

# Knowledge Management Factors Affecting the Level of Commitment

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**Abstract**—This paper examines the influence of knowledge management factors on organizational commitment for employees in the oil and gas drilling industry of Iran. We determine what knowledge factors have the greatest impact on the personnel loyalty and commitment to the organization using collected data from a survey of over 300 full-time personnel working in three large companies active in oil and gas drilling industry of Iran. To specify the effect of knowledge factors in the organizational commitment of the personnel in the studied organizations, the Principal Component Analysis (PCA) is used. Findings of our study show that the factors such as knowledge and expertise, in-service training, the knowledge value and the application of individuals' knowledge in the organization as the factor "learning and perception of personnel from the value of knowledge within the organization" has the greatest impact on the organizational commitment. After this factor, "existence of knowledge and knowledge sharing environment in the organization"; "existence of potential knowledge exchanging in the organization"; and "organizational knowledge level" factors have the most impact on the organizational commitment of personnel, respectively.

**Keywords**—Knowledge management, organizational commitment, loyalty, drilling industry, principle component analysis.

## I. INTRODUCTION

PORTER described organizational commitment as the strength of the individual identification in a particular organization. According to the definition of Porter [1], the concept of organizational commitment has three major components:

1. Strong belief in accepting the goals and values of the organization;
2. Tendency to considerable effort for the organization;
3. Definite intention to remain a member of the organization.

Refernece [2] defined organizational commitment as an employee's loyalty to the organization, recognition with the organization (i.e., pride in the organization and belief of organizational goals), and involvement in the organization. "Organizational commitment is related to the whole organization and not to the job or work itself" [3]. Organizational commitment is very important because of the complicated relationship between the organization and the individual and the extent to which commitment to an organization encourages other positive work behaviors [4], [5] explained the importance of understanding and promoting commitment to the organization in achieving the efficiency

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and effectiveness of the organization. Nevertheless, few studies have been investigated in the factors affecting the development and maintenance of organizational commitment.

Researchers in organizational behavior have specified organizational commitment as nature of relationship [6], loyalty to employer [7], integration of individual and organizational aims [8], identification with or dependence to the organization [1], [9], [10], preparation to apply considerable attempt on behalf of the organization, and strong tendency to maintain organizational membership [11]-[13] categorized organizational commitment into three classes: affective commitment, continuance commitment, and normative commitment.

Employees with intense affective commitment stay with the organization because they want to, those with an intense continuance commitment stay because they need to, and those with an intense normative commitment stay because they perceive they ought to. Some different empirical surveys confirmed that affective commitment is more positively related to job performance [14]-[17].

### A. Benefits of Organizational Commitment

Many desirable outputs for people and organizations have occurred as a result of commitment. Studies have shown that employees with higher commitment, have less useless works in activities under their control [4], [18], [15] and they work harder and better (for example, [19]). Generally, there is a higher possibility that outputs and outcomes which are more under control of workers, would be positively affected by employee commitment in their organization [4]. Since workplaces create more responsibility on employees to make decisions and manage their daily activities, the obligation to maintain positive conditions in organizations becomes more important [20]. Organizational researchers look to promotion of organizational commitment as a highly desirable and useful factor for organizations [21].

Organizational commitment also includes desirable results for workers. There is compelling evidence that people tend to be committed. Research shows that dependence and attachment are reasons of human existence. The opposite of commitment is alienation, and alienation is an unsound condition [22].

[23] presented comprehensive literature related to work commitment. As primary goals, they sought to (a) accumulate correlations among dimensions of work commitment to notice which were inter-correlated and (b) specify effect of work commitment dimensions and sub-dimensions on particular result variables (job satisfaction, job performance, turnover intentions, and turnover).

## II. RESEARCH BACKGROUND

With the study of the literature review, although the discussion of organizational commitment and its influential factors have been examined, but the effect of various aspects of knowledge management in organizations on loyalty and commitment of human resources has not been studied. Some researchers have done research on the topic of knowledge management. [24] examined the relationship between mentoring and a variety of organizational commitment in America's Army. They concluded that mentoring has a direct relationship with a variety of organizational commitment and an inverse relationship with the outflow of labor. In [25], Benson and Brown conducted a study and concluded that the knowledge workers and those who deal with knowledge in the organization have less outflow compared with other personnel. Another study on knowledge workers has shown that the presence of knowledge base in the organization can increase their working commitment [26]. In another study, the effect of factors of human resource management has been studied on the commitment and loyalty of knowledge workers. These factors include the issues such as organizational support, procedural justice, participation in decision-making and so on. The results showed that some factors had a positive impact while others had no effect. For example, procedural justice and organizational support of personnel by the organization had a positive impact on personnel loyalty but the satisfaction of salary or participation in decision-making has been ineffective.

Some other researchers have done studies on organizational learning. In one study, the researchers investigated the relationship between learning culture in the organization and the personnel learning and organizational performance. These studies have shown that the presence of learning culture within the organization and among the IT personnel has increased the exchange of knowledge between them which has led to the high level of their satisfaction of work environment. Finally, this strong culture has improved the organizational performance [27]. In another study, the relationship between learning and organizational loyalty was examined. This research has shown that creating learning opportunities in the organization has a positive impact on personnel's loyalty. The personnel were divided into two categories: full-time and part-time and were studied. The effect of learning on both forces was positive and increased their loyalty [28]. Also in 2010, a study was conducted by [29] which investigated the relationship between learning culture and strengthening the personnel's spirit and organizational commitment. This study that was conducted in one of the government agencies of Korea showed that the presence of learning culture within the organization strengthens the personnel's spirit and increases their loyalty to the organization. In fact, the employees who perceive a stronger learning culture demonstrate a higher commitment.

The studies conducted on the relationship between knowledge management in organizations and the personnel loyalty was limited to the above-mentioned studies. That is why in this paper concerns the relationship between

knowledge management and its influential factors on personnel loyalty which in this case is something new and original.

### A. Research Question

This research seeks to answer the question of what knowledge factors have the greatest impact on the personnel loyalty to the organization.

### B. Research Objective

The aim of this study is to determine the factors affecting the area of knowledge management and the effects of them on the organizational commitment and personnel loyalty to the organization. In fact, it determines the various factors in the area of knowledge management on which the organizations should focus to have the most feedback and the least outflow of labor especially knowledge workers and professionals.

### C. Research Methodology

In terms of applied purpose and in terms of data collection, this research is a descriptive-survey study. The required data were collected by questionnaire.

The designed questionnaire included 16 knowledge factors and the participants were asked to specify the effect of each of these factors on organizational commitment based on the Likert scale (Table I).

TABLE I  
 LIKERT SPECTRUM

Affectless	Low-impact	Average	Effective	Very effective
1	2	3	4	5

### D. Research Scope

The research was conducted on the personnel of three large companies active in oil and gas drilling industry. Cluster sampling was used to select the samples based on Table II.

## III. THE PROCESS OF DATA AND SAMPLE COLLECTION

Data were collected between the months of October 2014 to January 2015 from the professionals, managers and operational personnel of three large companies active in oil and gas drilling industry of Iran. Participants in this study were told that the study would help them to have a better evaluation of their organizations to achieve a better knowledge environment and paying more attention to the knowledge of human resources in the organization. Since there are similar positions in different organizations and similar charts for the site forces (active in the drilling rigs) in the oil and gas drilling industry, thus the distribution of the questionnaires was similar among the personnel of three studied companies (that were similar in size) and is like Table II. A total of 300 questionnaires were sent to full-time personnel working in 3 intended organizations; a total of 253 were returned and 234 answers were usable and acceptable for the study and the response rate was 78%.

## IV. DATA ANALYSIS METHOD

To determine the effect of knowledge factors in the

organizational commitment of the personnel in the studied organizations, the principal component analysis (PCA) was used. Since some of the factors identified in the study are correlated to each other, thus using the PCA technique will help to detect the relationships and classify the factors.

The following command was used to analyze the data of 234 collected questionnaires on 16 factors examined in SAS software.

TABLE II  
SAMPLE DEMOGRAPHIC DATA

Criteria	Values	Frequency	Percentage
Gender	Female	12	5.13
	Male	222	94.87
Education	High school	35	14.96
	Diploma	83	35.47
	Two-year college	24	10.26
	Four-year college	73	31.20
	Graduate school	19	8.12
Job level	Manager	8	3.42
	Boss	36	15.38
	Expert	139	59.40
Job type	Employee	51	21.79
	Staff	41	17.52
	Operating	193	82.48
Work experience	1-5 years	62	26.50
	5-10 years	53	22.65
	10-20 years	58	24.79
	20-30 years	44	18.80
	Over 30 years	17	7.26

## V. RESULTS AND CONCLUSION

To use a smaller number of factors, which also cover a major portion of the total variance; the PCA method was used to assess the impacts on the factor of organizational commitment and loyalty of the personnel. As can be seen in Table II, 4 factors were obtained with eigenvalues greater than 1. About 93% of total variance is explained by these 4 factors.

TABLE III  
EIGENVALUES OF THE COVARIANCE MATRIX

	Eigen Value	Difference	Proportion	Cumulative
PRIN 1	<b>7.94676543</b>	5.863957	0.5892	0.5892
PRIN 2	<b>2.08280805</b>	0.615064	0.1544	0.7436
PRIN 3	<b>1.4677439</b>	0.444964	0.1088	0.8524
PRIN 4	<b>1.02277997</b>	0.474544	0.0758	0.9283
PRIN 5	0.54823565	0.447215	0.0406	0.9689
PRIN 6	0.10102022	0.041213	0.0075	0.9764
PRIN 7	0.05980694	0.010327	0.0044	0.9808
PRIN 8	0.04947985	0.004141	0.0037	0.9845
PRIN 9	0.04533899	0.008049	0.0034	0.9879
PRIN 10	0.03729032	0.003539	0.0028	0.9906
PRIN 11	0.03375102	0.004829	0.0025	0.9931
PRIN 12	0.02892184	0.008487	0.0021	0.9953
PRIN 13	0.02043523	0.004031	0.0015	0.9968
PRIN 14	0.01640467	0.002346	0.0012	0.9980
PRIN 15	0.01405874	0.001131	0.0010	0.9990
PRIN 16	0.01292742	0.012927	0.0010	1.0000
<b>Total Variance</b>	<b>13.48776824</b>			

TABLE IV  
PRINCIPLE COMPONENTS ANALYSIS OF SURVEY ITEMS

	Factors	Loadings			
		PRIN1	PRIN2	PRIN3	PRIN4
1	Participation in the formal tracks of the exchange of information and knowledge in the organization	0.4051	-0.1219	<b>0.6539</b>	-0.0500
2	Participation in the informal networks to exchange information and knowledge in the organization	0.2069	-0.2284	-0.0953	<b>0.5923</b>
3	The richness and depth of knowledge and expertise of the taken job	<b>0.7098</b>	0.3292	0.2925	0.4463
4	Considering the appropriate in-service training programs by the organization	<b>0.5765</b>	0.2713	0.2389	0.4771
5	Considering the training courses in compensation, the promotion conditions and etc.	0.2090	-0.0883	0.0116	<b>0.8237</b>
6	The exchange of knowledge with other specialized units and the development of knowledge and skills	0.1850	<b>0.5365</b>	-0.1929	-0.1145
7	The value of education in the organization (being an efficient factor for determining the compensation, conditions of promotion, etc.)	0.1807	<b>0.8130</b>	-0.3750	-0.1168
8	Interaction with colleagues with high expertise and knowledge	0.2091	<b>0.5470</b>	-0.5121	0.0440
9	Existence of the culture of knowledge sharing in the organization	0.1543	<b>0.6689</b>	0.3746	-0.3208
10	Existence of suitable IT infrastructures for the knowledge transfer in the organization	0.4145	-0.1204	<b>0.5470</b>	-0.0846
11	Use of your knowledge and expertise by the organization	<b>0.6174</b>	0.1808	0.2874	-0.0482
12	Accessibility to needed information	0.2233	<b>0.5667</b>	-0.3081	-0.2141
13	Documentation of personnel knowledge	0.4086	-0.1425	<b>0.7714</b>	-0.0431
14	The rate of satisfying your expectations about promotion of the knowledge and expertise	0.4063	-0.1389	0.4574	<b>0.6891</b>
15	Recognizing the knowledge owners	0.1983	-0.2447	0.0051	<b>0.6420</b>
16	The value of knowledge in the organization (being an efficient factor for determining the compensation, conditions of promotion, etc)	<b>0.5602</b>	0.1080	0.2659	0.2414
<b>Cronbach alpha reliability</b>		0.82	0.75	0.79	0.86
<b>Eigenvalue</b>		7.95	2.08	1.47	1.02
<b>Percentage of explained variance</b>		58.92	15.44	10.88	7.58

To classify 16 initial factors and determine factors of the four new variables, Table IV that is one of the outputs of SAS software was used.

For each new variable, the factors with coefficients greater than 0.5 (bold coefficients) were selected and new factors were formed. Then, based on the factors for each new variable, the new variables were labeled as given in Table V.

Table IV also shows that all factors have reliability more than 0.7. Since the standard number to assess the reliability is equal to 0.7, so the validity of the study was also approved.

As can be seen in Tables IV and V, the factors such as knowledge and expertise, in-service training, the knowledge value and the application of individuals' knowledge in the organization as the factor "learning and perception of personnel from the value of knowledge within the organization" has the greatest impact on the organizational commitment. After this factor, factors such as the exchange of knowledge and interaction with colleagues, access to needed

knowledge and information and the culture of knowledge exchange in the organization as the factor "existence of knowledge and knowledge sharing environment in the organization" is the second most important factor affecting the determination of the level of organizational commitment. Also factors such as documenting the individuals' knowledge, the infrastructure necessary for knowledge exchange and the presence in the exchange track as the factor "existence of potential knowledge exchanging in the organization" represents the third factor which shows the effect on organizational commitment and loyalty. And finally the remaining factors represent the factor "organizational knowledge level" which has the least impact on the organizational commitment of personnel.

TABLE V  
 LABEL OF NEW VARIABLES

PRIN1	The richness and depth of knowledge and expertise of the taken job	The rate of learning and perceptions of the value of knowledge in the organization by the personnel
	Considering the appropriate in-service training programs by the organization	
	Use of your knowledge and expertise by the organization	
PRIN2	The value of knowledge in the organization (being an efficient factor for determining the compensation, conditions of promotion, etc.)	Existence of knowledge and knowledge sharing environment in the organization
	The exchange of knowledge with other specialized units and the development of knowledge and skills	
	The value of education in the organization (being an efficient factor for determining the compensation, conditions of promotion, etc.)	
PRIN3	Interaction with colleagues with high expertise and knowledge	Existence of potential knowledge exchanging in the organization
	Existence of the culture of knowledge sharing in the organization	
	Accessibility to needed information	
PRIN4	Participation in the formal tracks of the exchange of information and knowledge in the organization	Level of organizational knowledge
	Existence of suitable IT infrastructures for the knowledge transfer in the organization	
	Documentation of personnel knowledge	
	Participation in the informal networks to exchange information and knowledge in the organization	
	Considering the training courses in compensation, the promotion conditions etc.	
	The rate of satisfying your expectations about promotion of the knowledge and expertise	
	Recognizing the knowledge owners	

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