Research Article

Information Technology Resources and Knowledge Management in Competitive Advantage with the Mediating Role of Organizational Commitment (Case Study: Tile and Ceramic Company)

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Abstract: Information technology resources and knowledge management in competitive advantages with mediating role of organizational commitment (case study: tile and ceramic company) has been examined in this study. The researcher tries to explain this issue in ceramic and tile companies using statistical analysis of data collected through the questionnaire as well as structural equation and SPSS and PLS software. The statistical society consisted of employers and managers at Tile and Ceramic Company and 96 subjects were selected as samples among them. In this study, the effect of information technology resources on knowledge creation, knowledge sharing, knowledge use, and knowledge saving with mediating role of organizational commitment on samples and finally the role of knowledge management on competitive advantages have been evaluated. According to the results of this study, some of the hypotheses are not significant; i.e., there is no significant and direct relationship between information technology resources and knowledge creation, knowledge sharing, knowledge use, and knowledge saving with mediating role of organizational commitment. Also, knowledge management affects the competitive advantage acquisition.

Keywords: Knowledge Management, Information Technology, Competitive Advantages, Organizational Commitment, Tile, and Ceramic Industries

1. Introduction

Nowadays, one of the obvious concerns in organizations is extending science more and more. Among the significant changes in the field of management, sciences are updating and emerging of phenomena such as knowledge management and organizational competitive advantage. To achieve success in an organization, knowledge is an important asset managed to gain a competitive advantage. Concerning that all level of knowledge management is a new concept in the information technology industry, every organization or company needs to thoroughly study such an issue to be sustainable and stable in the competitive market and gain more profit. Today, most Iranian organizations try to distinguish themselves from others by increasing their organizations' knowledge to gain a higher level of efficiency and innovation. In dealing with Competitive and changeable situations, organizations have found the high value of knowledge. In today's organizations, knowledge is one of the key factors for success and its value has been evident more in business organizations. Most organizations try to apply and involve the knowledge of all employers in the level of organization to meet the organization's goals; therefore, knowledge capital management is an inevitable issue. Nowadays, knowledge management is one of the competitive and sustainable advantages of organizations involved in technology and this is becoming more important, especially in the field of information technology, as one of the most important sciences and technologies in the age of communication. The high-tech industry is a highly professional field with high technology. Advanced industries can be described in particular and in general as one of the most important, complex, and multifaceted parts of the current economy and the system of social and economic life in the world. Knowledge management is a process by which organizations are organized and developed and then their knowledge is shared to gain competitive advantages.

According to the mentioned explanations, organizations gain some advantages through savings derived from the use of diverse technology and economics. As a result, technology is one of the factors of globalization and thus causes the prosperity of technology. Therefore, technology knowledge management is essential. According to the mentioned explanations, organizations gain some advantages through savings derived from the use of diverse technology and economics. As a result, technology is one of the factors of globalization and thus causes the prosperity of technology. Therefore, technology knowledge management is essential. In the current turbulent era, Organizations are moving towards specialization and continue their activities in close competition. To survive, in addition to tools and equipment, high commitment human resources as the main and most necessary factor is needed (Pouri and Kasraei, 2015).

Organizational commitment is an important professional and organizational attitude which has been changed in recent decades especially in the field of business such as merging companies. For this purpose, managers of organizations have paid special attention to this commitment. And it has been given great importance as one of the basic attitudes that are related to the flow of knowledge in the organization.

Today, managers try to seek solutions to be distinguished from other competitors and gain the marketplace. For this purpose, some scientific topics such as knowledge management, information technology, and organizational

commitment can be helpful. Accordingly, the key success factors are the internal factors controlled by an organization. Many organizations focus on the knowledge of customers, suppliers, competitors, etc., as well as invest heavily in information technology to seek the benefits them and try to improve their performance by developing knowledge management and information technology. Various studies have emphasized the effective role of information technology in the implementation of knowledge management. In this study, the mentioned topics are examined in Tile and Ceramic Company. This study aims to examine information technology resource and knowledge management on competitive advantages with mediating role of organizational commitment in Sadaf Tile and Ceramic Company of Ardekan.

2. Research Hypotheses

The following hypotheses are explained in this study:

- Information technology resources have a positive and significant effect on knowledge management practices.
- Information technology resources have a positive and significant effect on organizational commitment.
- Organizational commitment has a positive and significant effect on knowledge management.
- Knowledge management has a positive and significant effect on competitive advantage

3. Methodology

This study analyses the effect of information technology resource and knowledge management on competitive advantages in Tile and Ceramic Company and concerns the mediating role of organizational commitment based on theoretical principle and literature. This is an applied study in terms of purpose. Also, the method of study is descriptive-correlation. The statistical population refers to the whole group, people, events, and phenomena of interest of the researcher who intends to study them. The statistical population in this study consisted of all employers working in Sadaf Tile and Ceramic Company. The sample is a subset of a population that includes some elected members of the population. Determining the sample size is very important in generalizing the results to the population. In this study, a random sampling method has been used. Accordingly, 120 questionnaires were distributed. Among the distributed questionnaires, 104 were returned, according to which, the return rate of the questionnaire is 87%, and 96 of them were complete and the analysis is performed based on them. In this study, the library method has been used to collect the theoretical foundations. This method has been selected for studying the literature and reviewing the research background and opinions about the topic and also providing a suitable framework for studying the topic. Therefore, in completing the literature and the main hypotheses of the research, library resources including books, Persian and Latin articles, doctoral and master's degrees thesis, as well as Internet tools have been used. Also, a field study has been used to collect data to test the research hypotheses. Field studies include distribution and collecting questionnaires aimed to gain some information for rejecting or accepting the research hypotheses.

In this study, the questionnaire was used as a tool for data collection. The questionnaire consisted of two sections of general information including demographic data. This is a 5-Likert scale questionnaire (strongly disagree -1, disagree-2, no opinion -3, agree -4, and strongly agree -5) and consisted of 48 closed questions to measure IT resources, knowledge management, organizational commitment, and competitive advantage.

In this study, data extracted by questionnaire is processed using descriptive and inferential statistics. In the main research conducted on the data in descriptive statistics, central tendency indices such as mean and dispersion indices such as standard deviation have been used. Inferential statistics were also used to examine the relationships between variables and to test the research hypotheses, Kolmogorov-Smirnov tests, correlation coefficient, and structural equation method are included in addition to SPSS and PLS software.

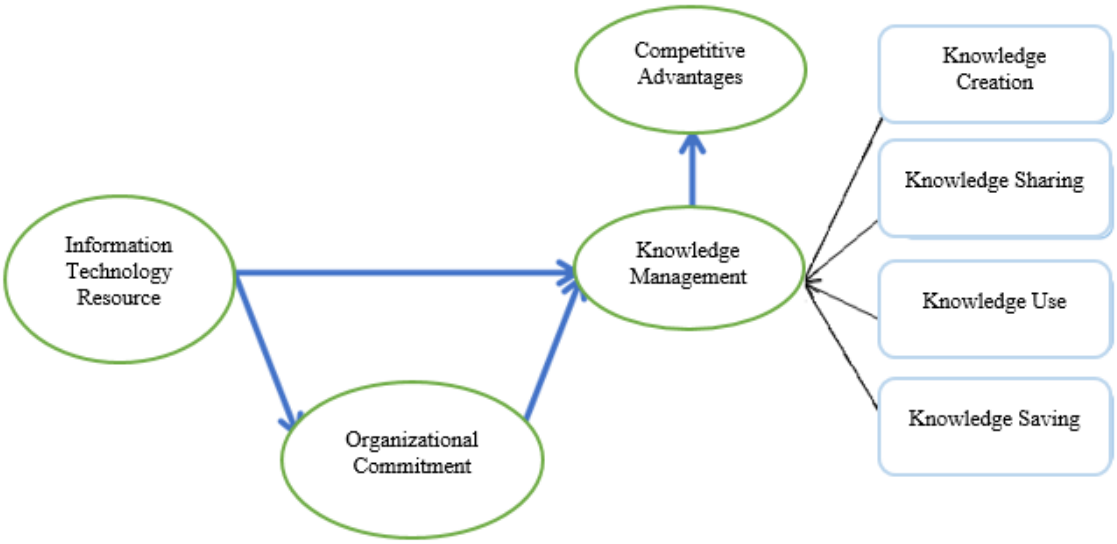

Figure 1- Conceptual Model of Study

4. Data Analysis

As mentioned earlier, the tool used in this study is a questionnaire consisting of two sections. The main part of the questionnaire consisted of some questions to evaluate information technology resources, organizational commitment, commitment, and dimensions of knowledge management. Descriptive statistics of variables are presented in Table (1)

Table 1. Descriptive Statistics of Research Variables

Variable	Mean	Standard Deviance	Skewness	Kurtosis	Minimum	Maximum
Information Technology Resource	3.373	0.798	-0.645	-0.075	1.00	5.00
Competitive Advantage	3.611	0.745	-0.663	0.670	1.33	5.00
Organizational Commitment	3.154	0.659	0.049	-0.288	1.71	4.71
Knowledge Management Practices	3.348	0.886	-0.48	-0.573	1.00	5.00

KMO is one of the studied indicators calculated in SPSS software and its results are shown in Table (2).

Table 2. Bartlett's Test and KMO

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.910
Bartlett's Test of Sphericity	Approx. Chi-Square	720.556
	Df	212
	Sig.	.000

According to Table (2) and the value of the KMO index, the obtained value is equal to 0.910 and is greater than 0.7; therefore, it is a significant number of Bartlett test (sig <0.05). Accordingly, the data are appropriate for performing factor analysis and have the necessary conditions.

Normality Test

The results of the Kolmogorov-Smirnov test for each variable are indicated in Table (3).

Table 3. Results of Kolmogorov-Smirnov Test

Variable	Probability of Kolmogorov-Smirnov Statistic	Kolmogorov-Simonov-z-statistic	Test Results
Information Technology	0.052	1.394	Normal

Organizational Commitment	0.409	0.899	Normal
Competitive Advantages	0.001	1.950	Abnormal
Knowledge Management Practices	0.008	1.85	Abnormal

The results of the Kolmogorov-Smirnov test show that the probability of test statistics for several research variables is less than 0.05 and indicates that the distribution of these variables is abnormal at the 95% confidence level; therefore, non-parametric tests should be used to analyze the relationships between variables.

- Correlation Test

Table (4) indicates the results of the correlation test between the variables. The results of the correlation test show that all variables at the 99% confidence level are positively and significantly related to each other. Findings indicate that the strongest relationship between variables is related to knowledge management practices with information technology with a correlation coefficient of 0.785 and the weakest relationship between organizational commitment and competitive advantage.

Table 4. Correlation between Variables

		1	2	3	4
1	**Information Technology Resource**	**1**			
2	**Competitive Advantages**	**0.724**	**1**		
3	**Organizational Commitment**	**0.778**	**0.648**	**1**	
4	**Knowledge Management Practices**	**0.785**	**0.682**	**0.724**	**1**

Testing of Research Hypotheses

The factor load of research indicators is shown in Table (5). As can be seen, the factor loads of all indicators are at the desired level and indicate the appropriateness of the studied indicators.

Table 5. Factor Load of Research Indicators

Knowledge management practices	Organizational commitment	Competitive advantages	Information technology resources	Constructs	Organizational commitment	Competitive advantages	Information technology resources	Constructs
0.833				**Q24**			0.746	**Q1**
0.748				**Q25**			0.832	**Q2**
0.830				**Q26**			0.870	**Q3**
0.769				**Q27**			0.871	**Q4**
0.824				**Q28**			0.841	**Q5**
0.881				**Q29**			0.822	**Q6**
0.889				**Q30**			0.764	**Q7**
0.833				**Q31**			0.789	**Q8**
0.749				**Q32**			0.759	**Q9**
0.801				**Q33**			0.882	**Q10**
0.666				**Q34**			0.870	**Q11**
0.884				**Q35**			0.839	**Q12**
0.828				**Q36**			0.839	**Q13**
0.840				**Q37**		0.905		**Q14**
0.857				**Q38**		0.919		**Q15**

0.864	**Q39**	0.868	**Q16**
0.812	**Q40**	0.842	**Q17**
0.835	**Q41**	0.671	**Q18**
0.586	**Q42**	0.861	**Q19**
0.595	**Q43**	0.873	**Q20**
0.602	**Q44**	0.562	**Q21**
0.672	**Q45**	0.848	**Q22**
0.727	**Q46**	0.600	**Q23**
0.703	**Q47**		
0.723	**Q48**		

Table 6. Indicators to Examine the Reliability of Research Model

Constructs	**Combined reliability**	**Cronbach alpha**
Information technology resource	0.965	0.961
Organizational commitment	0.910	0.884
Competitive advantages	0.926	0.880
Knowledge management practices	0.975	0.973

Table 7. The Average Extracted Variance of the Constructs

Constructs	**AVE**
Information technology resource	0.682
Organizational commitment	0.595
Competitive advantages	0.806
Knowledge management practices	0.611

Table 8. Cross-factor loadings of items

Constructs	Knowledge management practices	Organizational commitment	Competitive advantages	Information technology resources
Q1	0.660	0.656	0.552	0.746
Q2	0.742	0.618	0.573	0.832
Q3	0.775	0.715	0.613	0.870
Q4	0.803	0.667	0.667	0.871
Q5	0.722	0.730	0.688	0.841
Q6	0.785	0.613	0.561	0.822
Q7	0.642	0.594	0.613	0.764
Q8	0.725	0.642	0.610	0.789
Q9	0.716	0.683	0.579	0.758
Q10	0.808	0.705	0.622	0.882
Q11	0.798	0.666	0.622	0.870
Q12	0.719	0.747	0.677	0.839
Q13	0.794	0.656	0.562	0.839

Q14	0.625	0.638	0.905	0.625
Q15	0.669	0.652	0.919	0.745
Q16	0.575	0.594	0.869	0.617
Q17	0.658	0.842	0.730	0.712
Q18	0.456	0.671	0.292	0.459
Q19	0.658	0.861	0.641	0.718
Q20	0.697	0.873	0.721	0.751
Q21	0.409	0.653	0.270	0.424
Q22	0.640	0.848	0.581	0.690
Q23	0.426	0.600	0.351	0.520
Q24	0.833	0.678	0.584	0.810
Q25	0.784	0.662	0.558	0.778
Q26	0.830	0.647	0.457	0.742
Q27	0.796	0.486	0.490	0.665
Q28	0.824	0.634	0.586	0.805
Q29	0.881	0.684	0.544	0.821
Q30	0.889	0.638	0.520	0.784
Q31	0.833	0.656	0.584	0.797
Q32	0.794	0.650	0.571	0.732
Q33	0.801	0.677	0.563	0.762
Q34	0.666	0.573	0.538	0.596
Q35	0.844	0.660	0.526	0.780
Q36	0.828	0.575	0.512	0.718
Q37	0.840	0.570	0.522	0.734
Q38	0.857	0.603	0.698	0.771
Q39	0.864	0.610	0.603	0.798
Q40	0.812	0.645	0.613	0.762
Q41	0.835	0.577	0.553	0.735
Q42	0.586	0.377	0.316	0.436
Q43	0.595	0.421	0.245	0.422
Q44	0.602	0.462	0.328	0.480
Q45	0.672	0.433	0.429	0.587
Q46	0.727	0.519	0.487	0.605
Q47	0.703	0.484	0.425	0.621
Q48	0.723	0.561	0.517	0.657

According to Table (9), the *Fornell-Locker* index is used to evaluate the relationship between the construct and its items in comparison with the relationship between that construct and other constructs. Based on this index, the acceptable validity of a model indicates that one construct has more interaction with its characteristics than with other constructs. Divergent validity is at an acceptable level when the amount of variance extracted for each construct is greater than the common variance of that construct and other constructs (squared value of correlation coefficients between structures) in the model. A matrix is used for examining this issue whose cells in the matrix

contain the values of the correlation coefficients between the constructs and the square root of the AVE values for each construct. The model has an acceptable divergent validity if the numbers in the original diameter are higher than their lower values (Davari and Rezazadeh, 2013).

Table 9. Fornell-Locker Method

Constructs	Knowledge management practices	Organizational commitment	Competitive advantages	Information technology resource
Information technology resource				**0.826**
Organizational commitment			**0.898**	**0.744**
Competitive advantages		**0.771**	**0.700**	**0.811**
Knowledge management practices	**0.782**	**0.794**	**0.666**	**0.904**

-Confirmation Factor Analysis of Model

According to the values of t-statistic and factor loads, the significance of the observed variables has been confirmed. What can be deduced from Table (10) is that all observed variables have a suitable factor load and a significant level.

Table 10. Confirmatory Analysis Method

Significance (T-Values)	Factor Load	observed Variable
13.062	**0.744**	**Q1**
20.201	**0.833**	**Q2**
30.097	**0.870**	**Q3**
33.153	**0.872**	**Q4**
16.438	**0.838**	**Q5**
21.374	**0.825**	**Q6**
16.309	**0.763**	**Q7**
18.578	**0.789**	**Q8**
15.847	**0.757**	**Q9**
33.900	**0.882**	**Q10**
33.872	**0.871**	**Q11**
23.685	**0.836**	**Q12**
25.590	**0.841**	**Q13**
36.950	**0.904**	**Q14**
50.390	**0.920**	**Q15**
25.609	**0.868**	**Q16**
23.165	**0.842**	**Q17**
8.575	**0.673**	**Q18**
29.435	**0.860**	**Q19**
34.387	**0.873**	**Q20**
7.801	**0.655**	**Q21**
24.106	**0.847**	**Q22**
8.068	**0.596**	**Q23**
53.267	**0.901**	**Q24**
21.341	**0.823**	**Q25**
24.266	**0.867**	**Q26**
16.912	**0.807**	**Q27**
44.084	**0.893**	**Q28**

46.528	**0.920**	**Q29**
40.841	**0.913**	**Q30**
19.568	**0.833**	**Q31**
29.452	**0.862**	**Q32**
27.191	**0.860**	**Q33**
9.479	**0.685**	**Q34**
31.401	**0.867**	**Q35**
30.572	**0.861**	**Q36**
35.762	**0.880**	**Q37**
41.812	**0.908**	**Q38**
34.029	**0.895**	**Q39**
33.323	**0.885**	**Q40**
42.864	**0.902**	**Q41**
13.100	**0.781**	**Q42**
18.271	**0.833**	**Q43**
13.415	**0.782**	**Q44**
23.761	**0.855**	**Q45**
20.336	**0.791**	**Q46**
16.654	**0.743**	**Q47**
16.438	**0.751**	**Q48**

Table 11. Fitting Results of Structural Model

Construct			Coefficient of determination	Significance level	t Statistic	Route coefficient
Information technology resource	→	Organizational commitment	0.657	0.000	26.280	0.811
Information technology resource	→	Knowledge management practice	0.819	0.000	12.636	0.866
Organizational commitment	→	Knowledge management practice		0.547	0.603	0.047
Knowledge management practice	→	Competitive advantages	0.444	0.000	12.534	0.666

Coefficients of t and their significance level indicate that information technology resources with an impact factor of 0.811 positively and significantly affect organizational commitment at confidence level 95% and the coefficient of determination of this relationship also indicates that technology resources Information can explain about 65.7% of changes in organizational commitment. According to the findings, information technology resources with an impact factor of 0.866 positively and significantly affect knowledge management practices. But the effect of organizational commitment on knowledge management practices is not statistically significant and accordingly, the third hypothesis of the research is rejected at the 95% confidence level. The coefficient of determination also indicates that information technology resources and organizational commitment explain about 81.9% of changes in knowledge management practices. In addition, the findings indicate that knowledge management practices with an impact factor of 0.666 have a positive and significant effect on gaining a competitive advantage at a confidence level of 95% and the coefficient of determination of this relationship also indicates that knowledge management practices can explain about 44.4% of changes in competitive advantage.

The structural equation model and the t-value model are indicated in Figure 4-1 and Figure 4-2.

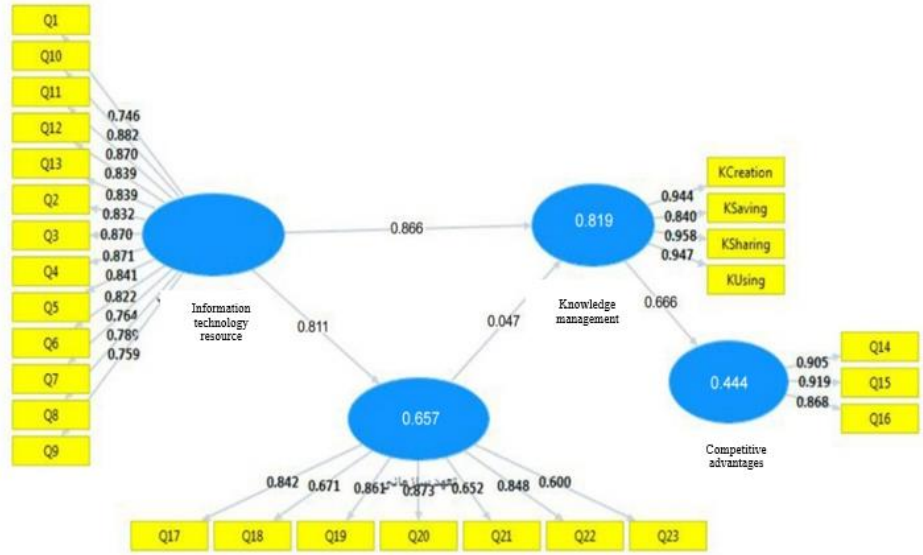

Figure 2- Structural equation model

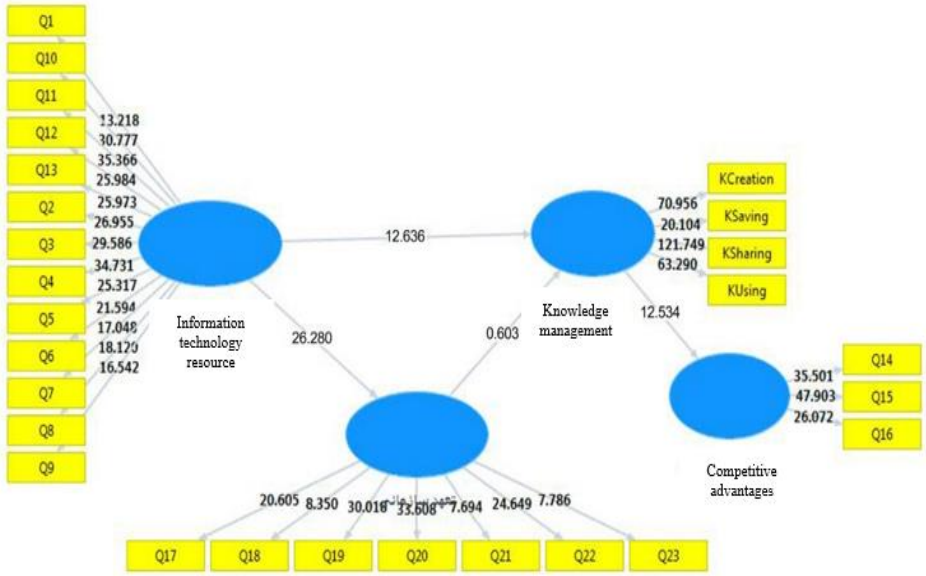

Figure 3- Statistical values model

Table 12. Direct Effects of Latent Variables on Each Other

Total			
	SSO	**SSE**	**Q^2(=1-SEE/SSO)**
information technology	1248.000	1248.000	
Organizational commitment	672.000	416.134	0.381
Knowledge management practices	384.000	121.619	0.683
Competitive advantages	288.000	190.384	0.339

According to the obtained values, the *index* of *predictive power* (Q2) is moderate and strong. According to positive values of quality indicators of the model (SSO and SSE), the structural model has a suitable quality.

5- Conclusion

For knowledge creation, various software such as idea generation and Ideafisher software have entered the market to motivate an individual or a group to generate new ideas and solutions. All organizations, especially given the results of hypotheses in the tile and ceramic industry, must have a new knowledge creation process. The

creation of new knowledge can be achieved in two ways, depending on whether the knowledge is obvious or hidden, and depending on whether the source is internal or external:

1. Acquiring knowledge from external sources of the organization, for example by purchasing knowledge, hiring experts, or the right to use certifications.
2. Creating knowledge within the organization, for example through formal research activities, expertise gained from experience, etc. This process is essential for the future performance of the organization. Of course, all the arguments of an organization can create some knowledge and will affect its competitive advantage to different degrees.

Organizational memory includes knowledge contained in documents, information stored in electronic databases, human knowledge encoded in expert systems, documented organizational procedures and processes, and hidden knowledge gained through individuals and interpersonal networks. Advanced storage and retrieval technologies such as query languages, multimedia databases, and database management systems can be effective tools in increasing organizational memory. These tools will increase the speed of access to corporate memory. Groupware enables organizations to create inter-organizational memory in the form of structured and unstructured information and to distribute this memory across time and space. For this purpose, information technology can play an important role in increasing and expanding organizational memory. Many memory consulting companies have created a meaningful organization by creating extensive repositories of knowledge about customers, projects, competition, and the tile and ceramic industry.

According to the results of this study, information technology in knowledge management can be used for storing all kinds of information. For example, information about processes, procedures, predictors, Organizational issues, and utilization rights can be stored in knowledge management systems.

Knowledge transfer occurs at different levels of an organization: between individuals, from individuals to explicit resources, from individuals to groups, between groups, between groups, and from group to organization. Therefore, knowledge transfer to the places needed for the application is an important process of knowledge management in organizational environments. Communication processes and information flows facilitate knowledge transfer in organizations in the field of tile and ceramic industry.

Information technology can also increase the integration and use of knowledge by facilitating the acquisition, updating, and accessibility of organizational orientations. For example, many organizations are facilitating access to and maintenance of their organizational orientations (such as guidelines, policies, and standards) through organizational intranets. Also, organizational departments can learn faster by accessing the knowledge of other units through similar experiences. In addition, by increasing the number of internal social networks and also increasing the amount of available organizational memory, information technologies make it possible to apply knowledge at any time and place. Information technology can also increase the speed of integration and use of knowledge through encryption and automation of organizational procedures. Automation systems are examples of information technology applications that reduce the need for communication and coordination and enable more efficient use of organizational procedures through the timely and automated recording of business documents, information, regulations, and activities. Expert systems are other tools for acquiring and strengthening specified organizational practices. However, the knowledge created by the organization may be used internally through producing a product or providing a service, or externally through utilization right or providing consulting services.

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