

CASE STUDY

Feasibility of E-learning management system for the staff of Tehran Municipality

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ABSTRACT: Empowering employees in specialized and general qualifications fields is required for urban management organization in Tehran Municipality. Planning and establishment of comprehensive system of electronic learning is considered the main goal of human resource and educational managers. This study tried to investigate the feasibility and execution of electronic learning courses for in-service staff. Training system for in-service staff is the most effective method in educating staff. Implantation of the system includes five necessary variables such as, hardware, software, electronic content, human resources and cultural proceedings. Initially, the main variables and the associated data of 550 people were recorded in the Likert-type scale through the information on the questionnaires. Then correlation analysis, variance and multiple regressions were performed. Description of data containing the collection of general characteristics of respondents, including managers, expertise of human resource and educational managers of Tehran municipality were summarized. The results indicated that the correlation coefficient of variables was $R = 0.804$ which represents the total correlation of the model. The next output showed the certainty of a linear relationship between the variables through analysis of variance. Then according to the standardized regression coefficients and the initial linear regression equation, the model with five variables was drawn and the effectiveness of each of the variables on the dependent variable (the deployment of Electronic-learning system) was examined and interpreted.

KEYWORDS: *Comprehensive system; Electronic content; Electronic-learning system; In-service Training; Multiple regressions*

INTRODUCTION

Providing work-place learners with appropriate and relating learning materials, personal advice and access to academic credit have always been major stumbling blocks to sustainable growth of any organization (Perusich and Taylor, 2006). Over the last 2 decades, more attention has been paid to the design and implementation of quality of e-learning within educational institution and governmental organization (Spector *et al.*, 2008). Along with the growth and expansion of Information and Communication Technology in different aspects, the establishment of

the fundamental of this phenomena, is of great importance. In general, e-Learning is any instruction that uses digital technologies as a means of distributing and delivering educational content to participants. The Internet is not the only digital medium in this method of education and as the name implies, it includes electronic devices such as audio, video, computer networking and etc. Over the past few years, e-Learning has evolved with demand from an increasing number of countries that rely on Internet services (Lee, 2002).

Reducing the escalating costs associated with traditional training in a brick and mortar setting is travel expenses, facility costs, and employee time and many

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other hidden expenses. Significantly, e-Learning is the least costly training option which involves virtually no physical space and many of its components, services, and operations can be outsourced, meaning you can employ a significant number of independent contractors without extending benefits, while also paying very little for the delivery of the electronic programs (Moore *et al.*, 2011). This reason by itself shows why so many organizations each year tend to implement e-Learning system instead of traditional training (Lim *et al.*, 2007). Accordingly, the organizations must fulfill a series of preparedness and prerequisites procedures before any investment for implementation of e-learning system to ensure the efficiency execution of this method (Tiwana, 2000).

Many studies have emphasized that the success of e-learning (Learning Management System (LMS)), depends on the extend of organizational readiness assessment (So, 2006; Loermans, 2002; Lopes, 2007). On the other hand, performing interactive trainings in large scale organizations with complex structures and varied operational activities are significantly cost-intensive and time-consuming (Neter *et al.*, 1996). Therefore While tons of businesses and organizations of all kinds and stripes have embraced e-learning as the way forward for training their staff (Thurmond and Wambach, 2004), there are still niche fields that have yet to join the revolution (except for a few pioneers).

Local government (Municipality) is one of them. LMS as an advanced training system in these types of organizations could be well practiced. Municipality of Tehran with various departments and functions and with limited budget could apply LMS which would efficiently improve the level of knowledge and skills of its employees. Holding virtual training in Tehran Municipality enables the organization to save time and money and even upgrade the quality and the standards of education to the employees. (McGill and Klobas, 2009).

Over the last hundred years, Tehran municipality has become an organization with diverse responsibilities and is constantly looking for structural changes towards improvement. Implementation of LMS is considered one of the smart approaches towards progress in the area of staff training while they are performing their designated tasks and duties, simultaneously and without extra expenses and time spent, fulfill the virtual learning process (Rosenberg, 2001). In this study, the attitude of Tehran Municipal

leaders in creation and maintenance of a comprehensive and efficient educational management system is the main hypothesis basis for the design of hardware infrastructure, software, content, human resources and cultural practices in effective E-learning courses for the staff of Tehran Municipality. Huge investment in E-learning courses will not be feasible without utilizing and careful selection of management systems which would be based on defined standards. LMS is a powerful and comprehensive educational program in executive management and employees within an organization facilitates and helps trainees to evaluate progress and plan for the next steps in learning courses. (Sobhaninejad *et al.*, 2010). Correct selection of a LMS that is planned to the needs of the educational programming department in the organization must help the employees and trainees to evaluate the extent of their learning and also plan for further educational requirements (Ring and Mathieux, 2002; Sobhaninejad *et al.*, 2010). Powerful and comprehensive Learning Management System must be based on the capabilities and readiness of the executive training management and also the structure of organizations. Using the software and hardware infrastructure and skilled manpower are the foundations for designing and implementing a LMS (Siemens and Yurkiw, 2003; Salehi and Kamalabadi, 2013). Inventive, creative, professional and a successful e-learning program execution is another important factor which could be progressed if followed by predicting behavioral changes resulting from the implementation of programs and educational attainment among employees and (Aydin *et al.*, 2005). By establishing LMS that is very rich in terms of content and relevant to the tasks of the employees, the management will be able to quickly monitor and evaluate the responds of the trainees to the learned materials especially in their performances and skills (Akpinar and Simsek, 2005). This study aimed to examine the possibility of implementing e-learning training courses for the staff of Tehran Municipality which was performed in 2015.

MATERIALS AND METHODS

The research method is descriptive survey and the study population consisted of human resources and training managers and also the experts employed in Tehran Municipality. Morgan and Krejcie method of sampling was used (With confidence of 95%, standard deviations of 0.5 and the margin error of 5 %-/+). The

statistical sample was 550 subjects mainly from resource managers and training managers who were selected randomly (Momeni and Ghaioimi, 2009). Methods and tools for data collections include filed and desk study and reviewing of the books, articles, thesis, related to the subject and also retrieving extra information from online search. Based on previous studies, the researcher's points of views and comments and also the infrastructures needed for implementation of e-learning, the questionnaire was designed.

Finally the questionnaire including some important components such as: hardware and software infrastructures, electronic content and virtual resources, specialized and skilled professionals and the cultural practices as an independents variables was developed. The questionnaire consisted of 22 items based on general characteristics of respondents and their opinions. Its validity was approved by 10 experts. Cronbach's alpha was used to test the reliability of the variables and its coefficient was 0.89 (Cronbach, 1951; Nie *et al.*, 1970; Gujarati, 1995; Neter *et al.*, 1996).

The analyses of data were performed in descriptive and inferential statistical methods. In the descriptive statistic level the mean and the standard deviation were used and in the inferential statistic level, multiple regression tests were used in four stages. The analysis of the data were performed by SPSS software version 20 (Hull and Nie, 1981; Tabachnick and Fidell 2001; Pallet, 2004).

The test was summarized in four phases beginning by entering the independent variables into the software. Multiple correlation coefficients, adjusted coefficient of determination and standard deviation estimation were found. To evaluate the certainty of a linear relationship between variables and linear hypothesis, regression analysis of variance were performed and then regression coefficient and the research equation were determined. According to the four phases, the independent variables such as hardware infrastructure, software infrastructure, electronic content, specialized and skilled professionals, and cultural practices were tested with the study's dependent variable of e-learning (Slater and Nerver, 1995).

RESULTS AND DISCUSSIONS

Assuming the presence of a linear relationship between the variables in multiple regressions, a multiple regression equation model with four dependent variables was defined as Eq. 1.

(1)

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$$

Where;

X_1 : Hardware infrastructure, X_2 : infrastructure software, X_3 :electronic content, X_4 : specialized and skilled professionals, X_5 : cultural practices, according to the above steps toward dependent variable (E-learning courses Y). Enter method approach was used for choosing the variable where all the entered variables were used for determination of logistic regression model in one stage (Momeni and Ghaioimi, 2009). Using the software, data Entry was done in the relating table of each variable where according to the regulated questionnaire in the Likert-type scale the accurate data according to every independent variable were recorded and prepared in the software and was ready for linear regression analysis (Rumble, 2001; Lee, 2002; Palloff *et al.*, 2003).

The collected data of 550 humane resource and educational managers with demographic, cultural and technological characteristics were defined in the data center through the collected questioners. The results reviled that 73% of humane research and educational managers and the experts in Municipality of Tehran were familiar with e-learning system. 72% of them believe in the importance of ELS symmetrical to the classical method of education. 80% were interested in virtual learning method. 76% believe in more variety and enjoy the time spent using the contents in cyberspace. 72% feel the value of virtual culture in different aspects of their life. 72% stated that the digital learning products have improved cultural properties of the cyberspace users. 86% are confident that ELS has improved cultural and religious values among activists in the virtual environment and some of 85% believe that to different style of learning (real / virtual) had an important role in expansion of virtual cultural products. After declaring variables and entering the related correct data in the software the multiple linear regression tests were performed. The first output of the entered independent variables is shown in Table 1.

The second output provides respectively multiple correlation coefficients, coefficient of determination, adjusted coefficient and standard error of the estimate (Table 2). As the results show the correlation coefficient of $R = 0.804$, indicates that the model represents the total correlation. The third output is the variance analysis that is to assess the certainty of a linear relationship between variables.

In this test, sig number was less than 5% therefore the assumption of linearity of the model is confirmed (Table 3). In the fourth output and in column B, the regression coefficients and the fixed amount have been presented respectively. The regression equation based on coefficients of column B, is shown as Eq. 2.

$$Y = 18.6 + 1.92x_1 + 2.4x_2 + 0.8x_3 + 0.3x_4 + 0.1x_5 \quad (2)$$

The rest of the columns of this output is also include: Standard error factor of column B, (Standardized coefficients that represent the amount of variation in the dependent variable for changes in the independent variable is the size of a standard deviation), that shows the greater absolute value would results to stronger relationship between the dependent and independent variables (Table 4).

Table 1: The study variables

Variables entered	Variables removed	Method
Hardware, Software, Resources, culture, content	0	Enter

Table 2: Summary of the model

R*	R Square	Adjusted R Square	Std. Error of the Estimate
0.897	0.804	0.803	7586.187

Table 3: The test of ANOV

Model	Sum of R Squares	Df*	Mean Square	F**	Sig***
Regression	1108678828	3	3695596095	642.151	0.000
Residual	270486125	470	57550239.51	0.000	0.000
Total	1379164954	473	0.000	0.000	0.000

*Dickey-Fuller test
 **F statistic
 *** Significance Test

Table 4: Table of coefficients

Model	B*	Std. Error**	Beta (Standardized coefficients)	T***	Sig****
constant	18.6	295.890	0.00	3.469	0.001
Hardware	1.92	0.23	0.78	43.435	0.000
Software	2.4	0.567	0.68	42.416	0.000
Context	0.8	0.025	0.70	19.78	0.000
Resource	0.3	0.45	0.56	11.64	0.000
Culture	0.1	0.39	0.51	3.097	0.000

*Beta coefficient
 **The standard error
 *** T-Test
 **** Significance Test

Statistic sig, tests the assumption that each factor equal to zero is provided in column B. As in this example sig is the equality of regression coefficient and the fixed amount with zero value of less than 5%, therefore the assumption of regression coefficient equality and the fixed amount with zero value is rejected hence there is no need to be omitted out from the regression equation. In other words these five independent variables and fixed amount influence on the dependent variable. To compare the effects of five variables on the dependent variable in the obtained regression model, only the standardized coefficients are used. Standardized coefficients column indicate that the hardware variable has the greatest influence on e-learning system because for a unit change in this variable, 0.78 of change is caused in the dependent variable. Cultural practices with coefficient of 0.51 shows the lowest coefficient of variation in the dependent variable.

Software variables with coefficients of 0.68, electronic content with 0.70 and specialized and skilled professionals with coefficient of 0.56, were obtained according to their influence in the resulting [Table 4](#).

CONCLUSION

E-Learning System is a new industry in educational technology and also in virtual education in Iran. While governmental and non-governmental institutions are trying very hard to practice and offer a proper model in accordance with the country's cultural and educational structure, Tehran Municipality is no exception in the field of ELS. According to the experiences of leading organizations, ELS has the potential to solve some of the needs of urban management organization ([Slater and Narver, 1995](#)). Apart from the increasing staff training needs, demand of equal access to training centers, economic resources, qualified teachers and instructors and also the need for traditional teaching tools are being resolved. Accordingly, in-service training which is the most important principal of organizational learning could be institutionalized using e-learning in each of the organizational units. In case of ELS implementation in any organization, documents and rules will be experiencing many changes. As a result, the content of laws and regulations and all existing information as well as other

subsystems such as documents archives, data bases will consequently change in the organizations from content point of view. In other words, organizational knowledge is convertible and will be disseminated into new learning system, therefore, the staff continually and during scheduled time period would learn the required information relating to their designated profession through the system. One of the main causes of the efforts to develop and improve ELS in Municipality of Tehran is the human resources and training manager's tendency to support this new learning system. Since the study revealed through observation of the experts and human resources and training managers of Tehran municipality were familiar with e-learning system (73%) and believe in the importance of ELS as of classical education (71%). Therefore, it is suggested that combination of traditional and modern teaching programs in the short and long term courses be approved by the Council of Higher Education. Simultaneously functional and progress reports of ELS practices must be given to the respective managers regularly in order to identify and resolve any system requirements. It is believed that solving any significant problems and shortcoming in the new system at the first phase of its launch, would guarantee the confidence and satisfaction of the users of ELS. Referring to the final statistical result, the affecting variables in formation and development of E-learning system in the Tehran Municipality are shown in the following order of priority ([Fig. 1](#)).

Therefore according to [Fig. 1](#) priority of variables are important for deploying L.M.S since the system hardware in terms of the technical cost savings and benefit of this approach is effective. Accordingly consultation with the information technology Organization of Municipality of Tehran, one of the leading agencies in information technology in Iran, would be the best option for choosing the most appropriate software and hardware for the system. Technical and content integrity of this system is very critical as this system must work with 50 other urban management systems which furnish the human resource and information technology managers with all the information regarding the update state of the employees as employees learning rank depends on other human resources subsystems such as payroll, grading, operation



Fig.1: Affecting variables

control and each of these factors plays a major role in the development of staff status and also their promotion.

Educational system is one of the important issues in comprehensive system of personnel in the Municipality of Tehran as the evaluation of staff performance, job upgrade and enhance administrative posts of the employees are dependent on the educational data entries (Ishida, 1997). In order to promote the culture of citizenship and their involvement and their participation in local management, Tehran Municipality, among its other missions, organizes significant activities such as cultural and educational and social events, educational and training workshops (Turner and Crews, 2005; Siemens, 2005). Thus, according to the common educational ground in some areas between citizens and the staff's educations and trainings, a comprehensive plan to provide content for the target population will be possible. Thereupon, as one of the main objective of urban management, dissemination of educational culture is necessary for empowering both the citizens as well as the employees. Therefore, by establishment and implementation of ELS, training and educating the citizens and the employees could be performed through the Electronic Learning Systems at the same time.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this manuscript.

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