

## Designing and Customization of Knowledge Management System Implementation Pattern: A Case Study of Khuzestan Gas Company

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**Abstract:** This paper seeks to investigate, by using the variables of Rahnavard's and Muhammadi's knowledge management conceptual model including the variables of knowledge management pattern, human resources development, knowledge-based orientation, knowledge assessment and transfer, and individuals' involvement, the effectiveness of each of the aforementioned model parameters in the implementation of knowledge management system in Khuzestan Gas Company. In the end, the correlation of parameters is to be studied by means of SPSS and LISREL software, and the final model will be presented.

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**Keywords:** knowledge management, Likert scale, normal distribution and statistical tests

### Introduction

Nowadays, organizations need to capture, create, store and apply knowledge, as the most determining factors for growth and development. Furthermore, in order to survive, organizations need to change their business strategies from scale-based competition to speed-based competition, by using the competitive advantage of the application of knowledge, skill, expertise and technology. In fact, knowledge management is a method based on which one can access to the hidden findings of individuals' knowledge which is of considerable significance in many cases. For this, the present study has investigated for designing and customization of knowledge management system implementation pattern in Khuzestan Gas Company.

### Knowledge Management

Knowledge management is considered as one of the major factors of competitive advantage in different economic institutes, because it includes a set of technologies and resources providing the possibility of transfer, creation, and coding of knowledge in modern business environments as well as leading to the organization and evaluation of requirements and customer-supplier relationship and supporting the decided processes. It also contributes to the forecasting, filtering and storage of all organizational knowledge in the knowledge warehouse.

Knowledge Management Aspects and Components.

Knowledge management can be studied from different perspectives and aspects. Each of these aspects includes components which are introduced by different viewpoints toward knowledge management. Knowledge management is regarded as an interdisciplinary concept. Different aspects are defined for the organizational knowledge management with regard to the different definitions mentioned for knowledge. Knowledge management is sometimes regarded with respect to the definitions of the total quality management, and sometimes to be in line with the system re-engineering goals.

### Knowledge Management Conceptual Model

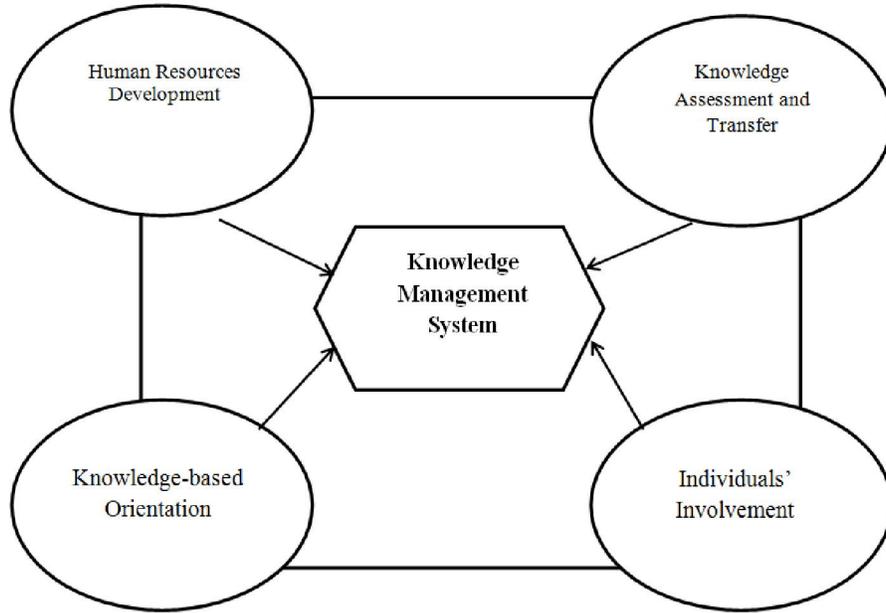
Rahnavard's and Muhammadi's model (2009) was used for the conceptual model and the variables studied in this research, variables of which are presented in the following figure.

### Population and Sampling Method

The population of this research is Khuzestan Gas Company consisting of 500 employees and experts, of which 217 people were selected by using Cochran's sample size formula.

### Validity and Reliability Assessment of the Questionnaire

In this study, validity of the questionnaire has been approved by consulting professors and experts, and Cronbach's alpha method in SPSS has been applied to approve reliability. The results of Cronbach's alpha test are presented in the following table.



Questionnaire	No. of Questions	Cronbach's alpha	Variables	No. of Questions	Cronbach's alpha
Knowledge Management Implementation Pattern	30	0.72	Human Resources Development	10	0.85
			Knowledge Assessment and Transfer	5	0.72
			Increase in Human Resources Knowledge	5	0.74
			Increase in Human Resources Activity	5	0.71
			Pattern Designing	5	0.71

**Descriptive Statistics of Variables**

The statistics of each of the model variables with regard to the completed questionnaires and being carried out by using SPSS, are presented in the table below.

		Increase in Human Resources Activity	Increase in Human Resources Knowledge	Knowledge Assessment and Transfer	Human Resources Development	Designing of Knowledge Management System Implementation Pattern
N	Valid	217	217	217	217	217
	Missing	0	0	0	0	0
Mean		3.4101	2.7465	4.6452	4.1982	3.8018
Error of the mean		.04630	.06041	.03911	.05112	.05112
Median		3.0000	2.0000	5.0000	4.0000	4.0000
Mode		3.00	2.00	5.00	5.00	4.00
Standard Deviation		.68210	.88991	.57606	.75302	.75302
Variance		.465	.792	.332	.567	.567
Kurtosis		.418	.959	-1.393	-.345	-.378
Error of the kurtosis		.165	.165	.165	.165	.165
Skewness		.012	-.031	.956	-1.165	.014
Error of skewness		.329	.329	.329	.329	.329
Minimum		2.00	2.00	3.00	3.00	2.00
Maximum		5.00	5.00	5.00	5.00	5.00
Total		740.00	596.00	1008.00	911.00	825.00

According to the table, mean, median and mode in each of the variables do not differ much and this can be an indication of normal distribution in these variables. The variable of knowledge assessment and transfer has the minimum of standard deviation by about 0.57, and the variable of increase in human resources knowledge has the maximum of standard deviation among other variables by 0.88.

**Inferential Findings**

In this study, inferential findings are first followed by applying Kolmogorov-Smirnov Test in order to investigate normality. Kolmogorov-Smirnov reliable test shows the normality of the available data distribution in each variable. The assumptions of the normality of variables are provided below.

H0: There is no difference between the observed and expected frequencies (distribution is normal).

H1: There is a difference between the observed and expected frequencies (distribution is not normal).

Variable	Type of the Applied Distribution	Sig.	Error Size	Hypothesis Approval	Result
Designing of Knowledge Management System Implementation Pattern	Normal	304/0	05/0	H0	Normal
Human Resources Development	Normal	257/0	05/0	H0	Normal
Knowledge Assessment and Transfer	Normal	427/0	05/0	H0	Normal
Increase in Human Resources Knowledge	Normal	302/0	05/0	H0	Normal
Increase in Human Resources Activity	Normal	325/0	05/0	H0	Normal

**Exploratory Factor Analysis**

If factor loadings approximate 1, they are suitable and if they recede from it, they are unsuitable inasmuch as the value of 0.3 indicates the omission of the related variables. In other words, a variable with a factor loading less than 0.3 should be omitted.

Variables	Factor Loading
Human Resources Development	.690
Knowledge Assessment and Transfer	.853
Increase in Human Resources Knowledge	.648
Increase in Human Resources Activity	.823

**The Fit of Regression Model**

Since a management system implementation pattern is to be designed, and this pattern is completed with variables such as human resources development, knowledge assessment and transfer, increase in human resources knowledge, and increase in human resources activity, it is studied in this section.

Table of regression adequacy index

Durbin-Watson	Coefficient of Determination	R
1.967	0.659	0.812

The value of correlational coefficient between variables is seen in the table and equals 0.812. It is also seen in the table that the value of coefficient of determination is 0.659. Coefficient of determination indicates the predictive power of the fit. Bearing this

in mind, it can be admitted that the fit in this case, has 65 percent predictive power of dependent variables in comparison to independent variable.

The F Test Table for the Significance of the fit

Model	Df (degree of freedom)	Statistic F	Sig.
1	Regression	4	102.501
	Remainder	212	
	Total	216	

The F table indicates whether the fit is in a significant level and this significance is statistically important or not. Regarding what has been said, the significance level is one of the indications of the fact that the fit is significant. As it is seen, the value of this statistic equals 102.50, which indicates that the fit is significant and of high power.

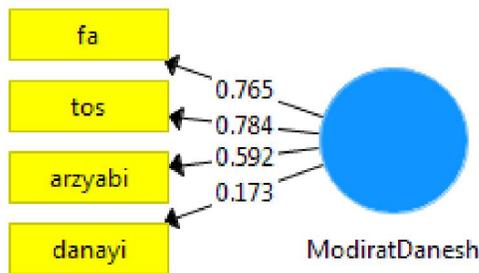
Table of Regression Effect Coefficients

Model	Standardized Coefficients Beta	t value	Sig.
1	Intercept	1.520	.130
	Human Resources Development	.78	10.67
	Knowledge Assessment and Transfer	.59	9.11
	Increase in Human Resources Knowledge	.11	2.38
	Increase in Human Resources Activity	.76	10.42

It is implied that the significance level of all variables is less than 5 percent and there is a significant correlational relationship between them. Furthermore, the statistic of T is an indicator of the variable significance in the model according to which, human resources development with the coefficient of 0.78 has a more significant relationship with the knowledge management system implementation, in comparison to other variables. Beta coefficient also indicates the rate of changes in the observed variables in consideration of one-unit changes in the independent variable.

**The Final Model Presented via LISREL**

According to the collected information and the studies conducted, the output of the software is provided below.



Figure

fa: Labor Force Activity danayi: Labor Force Knowledge.  
 arzyabi: Knowledge Assessment and Transfer tos: Labor Force Development.

As it is implied from the above figure, the rate of effectiveness coefficients of knowledge management system in Khuzestan Gas Company on each of the

variables and on knowledge management system are 0.17, 0.59, 0.76, and 0.78, respectively. Therefore, the maximum rate of the system effectiveness in this model belongs to the labor force activity and development. The model goodness indices are discussed in the following section.

In the following table, it can be generally seen that the presented model enjoys goodness. Therefore, according to the acquired model and the results of this study, it was determined that human resources development, in comparison to other factors, is of great significance in designing of knowledge management system implementation pattern in Khuzestan Gas Company. In fact, this system can be used to improve the scientific skill level and update the human resources information; all of these factors result in the improvement of human resources performance and development. Knowledge transfer is one of the other effective factors on knowledge management system. As a matter of fact, this system is capable of sharing the organization knowledge with other organizations by providing facilities such as web and the like, as well as arranging regular intra-organizational and inter-organizational meetings. Human resources knowledge also affects knowledge management system, in a way that by using this system and assessing the personnel of the organization, one is able to employ wise and knowledgeable people of high intelligence. Increase in the labor force activity is one of the other high effective factors in the knowledge management system. In fact, the organization should increase the labor force activity by means of strategies like encouragement, continuous assessment of performance, etc.

Fit index	Optimum	The amount available
GFI(Goodness of Fit Index)	90/0<	0.83
AGFI(Adjusted Goodness of Fit Index)	90/0<	0.86
RMR(Root Mean square Residual)	05/0>	0.035
NFI (Normed Fit Index)	90/0<	0.91
NNFI (Non-Normed Fit Index)	90/0<	0.92
IFI(Incremental Fit Index)	90/0<	0.92
CFI (Comparative Fit Index)	90/0<	0.92
RMSEA(Root Mean Square Error of Approximation)	08/0>	0.061

**Summary of Results**

The results acquired from this study can be entitled as below:

- The maximum frequency of participation in this study belonged to the men group.
- The maximum frequency of individuals belonged to the age group of 30 to 40.

- The maximum frequency of educational level belonged to BA.
- The maximum frequency of individuals belonged to those with the work experience of 10 to 20 years.
- All of the studied variables are in the normal distribution.

Regarding variables and the available questions in this study, as it is seen in the following,.....

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