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A Comparative Study about Electronic Human Resource Management, Organizational Learning, and Organizational Performance (Case Study: Water Department in Tehran and Kermanshah Provinces in Iran)

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ABSTRACT

The purpose of this study is to compare organizational learning, organizational performance, and electronic human resource management in the water department staff of Tehran and Kermanshah provinces. Given its purpose, this study is an applied research, in which questionnaire is used to measure the variables. After measuring the content validity and reliability (the Alpha coefficient of electronic human resource management (0.7), organizational learning (0.8), and organizational performance (0.75)), the research tools were distrusted among the statistical population, i.e. the questionnaires were distributed in a sample of 240 individuals (120 persons from the staff in Tehran province and 120 persons from the staff in Kermanshah province) consisting of all experts of water department in Tehran and Kermanshah provinces. The statistical method of multivariate variance analysis (MANOVA) was used to analyze the data. The research results indicated that among all the variables and their components, there is a significant difference only in the information acquisition and creation component of organizational learning between the two groups, and there is no difference in other components. Finally, according to the results obtained, some suggestions have been presented to future researchers.

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Introduction

The emergence of social organizations and their increasing growth is one of the distinctive features of human civilization. Given the different temporal-spatial factors and specific requirements and features of any society, the evolution and development of these organizations are increasingly growing. In a situation where a highly competitive atmosphere prevails in most of the industries, each individual, organization, or system is, for sure, consistently trying to create a better condition for their performance, so that they could gain a higher share from the market and eventually enhance their profitability. State organizations are not exempt from this issue, and make an effort to improve the quality of delivering services to clienteles. The history of implementing information technology in electronic human resource management goes back to 1940s-50s, when companies such as General Motors implemented IT in personnel and payroll systems (Walker, 1992). Rapid and growing development of IT and its applications in different areas in an organization resulted in penetration of IT in human resource systems and processes and created a new approach for human resource management, which is called electronic human resource management (Nazari, 2011). It is expected that introduction of electronic human resource management effectively and efficiently facilitates the work for human resource experts (Vermenz and Veldhoven, 2007). In recent decades, several studies have been carried out regarding the concepts of electric human resource, organizational learning, and organizational performance, i.e., concepts that, according to the resource-based view (RBV), can be regarded as important resources to create competitive advantage and a window towards improving service delivery and enhancing organizational performance (Jimenez and Navarro, 2007). Based on this view, organizational resource include all assets, capabilities, organizational processes, information, organizational knowledge, etc. providing an ability for the organization to achieve higher efficiency and effectiveness by implementing proper strategies (Barney, 1991). Based on the definition of organizational learning introduced by Huber (1991), in which he proposed four structures of knowledge acquisition, information distribution, information interpretation, and organizational memory for organizational learning, the electronic human resource management might be regarded as a way to acquire a part of knowledge that is the input of organizational learning structure.

Given the strategic importance of water in the world and critical condition of underground water being experienced by many countries all around the world, specifically the challenges ahead in Iran, the regional water department, as one of the major and fundamental elements of water management, needs to facilitate its organizational learning process and improve its organizational performance, which can be achieved by electronic human resource management. Regional water department (the organization studied in this research) is not exempt of environmental changes and, as an organization

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in large scale, required "learning". Without this capability, such an organization wouldn't be able to choose a specific structure, flow, product, and culture and would fail because of the crises ahead regarding water issues. Given the wide range of clients this organization is facing and the extensive and important information acquired from them, which can be regarded as the main input of organizational learning, the significant point to be noted is the effect that electronic human resource management have on organizational learning and eventually on improving the organizational performance.

This study aims to compare regional water departments of Tehran and Kermanshah provinces regarding electronic human resource management, organizational learning, and organizational performance variables. Given the fact that implementation of the electronic human resource management systems in Tehran regional water department has a rather longer history than of Kermanshah regional water department, it is discussed here that how much it has affected the effectiveness and efficiency of organizational learning and, accordingly, how much it has improved organizational performance. It has to be noted that this research is exploratory. No study has compared two state organizations in such scale so far, so there is no literature related to this research.

Research Theory

Since mid-1990s, information and communication technology has influenced international community, which is mainly due to development of internet. Reliance on Information and Communication Technology (ICT) has grown far beyond expectations. The governments all around the world have made efforts to identify the potential opportunities introduced by ICT in accordance with the requirements of the citizens. These efforts has resulted in growth of online electronic services and creation of electronic human resource management.

Electronic Human Resource Management

Based on issues such as widespread organizational electronic network of information related to human resource, databases, tools, software, and interactions, Watson and Yant (2002) described electronic human resource management as utilizing any technology helping the managers and staff to maintain direct relationship with the services and other human resource activities for communication and reporting. Furthermore, many routine tasks of human resource management are delegated to the staff by this technology, so occupation and involvement of human resource staff in administrative and routine tasks and excessive delays in performing the tasks are prevented. According to Bowen &Ostroff (2004), the human resource management system of the organization communicates some signals to the staff, which makes them aware if their behavior and expected performance. As the signals are sent with more power and transparency, they will show the human resource system stronger and more stable. In recent years, where most big organizations have utilized technologies in their human resource management, using electronic human resource management (e-HRM) has been increasingly growing (CIDP, 2005). Electronic human resource management can improve efficiency and facilitation in shifting the role of human resource to a higher strategic level (Strohmier, 2014; Pari and Tyson, 2011). According to Henson (2005), nowadays, workforce and technology are like heartbeat, and they are human resource business tool set. Since human resource management is the most important unit of any organization to manage and develop workforce, information technology would, of course, help human resource management in achieving these goals (Qais et al., 2013).

Organizational Learning

Organizational learning is one of the major effective attitudes in leadership which was first discussed in 1963 by Cyert and Marchmord (Ghorbanizadeh, 2008). Based on this attitude, organizational learning is an adaptive process focusing on standard scientific methods to achieve organizational goals (Aghahosseini, 2002). Argyris (1978) describes organizational learning as the process of identifying and correcting errors. Bob Gans defines organizational learning as acquisition and application of knowledge, skills, values, beliefs, and attitudes improving the maintenance, growth, and development of an organization (Behnami, 2005). Huber (1991) considers knowledge acquisition, information distribution, information interpretation, and organizational memory as the factors consisting the system of organizational learning (Argyris and Schon, 1978; Wang and Elinger, 2011). One of the effective factors in success of an organization is learning capability of human resource and the method of its management, since organizational learning is based on individual learning of people who constitute the organization, as well as human resource system, in order to help organization in generating new knowledge and motivating the learning, which can be achieved by electronic human resource management (Lopes, C. Real, Valle, 2011). This means that electronic human resource management (e-HRM) plays a major role in an organization moving towards learning.

Organizational Performance

The major weakness of companies and organizations is low organizational performance and, therefore, reduced productivity. This weakness can be overcome by identifying the methods of improving organizational performance through adopting a human-centered approach based on strategic management thinking and making the managerial actions purposeful by objective and practical ways (Bakal, 2007). Generally, organizational performance indices can be divided into two classes of subjective and objective. The objective indices of organizational performance are those indices measured in a quite realistic way and based on objective data such as profitability indices, namely return on investment and return on equity. Subjective indices of organizational performance mostly include indices formed based on the judgment of the stakeholder groups in the organization, namely satisfaction of clientele, satisfaction of the staff, etc. (Tayebi, 2010). Yukl (2008) suggest three aspects to measure organizational performance, including efficiency, adaptability and human resource. Reviewing the literature in this context, he concludes that the organizational performance depends on internal processes and timely adaptation against opportunities and external threats (Yukl, 2005).

Research Questions

Based on the goals mentioned, research questions and hypotheses are divided into primary and secondary hypotheses or questions. This research has one primary question and three secondary questions.

A. Primary question:

Is there any difference between the regional water departments of Tehran and Kermanshah provinces grading electronic human resource, organizational learning, and organizational performance?

B. Secondary questions:

1. Is there any difference between the water department staff of Tehran and Kermanshah provinces regarding organizational performance?
2. Is there any difference between the water department staff of Tehran and Kermanshah provinces regarding organizational learning?
3. Is there any difference between the water department staff of Tehran and Kermanshah provinces regarding electronic human resource management?

Research Methodology

Since the focus of the current study is on the description and investigation of the effect of electronic human resource management on organizational learning and improving the organizational performance in a comparative way, it is an applied research regarding its purpose, a quantitative-descriptive research regarding the method of collecting and analyzing the data, and causal-comparative type. The statistical population included all the staff of regional water department of Tehran and Kermanshah provinces. Since the purpose of this study is to investigate electronic human resource management, organizational learning, and organizational performance, the staff with bachelor and higher academic degrees constituted the statistical population. Given the fact that the total number of people working in the regional water department of Tehran province was 760, 228 of whom having bachelor and higher academic degrees constituted the statistical population of this study. The number of sample volume, using Cochran formula and Morgan table and its associated formula, was estimated to be at least 142. The total number of people working in the regional water department of Kermanshah province was also 378, 136 of whom had bachelor and higher academic degrees. The statistical sample volume, using the methods mentioned above, was estimated to be at least 100. Due to the small difference between the two populations, the sample volume was determined to be an average number of 120. The method of sampling for selecting the staff was purposive and available sampling. The main tool used in this survey was "questionnaire". In the first section of the questionnaires, it has been tried to collect the general and demographic information of the respondents. The second section of the questionnaire was designed based on e-HRM components, in which the indices used in the master thesis entitled "Investigating the relationship between electronic human resource management and the quality of providing human resource services" of Shahid Beheshti University was used to determine those three components. The third section was related to HRM components, the indices used in which were taken from Hasild's paper (1997). Questionnaire and opinions of academic experts were also used to evaluate its validity. The third section included 21 questions related to organizational learning component. Jimenz and Navarro had taken these questions from a questionnaire provided by Lopez et al. in 2004. The fourth section included four aspects of information acquisition, information distribution, information interpretation, and organizational memory. This section was comprised of 12 questions about organizational performance, provided by Sanjaghi et al. (2013), taken from Yukl research (2008), which included three aspects of efficiency, adaptability, and human resource.

Validity and Reliability of the Test

In order to evaluate the research, one must be able to provide the data and information necessary for analysis, as well as the final results, for the researchers, therefore, the research must have validity and reliability. In this study, the Cronbach's alpha method was used to measure the reliability of the test. This method is used to calculate internal consistency of the measuring devices measuring different features. In order to calculate the Cronbach's alpha coefficient, first, the variance of scores of the questions in each subset of the questionnaire has to be calculated. To do so, a primary (pilot) sample including 30 questionnaires was pre-tested. Then, using the data obtained from these questionnaires and via SPSS statistical software, the confidence index was calculated using Cronbach's alpha method. The value of Cronbach's alpha coefficient for human resource management, organizational learning, and organizational performance scale was 0.709, 0,805, and 0.752, respectively. After standardization, the coefficients were determined to be 0.708, 0.803, and 0.749, respectively. Since the value of Cronbach's alpha coefficient associated with these set of scales were all greater than 0.7, the questionnaire have the required reliability.

Research Findings

In this section, the frequency distribution of the sample is presented in terms of age, education, and years of experience. Next, the descriptive findings of research variables and, then, the results of multivariate variance analysis (MANOVA), performed to examine the research hypotheses, are presented.

According to the information shown in Table 2, the mean values of the scores related to efficiency (9.65), adaptability (10.29), and human resource (12.63) aspects of organizational performance for the staff of water department in Kermanshah province are higher than those of Tehran province. On the other hand, the mean values of the scores related to information acquisition and creation (17.39), information distribution (16.66), and organizational memory aspects of organizational learning for the staff of water department in Tehran province are higher than those of Kermanshah province.

Table 1. Frequency distribution of the sample in terms of age, education, and years of experience in each group

Groups		Tehran Province		Kermanshah Province	
		Mean	Standard Deviation	Mean	Standard Deviation
Organizational Performance	Efficiency	9.36	2.35	9.65	2.35
	Adaptability	10.14	2.62	10.29	2.81
	Human Resource	12.06	2.59	12.63	2.30
Organizational Learning	Information Acquisition and Creation	17.39	2.56	16.65	2.59
	Information Distribution	16.66	2.75	16.35	2.91
	Information Interpretation	16.66	2.91	16.81	3.29
	Organizational Memory	15.89	3.32	15.45	3.16
Electronic Human Resource Management	Ease	26.98	3.43	26.63	3.31
	Quality	26.54	2.61	26.28	2.93
	Job Relationship	25.77	3.00	25.51	3.04

The mean score of information interpretation (16.81), as one of the components of organizational learning, for the staff of water department in Kermanshah province is higher than that of Tehran province. The mean score of ease (26.98), quality (26.54), and job relationship (25.77), as the components of electronic human resource management, for the staff of Tehran province is higher than that of Kermanshah province. Multivariate variance analysis was used to examine research hypotheses. Before variance analysis tests, Mbox test was performed to check the pre-assumptions of variance analysis test in order to investigate the similarity of variables' variance matrix in the groups, Levene's test was performed to assess the equality of linear variances of the variable in the group, and Kolmogorov-Smirnov test was used to examine the normality of distribution of the dependent variables in the groups. According to Mbox test results, which were not significant for any of the variables, the homogeneity of variance matrices condition of variance matrixes was thoroughly met. According to Levene's test and its non-significant results for all of the variables, the condition of variance equality in the groups was not met. Given the fact that the z value of Kolmogorov-Smirnov was in the range of +1.96 and -1.96 for all the variables, it can be argued that score distribution of all variables under study was normal. After examining the pre-assumptions, multivariate variance analysis (MANOVA) was used to investigate the difference in mean scores of the variables between the water department staff of Tehran and Kermanshah provinces. The results of multivariate variance analysis to compare the organizational learning and organizational performance in the regional water department staff of Tehran and Kermanshah provinces are reported in Table 3. According to the results shown in Table 3, it is clear that the significance level of F statistic values in all four tests is greater than 0.05, so it can be concluded that there is no significant difference in the mean score of organizational performance, organizational learning, and electronic human resource management between the water department staff in Tehran and Kermanshah provinces.

Table 2. Multivariate variance analysis in the groups

Type of Effect	Name Of Test	Value	F Statistic	Degree of Freedom (DOF)	DOF Error	Significance Level
Constant Value	Pillay Effect	0.99	3882.62	10	163	0.001
	Wilks Lambda	0.004	3882.62	10	163	0.001
	HotellingEffect	238.19	3882.62	10	163	0.001
	Root Diminishing	238.19	3882.62	10	163	0.001
Group	Pillay Effect	0.52	0.902	10	163	0.53
	Wilks Lambda	0.94	0.902	10	163	0.53
	HotellingEffect	0.055	0.902	10	163	0.53
	Root Diminishing	0.055	0.902	10	163	0.53

Table 3. Inter-variable effects in organizational performance

Source of Changes	Dependent Variables	Sum of Squares	Degree of Freedom	Mean Square	F Statistic	Significance Level
Group	Efficiency	0.36	1	0.36	0.06	0.80
	Adaptability	1.38	1	1.38	0.18	0.66
	Human Resource	4.68	1	4.68	0.78	0.37
Error	Efficiency	1086.38	237	4.58		
	Adaptability	1417.36	237	5.98		
	Human Resource	1157.99	237	4.88		

Table 4. Inter-variable effects in organizational learning

Source of Changes	Dependent Variables	Sum of Squares	Degree of Freedom	Mean Square	F Statistic	Significance Level
Group	Information Acquisition and Creation	29.13	1	29.13	4.24	0.041
	Information Distribution	1.06	1	1.06	0.125	0.72
	Information Interpretation	1.46	1	1.46	0.160	0.69
	Organizational Memory	3.88	1	3.88	.385	0.53
Error	Information Acquisition and Creation	1330.38	237	5.61		
	Information Distribution	1647.20	237	6.95		
	Information Interpretation	1778.10	237	7.50		
	Organizational Memory	1958.41	237	8.26		

Table 5. Inter-variable effects in organizational electronic human resource management

Source of Changes	Dependent Variables	Sum of Squares	Degree of Freedom	Mean Square	F Statistic	Significance Level
Group	Ease	5.61	1	5.61	0.485	0.48
	Quality	0.089	1	0.089	0.011	0.91
	Job Relationship	0.34	1	0.34	0.036	0.85
Error	Ease	222.65	237	0.93		
	Quality	1512.96	237	6.38		
	Job Relationship	1863.14	237	7.86		

Univariate variance analysis (ANOVA) was used to analyze the difference between the groups regarding the components of organizational performance and organizational learning, whose results are presented in Tables 4, 5, and 6.

According to the values obtained for F statistic and the significance level shown in Table 4 (P<0.05), it is clear that the is no significant difference in the mean scores of organizational performance (efficiency, adaptability, and human resource)between the water department staff of Tehran and Kermanshah provinces. Therefore, to answer the first question of the research, it can be argued that there is no difference between the water department staff of Tehran and Kermanshah provinces regarding organizational performance.

To answer the second question, given the values obtained for F and the significance level shown in the above table (P<0.05), it can be argued that there is a significant difference in the mean score of information acquisition and creation between the water department staff of Tehran and Kermanshah province, but there is no significant difference in the mean score of information distribution, information interpretation, and organizational memory between the two groups. Following the significant difference in the information acquisition and creation aspect between the two groups, and considering their mean values regarding this aspect, it can be said that the mean score of the staff of Tehran province (17.39) is higher than that of Kermanshah province (16.65).

According to the values obtained for F statistic and the significance level shown in Table 6 (P<0.05), it is clear that there is no significant difference in the mean score of electronic human resource management (ease, quality, and job relationship) between the water department staff of Tehran and Kermanshah provinces. To answer the second question of the research, it can be said that there is no difference between the water department staff of Tehran and Kermanshah provinces regarding electronic human resource management.

Discussion and Conclusion

The purpose of this study was to investigate whether there is any difference between water department staff of Tehran and Kermanshah provinces regarding the components of electronic human resource management, organizational learning, and organizational performance. The results of multivariate variance analysis and suitable statistical test to compare aspects of the model indicated that, since the significance level of F values in all four tests of Pillay Effect, Wilks Lambda, Hotelling Effect, and Root Diminishing is greater than 5 percent, there is no significant difference between the two organizations regarding the aspects of electronic human resource management, organizational learning, and organizational performance. In the primary question, we were looking forwards to compare the main aspects of the model in the two organizations. Given the fact that the history of establishing e-HRM in Tehran organization is longer than that of Kermanshah, and since the nature of this research is exploratory and there is no literature available in this area, it can be argued that, according to the result obtained from the question, which implies the similarity in the key aspects of the model, the reason might lie in the fact that both organizations are state ones, as both organizations follow the same rules, instructions, and policies to achieve their organizational goals, which might result in lack of flexibility in enhancing the ability of the organization to acquire competitive advantage. Perhaps if the studied organization was considered to be in the private sector, the research results would have been totally different as there are different financial and human resources in this sector. This issue can be suggested for the future research.

To answer the first question of the research about whether there is a significant difference between the water department staff of Tehran and Kermanshah provinces regarding organizational performance, it can be argued that, according to the values obtained for F statistic and the significance level (P<0.05), there is no significant difference in the mean scores of organizational performance (efficiency, adaptability, and human resources) between the water department staff of Tehran and Kermanshah provinces. To answer the second question of the research about whether there is a significant difference between the water department staff of Tehran and Kermanshah provinces regarding organizational learning, it can be said that, according to the values obtained for F statistic (information acquisition and creation=4.23, information distribution=0.125, information interpretation=0.160, and organizational memory=0.385) and the significance level (P<0.05), there is significant difference in the mean score of information acquisition and creation between the water department staff of Tehran and Kermanshah provinces, but there is no significant difference in the mean scores of information distribution, information interpretation, and organizational memory between the two groups.

Because of the significant difference in the information acquisition and creation aspect between the two groups, and regarding their mean values, it can be stated that the mean score of the staff in Tehran (17.39) is higher than that of Kermanshah (16.65). This result can be deduced from the interview performed on a sample of people working in the water department of Kermanshah province, which can be generalized to the whole statistical population. The results of these interviews, which were performed as free interview, were that people competing with their colleagues in the context of updating their information have a great motivation. The small size of the organization, compared to the studied organization, can also be effective in facilitating information acquisition and creation from internal and external sources of the organization. To answer the third question of the research about whether there is a significant difference between the water department staff of Tehran and Kermanshah provinces regarding electronic human resource management, it can be noted that, according to the values obtained for F statistic and the significance level (P<0.05), there is no significant difference in the mean scores of electronic human resource management (ease, quality, and job relationship)between the water department staff of Tehran and Kermanshah provinces. In other words, this results imply that the electronic human resource management systems employed in the two organizations are the same, and also have the capability if enhancement and updating. It has to be noted that the results of this research in limited to the variables and aspects mentioned, and other existing factors are not identified. So caution should be taken in interpreting the research findings. Furthermore, the financial components of the performance were examined and evaluated in this study. Because of the literature available regarding organizational performance, which mostly has considered financial aspects such as profitability, it is suggested to consider both financial and non-financial aspects in the future research. Moreover, since the present research was conducted as a comparative study in two similar organizations inside the country, it is suggested to conduct comparative studies in two similar

organizations in different countries, or to expand this model based on other existing components.

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