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Research Article

THE ANALYSIS AND REVIEW OF KNOWLEDGE MANAGEMENT CHALLENGES AND BARRIERS AND CONNECTIONS BETWEEN THEM

Hamid Reza Vakili Fard[1], *Habibollah Dehghan[2] and Farid Barvari[3]
[1]*Department of Accounting and Management, Science & Research Branch, Islamic Azad University, Tehran, Iran*
[2]*Department of Accounting, Emamali University, Tehran, Iran*
[3]*Department of Accounting, Urmia Branch, Islamic Azad University, Urmia, Iran*
**Author for Correspondence*

ABSTRACT
This paper explores the barriers to the implementation of knowledge management and connections between them. Despite the importance of developing knowledge management in modern organizations, it faces problems and obstacles. In this study, these barriers in five groups of human, structural, cultural and technological – technical and other barriers have been studied in the literature. The statistical society is the IRIA commanders, and the sample includes 59 participants selected based on Morgan table. To extract the conceptual model, the DEMATEL method is used. The findings show that human and cultural barriers have the most interaction with the other hurdles of knowledge management in Army and also have the highest openness to influence from other obstacles. Moreover, according to the R values, technological–technical and organizational barriers are the most effective barriers on the other. Finally, by using the AHP method we prioritize the main barriers to knowledge management.

Keywords: *Knowledge Management, Barriers of Knowledge Management, DEMATEL Method, AHP, Army, IRIA*

INTRODUCTION
One of the issues that societies and organizations have always faced is the advent of new phenomena and changes that profoundly influence their performance; reacting to these changes properly significantly affects their success and failure. Change is a key and permanent variable in the endeavors and experiences of humans (Omekwu and Eteng, 2006). Successful organizations in this era are those that are ahead of environmental changes. With regard to these changes, today organizations would be prosperous if they give priority to the use of intangible capital especially knowledge. Knowledge management (KM) is not a new concept in the history of human development (Lundvall and Nielsen, 2007). The main purpose of knowledge management in different organizations and institutions is quick adaptation to environmental changes in order to improve their efficiency and effectiveness (Plessis, 2007). Thus, KM refers to the process of developing, sharing, capturing, and using knowledge in organizations. In other words, the final goal of KM is sharing knowledge among employees to promote the added value of available organizational knowledge (Brachos *et al.*, 2007).
KM is a structured approach that establishes procedures for identifying, assessing, organizing, saving, and using knowledge in order to fulfill the goals and needs of organizations (Davenport and Marchand, 1999). The success of KM depends on the effective combination and integration of human, technical, and economic skills; these features should not only exist in all KM activities but also in every individual plan and project (Afrazeh, 1389).
To enjoy the benefits of KM, it is necessary to investigate the barriers and challenges and to offer solutions. Otherwise, we would not be successful. Islamic Republic of Iran Army (IRIA), as an organization which wants to adjust to environmental changes, should move towards KM, but it faces challenges and barriers. This study, therefore, aims to examine theses challenges in order to propose solutions to the commanders in IRIA. If the barriers are not identified, IRIA would encounter problem with KM.

Research Article

Statement of the Problem

One of the issues that societies and organizations have always faced is the advent of new phenomena and changes that profoundly influence their performance; reacting to these changes properly significantly affects their success and failure (Jasimuddin, 2008). The fast pace of change is in a way that in the near future there would be organizations that that are fundamentally different from what we now regard as an organization (Rabinz, 1996).

Today, Knowledge is the main asset and capital of organizations, thus KM is the issue of identifying individual knowledge and changing it into an informational subject so that it could be stored in databases, be shared with others, and be used in routine and everyday tasks. KM involves achieving organizational goals through the optimum use of knowledge or the capacity of an organization for using intellectual capital (i.e. individual knowledge and experience) and collective knowledge to attain its goals through the process of developing, sharing, and using knowledge with the help of technology. KM is the secret to organizational success in the 21st century (Berkes, 2009). To reach its goals, an organization uses the knowledge that every individual has. If it does not use that knowledge, the failure of organization or the bad results of repeating some decision-making procedures and not using practical experiences and decisions properly are expected (Adli, 1384). IRIA needs KM in order to create changes in its trend. This study, therefore, aims to investigate the challenges of KM in IRIA and their relations in order to propose solutions to the commanders in IRIA.

Review of the Literature

Knowledge Management (KM)

The significance of knowledge in the complex business world cannot be ignored. Those organizations which know how to acquire, disseminate, and manage knowledge effectively would be the leaders in their industries. Today, we are moving towards an era in which competitive advantage results not only from acquitting knowledge but also more importantly from developing new knowledge (Davenport and Klahr, 1998). Knowledge is concept beyond data and information. It refers to a collection of information, the practical solution with regard to it, results of using it in different decisions, the related instruction, and the relevant attitudes of people in different jobs (Krogstie *et al.*, 2006). Knowledge of every individual may be different that of others even in a certain case. Knowledge is the basis of an individual's skill, experience, and expertise. Today, knowledge is a very important strategic source for organizations. Therefore, the ability to acquire, develop, share, and use knowledge in organizations can lead to a permanent competitive advantage for them (Rodman & Wilkinson, 2009).

KM is a new way for thinking about organizations and sharing their intellectual and creative sources (Chen *et al.*, 2009). It refers to the attempts that are systematically made to find and organize intangible assets of the organization, make them accessible, and reinforce the culture of continuous learning and knowledge sharing in the organization. Focusing on KM and making massive investments in IT, many organizations pursue the resultant benefits of KM, and try to improve their performance through the implementation of KM (Jasimuddin, 2008). KM is a new way of thinking about organizations and sharing their intellectual and creative sources. Considering the increase in the role of KM in competitive and dynamic environments, organizations are focusing on KM more and more (Mohammadi *et al.*, 1387). KM refers to the attempts that are systematically made to find and organize intangible assets of the organization, make them accessible, and reinforce the culture of continuous learning and knowledge sharing in the organization. Focusing on KM and making massive investments in IT, many organizations pursue the resultant benefits of KM, and try to improve their performance through the implementation of KM (Hasanzadeh, **1386**). The challenge here is that KM is a systematic subject so its successful implementation requires a comprehensive and pervasive attitude to different organizational factors. Some of the various factors involved in the implementation of KM systems are strategy, organizational culture, IT infrastructure, teamwork, etc; the role of management and leadership is clear in all of them (McBriar *et al.*, 2003). Unlike old organizations, modern organizations have advanced technologies, and need to capture, manage, and use information and knowledge in order to improve their performance, provide better services to clients, manage alterations, and follow endless changes (Yannis *et al.*, 2008). Contrary

to other techniques, KM is not often easy to define because it includes a wide range of concepts, administrative tasks, technologies, and measures. On the other hand, rapid changes in the technology of personal computers and electronic communications in the last decade have enabled us to create, gather, manipulate, store, and exchange information (Skyrme, 2003). KM is an interdisciplinary business model that deals with all aspects of knowledge including development, coding, share, and using it to promote learning and innovation in the institutional context (Switzer, 2008). KM deals with both technological tools and organizational routines (Organizational routines).

Challenges of KM

The challenge here is that KM is a systematic subject so its successful implementation requires a comprehensive and pervasive attitude to different organizational factors. Many organizations that want to implement KM have made huge investments in information and communication technologies (Balestrin *et al.*, 2008). But is should be borne in mind that IT is just one part of KM, and the successful implementation of KM requires that different organizational factors including organizational structure, organizational culture, technology, and human resources have special features and also have the essential coherence and coordination (Wen, 2009).

Any gap and inconsistency among these factors hinders the prosperous implementation of KM strategy. Thus, understanding organizational factors with regard to the characteristics related to the implementation of KM strategy is a primarily important measure which can lay the ground for future actions. Effective knowledge development and sharing requires a special structure in the organization. The internal structure of the organization can encourage or hinder KM.

The studies about this show that centralized decision-making as well as high formality of work procedures and relations impede knowledge production and new ideas while power distribution and flexibility in activities increase knowledge production and facilitates knowledge transfer (Claver-Cortes *et al.*, 2007). The role of leadership and management is very significant in the success of KM in organizations and in achieving determined goals. On the other hand, KM is a mechanism for the manger to reach the organizational goals. The following show the mutual relation between management and KM. In general, according to Kimble and Bourdon (2008), the barriers to KM are:

1. Organizational culture (lack of trust, communications, and knowledge sharing)
2. Lack of awareness, understanding, and insight about KM
3. Motivation
4. Geographical distribution
5. Organization size
6. Organization structure
7. Human resources structure
8. Culture and values

The biggest challenge of KM is not knowledge production but knowledge possession and dissemination. In fact, the knowledge which is not disseminated has a limited value for the organization. The traditional method of knowledge production was face-to-face conversation and dialogue, but today as organizations and institutes are moving towards globalization and are finding a virtual form, the old methods are very slow and ineffective (Shaw and Edwards, 2005).

Therefore, technology should be necessarily used for the circulation of knowledge. Another real challenge of KM is codifying employees' experiences and ideas in a way that others could use them (Gao *et al.*, 2008). Some of the barriers to the successful establishment and implementation of KM in organizations are as follows:

Human Barriers

People may be unwilling to share their knowledge for different reasons, and want to use it for personal development because they wrongly think that knowledge is power and they should not lose it. Maybe it can be said that human barriers to KM are more significant than the other barriers since knowledge has a human and social nature and essence, and only can develop through interaction and communication. The following table lists some of the human barriers discussed in the literature.

Table 1: Human Barriers

Source	Barriers
Lin *et al.*, (2008); Shaw & Edvards (2008)	Fear of less job security after sharing knowledge
Lin *et al.*, (2008)	Fear of losing the possession or ownership of intellectual property
Lin *et al.*, (2008)	Being proud because of keeping information
Lin *et al.*, (2012)	Being weak in communication skills
Lin *et al.*, (2008)	Differences between the people's experiences on the two sides of knowledge flow
Lin *et al.*, (2012)	Differences between people' languages

Organizational Barriers

Organizational barriers include drawbacks of the structure (for example, hierarchical and inflexible structures and those which do not allow employees' easy interaction with the organizational environment; neglect of the informal aspects of the organization structure, etc), management (top managers' lack of support for KM plans; when managers focus on the details and do not have a long-term perspective; using improper management styles), employees' income and benefits (employees transfer knowledge when that are motivated enough), training and education (changing traditional educational systems into learning organization system through suitable instructional programs), and the condition of jobs (unclear and routine jobs; unsuitable jobs; ambiguity and conflict in roles) (Abtahi, 1386). The following table shows some of the organizational barriers to KM.

Table 2: Organizational Barriers

Resources	Barriers
Lin *et al.*, (2008); Shaw & Edvards (2008)	Lack of sufficient rewards
Lin *et al.*, (2012)	Limited time and resources Lack of rules and standards for knowledge sharing
Lin *et al.*, (2012)	lack of rules or standards for sharing knowledge
Benson *et al.*, (2007)	Inefficient management or lack of leadership spirit
Benson *et al.*, (2007); Lin *et al.*, (2008)	Lack of delegation for sharing knowledge about information classification
Hsieh *et al.*, (2012)	Lack of coordination among units and geographical distribution
Lee & Kim (2001)	Not informing employees about the benefits of new system

Cultural Barriers

KM would not be prosperous without proper and trust-based collective culture.

Table 3: Cultural Barriers

Resources	Barriers
Lin *et al.*, (2008)	Lack of awareness and understanding about the necessity of knowledge sharing
Lin *et al.*, (2008)	Lack of trust in people because of the possibility of abuse
Benson *et al.*, (2007)	Lack of trust in using external knowledge and experiences
Benson *et al.*, (2007)	Fear of new technologies
Lin *et al.*, (2008)	Lack of trust in the nature of new knowledge
Lin *et al.*, (2012)	Different cultural characteristics
Riege (2005)	Inability to absorb new knowledge

If the idea and culture of knowledge transfer and sharing is not encouraged, KM encounters challenges. The effect of cultural factors on the effectiveness of KM programs is not deniable. The culture of every society impacts the behavior of individuals as it includes the value system. When knowledge sharing is a value in a culture, people try to acquire knowledge (Davenport, 1998).

Technical and Technological Barriers

Knowledge should be stored through technical methods and then be organized and disseminated. Using appropriate technologies in organizations is considered as an important step in explicit knowledge preservation and maintenance. Otherwise, a major part of the developed knowledge would be destroyed (Abtahi, 1386).

Table 4: Technical and technological barriers

Resources	Barriers
Lin *et al.,* (2008)	presence of tangible mechanisms including: telephone, chatrooms or computer network
He *et al.,* (2009)	Lack of technical support and not fixing IT systems quickly
Benson *et al.,* (2007)	Lack of integration of IT systems and processes
Brandon & Hollingshead (2004)	Incoherence of IT systems and available processes in the organization
Lee & Kim (2001)	Employees' lack of experience and expertise in using new and modern technologies
Riege (2005)	Lack of continuous update

Other Barriers

Knowledge is the source of power and the powerful person can have leverage to gain political power. So they impede knowledge dissemination.

Power of knowledge and political powers are the two factors which hinder proper distribution in organizations, so KM that needs widespread knowledge dissemination in organizations would face serious challenges. Management stability in organizations which results from the stability of political arena affects KM, especially with regard to an open context where people can easily express their ideas (Davenport, 1998).

Research Purposes

1. Finding the relationship between the barriers to KM in IRIA
2. Finding the priorities of major barriers to KM
3. Finding the priorities of minor barriers to KM
4. Developing the conceptual model of KM through this relationship

Research Questions

Regarding the points mentioned, the research questions are as follows:

1. How is the relationship between the barriers to KM (i.e. human barriers, organizational barriers, cultural barriers, technical and technological barriers, other barriers)?
2. Which barrier has the most interaction with other barriers?
3. Which barrier would be affected more by the other barriers?
4. Which barrier would be more effective?
5. What are the priorities of major barriers to KM?
6. What are the priorities of minor barriers to KM?

MATERIALS AND METHODS

Methodology

The data of this study was gathered through secondary research, questionnaires, interview, and investigating available information sources. Through secondary research, the related literature and studies were examined. The DEMATEL method was also used to find the relationship between the barriers to

KM determined based on the literature as well as their effects on each other. Finally, the AHP was employed to establish the priorities of major and minor barriers to KM.

Data Collection through the Questionnaire

The study population included 70 IRIA commanders and personnel. Considering the size of population as well as statistical rules and Morgan table, the selected sample was comprised of 59 commanders. The questionnaire was distributed to them; 57 questionnaires were returned, out of which 51 were complete and acceptable. Because of the organizational structure of IRIA, all respondents were male.

DEMATEL Method

To find causal relationships and to quantify the associations, the following steps should be taken in the DEMATEL technique:

1. Based on the defined goals, we ask some experts to determine the existence or lack of direct relationship between two goals (just the direct effect of one goal on the other). The comparisons are pair-wise and the experts are asked to determine the score of each available relationship according to the following criteria:

- Zero: Goal A does not affect goal B.
- 1: Goal A insignificantly affects goal B.
- 2: Goal A affects goal B.
- 3: Goal A affects goal B almost a lot.
- 4: Goal A significantly affects goal B.

It is worthy to mention that we are just concerned with direct relationships, not indirect, intervening, or reverse. So the final score of each direct relationship is the median of its scores.

Formation of Matrix X

Matrix X which indicates the total effect of direct relationships in the system is formed. Its elements are the scores determined in the previous stage. Each element or entry shows the direct effect of goal row of the element on the corresponding goal column.

Formation of Matrix M

Through multiplying matrix X by ɑ, which is the maximum reverse gained from the row addition of its elements, matrix M is obtained that shows the relative effect of direct relationships in the system.

$$M = \alpha . X$$

Formation of Matrix S

Matrix S which represents the total effects of direct and indirect relationships in the system si obtained as follows:

$$S = M(I - M)^{-1}$$

RESULTS AND DISCUSSION

Data Analysis and Results

In matrix s, we try to obtain the row addition of elements (R), the column addition of elements (J), the addition of R and J, and the subtraction of R and J. R for each goal shows the influence of that goal on the other and the corresponding J indicates the influence which that goal receives. Thus, R+J are the direct and indirect influence the goal exerts and receives. In other words, the goal which has the highest R+J has the most interaction with the other goals.

The amount of pure or absolute influence that each goal exerts on the other goals is obtained from R-J. The goal with a positive (R-J) is a goal which exerts influence while the one with a negative value is the one which receives influence.

To draw a better cause and effect relationship, firstly a threshold level is determined based on the experts' opinions, and the relations below it are not entered into the graph. Finally, with regard to the obtained structure, the conceptual model is developed.

Finding Cause-Effect Relationships between the Barriers and Constructing the Conceptual Model

In this section, using the DEMATEL method, the cause-effect relationships between the barriers to KM are identified and then their conceptual model is drawn

Formation of Matrix X

Table 5: Formation of Matrix X

X	Human Barriers	Organizational Barriers	Cultural Barriers	Technical and Technological Barriers	Other Barriers
Human Barriers	4	1	3	1	0
Organizational Barriers	3	4	3	1	0
Cultural Barriers	3	1	4	0	0
Technical and Technological Barriers	1	3	3	4	0
Other Barriers	2	2	1	1	4

Formation of Matrix M

Table 6: Formation of Matrix M

M	Human Barriers	Organizational Barriers	Cultural Barriers	Technical and Technological Barriers	Other Barriers
Human Barriers	0.36	0.09	0.27	0.09	0.00
Organizational Barriers	0.27	0.36	0.27	0.09	0.00
Cultural Barriers	0.27	0.09	0.36	0.00	0.00
Technical and Technological Barriers	0.09	0.27	0.27	0.36	0.00
Other Barriers	0.18	0.18	0.09	0.09	0.36

Formation of Matrix S

Table 7: Formation of Matrix S

S	Human Barriers	Organizational Barriers	Cultural Barriers	Technical and Technological Barriers	Other Barriers	R
Human Barriers	1.79693	0.88225	1.80205	0.5255973	0	5.01
Organizational Barriers	2.12116	1.47782	2.25256	0.6569966	0	6.51
Cultural Barriers	1.50171	0.73208	1.66553	0.3191126	0	4.22
Technical and Technological Barriers	1.95222	1.50171	2.36519	1.0648464	0	688
Other Barriers	1.89859	1.27913	1.87713	0.6784495	0.57143	6.30
J	9.27	5.87	9.96	3.25	0.57	

The Values of R, J, R+J, R-J

Table 8: The Values of R, J, R+J, R-J

M	Human Barriers	Organizational Barriers	Cultural Barriers	Technical and Technological Barriers	Other Barriers
R	5.01	6.51	4.22	6.88	6.30
J	9.27	5.87	9.96	3.25	0.57
R+J	14.28	12.38	14.18	10.13	6.88
R-j	-4.26	0.64	-5.74	3.64	5.73

As you see, based on the obtained results from the commanders and the analysis through the DEMATEL technique, the cultural barriers and human barriers have the most interaction with the other barriers. Considering the value of R-J, they receive the highest influence. Also, based on R values, technical and technological barriers and organizational barriers exert the most influence on the other barriers. Thus, the resultant conceptual model is as follows:

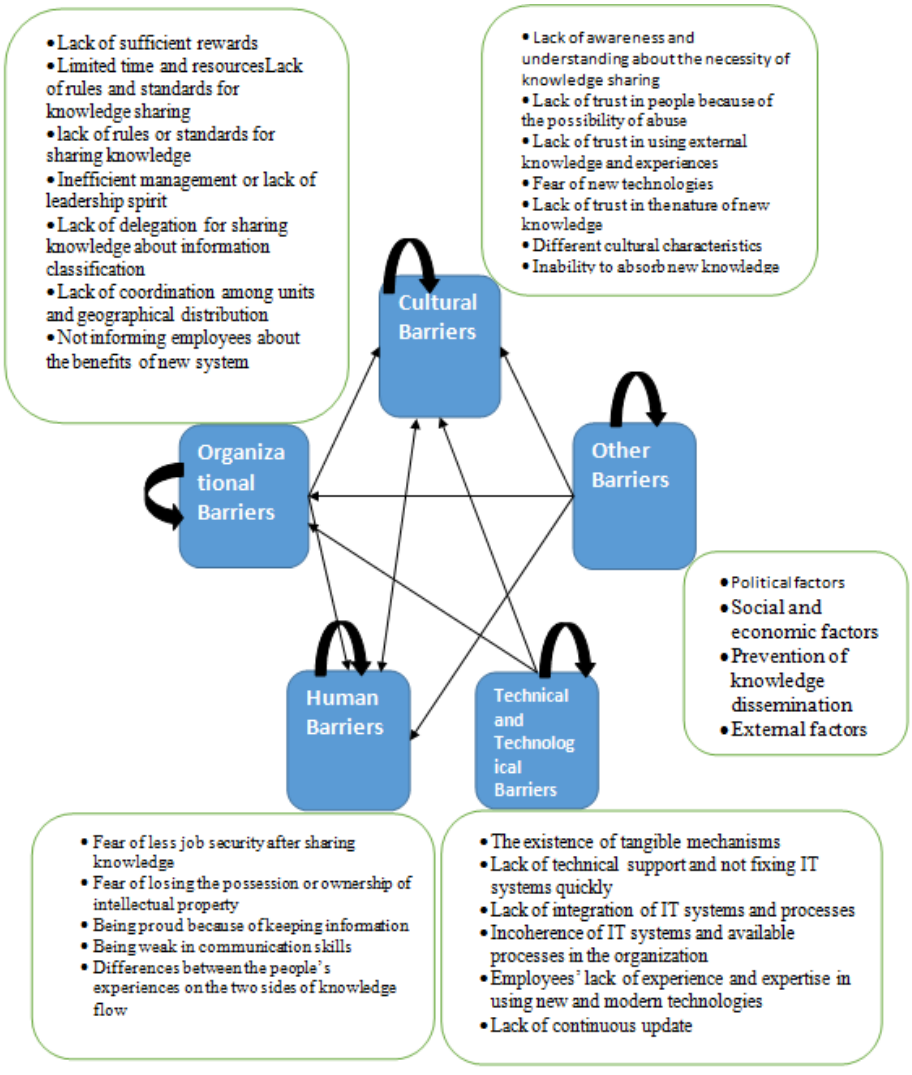

Figure 1: The Conceptual Model

Priorities in the Major Barriers

The matrix of pair-wise comparison of major barriers is obtained from the questionnaire as follows:

Table 9: Matrix of Pair-wise Comparison of Major Barriers

	Human barriers	Organizational barriers	Cultural barriers	Technical and technological barriers	Other barriers
Human barriers	1	6	5	8	7
Organizational barriers	0.17	1	0.25	3	2
Cultural barriers	0.20	4	1	5	2
Technical and technological barriers	0.13	0.33	0.20	1	0.50
Other barriers	0.14	0.50	0.50	2	1

Based on this table, the weights are obtained as follows:

Table 10: The Weights of Major Barriers

	Human barriers	Organizational barriers	Cultural barriers	Technical and technological barriers	Other barriers	Weights
Human barriers	0.61	0.51	0.72	0.42	0.56	0.56
Organizational barriers	0.10	0.08	0.04	0.16	0.16	0.11
Cultural barriers	0.12	0.34	0.14	0.26	0.16	0.21
Technical and technological barriers	0.08	0.03	0.03	0.05	0.04	0.05
Other barriers	0.09	0.04	0.07	0.11	0.08	0.08

Therefore, according to the AHP methods, the priorities in the major barriers to KM are as follows:

Table 11: Priorities in the Major Barriers to KM

Priorities	Main barriers	Weights
1	Human barriers	0.56
2	Cultural barriers	0.21
3	Organizational barriers	0.11
4	Othr barriers	0.08
5	Technical and technological barriers	0.05

Priorities in the Minor Human Barriers

The minor human barriers are:

- Fear of less job security after sharing knowledge
- Fear of losing the possession or ownership of intellectual property
- Being proud because of keeping information
- Being weak in communication skills
- Differences between the people's experiences on the two sides of knowledge flow
- Differences between people' languages

To do the AHP analysis, the pair-wise matrix is formed based on the questionnaire:

Table 12: The Pair-wise Comparison Matrix of Human Barriers

	Fear of less job security after sharing knowledge	**Fear of losing the possession or ownership of intellectual property**	**Being proud because of keeping information**	**Being weak in communication skill**	**Differences between the people's experiences on the two sides of knowledge flow**	**Differences between people' languages**
Fear of less job security after sharing knowledge	1	8	7	6	4	8
Fear of losing the possession or ownership of intellectual property	0.13	1	4	3	2	4
Being proud because of keeping information	0.14	0.25	1	3	0.50	4
Being weak in communication skills	0.17	0.33	0.33	1	0.33	5
Differences between the people's experiences on the two sides of knowledge flow	0.25	0.50	2	3	1	6
Differences between people' languages	0.13	0.25	0.25	0.20	0.17	1

Based on this matrix, the weights are determined as follows:

Table 13: The Weights of Human Barriers

	Fear of less job security after sharing knowledge	**Fear of losing the possession or ownership of intellectual property**	**Being proud because of keeping information**	**Being weak in communication skill**	**Differences between the people's experiences on the two sides of knowledge flow**	**Differences between people' languages**	**Weights**
Fear of less job security after sharing knowledge	0.55	0.77	0.48	0.37	0.50	0.29	0.49
Fear of losing the possession or ownership of intellectual property	0.07	0.10	0.27	0.19	0.25	0.14	0.17
Being proud because of keeping information	0.08	0.02	0.07	0.19	0.06	0.14	0.09
Being weak in communication skill	0.09	0.03	0.02	0.06	0.04	0.18	0.07
Differences between the people's experiences on the two sides of knowledge flow	0.14	0.05	0.14	0.19	0.13	0.21	0.14
Differences between people' languages	0.07	0.02	0.02	0.01	0.02	0.04	0.03

Therefore, the priorities in the human barriers are as follows:

Table 14: Priorities in the Human Barriers

Priorities	Human barriers	Weights
1	Fear of less job security after sharing knowledge	0.49
2	Fear of losing the possession or ownership of intellectual property	0.17
3	Being proud because of keeping information	0.14
4	Being weak in communication skill	0.09
5	Differences between the people's experiences on the two sides of knowledge flow	0.07
6	Differences between people' languages	0.03

Priorities in the Minor Organizational Barriers

The minor organizational barriers to KM are:

- Lack of sufficient rewards
- Limited time and resources
- Lack of rules and standards for knowledge sharing
- Inefficient management or lack of leadership spirit
- Lack of delegation for sharing knowledge about information classification
- Lack of coordination among units and geographical distribution
- Not informing employees about the benefits of new system

The pair-wise comparison matrix is as follows:

Table 15: The Pair-wise Comparison Matrix of Organizational Barriers

	Lack of sufficient rewards	**Limited time and resources**	**Lack of rules and standards for knowledge sharing**	**Inefficient management or lack of leadership spirit**	**Lack of delegation for sharing knowledge about information classification**	**Lack of coordination among units and geographical distribution**	**Not informing employees about the benefits of new system**
Lack of sufficient rewards	1	0.25	0.50	0.20	4	3	5
Limited time and resources	4	1	2	0.50	6	4	5
Lack of rules and standards for knowledge sharing	2	0.50	1	0.25	5	2	3
Inefficient management or lack of leadership spirit	5	2	4	1	7	5	8
Lack of delegation for sharing knowledge about information classification	0.25	0.17	0.20	0.14	1	3	2
Lack of coordination among units and geographical distribution	0.33	0.25	0.50	0.20	0.33	1	2
Not informing employees about the benefits of new system	0.20	0.20	0.33	0.13	0.50	0.50	1

Based on the above matrix, the weights are:

Table 16: The Weights of Organizational Barriers

	Lack of sufficient rewards	**Limited time and resources**	**Lack of rules and standards for knowledge sharing**	**Inefficient management or lack of leadership spirit**	**Lack of delegation for sharing knowledge about information classification**	**Lack of coordination among units and geographical distribution**	**Not informing employees about the benefits of new system**	**Weights**
Lack of sufficient rewards	0.08	0.06	0.06	0.08	0.17	0.16	0.19	0.11
Limited time and resources	0.31	0.23	0.23	0.21	0.25	0.22	0.19	0.23
Lack of rules and standards for knowledge sharing	0.16	0.11	0.12	0.10	0.21	0.11	0.12	0.13
Inefficient management or lack of leadership spirit	0.39	0.46	0.47	0.41	0.29	0.27	0.31	0.37
Lack of delegation for sharing knowledge about information classification	0.02	0.04	0.02	0.06	0.04	0.16	0.08	0.06
Lack of coordination among units and geographical distribution	0.03	0.06	0.06	0.08	0.01	0.05	0.08	0.05
Not informing employees about the benefits of new system	0.02	0.05	0.04	0.05	0.02	0.03	0.04	0.03

Therefore, the priorities in the organizational barriers are as follows:

Table 17: Priorities in the Organizational Barriers

Priorities	Minor organizational barriers	Weights
1	Inefficient management or lack of leadership spirit	0.37
2	Limited time and resources Lack of rules and standards for knowledge sharing	0.23
3	lack of rules or standards for sharing knowledge	0.13
4	Lack of sufficient rewards	0.11
5	Lack of delegation for sharing knowledge about information classification	0.06
6	Lack of coordination among units and geographical distribution	0.05
7	Not informing employees about the benefits of new system	0.03

Priorities in the Minor Cultural Barriers

The minor cultural barriers are as follows:

- Lack of awareness and understanding about the necessity of knowledge sharing
- Lack of trust in people because of the possibility of abuse
- Lack of trust in using external knowledge and experiences
- Fear of new technologies
- Lack of trust in the nature of new knowledge
- Different cultural characteristics
- Inability to absorb new knowledge

The pair-wise comparison matrix is as follows:

Table 18: The Pair-wise Comparison Matrix of Cultural Barriers

	Lack of awareness and understanding about the necessity of knowledge sharing	**Lack of trust in people because of the possibility of abuse**	**Lack of trust in using external knowledge and experiences**	**Fear of new technologies**	**Lack of trust in the nature of new knowledge**	**Different cultural characteristics**	**Inability to absorb new knowledge**
Lack of awareness and understanding about the necessity of knowledge sharing	1	0.33	0.17	0.20	0.14	0.13	0.25
Lack of trust in people because of the possibility of abuse	3	1	0.25	0.33	0.20	0.17	0.50
Lack of trust in using external knowledge and experiences	6	4	1	2	0.25	0.20	3
Fear of new technologies	5	3	0.50	1	0.50	0.25	2
Lack of trust in the nature of new knowledge	7	5	4	2	1	0.50	4
Different cultural characteristics	8	6	5	4	2	1	6
Inability to absorb new knowledge	4	2	0.33	0.50	0.25	0.17	1

Based on the matrix, the weights are:

Table 19: The Weights of Cultural Barriers

	Lack of awareness and understanding about the necessity of knowledge sharing	**Lack of trust in people because of the possibility of abuse**	**Lack of trust in using external knowledge and experiences**	**Fear of new technologies**	**Lack of trust in the nature of new knowledge**	**Different cultural characteristics**	**Inability to absorb new knowledge**	**Weights**
Lack of awareness and understanding about the necessity of knowledge sharing	0.03	0.02	0.01	0.02	0.03	0.05	0.01	0.03
Lack of trust in people because of the possibility of abuse	0.09	0.05	0.02	0.03	0.05	0.07	0.03	0.05
Lack of trust in using external knowledge and experiences	0.18	0.19	0.09	0.20	0.06	0.08	0.18	0.14
Fear of new technologies	0.15	0.14	0.04	0.10	0.12	0.10	0.12	0.11
Lack of trust in the nature of new knowledge	0.21	0.23	0.36	0.20	0.23	0.21	0.24	0.24
Different cultural characteristics	0.24	0.28	0.44	0.40	0.46	0.42	0.36	0.37
Inability to absorb new knowledge	0.12	0.09	0.03	0.05	0.06	0.07	0.06	0.07

Thus, the priorities in the minor cultural barriers to KM are as listed:

Table 20: The Priorities in the Cultural Barriers

Priorities	**Minor cultural barriers**	**Weights**
1	Different cultural characteristics	0.37
2	Lack of trust in the nature of new knowledge	0.24
3	Lack of trust in using external knowledge and experiences	0.14
4	Fear of new technologies	0.11
5	Inability to absorb new knowledge	0.07
6	Lack of trust in people because of the possibility of abuse	0.05
7	Lack of awareness and understanding about the necessity of knowledge sharing	0.03

Priorities in the Minor Technical and Technological Barriers

The minor technical and technological barriers to KM are:

- The existence of tangible mechanisms
- Lack of technical support and not fixing IT systems quickly
- Lack of integration of IT systems and processes
- Incoherence of IT systems and available processes in the organization
- Employees' lack of experience and expertise in using new and modern technologies
- Lack of continuous update

The pair-wise comparison matrix is as follows:

Table 21: The Pair-wise Comparison Matrix of Technical and Technological Barriers

	The existence of tangible mechanisms	**Lack of technical support and not fixing IT systems quickly**	**Lack of integration of IT systems and processes**	**Incoherence of IT systems and available processes in the organization**	**Employees' lack of experience and expertise in using new and modern technologies**	**Lack of continuous update**
The existence of tangible mechanisms	1	4	0.50	0.33	6	5
Lack of technical support and not fixing IT systems quickly	0.25	1	0.25	0.20	3	2
Lack of integration of IT systems and processes	2	4	1	0.50	7	6
Incoherence of IT systems and available processes in the organization	3	5	2	1	8	7
Employees' lack of experience and expertise in using new and modern technologies	0.17	0.33	0.14	0.13	1	0.50
Lack of continuous update	0.20	0.50	0.17	0.14	2	1

Based on the matrix, the weights are:

Table 22: The Weights of Technical and Technological Barriers

	The existence of tangible mechanisms	**Lack of technical support and not fixing IT systems quickly**	**Lack of integration of IT systems and processes**	**Incoherence of IT systems and available processes in the organization**	**Employees' lack of experience and expertise in using new and modern technologies**	**Lack of continuous update**	**Weights**
The existence of tangible mechanisms	0.15	0.27	0.12	0.14	0.22	0.23	0.19
Lack of technical support and not fixing IT systems quickly	0.04	0.07	0.06	0.09	0.11	0.09	0.08
Lack of integration of IT systems and processes	0.30	0.27	0.25	0.22	0.26	0.28	0.26
Incoherence of IT systems and available processes in the organization	0.45	0.34	0.49	0.43	0.30	0.33	0.39

Employees' lack of experience and expertise in using new and modern technologies	0.03	0.02	0.04	0.05	0.04	0.02	0.03
Lack of continuous update	0.03	0.03	0.04	0.06	0.07	0.05	0.05

Therefore, the priorities in the minor technical and technological barriers to KM are:

Table 23: The Priorities in the Technical and Technological Barriers

Priorities	Technical and technological barriers	Weights
1	Incoherence of IT systems and available processes in the organization	0.39
2	Lack of integration of IT systems and processes	0.26
3	The existence of tangible mechanisms	0.19
4	Lack of technical support and not fixing IT systems quickly	0.08
5	Lack of continuous update	0.05
6	Employees' lack of experience and expertise in using new and modern technologies	0.03

The Priorities in the Other Barriers to KM

The other barriers to KM are:

- Political factors
- Social and economic factors
- Prevention of knowledge dissemination
- External factors

The pair-wise comparison matrix is as follows:

Table 24: The Pair-wise Comparison Matrix of Other Barriers

	Political factors	Social and economic factors	Prevention of knowledge dissemination	External factors
Political factors	1	8	3	5
Social and economic factors	0.13	1	0.25	0.50
Prevention of knowledge dissemination	0.33	4	1	2
External factors	0.20	2	0.50	1

Therefore, the weights are:

Table 25: The Weights of Other Barriers

	Political factors	Social and economic factors	Prevention of knowledge dissemination	External factors	Weights
Political factors	0.60	0.53	0.63	0.59	0.59
Social and economic factors	0.08	0.07	0.05	0.06	0.06
Prevention of knowledge dissemination	0.20	0.27	0.21	0.24	0.23
External factors	0.12	0.13	0.11	0.12	0.12

Thus, the priorities in the other barriers to KM are as follows:

Table 26: The Priorities in the Other Barriers to KM

Priorities	Other barriers	Weights
1	Political factors	0.59
2	Prevention of knowledge dissemination	0.23
3	External factors	0.12
4	Social and economic factors	0.06

Discussion

In the present study, the relationships between the barriers to KM in IRIA are investigated. Having extracted the data from a questionnaire which was distributed to 59 IRIA commanders, the DEMATEL method was used to develop the conceptual model of the barriers obtained from the literature. We found out that the human and cultural barriers to KM have the most interaction with the other barriers in IRIA and receive the highest influence from them. Moreover, technical and technological barriers as well as organizational barriers exert the highest influence. Finally, using the AHP method, the major and minor barriers are prioritized as follows:

Weights	Minor barriers	Weights	Main barriers
0.49	Fear of less job security after sharing knowledge	0.56	Human barriers
0.17	Fear of losing the possession or ownership of intellectual property		
0.14	Being proud because of keeping information		
0.09	Being weak in communication skill		
0.07	Differences between the people's experiences on the two sides of knowledge flow		
0.03	Differences between people' languages		
0.37	Inefficient management or lack of leadership spirit	0.11	Organizational barriers
0.23	Limited time and resources Lack of rules and standards for knowledge sharing		
0.13	lack of rules or standards for sharing knowledge		
0.11	Lack of sufficient rewards		
0.06	Lack of delegation for sharing knowledge about information classification		
0.05	Lack of coordination among units and geographical distribution		
0.03	Not informing employees about the benefits of		

	new system		
0.37	Different cultural characteristics	0.21	Cultural barriers
0.24	Lack of trust in the nature of new knowledge		
0.14	Lack of trust in using external knowledge and experiences		
0.11	Fear of new technologies		
0.07	Inability to absorb new knowledge		
0.05	Lack of trust in people because of the possibility of abuse		
0.03	Lack of awareness and understanding about the necessity of knowledge sharing		
0.39	Incoherence of IT systems and available processes in the organization	0.05	Technical and technological barriers
0.26	Lack of integration of IT systems and processes		
0.19	The existence of tangible mechanisms		
0.08	Lack of technical support and not fixing IT systems quickly		
0.05	Lack of continuous update		
0.03	Employees' lack of experience and expertise in using new and modern technologies		
0.59	Political factors	0.08	Other barriers
0.23	Prevention of knowledge dissemination		
0.12	External factors		
0.06	Social and economic factors		

Suggestions

The findings of this study reveal that the implementation of KM in IRIA faces human, organizational, cultural, technical and technological, and other barriers (e.g. political, social, economic factors, etc). To overcome these barriers and creating an optimum context for KM in IRIA, the following suggestions are offered:

1. We suggest that practical measures for reaching a desirable implementation condition for KM in IRIA should be investigated.
2. As human and cultural barriers have the most interaction with the other barriers, we suggest that necessary measures should be taken in order to improve them.
3. Since the technical and technological barriers exert the highest influence on the other barriers, necessary technical and technological infrastructures for KM implementation in IRIA should be examined and codified.
4. KM in other similar organizations should be studied in order to learn from their experiences.

The barriers to KM implementation in IRIA and other military organizations should be investigated to offer a comprehensive model for it.

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