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Impact of Information and Communication Technology on Self-directed Learning among Employees at Red Crescent Society of Tehran

Batoul Khoundabi[1], Zahra Mollamohammad Alian Mehrizi[1], Saeid Mazbouhi[2], Mitra Ghadiri[3]

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Original Article

Abstract

INTRODUCTION: The achievement of organizational goals depends on the ability of employees to perform the assigned tasks and adapt to the changing environment. The implementation of training and improvement of human resources allow people to effectively continue their activities and increase their efficiency in accordance with organizational and environmental changes. The present study aimed to assess the impact of information and communication technology on self-directed learning among Employees at the Red Crescent Society of Tehran.

METHODS: This research was applied-descriptive and survey-type. The statistical population of the current research included all 1800 employees at the Red Crescent Society of Tehran. Based on Cochran's formula, 317 subjects were selected by simple random sampling and answered the questionnaires. To check the variables of the research, a 73-item questionnaire was used, which assesses the two variables of information and communication technology and self-directed learning. The validity of the questionnaire was confirmed by experts' opinions, and its reliability was assessed by Cronbach's alpha method. Research hypotheses were tested by structural equation modeling using LISREL software. Confirmatory factor analysis was used to measure the indicators of the questionnaire, and the model of path coefficients and significant coefficients was applied to examine the hypotheses.

FINDINGS: The results of the analyses demonstrated that information and communication technology and each dimension of using computers, media (radio and television), the Internet, educational software, and mobile phones had a significant positive effect on self-control, willingness to learn, and self-management among the employees at Red Crescent Society of Tehran.

CONCLUSION: In every organization, the management must make sure that the employees recognize the importance of learning since it is a key factor in the success of the organization. It is necessary for the management of every organization to remove mental models and old beliefs and, considering the role of information technology in learning and creating transformations in learning methods, provide the grounds for its application among employees.

Keywords: Information and communication technology; Self-control; Self-management; Willingness to learn

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Introduction

Learning means strengthening the ability by virtue of experience that is obtained over time in the path of real life. All organizations learn; that is to say, they cope with the changing world around them; nonetheless, some organizations learn faster and more effectively (1). With the development of knowledge and technology, as well as business expansion, including virtual organizations, economic enterprises have expanded, and the

1- Assistant professor, Applied Science Higher Education Institute Red Crescent Society of the Islamic Republic of Iran, Tehran, Iran
2- Assistant Professor, Department of Education Studies, Faculty of Psychology and Educational Sciences, Allameh Tabataba'i University (ATU), Tehran, Iran
3- Expert, Applied Science Higher Education Institute Red Crescent Society of the Islamic Republic of Iran, Tehran, Iran
Correspondence to: Zahra Mollamohammad Alian Mehrizi, Email: zmehrizi@yahoo.com

business environment has turned into a competitive environment full of challenges, and new paradigms have emerged that have made survival difficult for many enterprises. In such an environment, it is natural that competitive scores change shape. The most significant competitive advantage in new business paradigms is learning; therefore, the centrality of the new paradigm is learning (2).

From an individual point of view, learning is about accessing information, understanding it, and acquiring skills. Moreover, from an organizational point of view, learning is focused on acquiring traditions, perspectives, and strategies, as well as transferring knowledge. In both views, learning is associated with discovery, innovation, diagnosis, creativity, and knowledge production. Learning from an organizational point of view happens when information is collected and analyzed in order to generate and expand new facts, change existing opinions and viewpoints, create new viewpoints, and transfer them to all organizational levels through communication, teaching, dialogue, and interaction (3). Therefore, people should move their education in a direction independent of teachers. Consequently, the era of information technology and its achievement have provided a suitable platform for learning to transform teacher-centered education into self-directed learning.

The virtual environments created through the Internet and Intranet have motivated the individual to be self-directed, and self-directed learning makes the person follow and learn what he/she needs to learn (4). Due to the advantages of self-directed learning in educational and organizational environments, its importance is seriously emphasized, and its value as a necessary skill for education and work in the 21st century has been considered. Currently, self-directed learning methods are an educational method that is increasingly used in leading educational institutions and systems.

In these kinds of training, the growth of self-regulated learning, the conscious development of learning goals, and considerations about allocation are regarded as self-directed learning goals. Self-directed learners are active and spontaneous people who take the initiative in learning instead of passively waiting for reactive learning. Their learning is purposeful and meaningful, and due to their high motivation, their learning will have stability and continuity (5). Such people are more responsible in their lives and benefit from the process of self-discipline in their learning. They assume the management and responsibility of their learning process, as well as the owners and managers of their learning process. These people have the necessary skills to access and process the information they need for a specific purpose (6).

In order to achieve the aforementioned goals, all the functions of higher education should be considered equally, and continuous evaluation of processes and functions should be performed using valid and appropriate criteria and tools. The achievement of organizational goals depends on the ability of the employees to perform the assigned tasks and adapt to the changing environment. The implementation of training and improvement of human resources allows people to effectively continue their activities and increase their efficiency in accordance with organizational and environmental changes. Therefore, training and improvement is a continuous and planned effort by management to improve employee competency levels and organizational performance.

In the past, it was believed that the time of learning is separate from the time of working and living, and therefore, for them, it was a worthy education that was provided to people before starting work. Based on this assumption, a person learns for a while and then starts productive and useful life and work, and when work and life begin, there are no more places for an education worthy of attention. This idea is not valid now, and education has merged with human life. Now, all people should always engage in learning and refresh themselves with new human knowledge and pursue a useful life with more strength and awareness (7).

On the other hand, employees are the most important factor in improving the organization and organizational quality. In fact, capable employees who are familiar with organizational duties and responsibilities and have a wide range of knowledge and skills will be able to play a critical role in providing quality services (8). Furthermore, paying attention to the knowledge of employees among Red Crescent employees is of utmost importance. Despite the importance of self-directed learning, especially in the Red Crescent Organization, no research has so far

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been performed in the country to evaluate self-directed learning among the employees in this organization. Therefore, the current research addressed this important topic.

Methods

This research is applied-descriptive and survey-type. Considering that the present study aimed to investigate the impact of information and communication technology on self-directed learning among employees at the Red Crescent Society of Tehran, the methods of library studies and field research were used to collect information. The statistical population of this research included the 1800 employees at the Red Crescent Society of Tehran. The sample size was determined using the Krejcie and Morgan formula. In this method, the table below is used to estimate the sample. The number of samples is determined according to the research population.

These values were obtained by Krejcie and Morgan after the assessment of multiple studies with 95% accuracy and presented in their table. This table has been the basis of numerous studies since 1970. According to Morgan's table, the sample size was estimated at 317 cases whose answers to the questionnaire (Appendix 1) are analyzed. According to the data collection, documents review and questionnaires were used. In the review of documents, in order to collect information in the field of theoretical foundations and research literature, library sources, articles, required books, and the global information network were used.

The self-directed learning readiness scale is a 41-question test developed by Fisher, King, and Tago (10). This scale, which was standardized for the first time in Iran by Nadi and Sajjadian (11), consists of three components: self-management, desire for learning, and self-controlling. The summary of the structure of this questionnaire can be observed in Table 1. The reliability of the measurement tool was obtained using Cronbach's alpha method. The results of using SPSS software to determine the reliability of the dimensions of the questionnaire are presented in Table 2. As can be observed, the alpha value for all dimensions of the questionnaire is more than 0.70 and acceptable.

The data distribution normality was determined using the Kolmogorov-Smirnov, and the conceptual model of the research was examined by using various statistical tests, including confirmatory factor analysis. Moreover, this research used the technique of structural equation modeling (SEM) (using SPSS and LISREL software) to test hypotheses and fit the model. The conceptual model of this research, in order to investigate the impact of information technology on self-management, is displayed in Figure 1.

Table 1. Structure of the questionnaire

Variables	Variable components	Number of items	Number of questions in the questionnaire	Scale	Source
Information and Communications Technology	Use of computer	8	1-8	Ordinal	Researcher-made
	Use of the media (radio and television)	5	9-13	Ordinal	
	Use of the Internet	6	14-19	Ordinal	
	Use of educational software	7	20-26	Ordinal	
	Use of mobile phones	7	27-33	Ordinal	
Self-directed learning	Self-control	15	34-58	Ordinal	by Fisher, King, and Tago (2001)
	Willingness to learn	13	59-61	Ordinal	
	Self-management	12	62-73	Ordinal	

Table 2. Results of Cronbach's alpha analysis

Variable	Dimensions	Number of questions	Cronbach's alpha
Information and Communications Technology 0.960	Use of computer	8	0.844
	Use of the media (radio and television)	5	0.761
	Use of the Internet	6	0.832
	Use of educational software	7	0.841
	Use of mobile phones	7	0.890
Self-directed learning among the employee 0.907	Self-control	15	0.744
	Willingness to learn	13	0.794
	Self-management	12	0.709

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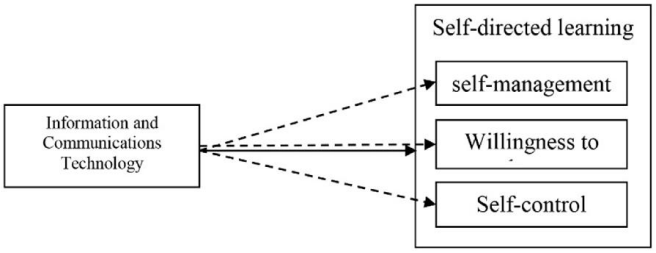

Figure 1. Conceptual model of the research (developed by the researcher)

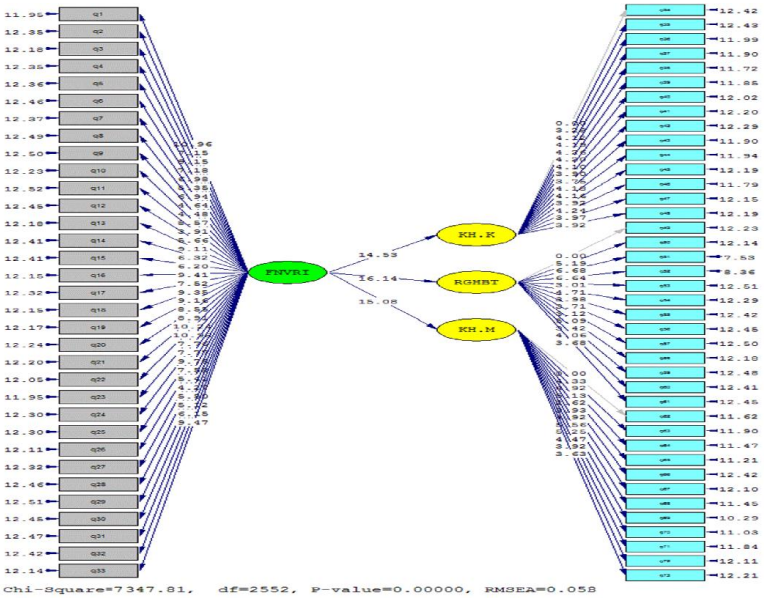

Diagram 1. Structural equations model of the research to investigate the impact of information technology on the components of self-directed learning

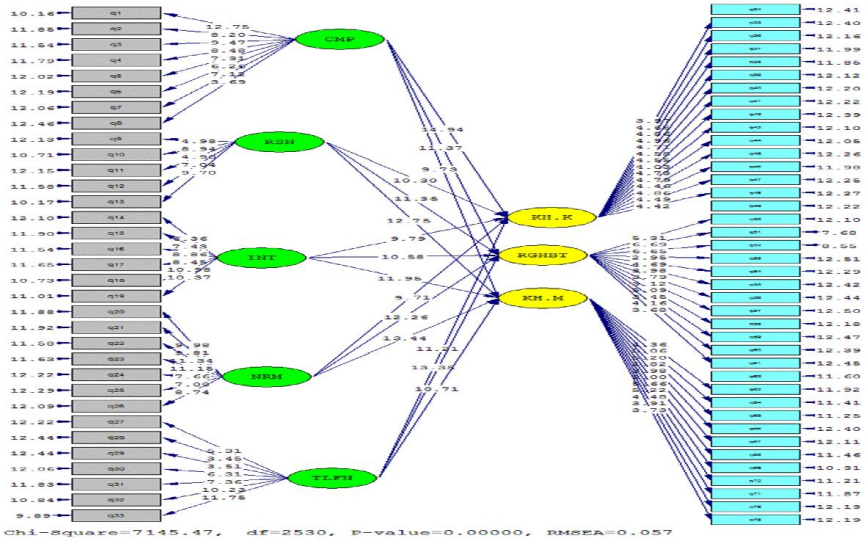

Diagram 2. Structural equation model of research to investigate the impact of information technology components on the components of self-directed learning

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Findings

The descriptive statistics demonstrated that 168 (53.1%) participants were male, and 149 (46.9%) cases were female. In terms of age, 92 (29.3%), 114 (35.8%), 79 (24.8%), and 32 (10.1%) of subjects were in the age range of less than 30, 31-40, 41-50, and above 50 years old, respectively. Regarding education level, 61 (19.5%), 218 (68.6%), and 38 (11.9%) had an associate's degree or less, a bachelor's degree, and a master's degree or higher, respectively. By using the structural equation model and LISREL software (version 11), the impact of the information technology and its components on the self-directed learning components was investigated and evaluated. Diagrams 1 and 2 illustrate the path diagram of the conceptual model presented in Figure 1.

The expressions of using computers, media (radio and television), the Internet, educational software, and mobile phones, self-management, willingness to learn, and self-controlling, abbreviated as CMP, RSN, INT, NRM, TFLN, KH.K, RGHBT, and KH.M are presented in the models. According to diagram 1, the significance coefficients between the variable of information and communication technology and each of the variables of self-controlling, willingness to learn, and self-management were calculated at 14.53, 16.14, and 15.08 which are higher than 1.96, illustrating the significance of the impact of information and communication technology on self-directed learning among the employees at Red Crescent Society of Tehran.

Moreover, the standard path coefficients between the variable of information and communication technology and each of the variables of self-controlling, willingness to learn, and self-management were obtained at 0.88, 0.89 and 0.99, demonstrating that the variable of information and communication technology has a marked effect on each of the variables of self-controlling, willingness to learn, and self-management. The goodness of fit indices for this model, including RMSE less than 0.1, as well as NFI and GFI more than 0.90, points to the adequacy of the model to an acceptable level.

Diagram 2 displays the estimate path diagram coefficients for the information technology variable by priority on self-management components. According to diagram 2, the significance coefficients between each of the variables of using computers, media (radio and television), the Internet, educational software, and mobile phones with self-directed learning of employees, respectively, were calculated at 14.94, 10.30, 9.79, 9.71, and 11.21, which are higher than 1.96, indicating the significance of the impact of information technology and communication on self-management among employees at Red Crescent Society of Tehran. Moreover, the standard path coefficient between each of the variables of using computers, media (radio and television), the Internet, educational software, and mobile phones with self-management of employees, respectively, were 0.83, 0.90, 0.64, 0.86, and 0.73, indicating that each of these variables had a strong effect on self-management among the employees.

Discussion and Conclusion

The age of knowledge or the age of information, which is the result of mankind's transition from the industrial age to the third millennium, requires a different education than what was prevalent in the past. Developments in the field of technology have affected educational systems, including universities. In fact, one of the indicators of advanced educational systems is the use of new capacities that have been created in the shadow of technological developments (12-13). Another very important feature in the learning environment is preparation for self-directed and independent learning.

It is necessary for learners to have a high degree of self-organization and self-discipline, which are characteristics of self-directed learners, to enter educational environments (14). The history of self-directed learning goes back to the beginning of the 20th century and focuses on the development of adult education (15). Owing to its advantages, it has been noticed by those involved in educational and organizational environments, as well as a necessary skill for education and work in the 20th century (16). Self-directed learning is a process in which learners are responsible for identifying their educational needs, planning, implementing, and evaluating their learning outcomes. In this approach, learners take the initiative to achieve predetermined learning goals (17).

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In fact, self-directed learning is an approach to the learning process that encourages learners to identify their own learning goals or needs through continuous recognition and collaborative decision-making. This approach allows learners to use learning strategies to meet these needs (18). In addition, self-directed learning as an active and structural approach is a process by which the learner adjusts the goals of learning activities, cognition, motivation, and behavior. One of the new developments in education is information and communication technology literacy.

Especially the use of information and communication technology literacy skills in the learning environment where learners are responsible for planning, implementing, and evaluating themselves. Moreover, they are expected to work independently (19), and this ability in the learning cycle is considered a basic principle. This applied-descriptive research aimed to investigate the impact of information and communication technology on self-directed learning among employees at the Red Crescent Society of Tehran.

Structural models used to determine the effect of information and communication technology components (use of computers, media, Internet, educational software, and mobile phones) had a statistically significant effect on self-directed learning components (self-management, willingness to learn, and self-control). Regardless of the exact date the organizational learning debate began, it did not receive much attention until the late 1970s. At this time, a number of theorists focused their activities on organizational learning (20). Although the research activities continued on the subject in the 1980s, in the 1990s, the issue of organizational learning was only one of the topics raised in various trends in the field of management, such as strategy and production management, and from that date onwards, organizational learning was overshadowed by new management issues. (21).

Qelichzadeh et al. (2016) presented an article entitled "Information technology functions in the development and growth of education and learning". In the stated study, the most important and fundamental element of dynamic and efficient education was to activate learners using the capabilities of technology. The findings of the research indicated that the most marked effects of information technology on education and learning could be a change in the attitudes of teachers and learners, as well as an increase in the use of external sources of electronic content production (22).

Moradi et al. (2016) conducted a study entitled "The role of information and communication technology in the formation of new educational methods with an emphasis on hybrid learning". The results of the present study indicated that learning approaches are a new solution in teaching and learning that move towards critical thinking and self-directed abilities through collaborative processes. They bring together unique and technological human interactions in one structure through the combination of different teaching and learning models, physiological and technological resources, as well as virtual and traditional learning (23).

Ahanchian and Asarroudi (2014), in an article entitled "The relationship between decision-making style and self-directed learning," stated that self-directed learning is an essential skill for modern education and can be influenced by various decision-making methods. The results of correlation analysis in the mentioned study suggested that the logical decision-making style has the strongest relationship with self-directed learning in students (16). Kazemi and Omidi Najafabadi in 2013, in the article entitled "Factors Affecting the Level of Self-directed Learning Readiness of Students in the Faculty of Agriculture, Islamic Azad University, Science and Research Branch, Tehran" investigated the factors affecting self-directed learning among students in this university. They demonstrated that the level of self-directed learning readiness was high among the majority of students.

Moreover, the deep learning approach, clarification of goals, general skills, technology, mastery goals, and functional goals showed a positive and significant relationship with the degree of self-directed learning readiness, and the surface learning approach has a negative and significant relationship with the level of self-directed learning readiness. In the study by Kazemi, the variables of mastery goals, functional goals, clarification of goals, surface learning approach, deep learning approach, and general skills were effective in self-directed learning readiness (24).

Learning barriers and learning organization are closely intertwined. As the learning organization seeks to create conditions to facilitate the learning process, learning barriers also deal with the

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factors and dynamics that prevent the development of organizational learning. The identification of learning barriers is directly related to the theoretical framework that different schools have imagined about organizational learning (25). Garvin et al. consider learning obstacles to be related to the factors that make the process of acquiring, interpreting, and applying knowledge difficult. Yoeung introduces learning barriers as factors that make the process of idea creation, generalization, and application of created learning difficult (26). In a similar vein, Senge defines learning barriers in the form of dynamism and limiting mechanisms that occur during the formation and development of learning abilities in organizations (27).

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None.

Conflict of Interests

The authors declare that there is no conflict of interest in this study.

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