

Investigating the Influence of Knowledge Management Processes on Organizational Learning in pp.r Pipe and Fittings Production Industrial

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Abstract: Objective of the present survey is to study the impact of knowledge management processes on organizational learning increase in pp.r pipe and fittings production Industrial. Therefore, it has been tried to examine the impact of key knowledge management processes (knowledge identification, knowledge dissemination, knowledge codification, knowledge transparency and knowledge reconstruction) on organizational learning increase through proposing appropriate hypotheses. This survey has been conducted using descriptive-field method and is of correlation type. The statistical population included employees and managers of companies in pp.r pipe and fittings production industrial. Descriptive statistics methods were used for data analysis to explain respondents' characteristics and correlation method and one-sample t-test were used to study the hypotheses. Obtained results illustrate all key knowledge management processes are effective on organizational learning increase.

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1. Introduction

The present age has unpredictable changes. Management status in our society demonstrates disequilibrium among increasing complexities of organizations and incapability of such organizations to predict these changes and complexities and confront them. Organizations must recognize their internal capabilities and capacities; reconstruct their weaknesses and reinforce strengths in order to confront with environmental threats and utilize the probable opportunities. Management problems are so complex that recognizing the problem is not possible easily and human nature of organizations and complexity of humans' behavior have intensified this complexity. Under such conditions those organizations are successful which could improve the ground for growth and dynamism and enhance the organization's performance while obtain extensive knowledge about environmental factors to maintain their survival. Knowledge management has been emphasized in many studies as the important factor to maintain organizational competitive advantage (Holsapple, 2005). Knowledge management programs shouldn't be separated from other organizational programs. Motivational processes and culture in knowledge management are one of the most important success factors. In other words knowledge management doesn't attain its purposes without human resources management (Allameh et al, 2012; Scarbrough & Kinnie, 2003). Knowledge management is one of the new concepts in management science and is one of

the vital resources for success of current organizations (Bollinger & Smith, 2006). Thus organizational science must be regarded as a strategic property in the organization (Safarzadeh et al, 2012). The existing knowledge in employees' mind, information systems and organizational culture are the most valuable organizational assets (Alstete, 2007).

It could be stated that encountering with all difficulties related to mental capitals besides other factors like changing of the population's age pyramid, unusual increasing of information volume and more specialized activities has been led to knowledge management phenomenon in recent decades of the previous century (Sinotte, 2004). Studies reveal only 30 percent of the existing knowledge is used in the organization in spite of increased importance of knowledge (Lehner & Maier, 2000) and cost intensive but preventable errors are occurred due to lack of access to the information. Risk of losing knowledge is more when individuals leave the organization (Sadoughi et al, 2012).

Knowledge management is related to the view of going beyond the organization's purposes by creating and developing knowledge assets of an organization and necessitates all activities that are related to knowledge identification, knowledge sharing and knowledge creation. This requires systems to create and maintain knowledge resources, knowledge training and facilitation and organizational learning. In this regard successful organizations consider knowledge as an asset and

develop organizational values and norms which support knowledge creation and sharing. Knowledge management deals with knowledge creation, knowledge sharing and imagination and tries to collect and manage dispersed knowledge in individuals to create a new knowledge (Malhotra, 2000). Given to the environmental uncertainty status with which organizations are faced at present learning situation must be provided for companies to maintain their competitive advantage for better business. Organizational learning provides suitable bases for structured knowledge to be developed in organizations. The organization must complete knowledge management processes well in order to develop learning capabilities. Organizations can't extend personal or group learning capabilities without knowledge management. It has been tried in this survey to study and determine knowledge management processes in the organizations under study by considering previous studies. Then those cases that enhance organizational learning would be identified among the determined processes.

2. Research literature

2.1. Knowledge management

Knowledge management is considered as an organized process to create, acquire and disseminate knowledge and utilize its leverage feature in order to maintain competitive advantage and obtain organizational purposes. One of the existing puzzles in knowledge management is the gap between the reality and theory. Universities have represented complicated and advanced researches about various advantages and experiences to use knowledge management without perceiving all its ambiguities. Gupta et al (2000) stated that knowledge management is a process which helps organizations find, select, plan, disseminate and transfer important information and necessary specialties for activities such as problem solving, dynamic learning, strategic planning and decision making. Liebowitz (2001) believes that recording, sharing, applying and creating knowledge in the organization are the best influence power in internal and external resources. Anyway knowledge management has been demonstrated as an active and formulized approach for managing and optimizing knowledge resources in the organization. Hansen et al (1999) introduced two codification and personalization approaches in an attempt to perceive knowledge management approach that organizations choose to implement. According to this approach knowledge is exploited from individuals, it is codified and recorded and then is saved in knowledge resources. Hence it is accessible and could be used again. This approach is a way to

receive knowledge from individuals who are proficient in it, thus they remain in the organization.

2.2. Knowledge management processes

Nowadays importance of knowledge management is clear for many organizations and managers are looking for major reasons and factors in order to be successful in designing and implementing knowledge management system in their organizations. There are several processes through which knowledge management is implemented in the organization successfully. By studying the accomplished researches the following processes could be regarded as major processes in the field of knowledge management:

Knowledge identification: this factor is among the primary stages of knowledge management cycle and includes identification of helpful knowledge in working processes, procedures and actions of the organization. The existing knowledge in the organization must be identified and stored completely so that all experiences and knowledge of the organization will be used optimally.

Knowledge codification: organizational knowledge storage (implicit and explicit knowledge) is one of the important elements of a knowledge management system. Information banks about skills, specialties as well as implicit and explicit knowledge storage are as much important as knowledge management system.

Knowledge Transparency: it is necessary across the organization for knowledge sharing. Of course, it depends directly on support and commitment of senior management.

Knowledge reconstruction: reconstruction of working process means to change old business methods and find new and creative ones and replace them. New methods propose new rules which determine how business processes are conducted. New business processes become harmonized with knowledge management attempts through implementing work process reconstruction and cause knowledge management team to act properly in the organization.

Knowledge dissemination: it is essential to disseminate the acquired knowledge in the organization so that all employees would enjoy it in order to enhance their activities and improve their work process. Providing possibilities for employees' effective conversation with each other to exchange and disseminate knowledge is one of the ways of knowledge dissemination. Thus designing and implementing a system which could pursue regular and permanent dissemination of knowledge among employees is one of the necessities. Also the existing culture in the organization must be totally considered

in discussing about knowledge dissemination and form of knowledge dissemination should be proportional to the organizational culture. On the other hand, sending and attracting knowledge are interrelated. If knowledge is not attracted, no transfer would be occurred. Accessibility of knowledge doesn't mean knowledge transfer (Radding, 1998).

2.3. Organizational learning

Organizational learning has been defined as the change process in the individual and common thoughts and acts of individuals that is affected by inputs of the organization and is embedded in them. Since knowledge is just created by individuals challenge of any organization is to guarantee this knowledge is transferred from the individual to the group and then the organization and knowledge transfer process is accomplished successfully (Bennet & Tomblin, 2006). Organizational learning is defined as a set of organizational actions like knowledge acquisition, information dissemination, information interpretation and memory that affect positive organizational change consciously or unconsciously (Templeton et al, 2002). Garvin (1999) too has represented a similar definition and states that learning is defined in many schools as a process that is appeared during the time and is accompanied by knowledge acquisition, deeper understanding and performance improvement. Importance of studying and analyzing organizational learning has been increased in recent years and different researchers have analyzed it from various approaches (Jerez-Gomez et al., 2005) such as psychological approach (Daft & Weick, 1984), social approach and organizational theory viewpoint (Levitt & March, 1988; Cangelosi & Dill, 1965). Organizational learning from the viewpoint of strategy is regarded as a resource to distinct among organizations and also a basis to create competitive advantage. Concept of learning organization is derived from this viewpoint which changes traditional methods of business management. Garcia-Morales et al define organizational learning as the company's capability to maintain and improve performance based on previous experiences and believe this capability is the ability to obtain and exploit implicit and explicit knowledge, knowledge sharing and application in the organization (Garcia-Morales et al, 2007). Also it is noteworthy that knowledge management is the prerequisite of creating a learning organization and some believe knowledge management is a step beyond creating a learning organization (Loermans & Synergizing, 2002).

3. Research model and hypotheses

Figure (1) displays conceptual model of the survey that is proposed based on theoretical principles. It shows the impact of knowledge management processes on organizational learning.

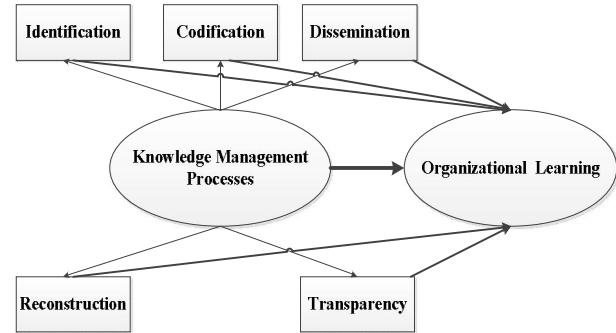


Figure 1. conceptual model of the survey

Primary hypothesis: there is a relationship among knowledge management processes and organizational learning.

Secondary hypotheses:

Hypothesis 1: there is a relationship between secondary process of knowledge identification and organizational learning.

Hypothesis 2: there is a relationship between secondary process of knowledge codification and organizational learning.

Hypothesis 3: there is a relationship between secondary process of knowledge dissemination and organizational learning.

Hypothesis 4: there is a relationship between secondary process of knowledge reconstruction and organizational learning.

Hypothesis 5: there is a relationship between secondary process of knowledge transparency and organizational learning.

4. Material and Methods

This survey has been conducted using descriptive-field method and is of correlation type. Generally all plastic pipe and fittings manufacturers inside the country constitute statistical population of the survey who produce different products in the field of pipe and fittings. Sum of these manufacturers is equal to 123 units based on statistics.

Two-phase sampling method was used and samples were selected randomly at each phase so that a number of plastic pipe and fittings manufacturers were selected as the sample after determining sample number and volume by drawing lots and then some individuals were selected to answer to the questionnaires.

A pilot study was conducted by distributing some questionnaires among the plastic pipe and

fittings manufacturers to determine the sample number and volume that was equal to 34 persons by calculating the primary sample's variance at confidence level 95%. Questionnaires were distributed directly among the manufacturers or were sent through mail, fax and e-mail given to the estimated sample volume and using lot method.

The designed questionnaire and Likert five-option scale were used to collect data. Validity of the questionnaire was measured using experts' views and then questionnaires were distributed among the statistical population after ensuring the obtained results. Similarly cronbach alpha was used to examine its reliability and total cronbach alpha coefficient was equal to 0.954 which showed suitable reliability of questions.

Data analysis was conducted through SPSS 18 software and one-sample t-test and correlation test were applied to analyze the hypotheses.

5. Results

Analytical statistics are proposed in two forms of descriptive and inferential statistics to analyze the collected data. First demographic status and characteristics of respondents are recognized using descriptive statistics and then causal relations among the existing variables in the conceptual model are studied through inferential statistics.

Studying statistical characteristics of the selected sample is shown in table (1) by separating gender, education level and work experience.

Table 1. demographic characteristics of respondents

Variable's name	Frequency	%
Gender		
Male	27	79/41
Female	7	20/59
Education		
Diploma	10	29/41
B.A	17	50
M.A	6	17/65
PhD	1	2/94
Working experience		
0-5 years	12	35/29
5-10 years	12	35/29
10-15 years	9	26/47
Over 15 years	1	2/94

Given to the above table 20.59% of the sample are females and 79.41% are males; 29.41% have diploma, 50% have B.A, 17.65% have M.A and 2.94% have PhD. Moreover, 35.29% have work experience less than 5 years, 35.29% have work experience of 5-10 years, 26.47% have work experience of 10-15 years and 2.94% have work experience more than 15 years.

Kolmogoroff-Smirnoff test was used to determine statistical population distribution. As it is

shown in table (2) normality of statistical population distribution is accepted, because significance level of all variables is more than 0.05.

Table 2. one-sample Kolmogoroff-Smirnoff test

Variable	Mean	SD	K-S test	Sig level	N
transparency	2/47	0/3749	0/908	0/382	34
reconstruction	2/48	0/3981	0/790	0/561	34
dissemination	2/95	0/8130	0/819	0/513	34
codification	2/20	0/2849	1/168	0/131	34
identification	2/24	0/3183	0/844	0/475	34

As it is shown in table (3) knowledge identification variable has been measured by four items (using individuals' experience, evaluation of decisions' results, a clear method to collect data and having access to internet) that results are displayed in the following table.

Table 3. explaining the results of items related to the first variable: identification

Items	Mean	SD	Var	N
using experience	2/24	0/872	0/761	34
evaluation of decisions'	2/25	0/786	0/618	34
clear method to collect	2/31	0/760	0/579	34
access to internet	2/17	0/759	0/576	34

Table 4. explaining results of the first variable

Variable	SE	Mean	SD	N
identification	0/069	2/24	0/374	34

Mean and standard deviation related to the first variable are shown in table (4).

Table 5. one sample t-test

Variable	Identification	
T	-10.89	
df	33	
Sig	0.000	
Mean difference	-0.758	
Confidence interval	Lower limit	-0.901
	Higher limit	-0.616

Given that the lower and upper limits of confidence interval are negative mean amount of the identification variable in the sample is less than 3 and it means that plastic pipe and fittings manufacturers don't have a suitable status in knowledge identification.

As it is demonstrated in table (6) codification variable has been measured by five items (Database, information organization, classification of documents and letters, existence of software and

computer systems, existence of information system) and results are shown in the below table.

Table 6. explaining the results of items related to the second variable: codification

Items	Mean	SD	Var	N
Database	1/79	0/726	0/527	34
information organization	1/96	0/981	0/963	34
classification	1/79	0/726	0/527	34
software and computer systems	1/89	0/817	0/667	34
information system	3/88	0/945	0/894	34

Table 7. explaining results of the second variable

Variable	SE	Mean	SD	N
identification	0/073	2/20	0/398	34

Mean and standard deviation related to the second variable are shown in table (7).

Table 8. one sample t-test

Variable		codification
T		-10/72
df		33
Sig		0.000
Mean difference		-0/793
Confidence interval	Lower limit	-0/944
	Higher limit	-0/641

Given that the lower and upper limits of confidence interval are negative mean amount of codification variable in the sample is less than 3 and it means that plastic pipe and fittings manufacturers don't have a suitable status in knowledge codification.

As it is demonstrated in table (9) dissemination variable has been measured by four items (having access to information, policies of knowledge exchange, culture of knowledge transfer, encouraging to knowledge sharing) and results are shown in the below table.

Table 9. explaining the results of items related to the third variable: dissemination

Items	Mean	SD	Var	N
access to information	3/48	1/52	1/04	34
policies of KE	2/96	1/21	1/46	34
culture of KT	2/79	1/14	1/31	34
encouraging to KS	3/58	0/957	0/823	34

Table 10. Explaining results of the third variable

Variable	SE	Mean	SD	N
dissemination	0/150	2/95	0/813	34

Mean and standard deviation related to the third variable are shown in table (10).

Table 11. one sample t-test

Variable		dissemination
T		-0/285
df		33
Sig		0/7
Mean difference		-0/043
Confidence interval	Lower limit	-0/352
	Higher limit	0/266

Given that the lower limit of confidence interval is negative and its upper limit is positive mean amount of dissemination variable in the sample has no significant difference with number 3 and it means that plastic pipe and fittings manufacturers have a suitable status in knowledge dissemination.

As it is demonstrated in table (12) reconstruction variable has been measured by six items (periodical evaluation of information, periodical revision of information codification, replacement of new and old information, assessment of storage methods, revision of forms and documents and reviewing access level of individuals to information). The results are shown in the below table.

Table 12. explaining the results of items related to the fourth variable: reconstruction

Items	Mean	SD	Var	N
periodical evaluation	2/34	0/856	0/734	34
periodical revision	2/24	0/786	0/618	34
replacement	2/31	0/760	0/579	34
assessment	2/27	0/759	0/576	34
revision of forms	2/24	0/912	0/833	34
reviewing access	3/62	0/902	0/815	34

Table 13. explaining results of the fourth variable

Variable	SE	Mean	SD	N
reconstruction	0/284	2/48	0/284	34

Mean and standard deviation related to the fourth variable are shown in table (13).

Table 14. one sample t-test

Variable		reconstruction
T		-9/66
df		33
Sig		0.000
Mean difference		-0/511
Confidence interval	Lower limit	-0/619
	Higher limit	-0/403

Given that the lower and upper limits of confidence interval are negative mean amount of reconstruction variable in the sample is less than 3 and it means that plastic pipe and fittings manufacturers don't have a suitable status in knowledge reconstruction.

As it is demonstrated in table (15) knowledge transparency variable has been measured by four items (applied storage of information, evaluation of information effectiveness, proportionality of the information with decision-making scopes, understandability of stored information). Results are shown in the below table.

Table 15. explaining the results of items related to the fifth variable: transparency

Items	Mean	SD	Var	N
applied storage	1/86	0/639	0/409	34
evaluation	1/89	0/673	0/453	34
proportionality	1/96	0/778	0/606	34
understandability	2/10	0/900	0/810	34

Table 16. explaining results of the fifth variable

Variable	SE	Mean	SD	N
transparency	0/078	2/33	0/424	34

Mean and standard deviation related to the fifth variable are shown in table (16).

Table 17. one sample t-test

Variable		transparency
T		-8/43
df		33
Sig		0.000
Mean difference		-0/663
Confidence interval	Lower limit	-0/825
	Higher limit	-0/502

Given that the lower and upper limits of confidence interval are negative mean amount of transparency variable in the sample is less than 3 and it means that plastic pipe and fittings manufacturers don't have a suitable status in knowledge transparency.

Pierson correlation coefficient test was used to evaluate research hypotheses and results are illustrated in table (18).

Table 18. results of correlation coefficient test

Hypothesis	Path	r	Sig	Result
H ₁	KI and OL	0/783	0.000	Supported
H ₂	KC and OL	0/518	0.004	Supported
H ₃	KD and OL	0/438	0.018	Supported
H ₄	KR and OL	0/685	0.000	Supported
H ₅	KT and OL	0/570	0.001	Supported

Given to the obtained results in table (18) and the obtained significance level that is less than 0.05 all hypotheses are accepted. It means that there is a significant relationship among all variables in the above table.

6. Discussions

The present survey was conducted to study the impact of knowledge management processes on organizational learning in the academic year 2011-2012 and its hypotheses were proposed after preliminary phases and reviewing the research literature. Then the required data was collected through questionnaires from a sample consisted of 34 employees of plastic pipe and fittings manufacturing companies. Data was studied using descriptive and inferential statistics techniques. Obtained results are as the following:

Descriptive results indicate males and females constitute 79.41% and 20.59% of the sample respectively. In terms of education level the highest frequency (50%) is related to those who have B.A and the lowest frequency (2.94%) is related to those who have PhD degree. The highest frequency related to work experience (35.29%) is related to those who have work experience less than 5 years and 5-10 years. Also results related to hypotheses' testing are as below.

Hypothesis 1: there is a relationship between secondary process of knowledge identification and organizational learning.

Knowledge identification variable is at an average level and learning variable is weak in plastic

pipe and fittings companies. Given to the calculated correlation and its results in table (6) it could be concluded that knowledge identification process has a direct impact on organizational learning. Amount of obtained R between knowledge identification and organizational learning indicates there is a relationship between these two variables.

Hypothesis 2: there is a relationship between secondary process of knowledge codification and organizational learning.

Codification and organizational learning variables are at an average level in plastic pipe and fittings companies. Given to the calculated correlation and its results in table (10) it could be concluded that knowledge codification process has a direct impact on organizational learning. Amount of obtained R between knowledge codification and organizational learning indicates there is a relationship between these two variables.

Hypothesis 3: there is a relationship between secondary process of knowledge dissemination and organizational learning.

Dissemination and organizational learning variables are at a high level in plastic pipe and fittings companies. Given to the calculated correlation and its results in table (15) it could be concluded that knowledge dissemination process has a direct impact on organizational learning. Amount of obtained R between knowledge dissemination and organizational learning indicates there is a relationship between these two variables.

Hypothesis 4: there is a relationship between secondary process of knowledge reconstruction and organizational learning.

Reconstruction and organizational learning variables are at a weak level in plastic pipe and fittings companies. Given to the calculated correlation and its results in table (19) it could be concluded that knowledge reconstruction process has a direct impact on organizational learning. Amount of obtained R between knowledge reconstruction and organizational learning indicates there is a relationship between these two variables.

Hypothesis 5: there is a relationship between secondary process of knowledge transparency and organizational learning.

Transparency and organizational learning variables are at a weak level in plastic pipe and fittings companies. Given to the calculated correlation and its results in table (23) it could be concluded that knowledge transparency process has a direct impact on organizational learning. Amount of obtained R between knowledge transparency and organizational learning indicates there is a relationship between these two variables.

7. Applied recommendations

As results of testing hypothesis one show dominance of identification variable at an average level and learning variable at a weak level it is recommended to apply work experiences of the past in order to solve the present and future problems. Employees could commit truthful (unintentional) and intelligent (not repetitive) low-cost mistakes and organizational reward system must be reconstructed for employees to propose new ideas and test them boldly beside hard work. Teams must be constituted to identify and maintain intelligent, curious and knowledge seeking individuals because of having the ability to create, share and apply knowledge. Performance assessment system must be designed and implemented to assess employees' participation in knowledge creation and exchange process and applying knowledge assets. This issue could be regarded as one of individuals' job necessities in succession planning.

Given that results of testing hypothesis two show dominance of codification and learning variables at an average level it is recommended that the stored information must be understandable and usable for users. The information must be stored in applied form for later application and there must be specific methods to collect information about work grounds and activities of the organization. Also there must be computer systems and software to save the information.

As results of testing hypothesis three show dominance of knowledge dissemination and learning variables at a high level it is recommended to employees to exchange information about successful work activities and good ideas with each other. Knowledge employees must be employed in various units of organizations and companies. Conferences, speeches and meetings must be held to change the implicit knowledge into explicit knowledge. There must be policies for knowledge exchange.

Since results of testing hypothesis four show dominance of reconstruction and learning variables at a weak level it is recommended to review access level of individuals to information; review forms and documents; revise and improve the current processes, procedures and instructions of the organization directly (periodically) so that employees can have easy access to the required knowledge to do their work. Codification methods must be reviewed periodically and new information replaces the old one.

As results of testing hypothesis five show dominance of transparency and learning variables at weak level it is recommended to propose and implement a reward and value system to encourage and acknowledge employees who have the highest

participation and role in the field of knowledge acquisition, production and transfer.

8. Research limitations

Lack of time and noncooperation of some experts in plastic pipe and fittings manufacturing companies to fill out the questionnaire or interview about the research topic is one of the limitations of this survey. Given that the researcher hadn't been allowed to distribute questionnaires manner of its distribution was determined by discretion of the organizations. Limited time interval and lack of the required samples for a more complete research are other limitations of the survey.

9. Recommendations for future studies

There are several factors that have been recognized as key success factors of knowledge management but only impact of five factors on organizational learning have been studied in this survey. It is recommended to researchers to study the impact of other key success factors of knowledge management on organizational creativity and organizational learning. As the present survey has been conducted in private companies various results could be obtained by conducting such study in a governmental company and the existing differences could be perceived through a comparative study among the obtained results of governmental organizations and private companies.

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