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## THE EVALUATION OF KNOWLEDGE MANAGEMENT'S EFFECTIVENESS ON E-LEARNING: A CASE STUDY ON PAYAME NOOR UNIVERSITY OF IRAN

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### ABSTRACT

*The aim of this study is evaluating the effectiveness of knowledge management on e-learning according to both these variables. Based on the reviews taken, knowledge management indicators include: organizational culture, information technology, human resources, leadership, organizational structure and internal processes, and indicators of e-learning are training based on computer, training based on networks, network training, virtual classrooms and digital collaboration. The statistical society of this study is the employees of the Payame Noor University central organization and the samples are 289. We used random and multistage cluster sampling and the measuring tool consists of two questionnaires based on knowledge management and e-learning. To describe the data we used frequency indicators, mean and standard deviation and to analysis the data, the Pearson correlation coefficient test, Levin equal variance test, independent group t test, one-way ANOVA (one way variance test) and Post Hoc test with SPSS software were used. Research result shows that among all the knowledge management indicators, there is a positive correlation. Independent group t test on the dimensions of internal processes, information technology and organizational structure showed significant difference between group learning and individual learning by emphasizing on group learning and on organizational culture dimension, the difference emphasized on the individual learning. Also, independent group t test only based on the relationship between traditional and untraditional learning showed significant difference. ANOVA test on the dimensions of information technology, human resources, organizational structure and organizational culture with regard to employee learning levels showed significant difference, and finally according to the obtained data, the effectiveness of knowledge management on e-learning is desirable.*

### KEYWORDS

knowledge management, e-learning, effectiveness, virtual education, open distance learning

### INTRODUCTION

Today many organizations are following the data and information and faced with massive amounts of data that in many cases, proper management and exploitation of them is another matter. Today, organizations increasingly are separated based on their knowledge and also knowledge in the organization's competitive advantage in the global economy. Intellectual capital as a powerful force is being replaced rather than physical assets. So the topic of workforce learning and development today is a particularly important issue like e-learning. [24]

In the age of informatics and IT, changes are not limited only to teaching-learning process, but it also changes educational structures, behavioral paradigms, and even instructional content and education organization is expected to play role in solving educational, social, cultural, and economic problems and grow people independent, flexible, and proportionate to specific needs and keep the step with individual and pluralism in the society and it presupposes a special approach in educational system, because as students study IT they can attain much information in a short time.

Knowledge management tools such as community [20], social software [23], peer-to-peer [18] and personalized knowledge management [2, 21] are now commonly being used in ubiquitous learning. Learners use these tools to generate and share ideas, explore their thinking, and acquire knowledge from other learners.

On the other hand the new era of e-learning services is mainly based on ubiquitous learning, mobile technologies, social networks (communities) and personalized knowledge management [8, 17].

### KNOWLEDGE MANAGEMENT

Knowledge management is a systematic approach to manage people, groups and organizational knowledge using appropriate tools and technologies. [16] O'Dell and Grayson [9] see knowledge management as a strategy to be developed in a firm as a way to ensure that knowledge reaches the right people at the right time and to share the information to improve the overall function of the organization. However, since there is no universal definition of knowledge management, it is often recognized in a generalized sense, for example: as a generic process through which organizations generate value from knowledge and also as the creative and innovative capacity of human beings [10, 36, 3]. Knowledge management can also be relevant to the use of e-learning systems within a company, systems which are extremely beneficial to company growth. [25]

In addition, since knowledge management is regarded as an important part of developing e-learning, finding a way to successfully transfer ordinary e-learning to knowledge-based e-learning will be necessary in order to remain competitive. It will be through necessity that a company place great importance on the operations of a knowledge community during a critical period when an enterprise wants to advance its practices of knowledge management or hopes to accelerate corporate innovation.

Benefits of developing a knowledge community:

When a company embarks on knowledge community-based e-learning, it needs to consider several issues: how to develop knowledge strategy, how to use information technology, how to carry out a knowledge procedure, and how to operate a knowledge community. These issues must be addressed in order to achieve organizational effectiveness and aggressive focus when working towards desired goals. Benefits an efficient knowledge community can bring to an organization environment include: learning curve improvement, quick response and efficient customer satisfaction (QR/ECS), increased experience sharing within an organization, a decrease in repetitive work, enhanced communication and innovation, efficient resolution of practical problems, and increased learning overall in relevant areas of growth. [22, 33, 19, 13, 26]

One of the primary goals of knowledge management is facilitating efficient and effective process of sharing knowledge among the members of the organization. [37]

Therefore, such a definition would be appropriate that knowledge management is a process of discovery, acquisition, development, sharing, storing, evaluating and applying the appropriate knowledge, at the right time, by the right person in the organization through the link between human resources, information and communication technology and organizational structure for achieving occurs. [1]

The most important assistance that can be made is to identify the types of knowledge management and show the differences of them. Using knowledge management by individuals, organizations and nations to improve their efficiency and effectiveness of knowledge systems, it seems absolutely vital. [14]

The general policy is the integration of knowledge management in e-learning. [39]

**E-LEARNING**

Today, E-Learning has different definitions, each of which consists of conceptions, attitudes and training philosophy of its presenters. Therefore, considering the nature of E-Learning system, without any intention to explain and criticize other definitions, it can be said that E-Learning includes organizing the training process – Learning through an institute (and not a teacher) by selecting proper solutions to apply educational technologies, organizing multimedia and IT, to provide educational self-assessment independent learning facilities, and establishing mutual connection between trainer and trainee are separate from time and place viewpoint. [38]

Nowadays we are witnessing a fast and significant expansion of the e-learning domain. Indeed many large e-learning project are launched everywhere in the world. [6, 7]

Goals of e-learning:

E-Learning [27] is defined as, “[T]he use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance.” The e-learning goals are to establish a learning organization and nurture a corporate culture based on knowledge sharing [12, 40, 31, 28, 35]. Hopefully knowledge innovation can be promoted through the learning of an organization, the sharing of knowledge, and the creation of a knowledge community. This way knowledge dominance can be achieved more speedily and consistently maintained. This in turn can hasten the collaborative climate of higher intellectual capital, organizational creativity, innovative business models, and raise the overall company value and efficiency. [34, 32, 4, 29, 11]

Open and remote education includes organizing training-learning process-learning and educational evaluation by a reflexible institute, or giving equal opportunities to everybody and removing access obstacles, in particular geographical distance of society members to the required training and independent learning in all levels and taking proper strategies to apply the educational technology, multimedia and IT. Thus, we are facing with a type of educational system, organizing training elements in a manner that the trainer in his/her desirable time and place, with his/her proper speed but with maintaining organizational relationship, cooperates with assistance of development or teacher and/or a learning group.

The terms distance education, open education, tale education are ambiguous terms, for which numerous meanings have been offered. In Cambridge encyclopedia (hormozi, 1994, cited from crystal, 1990) distance education is defined as below (educating people at home or workplace).

**RESEARCH METHODS, THE STATISTICAL SOCIETY AND SAMPLING**

The statistical society of this study is the employees of the Payame Noor University central organization and the samples are 289. This type of research is descriptive and co relational. We used random and multistage cluster sampling and the measuring tool consists of two questionnaires based on knowledge management and e-learning. To describe the data we used frequency indicators, mean and standard deviation and to analysis the data, the Pearson correlation coefficient test, Levin equal variance test, independent group t test, one-way ANOVA and Post Hoc test with SPSS software were used. Sample of 289 members, there are 194 people as a group and 89 people as individual learning, 152 people are under the traditional learning process and 129 people are under the non-traditional learning process.

**FINDINGS**

For internal consistency of questions within the subscale, we have used Correlation coefficient and Cronbach's alpha.

**TABLE 1: CRONBACH'S ALPHA COEFFICIENT OF KNOWLEDGE MANAGEMENT INDICATORS**

Indicator	Alpha coefficient	Average	Standard deviation
Effectiveness	0/73	26/92	4/62
Internal processes	0/37	19/78	3/29
Information technology	0/78	17/82	4/24
Human resources	0/70	18/50	3/79
Organizational structure	0/61	20/23	3/18
Leadership	0/64	14/12	2/85
Organizational culture	0/65	11/41	2/27
Total	0/90	128/78	19/09

**TABLE 2: SUBSCALES CORRELATED WITH EACH OTHER AND WITH THE TOTAL SCALE**

	Effectiveness	Internal processes	Information technology	Human resource	Organizational structure	Leadership	Organizational culture	Total
Effectiveness	1							
Internal processes	0/50**	1						
Information technology	0/54**	0/61**	1					
Human resources	0/67**	0/57**	0/67**	1				
Organizational structure	0/70**	0/57**	0/54**	0/60**	1			
Leadership	0/58**	0/44**	0/43**	0/64**	0/47**	1		
Organizational culture	0/68**	0/34**	0/30**	0/50**	0/43**	0/52**	1	
Total	0/86**	0/74**	0/78**	0/86**	0/80**	0/73**	0/66**	1

\*\* p<0/01

According to the tables with the exception of internal processes indicator, the other subscales of the coefficients and the total are high.

On the other hand, the significant correlation with all subscale and total scores show that the scale has good internal consistency.

Questions:

1. Is there any significant relation between e-learning and knowledge management?

By using the Pearson correlation coefficient, the relation between the total score of e-learning with its four subscales and seven subscale scores of knowledge management was obtained. The result is in table 3.

TABLE 3: THE RELATION BETWEEN KNOWLEDGE MANAGEMENT SUBSCALES AND e-LEARNING SUBSCALES

	Training based on computer	Training based on networks	Network training	Virtual classrooms	Digital collaboration
Effectiveness	0/35**	0/37**	0/20**	0/22**	0/33**
Internal processes	0/28**	0/36**	0/23**	0/15**	0/18**
Information technology	0/15**	0/11	0/08**	0/03	0/23**
Human resources	0/32**	0/33**	0/25**	0/17**	0/28**
Organizational structure	0/34**	0/38**	0/21**	0/19**	0/33**
Leadership	0/26**	0/33**	0/21**	0/05	0/24**
Organizational culture	0/24**	0/24**	0/08	0/21**	0/25**

- Is there any significant relation between learning types and learning methods?  
Independent group t test was used to answer this question:

TABLE 4: INDEPENDENT GROUPS t-TEST RESULTS: KNOWLEDGE MANAGEMENT, LEARNING TYPES AND LEARNING METHODS

	Learning types	Average	Standard deviation	T amount	Learning methods	Average	Standard deviation	T amount
Effectiveness	Group	26/89	4/38	-0/21	Traditional	26/88	4/66	-0/25
	Individual	27/02	5/20		Non traditional	27/02	4/68	
Internal processes	Group	19/50	2/94	-2/28*	Traditional	19/64	2/88	-0/80
	Individual	20/54	3/82		Non traditional	19/65	3/63	
Information technology	Group	17/32	3/95	-3/02**	Traditional	18/04	4/39	-0/90
	Individual	19/06	4/72		Non traditional	17/58	4/12	
Human resources	Group	18/55	3/60	0/26	Traditional	18/51	3/79	-0/06
	Individual	18/42	4/30		Non traditional	18/54	3/91	
Organizational structure	Group	19/85	3/22	-2/94**	Traditional	20/32	3/02	0/93
	Individual	21/02	2/89		Non traditional	19/98	3/20	
Leadership	Group	13/98	2/85	-1/14	Traditional	13/78	3/07	-1/99*
	Individual	14/41	2/94		Non traditional	14/47	2/59	
Organizational culture	Group	11/76	2/11	3/82**	Traditional	11/62	2/12	1/66
	Individual	10/67	2/43		Non traditional	11/16	2/43	

\*Significant level, p<0/05 \*\* Significant level p<0/01

- Is there any significant difference between the knowledge management subscales and the learning level?  
To answer this question we use Analysis of one way variance test and Post Hoc test that do not need any defaults.

TABLE 5: ANALYSIS OF ONE-WAY VARIANCE TEST

	Learning level	Average	Standard deviation	F
Effectiveness	Weak	29/25	3/92	10/32**
	Middle	27/44	5/05	
	Good	25/66	4/14	
Internal processes	Weak	20/50	3/37	1/31
	Middle	19/83	3/39	
	Good	19/52	3/39	
Information technology	Weak	19/94	4/38	8/8**
	Middle	17/42	3/87	
	Good	16/93	4/20	
Human resources	Weak	15/12	4/46	7/50**
	Middle	18/50	3/36	
	Good	17/52	3/71	
Organizational structure	Weak	22/50	2/67	15/56**
	Middle	19/87	3/20	
	Good	19/45	3/36	
Leadership	Weak	14/69	2/62	1/04
	Middle	14/38	2/90	
	Good	14/96	3/05	
Organizational culture	Weak	11/12	2/67	3/85*
	Middle	11/99	2/11	
	Good	11/14	2/09	

- Is there any significant difference between the four e-learning subscales with learning types and learning methods? It is a side question. We use independent group t test.

TABLE 6: INDEPENDENT GROUP t TEST

	Learning types	Average	Standard deviation	T amount	Learning methods	Average	Standard deviation	T amount
Training based on computer	Group	2/95	12/18	0/94	Traditional	26/72	11/8	1/66
	Individual	24/45	12/93		Non traditional	24/28	12/95	
Training based on networks	Group	6/14	3/23	0/20	Traditional	6/12	3/05	-0/11
	Individual	6/05	3/84		Non traditional	6/16	3/82	
Network training	Group	7/37	4/08	1/19	Traditional	7/27	3/65	0/29
	Individual	6/72	4/60		Non traditional	7/12	4/88	
Virtual classrooms	Group	8/27	3/22	0/49	Traditional	8/68	3/26	2/36*
	Individual	8/05	3/79		Non traditional	7/74	3/42	
Digital collaboration	Group	4/17	4/27	0/96	Traditional	4/65	4/88	2/8**
	Individual	3/64	4/42		Non traditional	3/26	3/43	

**CONCLUSIONS**

According to the data obtained the following conclusions can be made:

- 1- There is a positive correlation among all the knowledge management indicators.
- 2- There is a significant difference between group learning and individual learning by emphasizing on group learning and on organizational culture dimension, the difference emphasized on the individual learning.
- 3- Independent group t test only based on the relationship between traditional and untraditional learning showed significant difference.
- 4- ANOVA test (one way variance test) on the dimensions of information technology, human resources, organizational structure and organizational culture with regard to employee learning levels showed significant difference.
- 5- According to the obtained data, the effectiveness of knowledge management on e-learning is desirable.

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