

## Determining Challenges in the Application of E-Learning in Agricultural Extension Services in Iran

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**Abstract:** The Ministry of Agriculture (MoA) in Iran, considered the necessity of e-learning in agricultural extension for training extension agents as human resources that are working in extension centers throughout the country and have direct interaction with farmers, because they understand that traditional education is no longer effective. As a result, understanding challenges for e-learning in Iran's agricultural extension centers is crucial for creating the new opportunities for extension agent to give and update their information. By using an extensive framework for challenges of e-learning, this paper sets out to identify which of these challenges are most salient for e-learning in agricultural extension. A quantitative approach is taken to identify the most important factors. The research population included all the graduate extension agents throughout the country (N=2745). Using the stratified sampling technique and the results from the pilot test, 400 extension agents were surveyed. A questionnaire was developed and distributed by mail across the country and data collected from 379 returned questionnaire. Using ordinal factor analysis classified factors into six major challenges in the following areas: financial, technical, supporting services, regulatory, cultural and human factors. In this paper these challenges will be discussed and solutions suggested.

**Key words:** E-learning • Challenges • Agricultural extension • Iran

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### INTRODUCTION

With advances in information and communication technology (ICT), Web based education has become an increasingly popular instructional mode all over the world.

Many organizations; institutes; universities; schools and corporations are investing substantial amounts of time and money in developing online alternatives like e-learning to traditional types of education and training systems. Electronic learning (e-learning) refers to communication and learning activities through computers and networks [1].

E-learning in agriculture related fields is still in the early phases of adoption. The Ministry of Agriculture in Iran like many other organization and educational centers have considered the necessity of e-learning in agricultural extension network for training extension agents. It is dramatically improving how agricultural education is done.

Every year extension agents are trained in different on-the-job training courses regularly. Holding such training courses in training centers requires a considerable time and money, because extension agents

from different offices should leave the office for training centers. With providing online training we can save time and money and train a bigger group simultaneously. Therefore e-learning as a modern approach in training can be used to improve the effectiveness and efficiency of training in extension services [2]. Several studies, reported by Lippert and Plank [3] ultimately proved, with strong support of all of the participating learners, that "the Internet can be an effective way to implement an in-service training within the U.S. Cooperative Extension Service." There is little doubt as to e-learning's efficacy for training extension agents.

Despite these huge potential for MoA struggling to meet a growing demand for education, e-learning is facing a lot of obstacles and challenges that persist. It is therefore relevant to investigate which e-learning challenges are of particular importance for MoA.

The identifying challenges seems very important, if people who are involved in a system are not familiar with of its potential challenges, these challenges will be transformed into threats; with additional information, however, they can be transformed into opportunities [4].

Table 1: Related references to e-Learning challenges

Author	Factors
Dillon, [5]	poor attitudes toward distance education, suspicion of the nontraditional, required changes in instructional methods
Murphy and Terry [6]	lack of incentives, time constraints, lack of technical support, equipment costs and inadequately designed facilities, Educators' fear of the technologies, High cost of network connections, Lack of vision by administrators, Resistance to change by administrators, Increased cost to students for the ability to utilize these technologies, The paradigm of the instructor as the expert using teacher-directed Learning,.
Zhang <i>et al.</i> [7]	access to computers or the Internet at home, low bandwidth, high Cost, shortage of online instructional resources and duplication of online programs, effective management of external online learning support centers, teacher training, extension of Web-based education to learners in remote and economically disadvantaged areas, credibility of Web-based education and the quality of its graduates
Tham and Werner [8]	lack of face-to-face communication
Tyan [9]	intellectual property rule, certification credit, cost of updating contents, prejudiced beliefs of learners towards traditional education, misunderstanding of the advantages and disadvantages of virtual education, negative experiences of users with virtual education, organizational staff not taking virtual education seriously
Wilson [10]	students' technical skills, less competent computer users insufficient time, overstretched IT support services skills and support available to lecturers
Cantoni <i>et al.</i> [11]	lack of appropriate ICT infrastructure, limited access to the internet, requires new knowledge and skills, require more self discipline, high cost for ADSL method, Lacking informal social interaction and the face-to-face contact of traditional training
Rezaei mood [12]	infrastructures, culture, lake of national programming, lake of interaction between learner and instructor, inadequate information about e-learning, lake of incentives for e-learning implementation, lake of Persian resources, Lake of network security
Leary and Berge [13]	Illiteracy of learner, lack of motivational constructs for using virtual education, lack of relationship between instructors and students, the limitation of virtual training for Hands-on component which needs face-to-face training, incompatibility of online training with values and culture, financial rewards, lack of time and skills needed in adopting new technologies
Omidi <i>et al.</i> [14]	inadequate experts in virtual education, lack of appropriate support services, negative attitude of organizations towards virtual education
Andersson [15]	Support and guidance for students, Flexibility, Teaching and Learning Activities, Access, confidence, Localization of content, Attitudes on IT and e-learning

This paper does so determining challenges of e-learning in agricultural extension service in Iran. The research question underlying this study is: which are the major challenges for e-learning in agricultural extension services where the use of e-learning to deliver education is a new phenomenon?

**Literature Review:** This literature review will cover some existing literature reviews on challenges of e-learning. Some variables in the research selected from previous studies and some others from interviews with some experts in the field of e-learning in agricultural sector. Many studies have identified important variables dealing with challenges of e-learning. Table 1 reviews briefly opinions of some authors about challenges of e-learning.

## MATERIALS AND METHODS

The research carried out in a survey way. A questionnaire was developed based on interviews with some experts and previous literature. The questionnaire included fixed-choice questions. A 5 point likert scale

ranging from 1 as strongly disagrees to 5 as strongly agree used for the measurement. A pilot study was conducted with 30 extension agents that were not included in the sample population to determine the reliability of the questionnaire for the study. Computed Cronabch's Alpha was 89% which indicated high reliability of the questionnaire. Statistical population of the study consisted of 2745 extension expert in the sector of agriculture in Iran. Based on the classification of the Ministry of Agriculture which has divided these centers into six regions, sample taking has been conducted using stratified proportionate random sampling technique. Sample size for the extension expert is 400 persons using Cochran formula. From 400 questionnaires, 379 questionnaires have been returned. The data collected by mailing the questionnaire across the country and was analyzed by using ordinal factor analysis technique. The basic idea of factor analysis is to find a set of latent variables that contain the same information. The classic factor analysis assumes that the both observed and the latent variables are continuous variables. But, at practice, the observed variables are often ordinal.

Table 2: Descriptive statistics of extension experts

Sex	Female (7%)	Male (93%)
Age/ year	Mean = 39.66	SD= 7.65
Work experience/year	Mean = 15.39	SD=8.14
Management experience/year	Yes(35%)	No (65%)
Field of Study	Agriculture(93.5%)	Other(6.5%)
Degree	BSc.: 67.8	MSc and higher: 9

Table 3: Classification of challenges by using ordinal factor analysis

Variance by Factor	Variables	Factor
Financial	Lake of budget for setting up e-learning	16.26
	High cost of buying hardware	
	High cost of buying software	
	High cost of access to internet	
	Cost of maintaining the system	
	Expense of upgrading the system	
	Expense of upgrading the content	
Technical	Lack of appropriate infrastructure	13.95
	Lack of hardware	
	Lack of software	
	Low bandwidth	
	Limited access to the educational software	
	Inequality in access to equipments	
	Speed of changes in computer technology	
	Lake or limited access to appropriate contents	
Supporting services	Lack of appropriate support services for user	10.13
	Limited or lack of incentives (for using e-learning system)	
	Lack of appropriate support services for maintains equipments	
	Problem related to the course starting	
Regulatory	Lack of strategic vision in development e-learning	7.98
	Unfamiliar of top manager with e-learning applications	
	Lack of intellectual property right	
	Lake of appropriate rules for using e-learning	
	Lake of network security	
Cultural	Negative preconceptions of user towards e-learning	7.21
	Negative preconceptions of organizations towards e-learning	
	Problem related to group working	
	Not taking e-learning seriously by people	
	Problem related to the culture of users	
Human	Require new knowledge and skills	5.71
	Lake of adequate experts in e-learning	
	Not understanding about advantages and disadvantages of e-learning	
	Lack of preparatory training for educator	
	Lack of preparatory training for learner	
	Lack of relationship between instructors and students	
Total		61.24

## RESULTS

The results of descriptive statistics show that the average age of extension agents were 39.66 years old with 15.39 years work experience. Majority of them were male (93%). It was also reported that more than 93% of respondents

studied in the filed of agriculture. Table 2 shows the details.

Table 3 by using the ordinal factor analysis shows the classification of the challenges into six latent variables. The variables were classified into financial, technical, supporting services, regulatory, cultural and human factors

## DISCUSSION

As the ordinal factor analysis showed, factors were categorized into six challenges, financial, technical, supporting services, regulatory, cultural and human factors ordered by their impact.

**Financial Factors:** The findings about financial challenges is in accordance with those of Murphy and Terry [6], Zhang *et al.* [7], Tyan [9] and Cantoni *et al.* [11]. The financial factor, plays an important and critical role because the base and setting of e-learning system such as telecommunication infrastructure, buying computer, access to internet, Expense of maintenance of equipment and other ICT resources needs financial and credit and continuing e-learning projects needs investment [16]. It shows that MoA should be allocating the necessary budgets and secure the cost of training would have affect on the e-learning.

**Technical Factors:** The importance of technical factors pointed out by several authors, such as Zhang *et al.* [7], Cantoni *et al.* [11], Rezaei Mood [12]. As we found, there is no sufficient tools needed for e-learning in extension center. The result shows that MoA should pay more attention to provide appropriate hardware and software and infrastructure, because technical resources are one of sustainable implementation dimensions of e-learning [17].

**Supporting Services:** E-learning programs for successful and sustainable implementation, should be supported. This support, should involve learners, instructors and technical. Our findings corroborate those of Murphy and Terry [6], Zhang *et al.* [7], Wilson [10], Omidi *et al.* [14] and Andersson [15].

**Regulatory Factors:** Findings about regulatory factors are in accordance with those of Murphy and Terry [6], Tyan [9] and Rezaei Mood [12].

**Cultural Factors:** Another factor is culture. The “culture” is one of key elements of e-learning implementation [18]. An effective e-learning strategy should concern “culture”. The importance of cultural factors pointed out by several authors, such as Dillon [5], Rezaei Mood [12], Leary and Berge [13] and Andersson [15].

**Human Factors:** Finally, human in e-learning should be considered. The important factor to accepting and applying e-learning is human recourses. Based on our

findings, human challenges confirming similar findings by Tham and Werner [8], Tyan [9], Wilson [10], Cantoni *et al.* [11], Rezaei mood [17] and Leary and Berge [13]. The MoA should promote and support the development of qualified personnel. Of course, There are evidences that show MoA follows the policy of developing knowledge and skill of extension agent about ICT.

## CONCLUSION

The main purpose of this paper was to identify major challenges for e-learning in Agricultural extension.

Agricultural extension is skipping traditional training delivery methods and are going straight to using e-learning. To achieve the goal of application of e-learning for extension service, there are some main challenges namely financial, technical, supporting services, regulatory, cultural and human. The agricultural extension services in Iran should overcome and transform the challenges to the opportunities. In an environment, agricultural extension organization familiar with the challenges could transform these potential challenges to the opportunities, otherwise, lack of familiarity with the nature of challenges would transform them to threats.

Future research is needed to deepen the analysis of these factors and in order to pursue the major research question - on what is of particular importance in settings with low experience and exposure to e-learning.

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