To Study Predictability Knowledge Management Processes of Empowerment Dimensions in Esfahan Oil Refining Company

Mohammad Ali Shakki[1], Mansour Garkaz[2*], Mahmoud Dahghan[3]

[1]Department of Management, Aliabad Katoul Branch, Islamic Azad University, Aliabad Katoul, Iran
[2]Department of Management, Gorgan Branch, Islamic Azad University, Gorgan, Iran
[3]Department of Management, Central Tehran Branch, Islamic Azad University, Tehran, Iran

[*]Corresponding Author Email: m_garkaz@yahoo.com

Abstract: The aim of this research was to study predictability knowledge management processes of empowerment dimensions in Esfahan Oil Refining Company. This study was applied in terms of aim and in terms of nature, this was descriptive, survey and correlational. The population consists of all employees and managers having formal high school diploma in Isfahan Oil Refining Company. Two groups of managers and employees were analyzed separately. Through pre-test, questionnaire reliability of knowledge management processes were obtained 0.852 and the questionnaire reliability of enablers was 0.863 and the sample size was estimated 160 people among employees. Pearson correlation was used to analyze the data. The results showed that empowerment dimensions were able to predict knowledge management processes.

Keywords: Productivity, Human Resources, Job Motivation.

Introduction

Davenport and Prusak (1998) define knowledge management as an organizational specific and systematic process for acquiring, organizing, storing, use, sharing knowledge which renews implicit and explicit knowledge of individuals to improve organizational performance and value creation. Effective management of knowledge in the new economy is essential, because having a competitive advantage depends on the ability of companies to develop and expand their knowledge (Perez & Pablos, 2003). Knowledge management approaches mean that companies and organizations are seeking to create competitive advantages through continuous learning which obtain as a result of the formulation of different kinds of knowledge (Ignacio et al., 2008). Organizations to be successful and competitive in today's environment need to consider strategies adaptable and intelligent which contain procedures and knowledge management processes (Kangas, 2005). The culture has been as a platform for knowledge management and need multiple structures for success of knowledge management and knowledge sharing in the organization (Choi et al, 2005). Uncertainty which is as a result of constant changes in the component elements of the environment, many organizations and companies in the global competition have prompted to adopt a different behavior from what they have ever been proposed in theories. Evaluation of the factors used by successful

companies in order to stay effective in conditions of uncertainty administrators and experts to the process of (scientific) knowledge management model implementation has attracted. It should be noted that the establishment of model-based management involves understanding its basic concepts, the creation of appropriate infrastructure and attention to the risk factors that it may result in failing this process. Managers need to understand this issue how knowledge affects the organization how of their organization and consider their consideration. Managers are trying to improve organizational performance using the knowledge and gain market sharing. Knowledge management can be used to create commercial value, create competitive advantage, achieve business goals and develop more value from key business competencies (Tiwana, 2001).

Nevertheless, companies were interested to motivate students and they use knowledge as the greatest asset and the capital for decision making and strategy formulation (Keskin, 2005). Although it must be said that programs failed are much more than successful programs and this is due to the unexpected challenges in the development of knowledge management strategies and process. These challenges include identifying measurable knowledge management and its impact on organizational performance (Darroch, 2003). To improve organizational performance and successful relationship in global markets, organizations need efficient knowledge management, although the need for effective knowledge management is generally accepted, knowledge management is still a subjective concept and most of writings are seeking to explore this intangible issue (Darroch, 2003). Knowledge management has influenced the organization's needs, value systems, and management styles in a way that people work to consider knowledge management within the organization to achieve long-term returns. Organizations that want to be successful and grow, they need to better understand knowledge management (Davenport and Prusak, 1998). To be successful in the field of knowledge management, the necessary infrastructure should be adopted. Technology infrastructure, structure and culture are the main enablers of knowledge management and they have an important role in its success. Creating the necessary infrastructure has been the main pillars of successful knowledge management and organizations should have special attention to this issue.

Knowledge of infrastructure can help the organization in successful and practical implementation of knowledge management. Finally, by determining the relationship between enablers and sextet processes within the organization has obtained a deeper understanding of the degree of knowledge management processes and empowerment which can help managers in order to better and more effective use the benefits of knowledge management and have improvement of successful organizational performance and competitiveness. Therefore, the aim of this research was to study predictability knowledge management processes of empowerment dimensions in Esfahan Oil Refining Company.

Materials and Methods

This study was descriptive and correlational. The population consisted of all employees and managers having formal high school diploma and higher in Isfahan Oil Refining Company which 977 people were formal employees and 33 people were managers. According to Morgan and 156 subjects were selected randomly. By distributing the questionnaire and return, 160 questionnaires were analyzed. In this study, the independent variable of empowerment included three components: technology, structure and organization culture and dependent variables of knowledge management processes included six process variables of creation, capture, organization, storage, dissemination and application of knowledge. In the stage of performing the study, after providing a preliminary explanation about measurement instrument and the purpose of the test, how to answer test for participants were described in detail. On the ethical considerations after obtaining the consent of the people and giving necessary awareness, they were assured that information received will be used only to this study and they will be protected from any abuse. To measure the variables of the study, questionnaires will be used as below.

A questionnaire of assessing knowledge management processes: This part of the questionnaire assesses knowledge management processes from the perspective of employees and managers of Isfahan Oil Refinery Company. This part is based on the study of the literature and based on studies of Lawson (2003). Lawson (2003) by combining and refining processes in three different models, Wiig (1997), Parikh (2001) released his six steps. In this model, knowledge management processes include creation, capture, organization, storage, dissemination and application of knowledge. Lawson questionnaire (2003) used in this study consists of 24 questions. The questionnaire is designed based on the Likert scale and for five options. The range is extended from strongly agree to strongly disagree. 24 questions in this section are divided into six parts of four questions and each of the four questions is related to a process of processes from the processes of sextet and assesses the level of activity in each process.

Knowledge Management Enablers Questionnaire: This part of the questionnaire measures the perspective of administrators and staff of the enablers of knowledge management in Esfahan Oil Refining Company. In this section, enablers of knowledge management are measured by knowledge management enablers' scale of Lee and Choi (2003). This scale consists of three dimensions of enabler, including technology, organizational structure and culture. This section of the questionnaire is a five-item Likert scale which is extended from strongly agreement to strongly disagreement. Numbers 1 to 5 indicate responsive trends. High score (5) represents the complete agreement and low score (1) represents the question in its total opposition. The questionnaire contains 27 questions in relation to the three components of technology, structure and culture which of the 27 questions, the questionnaire consists of five primary questions related to technology, 10 questions related to the structure and 12 questions to organizational culture. The section of the organizational structure includes both the decentralization and recognition of the organization. Of 10 questions relating to the structure, 5 primary questions measure decentralization in the organization and 5 second questions assesses recognition in the organization. The validity of the questionnaire was approved by professors and experts. For reliability, Cronbach's alpha was used. The results showed that to the questionnaire of knowledge management processes, the alpha was equal to 0.852 and the questionnaire of enablers was equal to 0.863 indicating good reliability of measurement tools. Pearson correlation was used to analyze the data. In all analyses, the significance level of $P < 0.05$ was considered.

Results

The results of Kolmogorov - Smirnov test showed normal distribution of data ($P > 0.05$). To study the relationship between empowerment and knowledge management, Pearson correlation was used. The results are presented in Table 1. In this part, enablers of technology, structure and culture as an independent variable and the process of knowledge creation as a dependent variable are considered. Table 1 shows the results of variance test. As it is clear, in the first part, given that Sig is less than 5% H_0 is rejected and H_1 is accepted, as a result, the assumption of linearity of the relationship between two variables of enablers and knowledge creation process is confirmed. According to the data of the second part, since Sig of the test of the fixed value and regression coefficients of variables of technology and culture with the value of the zero is less than 5%, therefore, assuming the equality of the coefficients of the variables and constant value with the value of zero is rejected. In the case of structure variable, since Sig is more than 5%, as a result, this cannot be entered in equation. In other words, this variable has not been able to significantly enhance the predictive power. To compare the effects of three variables in the regression model on the dependent variable, knowledge creation process for column of standardized coefficients (Beta) shows that technology and culture have the highest effect, respectively. The regression equation is as follows:

$$\hat{y} = 2/401 + 0/246x_1 + 0/19x_3$$

Table 1. Regression between enablers and knowledge creation process.

Dependent Independent	The process of knowledge creation							
	First part				Second part			
	R	R^2	F	*Sig*	B	*Beta*	t	*Sig*
Fixed value	0.416	0.173	10.858	0.000	2.401	---	5.524	0.000
Technology					0.246	0.252	3.050	0.003
Structure					-0.227	-0.133	-1.79	0.075
Culture					0.190	0.191	2.347	0.020

In this part, technology enablers, structure and culture as an independent variables and the process of knowledge capture as a dependent variable are considered. The second sub-hypothesis is studied and regression relationship is determined and the impact of each of enablers is specified. Table 2 shows the results of variance test. As it is clear, in the first part, given that Sig is less than 5% H_0 is rejected and H_1 is accepted, as a result of the assumption of linearity of the relationship between two variables of enablers and the process of knowledge capture is confirmed. According to the data of the second part, since Sig of the test of the fixed value and regression coefficients of variables of structure and culture with the value of the zero is less than 5%, therefore, assuming the equality of the coefficients of the variables and constant value with the value of zero is rejected. In the case of technology variable, since Sig is more than 5%, as a result, this cannot be entered in equation. In other words, this variable has not been

able to significantly enhance the predictive power. To compare the effects of three variables in the regression model on the dependent variable, the process of knowledge capture for column of standardized coefficients (Beta) shows that culture and structure have the highest effect, respectively. The regression equation is as follows:

$$\hat{y} = 2/695 - 0/36x_2 + 0/396x_3$$

Table 2. Regression between enablers and the process of knowledge capture.

Dependent Independent	The process of knowledge capture							
	First part				Second part			
	R	R^2	F	Sig	B	$Beta$	t	Sig
Fixed value	0.439	0.193	12.449	0.000	2.695	---	5.608	0.000
Technology					0.07	0.064	0.788	0.432
Structure					-0.36	-0.189	-2.57	0.011
Culture					0.396	0.356	4.437	0.000

In this part, technology enablers, structure and culture as an independent variables and the process of knowledge organization as a dependent variable are considered. The third sub-hypothesis is studied and regression relationship is determined and the impact of each of enablers is specified. Table 3 shows the results of variance test. As it is clear, in the first part, given that Sig is less than 5% H_0 is rejected and H_1 is accepted, as a result of the assumption of linearity of the relationship between two variables of enablers and the process of knowledge organization is confirmed. According to the data of the second part, since Sig of the test of the fixed value and regression coefficients of variables of technology and culture with the value of the zero is less than 5%, therefore, assuming the equality of the coefficients of the variables and constant value with the value of zero is rejected. In the case of structure variable, since Sig is more than 5%, as a result, this cannot be entered in equation. In other words, this variable has not been able to significantly enhance the predictive power. To compare the effects of three variables in the regression model on the dependent variable, the process of knowledge capture for column of standardized coefficients (Beta) shows that technology and structure have the highest effect, respectively. The regression equation is as follows:

$$\hat{y} = 1/119 + 0/343x_1 + 0/29x_3$$

Table 3. Regression between enablers and the process of knowledge organization.

Dependent Independent	The process of knowledge organization							
	First part				Second part			
	R	R^2	F	Sig	B	$Beta$	t	Sig
Fixed value	0.495	0.245	16.89	0.000	1.119	---	2.388	0.018
Technology					0.343	0.312	3.946	0.000
Structure					-0.111	-0.058	-0.81	0.418
Culture					0.290	0.259	3.33	0.001

In this part, technology enablers, structure and culture as an independent variables and the process of knowledge storage as a dependent variable are considered. Table 4 shows the results of variance test. As it is clear, in the first part, given that Sig is less than 5% H_0 is rejected and H_1 is accepted, as a result, the assumption of linearity of the relationship between two variables of enablers and the process of knowledge organization is confirmed. According to the data of the second part, since Sig of the test of regression coefficients of variables of technology, structure and culture with the value of the zero is less than 5%, therefore, assuming the equality of the coefficients of the variables and constant value with the value of zero is rejected. In the case of fixed value, since Sig is more than 5%, as a result, this cannot be entered in equation. In other words, this variable has not been able to significantly enhance the predictive power. To compare the effects of three variables in the regression model on the dependent variable, the process of knowledge storage for column of standardized coefficients (Beta) shows that technology, culture and structure have the highest effect, respectively. The regression equation is as follows:

$$\hat{y} = 0/594x_1 + 0/282x_2 + 0/25x_3$$

Table 4. Regression between enablers and the process of knowledge storage.

Dependent	The process of knowledge storage							
Independent	First part				Second part			
	R	R^2	F	Sig	B	$Beta$	t	Sig
Fixed value	0.614	0.377	31.473	0.000	-0.313	---	-0.68	0.497
Technology					0.594	0.499	6.963	0.000
Structure					0.282	0.136	2.109	0.037
Culture					0.25	0.207	2. 93	0.004

In this part, technology enablers, structure and culture as an independent variables and the process of knowledge dissemination as a dependent variable are considered. Table 5 shows the results of variance test. As it is clear, in the first part, given that Sig is less than 5% H_0 is rejected and H_1 is accepted, as a result, the assumption of linearity of the relationship between two variables of enablers and the process of knowledge dissemination is confirmed. According to the data of the second part, since Sig of the test of the fixed value and regression coefficients of variables of technology with the value of the zero is less than 5%, therefore, assuming the equality of the coefficients of the variables and with the value of zero is rejected. In the case of coefficients of structure and culture variables, since Sig is more than 5%, as a result, this cannot be entered in equation. To compare the effects of three variables on the in the regression model on dependent variable, the process of knowledge dissemination for column of standardized coefficients (Beta) shows that technology has the highest effect. The regression equation is as follows.

$$\hat{y} = 1/557 + 0/655x_1$$

Table 5. Regression between enablers and the process of knowledge dissemination.

Dependent	The process of knowledge dissemination							
Independent	First part				Second part			
	R	R^2	F	Sig	B	$Beta$	t	Sig
Fixed value	0.591	0.349	27.932	0.000	1.557	---	3.682	0.000
Technology					0.655	0.612	8.344	0.000
Structure					-0.032	0.017	-0.26	0.792
Culture					0.065	-0.06	-0.82	0.41

In this part, technology enablers, structure and culture as an independent variables and the process of knowledge application as a dependent variable in are considered. Table 6 shows the results of variance test. As it is clear, in the first part, given that Sig is less than 5% H_0 is rejected and H_1 is accepted, as a result, the assumption of linearity of the relationship between two variables of enablers and the process of knowledge application is confirmed. According to the data of the second part, since Sig of the test of regression coefficients of variables of technology and culture with the value of the zero is less than 5%, therefore, assuming the equality of the coefficients of the variables with the value of zero is rejected. In the case of coefficients of structure variables, since Sig is more than 5%, as a result, this cannot be entered in equation. To compare the effects of three variables in the regression model on dependent variable, the process of knowledge application for column of standardized coefficients (Beta) shows that technology and culture have the highest effect. The regression equation is as follows:

$$\hat{y} = 0/441x_1 + 0/354x_3$$

Table 6. Regression between enablers and the process of knowledge application.

Dependent	The process of knowledge application							
Independent	First part				Second part			
	R	R^2	F	Sig	B	Beta	t	Sig
Fixed value	0.7	0.5	50.195	0.000	0.646	---	1.946	0.053
Technology					0.441	0.464	7.152	0.000
Structure					0.052	-0.032	-0.54	0.588
Culture					0.342	0.354	5.544	0.000

In this part, technology enablers, structure and culture as an independent variables and the process of knowledge management as a dependent variable are considered. Table 7 shows the results of variance test. As it is clear, in the first part, given that Sig is less than 5% H_0 is rejected and H_1 is accepted, as a result, the assumption of linearity of the relationship between two variables of enablers and the process of knowledge management is confirmed. According to the data of the second part, since Sig of the test of the fixed value and regression coefficients of variables of technology and culture with the value of the zero is less than 5%, therefore, assuming the equality of the coefficients of the variables with the value of zero is rejected. In the case of coefficients of structure variables, since Sig is more than 5%, as a result, this cannot be entered in equation. To compare the effects of three variables in the regression model on dependent variable, the process of knowledge management for column of standardized coefficients (Beta) shows that technology and culture have the highest effect. The regression equation is as follows:

$$\hat{y} = 1/351 + 0/392x_1 + 0/234x_3$$

Table 7. Regression between enablers and the process of knowledge management.

Dependent	The process of knowledge management							
Independent	First part				Second part			
	R	R^2	F	Sig	B	Beta	t	Sig
Fixed value	0.649	0.422	37.893	0.000	1.351	---	4.337	0.000
Technology					0.392	0.468	6.775	0.000
Structure					-0.083	-0.057	-0.92	0.358
Culture					0.234	0.275	4.042	0.000

Discussion and Conclusion

The aim of this research was to study predictability knowledge management processes of empowerment dimensions in Esfahan Oil Refining Company. The results showed that dimensions of empowerment are able to predict the processes of knowledge management. According to findings, it is suggested that the organization of the cooperation between people of the organization and people outside the organization is supported and knowledge of them is encouraged. The organization for knowledge acquisition can use to help knowledge of outside experts, other companies, organizations, stakeholders and customers.

Attending various conferences and seminars, newspaper, social gatherings, hiring consultants, studying related magazines and books, view of related videos, hiring new staff are paths for gaining knowledge. Many useful tools for acquiring knowledge are required. Traditional tools include word processor, words, spreadsheets, displaying email and software. New technologies such as voice recognition, video conferencing and shared workspaces to support the process of acquiring knowledge are used.

The organization to improve the process of organizing knowledge in explicit policies to evaluate existing knowledge induces updating and making practical to employees. Methods and mechanisms identified in the information technologies to filter, summarize, categorize and catalog the different types of knowledge are used. The organization should try to have three organized stages include the selection and assessment of knowledge organization, organizing and re-election, plans and specific methods. The organization should identify useful information by assessing their value and then based on practical learning organization needs they are encrypted.

Also, it is suggested that the organization support storing knowledge and information using computer and information systems. Also, the use of magazines, journals, reports and pamphlets can be helpful in storing knowledge. Creating organizational memory is another way to save knowledge. In the storage process knowledge,

experiences and documenting them for future use of them are very important. Security and protection system for the protection of information and knowledge are recommended. Knowledge storage systems should have a capacity to provide the required information accurately and clearly, and also they make possible their access to information. Knowledge not only should be based on the classification issue, but also it should be stored based on organization's objectives for continuous improvement and professional learning needs of employees and users. It is recommended that the organization facilitate the dissemination of knowledge in the organization using systems such as internet, intranet, and automation. Presenting reports from the organization for employees properly and correctly, creating libraries, study halls, conferences, regular meetings, lectures and training sessions, also job rotation and composition of the team and the formation of groups all can help facilitate knowledge in the organization. In the process of knowledge sharing, the role of culture infrastructure cannot be hidden and knowledge sharing culture in the organization should be governed. Tacit knowledge through communication of people particularly informal communication in the organization is transferred; as a result, the organization should support informal communication in the organization. Instead of the slogan "knowledge is power", the organization induces the slogan "sharing knowledge is power" to employees. The organization creates a culture of knowledge sharing, in which people have no fear and in exchange for this work, they also receive some rewards. Trust and incentives are two essential factors in knowledge sharing.

Application of knowledge includes the application of knowledge to support decision-making, action and solve the problem. This can result in the creation of knowledge. The organizations with established procedures develop the knowledge gained and use it in the future to create the template. Effective use of knowledge includes the use of knowledge of previous mistakes, the use of knowledge to solve new problems, adapt knowledge resources for issues, exploitation of knowledge to improve the efficacy, the use of knowledge available for setting strategic direction and knowledge sources to solve a problem. Managers should create conditions so that users can take advantage of existing knowledge. Working environment must support the application of new knowledge, and should encourage individuals and groups to access the company's intellectual property. The organization should attempt to destroy barriers to use of knowledge caused by blindness, fear of revealing their weakness and lack of public confidence in outside knowledge.

Conflict of interest
The authors declare no conflict of interest

References

Choi CJ, Cheng P, Hilton B, Russell E, 2005. Knowledge governance. Journal of knowledge management. 9(6): 67-75.

Darroch J, 2003. Developing a measure of knowledge management behaviors and practices. Journal of knowledge management. 7(5): 41-54.

Davenport TH, Prusak L, 1998. Working Knowledge: How Organization Manage What They Know. Boston: Harvard Business School Press.

Ignacio J, Rodrı´guez-Ruiz O, 2008. EFQM model: knowledge governance and competitive advantage. Journal of Intellectual Capital. 9(1): 133-156.

Kangas LM, 2005. An assessment of the relationship between organizational culture and continuous knowledge management initiatives. Doctoral Dessertation. Capella University.

Keskin H, 2005. The relationships between explicit and tacit oriented KM strategy and firm performance. Journal of American Academy of Business. 7(1): 169-175.

Lawson S, 2003. Examining the relationship between organizational culture and knowledge management. Doctoral dissertation. Nova Southeastern University.

Lee H, Choi B, 2003. Knowledge management enablers, Processes, and Organizational Performance: An integrative view and empirical examination. Journal of Management Information System. 20(1): 179-228.

Parikh M, 2001. Knowledge management framework for high-tech research and development. Engineering Management Journal. 13(3): 27-33.

Perez JR, Pablos PO, 2003. Knowledge management and organizational competitiveness: A framework for human capital analysis. Journal of Knowledge Management. 7(3): 82-91.

Tiwana A, 2001. The knowledge management toolkit: Practical techniques for building knowledge management system. Upper Saddle River. NJ: Prentice Hall. Inc.

Wiig KM, 1997. Knowledge management: Where did it come from and where will it go?. Expert Systems with Applications. 14.