

Investigating the Effect of Organizational Knowledge Management on Improving Performance Evaluation System in the View of Knowledge Workers Case Study: Tabriz Waste Water Company

Dr. Soleyman Iranzadeh¹, Maedeh Sedighi², Dr. Majid Bagherzadeh Khajeh²

¹Associate Professor, Department of Management, Tabriz branch, Islamic Azad University, Tabriz, Iran

²Department of Management, Tabriz Branch, Islamic Azad University, Tabriz, Iran

ABSTRACT

In the era of knowledge – based economy , Institutions of high education is achieved to proper and important opportunities for obtaining goals and strategies that created for them , by management of knowledge with in own (organization). As monitoring and evaluating organization with respect to components of knowledge management is considered as pre requested for planning and implementing these activities. So in this research, it is attempted to, deal with the effect of five components of knowledge management on improving the system of performance evaluation. Statistical community have two group: 1- Incompatible group (independent) and 2- Heterogeneous group (different Levels of management and experts); At first , It is used from class sampling method for selecting studied sample , and the sample will be choose randomly this sample include 173 person of knowledge personnel's (management and experts) of waste water co. Tabriz. Required data and information is provided based on questionnaire way and resulting information will be analyzed by Kolmogorov smirnov test and multiple Regression. The results of this research indicate that management of organizational knowledge and its components have influence on improving the system of performance evaluation and there positive correlation among management of organizational knowledge and its processes and improve performance evaluation system. Also the results of this research show that knowledge creation, knowledge acquisition and knowledge application among the main components of organizational knowledge management have the most effect on improving the system of performance evaluation.

KEYWORDS: Knowledge management, components of knowledge management and performance evaluation.

INTRODUCTION AND PREVIOUS RESEARCH

Nowadays knowledge is considered as the most importance capital and property or assets of one organization and stimulus creating competitive benefit, organizational evolution, innovation and etcetera in organization. This asset, in comparison to other assets, has a unique nature that the more being used, the more it is added to its value. Iin the recent years, It is used from knowledge as a tool for reducing or decreasing distance between developing countries and undeveloped ones.

During two recent decades, increasing the amount of information in organizations and effective using or application of them in organizational decisions caused the appearance the phenomenon with the name: knowledge management.

Human Resource is creators and users of knowledge and their performance have important role in organization success. Then it is necessary to provide occasion for designing performance evaluation system with implementing correct management of human Resources especially in the field of performance evaluation and by creating harmony or coordination between system of performance evaluation and management of organizational knowledge And also The ways of performance evaluation system improve with it and in the course of decreasing common errors helped to the effectiveness of system of performance evaluation. So the goal of this paper is the investigation of the effect of management of organization knowledge and its processes on improving system of performance evaluation and the way of creating harmony among them.

Nowadays, organizations are faced with different challenges in the field of own human Resources. That the subject of evaluation of personal's performance is among important challenges with in organizations that management is involved it with different kinds of methods. Maybe one of the important components of being developed of communities is correct and logical evaluation of organization personnel's. For this reason, evaluating performance of human forces in organizations is among main responsibilities of management in every organization.

Most of the traditional models of evaluating personal's performance were lack of essential effectiveness in performance evaluation because they couldn't evaluate every person completely and also rate of individual

performance in relation to organizational goals or aims. In addition, when money of the managers of organizations observed inadequacies of these methods and models, they recognized the discussion of performance evaluation with out of (lacking) effectiveness and forgot it. Awareness of rate of personal's performance not only cause to improving their condition, but also. With increasing content of productions and services of organizations, create big or vast evolutions in tread of their growth and development and this will be possible with help of valid and logical designing and performing pattern for evaluating performance of organization personals.

Main or basic hypothesis: knowledge management is effective on improving evaluation of organizational performance.

Haienc (2001) consider knowledge management as a process that is based on four principles: 1- content: that is related to the kind of knowledge (being revealed or un revealed); 2- skill: access to skills for extracting or derivation knowledge; 3- culture: organizations culture should be encouraging distribution of knowledge and information's; 4- organization of existing knowledge.

Behat (2001), know the process of knowledge management including activities such as acquisition, record transferee creation and application of knowledge.

RESEARCH METHODOLOGY

This research is applicable in terms of goal and is descriptive in terms of method. Since this statistical community have incompatible groups (independent) and heterogeneous group different Levels of management and experts), so it is used from class sampling method for selecting studied sample and then the sample is chosen randomly.

Statistical community of this research include of all of the knowledge personnel's (BA degree and higher) in waste water. Co. Tabriz that their number will be determine with referring to documents and records of this institution.

In this research, kokran formula will be used for obtaining the content or volume of sample:

$$n = \frac{N \cdot \frac{Z_{\alpha}^2}{2} \cdot p \cdot q}{e^2 (N - 1) + \frac{Z_{\alpha}^2}{2} \cdot p \cdot q}$$

In this formula , N is statistical community , $\frac{Z_{\alpha}}{2}$ is amount of Normal variable according to confidence Level

$1 - \alpha$ (In this research , because confidence coefficient will be considered as 95% , so amount of Z will be equally 1.96) , P is ration of covering considered adjective in community that it's maximum amount is selected i.e. 0.5 , q is equally to $1 - P$, e is amount of allowed error that it's amount is selected in this research equally to 5% , n is content or number of statistical sample (173).

We have following hypothesis for considering the effects of acquisition organizational knowledge on the performance system:

First Secondary hypothesis: Acquisitions of organizational knowledge is effective on improving evaluation of organization performance.

Knowledge acquisition: knowledge acquisition include of the activities that is done for acquisition new knowledge from outside the organization. Activities such as amount of member's participation in scientific associations and rate of participation in instructional meetings , cooperation of organization with universities and other scientific centers , buying New knowledge for organization is indication of content of attempts that is done for acquisition New knowledge and entering it to organization.

Second secondary hypothesis: record (maintenance) organizational knowledge is effective on improving organization performance.

Record of knowledge: Recording and documenting knowledge include all of the activities that is done for recording existing knowledge with in organization. Activities such as using from data bases for recording organizational knowledge, documenting success and un success experiences are among the activities of recording knowledge in organization third secondary hypothesis: transferring or communicating organizational knowledge is effective on improving evaluation of organizational performance transfer of knowledge: Transferring of knowledge include all of the activities that is done for transferring organizational knowledge among members. Activities such as discussion and exchange of views meetings for giving experiences and working methods , inclination and

participation of members towards cooperation and help to colleagues in order to improving working methods , using from data bases and providing organization knowledge for all of the members is indications of amount of organization attempt to transferring organizational knowledge.

Fourth secondary hypothesis: creation of organizational knowledge is effective on improving evaluation of organization performance.

Creation of knowledge: knowledge creation includes all of the activities that new knowledge in organization creates or produces by it. Activities like giving reward and encouraging innovations and new ideas of personals, clear discussion about experiences and organization failures, forming learning groups in organizations, all of them are among activities that facilitate creation of new knowledge in organization. Fifth secondary hypothesis: application of organizational knowledge is effective on improving evaluation of organization performance.

Application of knowledge includes activities that show that organization is applied own knowledge application of new ideas of employees or personals in organizational process or attended to buying of organizational knowledge are among activities of knowledge application in organization (Alvani et al, 2006).

Results of different scholar’s research or investigations in this regard, are considered by mentioned tools. It is used from question are the stage of data gathering for replying to research questions and access to research goals. It is necessary to mention that used question is in this research is combination of two questions are, i. e: question are of performance evaluation and question are of management of organization (knowledge). In other , question are is regulated in two section in terms of content that first section is related to evaluation of independent variables , i.e. , improving system of performance evaluation and second section is about evaluation of dependent variable , i.e. , management of organization knowledge.

In this research, justifiability of the used question is determined as nominal: In this regard, measuring tools introduced to some of the experts and professors of universities and it is wanted from them to express their opinions about justifiability of questioner studying it. After gathering expressed opinions and reforming some of the questions , it is found that considered question are have justifiability It is used from α - Cronbach coefficient for evaluating durability and stability of question are for this reason , designated question are presented to 30 person of members of statistical community and amount of stability coefficient (α - Cronbach) is computed (calculated) after gathering data and entering data with using of spss 17 software these amount of obtained α (Alpha) coedicient from this method is 93% for question are of evaluation of performance that is indication of high compatibility between variable of performance evaluation and question are stability.

Table 1: Amount of computed α - Cronbach coefficient for every of variable of knowledge

variable	Amount of computed - Cronbach α
Knowledge Creation	0.84
record (maintenance)	0.73
Knowledge Transfer	0.78
knowledge application	0.73
knowledge acquisition	0.86

Considering amount of computed α - Cronbach coefficient in table 1 and with attention to the amount of computed α - Cronbach coefficient for every of input variables that is more than 0.6, we can conclude that designed question arehaveacceptable stability.

THE RESULTS AND FINDINGS

This section include specifications of repliers that response to question are of knowledge management and evaluation of performance , that is considered from four aspects such as sex , age , amount of education and work history.

Table 2: frequency distribution of repliers based on sex (gender):

Amount of education	number of frequency	percentage of frequency	percentage of cumulative
Men	124	71.68	71.68
Woman	38	0.22	93.68
Total	162	93.68	93.68
without answer	11	8.32	100.0
Sum	173	100.0	

Out of 314 knowledge workers participating are 71.68 % men and 93.68 % women about 0/11% of survey participants do not have to answer this question. Totally is said to this study be most of the respondents to questions was about men.

Table 3: frequency distribution of repliers based on age.

Amount of education	number of frequency	percentage	percentage of cumulative
below 25 years	2	1.0	1.0
35 -25	25	14.45	15.55
45 -35	48	27.74	43.29
55 -45	55	31.38	74.67
romf above 25	32	18.5	93.17
sum	162	92.17	93.17
without answer	11	7.83	100.0
sum	173	100.0	

According to information obtained from the study can be said the most common age of knowledge workers Tabriz Water Co The age between 55 to 45 years and the lowest pyramid age is below 25 and above 55 years.

Table 4: frequency distribution of repliers based on education rate

Amount of education	number of frequency	number of frequency	commutative percentage
BA	131	131	75.72
MA	29	29	92.49
professor	2	2	93.64
total	162	162	
without answer	11	11	100.0
sum	173	173	

According to tables can say most of the respondents had a bachelor's degree and Respondents are least Ph.D.

Table 5: frequency distribution of repliers based on work history

work history	frequency	percentage	cumulative percentage
below 10 years	38	21.95	21.95
10 – 20 years	83	47.97	69.92
top of 20 Years	52	30.08	100.0
sum	173	100.0	

Can be saying Respondents with 10-20 years of experience in the high-frequency band than the others.

Descriptive statistics is introduced in two sections of performance evaluation and descriptive statistics related to dimensions of knowledge management

Table 6: descriptive statistics related to research variables:

variable	biggest data	smalles data	mode	medium	standard deviation	mean	Number
knowledge creation	5.00	1.00	2.00	2.667	0.86518	2.7121	173
knowledge record	4.67	1.33	3.33	3.00	0.73264	3.0758	173
nizational orga knowledge trasfer	4.50	1.00	3.00	3.00	0.76550	2.9261	173
organizational knowledge application	3.75	1.0	2.25	2.75	0.67015	2.7443	173
organizational knowledge acquisition	5.00	1.00	3.33	3.00	0.7274	2.9773	173
performance evaluation	4.0	1.0	1.4	2.40	0.7966	2.35	173

This table was for Analysis of Research Questions that including components of knowledge management (knowledge creation- knowledge record- organizational knowledge transfer- organizational knowledge application- organizational knowledge acquisition) and performance evaluation.

Table 7: Test results of the Kolmogorov - Smirnov for research data

variable	(sig)	Kolmogorov-Smirnov Z
creation of organizational knowledge	0.628	0.749
record (maintained) organizational knowledge	0.396	0.898
transfer of organizational knowledge	0.916	0.556
application of organizational knowledge	0.489	0.835
acquisition of organizational knowledge	0.793	0.793
performance evaluation	0.314	0.961

In a test of normality of data zero hypotheses is so that data a distribution follow from normal distribution and contrast hypothesis implicate against it. With attention to table 7, significance level of all of data is more than 0.05 so we can say that distribution of obtained data is normal from research questioners. So one can use from regression parametric statistic for testing hypothesis.

It is used from multivariate regression for testing research hypothesis Results of Regression test that is done with the way of removing dependent variable UN progressively, is given in the following. UN progressively removing or deleting method of dependent variables is the way in selecting variables that in which all of the dependent variables first enter the Regression equation and then if they hadn't necessary criteria for remaining in this model, they will be deleted one by one from this model.

Table 8: first model of computed Regression

Model	correlation coeicient	determination coefficient	coefficient of adjusted determination	Error of evaluation criteria
1	0.835	0.697	0.657	0.46672

Correlation coefficient for first model that all the independent variables entered the model (knowledge creation, record (maintenance), knowledge transfer, knowledge) is egul to 0.835 and this means that total correlation coefficient between dependent variables and independent oned is equal to 83.5 %. Also determination coefficient in first model is calculated and is equal to r 0.697 that show discrete amount of dependent variable from independent ones.

Table 9: Regression variance analysis (ANOVA) for first model

Model		sum of squares	degree of freedom	mean of squares	F	Level of significance
1	Regression	19.02	5	3.802	17.456	0.000
	Remainder	8.278	167	0.218		
	Total	27.290	172	-		

In Regression variance analysis, null or zero hypothesis (H_0) implicate that there is no linear relation between dependent and independent variables and contrast hypothesis (H_1) implicate against it. Computed significance Level for this statistic in the first model is computed that is equal to 0.000 that because it is below 0.05, so contrast hypothesis is confirmed that this shows that there is linear relation between dependent and independent variables. So we can use from regression equation.

Table 10: statistics and evaluated coefficients for Regression in first model

model	variable	coefficients	standard deviation	standardized coefficients	t	Significance Level
1	Constant number	-0.879	0.379	-	-2.315	0.026
	acquisition knowledge	0.191	0.129	0.175	1.486	0.145
	knowledge application	0.590	0.168	0.496	3.520	0.001
	knowledge transfer	0.105	0.147	0.101	0.719	0.476
	record (maintenance)	0.060	0.140	0.055	0.429	0.670
	knowledge creation	0.201	0.102	0.219	1.966	0.057

In the first Regression model, other variables haven't significance and cannot effects on the performance evaluation, other than constant and variable number of knowledge application that their significance Level is below 0.05.

Because in this research , it is used from Regression test with the way of deleting indendent variables progressively , so second model with Removing record variable (maintenance) , caused to improving result of Regression test. Results of second Model are indicated in the following.

Table 11: second of computed Regression:

model	correlation coefficient	determination coefficient	adjusted determination coedicient	Standard deviation of evaluation
2	0.834	0.695	0.664	0.46182

As we can see from table 11, amount of computed correlation coefficient (R) for second Model is equal to 0.834 and this means that total correlation coefficient between independent variables and dependent ones is equal to 83.4. Also determining Coefficient in the second model is computed that is equal to r 0.695 that is show discrete rate of dependent variable by indepent ones. Evaluation standard deviation in the second model is decreased from 0.46672 to 0.46182 with deleting record variable and this show improve of second model than first model.

Table 12: Regression variance analysis (ANOVA) for second model:

Model		sum of squares	degree of freedom	mean of squares	F	Level of significance
2	Regression	18.972	4	4.743	22.239	0.000
	Remainder	8.318	168	0.213		
	Total	27.290	172	-		

Compedted significance Level for this statistic based on table 12 in the second Model is equal to 0.000 that existence of liner relation between dependent and independent variables is confirmed because of being below 0.05. So we can use from Regression equation in this model.

Table 13: Evaluated statistics and coefficients for the second Regression Model

Model	variable	coefficients	standard deviation	standardized coefficients	t	Level of significance
2	Constant number	-0.842	0.366	-	-2/301	0.027
	knowledge acquisition	0.221	0.108	0.201	2.039	0.048
	knowledge application	0.598	0.165	0.503	3.635	0.001
	knowledge transfer	0.122	0.140	0.118	0.876	0.386
	knowledge creation	0.197	0.101	0.214	1.955	0.058

Table 13 show that in second Regression Model except that constant and variable number of knowledge acquisition and knowledge application that their significance level are below 0.05 , Levels of other variables was not significance and cannot place in Regression model however , significance Level is improved of some of these variables.

Third model, with deleting knowledge transfer variable than second model, abused to improving results of Regression test. Results of third are show in following.

Table 14: evaluated third Regression Model

model	correlation coefficient	determination coefficient	adjusted determination coefficient	evaluated standard deviation	Watson Durbin
3	0.830	0.689	0.666	0.46047	1.974

As one can see that from table 14 , amount of computed correlation coefficient (R) for third model (knowledge transfer that is independent variable is deleted from this model) is equal to 0.830 that though we deleted knowledge transfer variable from this model , change in correlation coefficient is equal to 0.004 that show low correlation of knowledge transfer variable also determination coefficient in the third Model is competed 0.689 that is show discrete amount of dependent variable by independent variables. This coefficient is improved in comparison to second

model. Evaluated standard deviation in third model is decreased from 0.46182 to 0.46047 that shows that third model is improved than second model.

Results of Regression variance Analysis (ANOVA) for third model are indicated in following.

Table 15: ANOVA for third model:

Model		sum of squares	degree of freedom	mean of squares	F	Level of significance
1	Regression	18.809	3	6.270	29.668	0.000
	Remainder	8.481	169	0.212		
	Total	27.290	172	-		

Table 16: Evaluated statistics and coefficients for third model

Model	variable	coefficients	standard deviation	standardized coefficients	t	Level of significance
3	Constant number	-0.822	0.364	-	-2.225	0.000
	knowledge acquisition	0.248	0.103	0.226	2.398	0.03
	knowledge creation	0.210	0.100	0.228	2.103	0.021-
	knowledge application	0.680	0.136	0.572	5.012	0.000

Table 16 show that in the third Regression model except that constant number , all of the variables such as knowledge acquisition variable , knowledge creation variable and knowledge application variable that their Level of significance are below 0.05 , can place in Regression Model however , Level of significance is improved some of the variables.

Evaluated Regression Equation is as follows that is indicating acceptance of hypothesis such as knowledge acquisition, knowledge creation and knowledge application and rejection of hypothesis such as knowledge transfer and record in third research: $y_{ARA} = -0/822 + 0/248x_1 + 0/210x_2 + 680x_3$

In this equation, y_{ARA} is indication of performance evaluation, x_1 is indication of knowledge acquisition variable, x_2 is indication of knowledge creation variable and x_3 is in dictation of knowledge application variable.

One of the assumptions in the Regression, is separation of errors or deviations from each other if the hypothesis of independent of errors rejected and errors have had correlation with each other, so it is not possible to use from Regression In order to considering dependence of errors from each other, we used from Watson – camera test amount of statistic in this test place between range 0 and 14. If this statistic place between range of 1.5 to 2.5 , H_0 in this test is accept , i. e , lack of correlation between errors and other wise , H_0 is reject , i. e , there is correlation among errors and cannot use from Regression. Results of Watson – camera test for Regression equation is computed 1.974 that is indication of lack of correlation among errors or deviations and can from Regression.

One of the assumptions of liner Regression model is that mean of remainders should be equal to zero and their variance be constant number. In table 1, statistics is showed that is related to remainders.

Table 17: statistics related to remainders

	minimum data	maximum data	mean	standard deviation	Number
evaluated amounts	0.5553	3.6144	2.3500	0.66137	173
remainders	-0.68010	1.29483	0.000	0.44412	173
standard amounts	-2.714	1.911	0.000	1.000	173
	-1.477	2.812	0.000	0.964	173

As we can see in table 17, mean of remainders is equal to zero and their standard deviation is equal to constant number of 0.44412 and evaluated Linear Regression Model is acceptable.

CONCLUSIONS

With analysing and considering research variable and using multiple Regression test, hypothesis such as knowledge acquisition, knowledge creation and knowledge application is accepted and hypothesis such as

knowledge transfer and record is rejected. One total conclusion that we can obtain from this research is that findings of this research is confirmed that one knowledge organization than un knowledge organization require different approach and viewpoints in management so , managers of human Resource in this organizations will have different and unique role in comparison to other organizations Results of this research show that management of organizational knowledge and it's components influence on improving system of performance evaluation and there is positive correlation among management of organizational knowledge and it's components and improving system of performance evaluation.

REFERENCES

- Allee, V. (1997), *the knowledge evaluation, expanding organization*, Boston: Nuttler worth- Heinemann.
- Bajaria, H. J. (2000), Knowledge creation and management: inseparable twins, *Total Quality Management*, Vol. 11. No 4, pp. 502-573.
- Bhatt, G.D. (2001), Knowledge management in organizations: examining the interaction between technologies, techniques, and people, *Journal of Knowledge Management*, Vol. 5, No. 1, and pp.68-75.
- Bierly, P. & A. Chakrabarti (1996), Generic knowledge strategies in the US pharmaceutical industry, *Strategic Management Journal*, No. 17, pp.123-135.
- Barney, J. B. (1991), Firm resources and sustained competitive advantage, *Journal of Management*, No. 17, pp. 99-120.
- Blackler, F. (1995), the knowledge, knowledge work and organization: An overview and interpretation, *Organization Studies*, Vol.16 No.6, pp. 1021-1046.
- Cheng, S., C.W. Chan & G. H. Huang (2003), An integrated multi-criteria decision analysis and inexact mixed integer linear programming approach for solid waste management, *Engineering Applications of Artificial Intelligence*, No.16, pp.543-554.
- Chiu, C.M., Hsu, M.H. & Wang, E.T. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems*, No. 42, pp. 1872-1888.
- Chua, A. (2004), Knowledge management system architecture: a bridge between KM consultants and technologists, *International Journal of Information Management*, No. 24, pp.87-98.
- Clair, G.T.(2002), Knowledge services: your company's key to performance excellence, *Journal of the American Society for information Science and Technology*, Vol.6 No.6, pp.26-33.
- Clark, J. & C. Rollo (2001), Knowledge management & transformational leadership, *Industrial Training*, Vol.24, No. 4, pp. 347-362.
- Davenport, T.H., & L. Prusak (1998), *Working Knowledge: How Organizations Manage What They Know*, Boston. MA: Harvard Business School Press.
- Deng, H., C.H. Yeh & R. J. Willis (2000), Inter-company comparison using modified TOPSIS with objective weights, *Computers and Operations Research*, No.27, pp.963-973.
- DiMatta S. & O.Norman (1997), Knowledge management: hope or habinfer? *Library Journal*, No.15, pp.33-35.
- Feng, C. M., & R. T. Wang (2001), Considering the financial ratios on the performance evaluation of highway bus industry, *Transport Reviews*, No.21, pp.449-467.
- <http://www.kmiran.com>
- <http://proquest.umi.com/pqdweb>
- http://www.unc.edu/~sunnyliu/inls258/Introduction_to_Knowledge_Management.html
- <http://www.kmworld.com/>
- http://www.linkedin.com/skills/skill/Knowledge_Management
- www.skagitwatershae.org
- www.theinternationalofmanagementscience.com
- <https://faculty.washington.edu/markh/tc400>