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Information Dissemination System (IDS) Based E-Learning in Agricultural of Iran (Perception of Iranian Extension agents)

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Abstract**—**The purpose of the study reported here was designing Information Dissemination System (IDS) based E-learning in agricultural of Iran. A questionnaire was developed to designing Information Dissemination System. The questionnaire was distributed to 96 extension agents who work for Management of Extension and Farming System of Khuzestan province of Iran. Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS). Appropriate statistical procedures for description (frequencies, percent, means, and standard deviations) were used. In this study there was a significant relationship between the age , IT skill and knowledge, years of extension work, the extend of information seeking motivation, level of job satisfaction and level of education with use of information technology by extension agent. According to extension agents five factors were ranked respectively as five top essential items to designing Information Dissemination System (IDS) based E-learning in agricultural of Iran. These factors include: 1) Establish communication between farmers, coordinators (extension agents), agricultural experts, research centers, and community by information technology. 2) The communication between all should be mutual. 3) The information must be based farmers need. 4) Internet used as a facility to transfer the advanced agricultural information to the farming community. 5) Farmers can be illiterate and speak a local and they are not expected to use the system directly. Knowledge produced by the agricultural scientist must be transformed in to computer understandable presentation. To designing Information Dissemination System, electronic communication, in the agricultural society and rural areas must be developed. This communication must be mutual between all factors.

Keywords**—**E-Learning, Information Dissemination System, Information Technology.

I. Introduction

THERE is a widespread belief that information is vital for rural development [9], [4], [9], [2]. According to references [12] and [14] using information is a critical and key issue in the information age. The main challenge of our age is not producing information or storing information, but getting people to use information. Information is a critical resource in the operation and management of organizations. Timely availability of relevant information is vital for effective performance of managerial functions such as planning, organizing, leading, and controlling [1]. According to [8] information within the hands of the farmers means empowerment through control over their resources and decision-making processes. They noted that being an effective and efficient delivery system of essential information and technology services, it facilitates the clients' critical role in decision-making towards improved agricultural production, processing, trading, and marketing. As reference [2] points out, information is very important for rural development because improving the incomes of smallholder farm families will depend crucially upon raising agricultural productivity.

Numerous studies have highlighted the short-comings of traditional print- and library-based methods of providing information to rural farmers and rural community who are generally illiterate and relatively remote from formal sources of information (e.g. extension stations, libraries). Scientists of the new information and communication technologies suggest that technology can overcome these barriers by delivering information right and need based to the rural people via new information technologies [7], [10], [11]. New information technologies are critical factors to open new information channels to the information-poor rural areas of developing countries [10]. Reference [13] proposed a framework of a cost-effective agricultural information dissemination system (AgrIDS) to disseminate expert agriculture knowledge to the farming community of Indian to improve the crop productivity. He explained,'…the proposed system aims to improve agricultural productivity by disseminating fresh expert agricultural advice to the farmers both in a timely and personalized manner. In AgrIDS, the agricultural experts generate the advice by using both the available agricultural technology related to the crop and the latest information about the crop situation received through Internet in the form of both text and images' [13].

According to reference [11] despite the advancement of infrastructural services made available to rural people over the past 20 years in rural community of Iran, they still, however unfortunately, live in unequal social and cultural environments. In the third decade of rural development in

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Iran, this problem will reveal itself as social demands which naturally bring about social challenges in future. The most important challenges may fall in the following categories: developing communication system and facilitating information process; reduce wide information gap exists between the research level and practice; developing job opportunities; increasing sorts of rural-based jobs which call for more mental skills; in other to overcome the inefficiency of technical-vocational training system; developing demands by rural people for equal access to job opportunities, markets and businesses; and building upon rural information dissemination networks. Iranian farmers need timely expert advice to improving their practices. In this paper, we made an effort to present a system to information dissemination in agricultural of Iran based perception of Iranian extension agents.

II. Purpose and Objectives

The major purpose of this study was designing Information Dissemination System (IDS) based perception of extension agents in agricultural of Iran. Specific objectives of this study were to:

1. Identify perception of extension agents regarding basic causes for designing Information Dissemination System (IDS) based E-learning.
2. Determine essential factors for designing Information Dissemination System (IDS) based E-learning.
3. Identify barriers that prevented extension agents from using Information Dissemination System (IDS) based E-learning.
4. Identify factors affecting on use of information technology by extension agents.

III. Methods and Procedure

The descriptive research methodology was used in this study. The population consisted of 96 extension agents who work for Management of Extension and Farming System of Khuzestan province of Iran. A questionnaire was developed to designing Information Dissemination System (IDS) based E-learning. The questionnaire covered four areas: 1)demographic characteristics such as age, sex, and levels of education; 2)basic causes for designing Information Dissemination System (IDS) based (the extent of importance of five reasons for Information Dissemination System were measured on a five-point, Likert scale which ranged from 0 (not important) to 4 (extremely important); 3)essential factors for designing of Information Dissemination System (IDS) based E-learning (the extent of importance of eight characteristics for Information Dissemination System were measured on a five-point, Likert scale which ranged from 0 (not important) to 4 (extremely important); and 4)barriers for using Information Dissemination System (IDS) based E-learning by extension agent (a multi choice question including six barriers). Face and content validity of the questionnaire was established using a panel of experts consisting of faculty in the Department of Agricultural at Shoushtar University, and extension officers in the Ministry of Jihad-e Agriculture.

The questionnaire was field-tested in Esfahan provinces not included in the population. A pilot test was conducted to determine the questionnaire's reliability (Cronbach's alpha=0.81. Data collected were analyzed using the Statistical Package for the Social Sciences (SPSS). Appropriate statistical procedures for description (frequencies, per cent, means, and standard deviations) were used.

IV. Findings

Personal and socio-economic characteristics of respondents:

Approximately 51% of respondents between 40 to 50 years and 29% between 30 to 40 year. Most respondents (62%) reported work experience, including both inside and outside of Extension, of 15 or more years. ". Most of the extension agents (94.4%), were male. The results showed that the majority of extension agents (92.2%) were married. Approximately 48.8% of the respondents had high school education, 46.7% had Bachelor of Science degrees, and 4.5% had Master's degrees.

Agents were asked to self-rate their overall Information Technology skills on scale from "very poor" to "very strong". Approximately 16% of respondents reported their skills to be "very poor" and approximately 61% of respondents reported their skills to be "poor".

Basic causes for designing Information Dissemination System:

Perception of extension agents regarding basic causes for designing Information Dissemination System (IDS) based E-learning, was measured using a Likert-scale, including five reasons for designing Information Dissemination System. These reasons were derived from several previous studies(Reddy 2004; Sharma 2004; Ommani 2005) and were applied after a pilot-test and discussion with information and extension scientists. Table I shows the perception of extension agents regarding basic causes for designing Information Dissemination System. As shown in Table I, the top three causes according to extension agents, for designing Information Dissemination System based E-learning in agriculture were:1)Expert/scientific advice regarding crop cultivation is not reaching farming community in a timely manner.2)A wide information gap exists between the research level and practice.3)Traditional methods for Information Dissemination are inappropriate.

Characteristics of Information Dissemination System (IDS) based E-learning:

For designing Information Dissemination System (IDS) based E-learning of respondents were asked to indicate on a scale of 0 (Not important) to 4 (Extremely important), factors that require for designing Information Dissemination System (IDS) based E-learning in agricultural of Iran. The data presented in Table II reveals that the top five characteristics of Information Dissemination System were:

TABLE I
CAUSES FOR DESIGNING INFORMATION DISSEMINATION SYSTEM (IDS) BASED E-LEARNING

Reason	N	Men	SD	Rank
Expert/scientific advice regarding crop cultivation is not reaching farming community in a timely manner.	90	3.59	.78	1
A wide information gap exists between the research level and practice.	89	3.28	.96	2
Traditional methods for Information Dissemination are inappropriate.	90	3.05	.93	3
In traditional system expert/scientific advice is not based farmers need.	90	2.35	1.02	4
In traditional system farmers can't received new information by information technology.	88	1.56	.92	5

Scale: 1)Not important; 2)Little important; 3)Somewhat important; 4)Very important; 5)Extremely important

1. Establish communication between farmers, coordinators (extension agents), agricultural experts, research centers, and community by information technology.
2. The communication between all factors should be mutual.
3. The information must be based farmers need.
4. Internet used as a facility to transfer the advanced agricultural information to the farming community.
5. Farmers can be illiterate and speak a local language and they are not expected to use the system directly.

These characteristics used for designing Information Dissemination System (IDS) based E-learning (see Fig. 1).

Organization-related barriers for using Information Dissemination System (IDS) based Information Technology (IT):

To obtain additional insight into organizational factors that influence using Information Dissemination System (IDS) based E-learning, study participants were asked to indicate the most important barrier to their use of Information Dissemination System (IDS) based E-learning in a multiple choice question including six organizational barriers. It is clear from Table III that thirty eight extension agents out of eighty nine who answered this question blamed Lack of skill and knowledge in information technology as the main barrier that prevented them from seeking and getting information, followed by Lack of in-service training courses which was mentioned as the main barrier by twenty tow extension agents.

TABLE II
CHARACTERISTICS OF INFORMATION DISSEMINATION SYSTEM (IDS) BASED E-LEARNING

Characteristic	N	Mean	SD	Rank
A essential factor for designing Information Dissemination System is communication between farmers, coordinators, agricultural experts, research centers, and community, by IT.	90	3.87	.68	1
The communication between all factors should be mutual.	90	3.65	.95	2
The information must be based farmers need.	88	3.43	1.02	3
Internet used as a facility to transfer the advanced agricultural information to the farming community.	89	3.15	.83	4
Farmers can be illiterate and speak a local language and they are not expected to use the system directly.	90	3.06	1.12	5
Reducing the lag period between research effort to recommendation.	88	2.65	1.06	6
This system must be reduces the cost of exchange of information significantly.	90	2.08	.93	7
It must be a scalable system which can be incrementally developed and extended to cover all the farmers and crops.	90	2.03	1.07	8

Scale: 1)Not important; 2)Little important; 3)Somewhat important; 4)Very important; 5)Extremely important

TABLE III
ORGANIZATION-RELATED BARRIERS FOR USING INFORMATION DISSEMINATION SYSTEM (IDS) BASED E-LEARNING

Barriers	N	Percent	Rank
Lack of skill and knowledge in information technology	38	42.6	1
Lack of in-service training courses	22	24.7	2
Lack of communication with other organization such as Research Centers	14	15.7	3
No access to internet at office	10	11.2	4
Job complexity and ambiguity in tasks	4	4.4	5
No access to direct telephone line at office	1	1.1	6

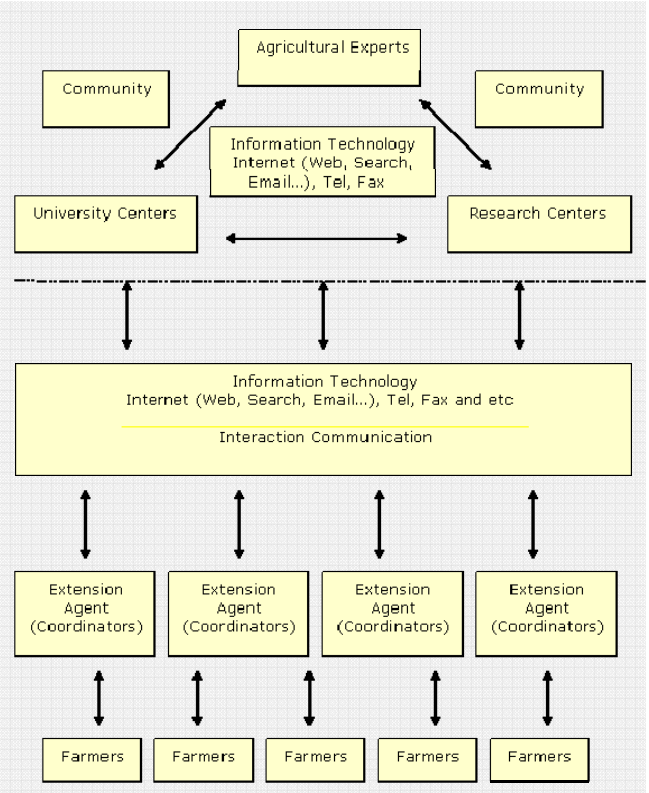

Fig. 1 A Framework for Agriculture Information Dissemination system by Information Technology

Correlation between some personal and organizational characteristics with use of information technology:

The fourth objective was to identify factors affecting on use of IT. The model in Figure II, has been developed for the purposes of the study described in this paper. The model is based upon the references [15], [6], [3], [5], and [2].

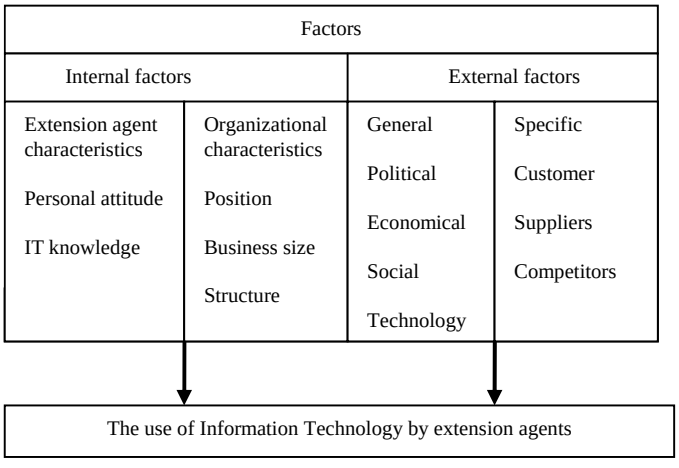

Fig. 2 A theoretical model of factor affected use of Information technology by extension agents

As shown in Table IV, the Pearson coefficient of correlation was used to explore the correlations between some selected respondents' characteristics with use of information technology. According to the correlation analysis, there was a significant relationship between the age, IT skill and knowledge, years of extension work, the extent of information seeking motivation, level of job satisfaction and level of education with use of information technology by extension agents.

TABLE IV
PEARSON CORRELATION BETWEEN SOME PERSONAL AND ORGANIZATIONAL CHARACTERISTICS WITH USE OF INFORMATION TECHNOLOGY

Variable	r	p
Age	-0.436**	0.006
IT skill knowledge	0.684***	0.000
Years of extension work	-0.212*	0.03
The extent of information seeking motivation	0.445**	0.004
position	0.087	0.103
level of education	0.681**	0.000
Level of job satisfaction	0.286*	0.02

Note. *: p<0.05; **: p<0.01; ***: p<0.001

V. Conclusion

This study has designed Information Dissemination System (IDS) based E-learning in agricultural of Iran according to perception extension agents who work for Management of Extension and Farming System of Khuzestan province. The results show the top three causes for designing Information Dissemination System based E-learning in agricultural of Iran according to perception of extension agents were: *Expert/scientific advice regarding crop cultivation is not reaching farming community in a timely manner*, *A wide information gap exists between the research level and practice*, and *Traditional methods for Information Dissemination are inappropriate* respectively. The results also showed that top five factors that require for designing Information Dissemination System (IDS) based Information Technology (IT) in agricultural of Iran were: *Establish communication between farmers, coordinators (extension agents), agricultural experts, research centers, and community by information technology*, *The communication between all factors should be mutual*, *The information must be based farmers need*, *Internet used as a facility to transfer the advanced agricultural information to the farming community*, and *Farmers can be illiterate and speak a local language and they are not expected to use the system directly* respectively. According to result, majority of extension agents reported, *Lack of skill and knowledge in information technology* as the main barrier that prevented them from using Information Dissemination System (IDS) based E-learning in agriculture, therefore extension agents should be taught about the information technology. In-service training courses could be

useful to teach extension agents in this regard. Also there was a significant relationship between the age, IT skill and knowledge, years of extension work, the extent of information seeking motivation, level of job satisfaction and level of education with use of information technology by extension agents.

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