
H₄: Relationship between of technology factors and improving knowledge sharing

Sub-hypotheses:

- Time affects the improvement of knowledge sharing among employers.
- Personal relations affect the improvement of knowledge sharing among employers.
- Unawareness of existence of knowledge in organization affects the improvement of knowledge sharing among employers.
- Attitude of employees towards knowledge sharing affects the improvement of knowledge sharing.

Table 3. Analytic model of research (four main factors and their variables)

Information technology	Organizational	Cultural	Individual	Factors
Consistency	Structure	Adaptability	Time	Variables and indices
Infrastructure and security	Resources	Involvement	Personal relations	
Knowledge management software	Procedures and rules	Cultural integration	Unawareness	
Informational literacy	Management support	Champion project	Attitude	
	Strategy		Trust	
	Financial reward			

- Trust between employees affects the improvement of knowledge sharing.
- Adaptability subculture affects the improvement of knowledge sharing.
- Involvement subculture affects the improvement of knowledge sharing.
- Cultural integration affects the improvement of knowledge sharing.
- Presence of pioneers affects the improvement of knowledge sharing.
- Organizational structure affects the improvement of knowledge sharing.
- Organizational resources affect the improvement of knowledge sharing.
- Financial reward affects the improvement of knowledge sharing.
- Procedures and rules affect the improvement of knowledge sharing.
- Management support affects the improvement of knowledge sharing.
- Strategy affects the improvement of knowledge sharing.
- Infrastructure and security affect the improvement of knowledge sharing.
- Consistency of systems affects the improvement of knowledge sharing.
- Knowledge management software affects the improvement of knowledge sharing.
- Informational literacy affects the improvement of knowledge sharing.

3.2.6 Data Analysis

To analyze the data and select the factors of knowledge sharing model, distribution normality and binominal tests were used.

3.2.6.1 Distribution Normality Test

To examine the normality of data distribution, Kolmogorov-Smirnov test (K-S) was used. To test the claim of normality of distribution for each variable, we

act as follows:

H_0 : Distribution of the variable “knowledge sharing” is normal.

H_1 : Distribution of the variable “knowledge sharing” is not normal.

The result of this test suggests a significance level of less than 0.05 for all variables. Therefore H_0 is confirmed. In other words, distribution of data is not normal and non-parametric tests (binominal) should be used for determining the key factors.

3.2.6.2 Binominal Test

As the distribution of data is not normal, the non-parametric test of binominal was used for testing the hypotheses.

H_0 : “Personal relations” is an effective and important factor in knowledge sharing.

H_1 : “Personal relations” is not an effective and important factor in knowledge sharing.

In this test, there are two sets of responses. For this purpose, an option is selected as the separation point of values. As the Likert’s five-point scale was used in this study, number 3 was selected as the separation point in this study. Thus, the choices low (1), very low (2), and moderate (3) are in Group q and choices high (4) and very high (5) are in Group p.

According to test on the variable “personal relations” (Question 2 or Q02), the significance level is 0.7 which is less than 0.05. Therefore, H_0 is confirmed and this means that personal relations is an effective and important factor in knowledge sharing.

The same result was obtained for all other factors. In addition, among 19 variables, 12 variables with a significance level of less than 0.05 were identified as important and effective factors in knowledge sharing. These variables include personal relations, attitude, trust, adaptability, involvement, presence of pioneers,

procedures and rules, senior management support, financial rewards, infrastructure and security, knowledge management software, and informational literacy. Other variables including time, unawareness, cultural integration, organizational structure, resources, strategy, and consistency had a significance level more than 0.05 and, therefore, were not identified as effective factors in knowledge sharing.

3.3 The Model of Knowledge Sharing

The next step is to identify the factors affecting knowledge sharing 12 factors in four categories individual factors, cultural factors, organizational factors and information technology were considered as a structural model.

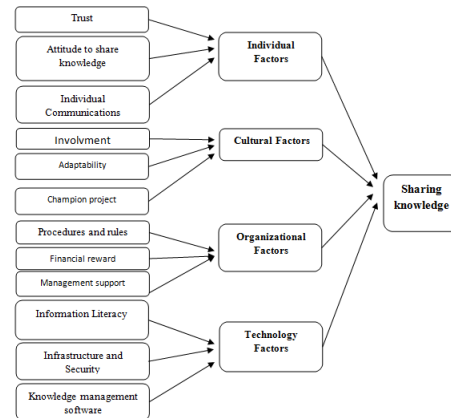


Figure 1. The model of knowledge sharing.

Table 4. The results of binomial test

Binomial Test													
		Cate- gory	N	Observed Prop.	Test Prop.	Exact Sig. (1-tailed)			Cate- gory	N	Observed Prop.	Test Prop.	Exact Sig. (1-tailed)
Q01	Group 1	<= 3	6	.3	.4	.250 ^a	Q11	Group 1	<= 3	13	.7	.4	.021
	Group 2	> 3	14	.7				Group 2	> 3	7	.4		
	Total		20	1.0				Total		20	1.0		
Q02	Group 1	<= 3	2	.1	.4	.004 ^a	Q12	Group 1	<= 3	15	.8	.4	.002
	Group 2	> 3	18	.9				Group 2	> 3	5	.3		
	Total		20	1.0				Total		20	1.0		
Q03	Group 1	<= 3	9	.5	.4	.404	Q13	Group 1	<= 3	0	0.0	.4	.000 ^a
	Group 2	> 3	11	.6				Group 2	> 3	20	1.0		
	Total		20	1.0				Total		20	1.0		
Q04	Group 1	<= 3	3	.2	.4	.016 ^a	Q14	Group 1	<= 3	1	.1	.4	.001 ^a
	Group 2	> 3	17	.9				Group 2	> 3	19	1.0		
	Total		20	1.0				Total		20	1.0		
Q05	Group 1	<= 3	0	0.0	.4	.000 ^a	Q15	Group 1	<= 3	12	.6	.4	.057
	Group 2	> 3	20	1.0				Group 2	> 3	8	.4		
	Total		20	1.0				Total		20	1.0		
Q06	Group 1	<= 3	0	0.0	.4	.000 ^a	Q16	Group 1	<= 3	0	0.0	.4	.000 ^a
	Group 2	> 3	20	1.0				Group 2	> 3	20	1.0		
	Total		20	1.0				Total		20	1.0		
Q07	Group 1	<= 3	1	.1	.4	.001 ^a	Q17	Group 1	<= 3	11	.6	.4	.128
	Group 2	> 3	19	1.0				Group 2	> 3	9	.5		
	Total		20	1.0				Total		20	1.0		
Q08	Group 1	<= 3	2	.1	.4	.004 ^a	Q18	Group 1	<= 3	0	0.0	.4	.000 ^a
	Group 2	> 3	18	.9				Group 2	> 3	20	1.0		
	Total		20	1.0				Total		20	1.0		
Q09	Group 1	<= 3	11	.6	.4	.128	Q19	Group 1	<= 3	2	.1	.4	.004 ^a
	Group 2	> 3	9	.5				Group 2	> 3	18	.9		
	Total		20	1.0				Total		20	1.0		
Q10	Group 1	<= 3	2	.1	.4	.004 ^a							
	Group 2	> 3	18	.9									
	Total		20	1.0									

3.4 Evaluation of the Studied Organization

3.4.1 The Studied Organization

Danesh Gostar Training and Research Institute aims to generate, maintain, and expand different areas of knowledge in order to provide scientific supports to academic and industrial organizations. With permission of the authorities of this institute and in line with its organizational policies, the status of knowledge sharing factors was evaluated in this institute by using the proposed model of this study.

3.4.2 Evaluation of the Average Score of Factors in the Studied Organization

After collecting the required data and information, the statistical test mentioned in Table 4 were used for data analysis. All tests were performed in SPSS 22 software. Mean score of all indices of each factors was calculated

and presented in Table 5 and Figures 1 and 2. Mean scores less than 2.5, between 2.5 and 3.5, and more than 3.5, respectively were considered as low, moderate, and high scores.

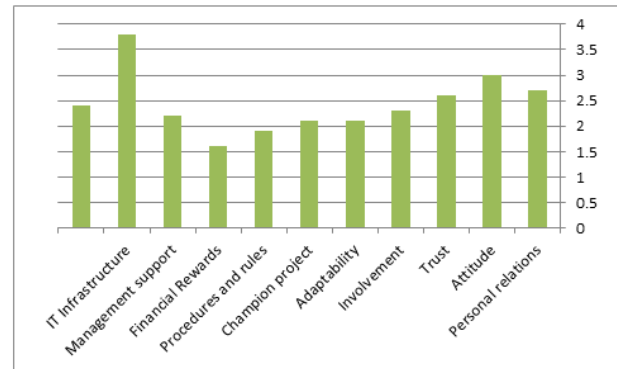


Figure 2. Organizational readiness in factors affecting on the success of knowledge sharing.

Table 5. Mean score of all indices of each factor

	Status of factors	Suggesting	Effective
Organizational Factors	This group has the lowest score among the four groups. Among those factors ,the low index of financial reward. Low Rate this agent shows a lack of support from senior managers in the organization and the organization of shared knowledge.	- Managing Director of Knowledge -Management under the leadership council. -Case incentives and financial rewards knowledge sharing activities	Voluntary organizations, people's willingness to share knowledge: Trust staff maintain effective intellectual property system.
Cultural Factors	The second factor is the weak group in the organization. Lowest score is the culture of learning and learning from failures. According to research literature this is the most important improvement is the sharing of knowledge and research training.	-Development oriented corporate culture. -Training of pioneer.	-Knowledge sharing behavior. -Improve individual communication. -Chief support.
Individual Factors	Characteristics of people who participate in the sharing of knowledge is average. According to the education level of employees and presence in the scientific community and academic staff individually positive attitude and belief in sharing knowledge.	-Education and empowerment of individuals -Assembly and recreational camps for people close to each other. -Approval of procedures and rules support	Voluntary sharing of knowledge
Individual Factors	Technical aspects of knowledge sharing organization is the moderate. The agents in this class knowledge management software located in poor condition.	A:Security software : -Knowledge Map. -Asset Management Knowledge Management -Documented knowledge documents -Tacit knowledge management -Knowledge management portal B: The development of information literacy.	-Strengthening Participatory Culture - Record and share knowledge more easily -Empowerment of individuals : using learning systems

4. Results and Suggesting

Figure 1 shows the none of the four groups of the poor. The unsatisfactory state of the key success factors, competitive performance and its future success will be guaranteed and managers have not success in this area.

5. Conclusion

In this study a model with twelve factors in four groups was presented. The group consists of individual, institutional, cultural and information technology, to improve the sharing of knowledge in the training and research. Native to the organization of Iranian institutions, in addition to studies designed to model and identify factors related books and articles, the opinions of experts and experienced persons were employed in knowledge management. This sharing of knowledge was conducted wide to assess the readiness of educational and research and its results in order to plan projects and sharing of knowledge in the hands of authorities. Although these findings can be taken into consideration as an initial framework for the assessment of appropriate educational and research organizations, the findings do not apply to all types of

organizations. In particular, this model cannot be used in the industrial and cultural mission and compatibility.

6. References

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