



Operational indicators for measuring organizational e-readiness based on fuzzy logic: A challenge in the Agricultural Organization of Guilan Province, Iran

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ABSTRACT

Information and communications technology has exponentially grown in recent years and has played a significant role in organizational development. The main purpose of this study was to collect the data needed for the introduction of a new tool for assessing e-readiness in the Agricultural Organization of Guilan Province, Iran. The study population includes agricultural organization experts and researchers who were familiar with the concepts of IT and the organization status. Based on the relevant literature review, the e-readiness indicators which had theoretically been proposed and practically used by researchers over the past 10 years were identified. Then some parameters were introduced for examination and prioritization. These indicators represented the spatial and temporal factors as well as the characteristics of the condition of the Agricultural Organization of Guilan Province. The proposed structural model included seven factors (Infrastructural, Human, Educational, Government, Management, Socio-cultural and Legal) and 44 indicators. After that, based on the experts' points of view, the coefficient of significance for each of the selected factors and indicators was measured using Minkowski fuzzy screening method. The results obtained from structured questionnaires show that all of the seven main factors and 40 indicators out of 44 indicators were appropriate for assessing electronic readiness and the final model of assessing e-readiness. Furthermore, the results indicated that the most important factor in assessing e-readiness is the human factor and then stand other factors such as educational, infrastructural, management, government, legal and socio-cultural.

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1. Introduction

Organizational dependence on information and communications technologies (ICTs) is increasingly growing and the benefits of using ICTs in human resource services and other

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sectors help organizations to compete with other organizations successfully. ICT is expected to provide new opportunities for the improvement of organizational effectiveness. The application of technological approaches has been the engine of progress, wealth creation, and economic growth since the first Industrial Revolution [1-3]. Organizational e-readiness is the ability of an organization to successfully adopt, use and benefit from ICTs such as e-learning, and e-commerce. The importance of ICTs as a vital resource on which organizations and societies depend to assist in management decision making, success and competitive advantage have already been underscored [4,5]. To understand the concept of electronic readiness, it is necessary to recognize the concepts and benefits of ICTs. ICTs consist of activities that facilitate the capturing, storage, processing, transmission, and display of information by electronic means. The World Summit on the Information Society (WSIS), held in 2003 and 2005, officially endorsed the importance of ICTs to enhance food security and support rural livelihood [6]. E-readiness has various meanings to different people in different contexts, and for a variety of aims. The main emphasis of e-readiness is to assess a country's ability in improving and supporting digital business and ICT services [5,7]. Thus, it is necessary to define e-readiness according to the purpose of the research. In this study electronic readiness of an organization is defined as the readiness and capability of an organization to receive, apply and profit from ICTs. In today's digital world, ICTs play a major role in an organization's progress and help to succeed in competition.

In recent years organizations have allocated between about 2% and 4% of their annual organizational budget to IT development. Although many clients are not satisfied and complain that their information needs are not properly met, information and communication penetration can solve many such problems of organizations and their clients [8]. The first and most important step in any evaluation is to define the goals. The tactical decision makings, strategic directions, programs and resource allocations are the outcomes of an assessment of an enterprise [9].

A number of studies evaluates the e-readiness of countries and their readiness for competition in the digital world but few studies have attempted to evaluate e-readiness from a micro point of view. Furthermore, these e-readiness assessment models, in practice, are constructed based largely upon the experience of e-business implementation in developed countries. Developed and developing countries differ in

certain key elements such as the availability, cost and quality of ICT networks, services and equipment. Hence, e-business implementation in developing countries could be different from that in developed countries [10,11].

Iran is the 18th largest country in the world in terms of area at 1,648,195 km². It has a population over twice as many as any other countries in the Middle East. The use of the Internet is growing in all such areas and industries as the agriculture sector. In 1993 Iran became the second country in the Middle East to be connected to the Internet, and since then the government has made significant efforts to improve the nation's ICT infrastructure. There have been about 45 million internet users in Iran as of March 2013 and most of the Internet connectivity is done via mobile phone systems. Connectivity by ADSL, Dial up, optic fiber and WiMAX are in the next grades. Internet usage in Iran have exponentially grown in recent years, usage percent was 3.8 of the total population for the year 2000. This value increased to 53.3% in 2012.

Table 1 shows the coefficient of Internet penetration. The Internet penetration coefficient is one of the most basic indicators that shows the extent to which a country has access to the internet. Census of the Internet users is one of the ways to calculate the Internet penetration coefficient.

The globalization and the expansion of ICTs, especially those of the Web and Internet technologies have provided various benefits in different work fields particularly in doing administrative activities. In Iran, considering the dominant role of governmental organizations whose national share of employment is about 25%, it is about two decades that the development of ICT has earned a high priority in the government's agenda. Based on these strategies and actions related to telecommunications and electronic technologies, there has been a significant development in computers and data transfer networks. In the past 10 years, there has been a constant growth in the measures taken to promote the use of ICT in the fields of education, research, culture, business, healthcare management and program planning based on the findings and global experiences, national capacity in cooperation with the government, private sectors and academic and social institutions.

The main goal of this study was to design an e-readiness framework in the Agricultural Organization (Jihad-e-Keshavarzi) in Guilan Province, Iran. The Agricultural Organization has been equipped with computing systems since 1995 and the Internet (with a bandwidth of 2 GB per second) since 2002. Currently more than 350 computing

Table 1 – Internet penetration coefficient in Iran.

March 2013–September 2013				
Description of parameters	Percent of penetrations	Users	Subscribers	Country's population
ADSL	10.89	8,186,500	3,274,600	75,149,669
Dialup	9.23	6,934,760	3,467,380	75,149,669
Wimax	2.7	2,027,075	810,830	75,149,669
CallPhone	30.11	22,629,809	22,629,809	75,149,669
Fiber	8.13	6,106,000	2,656,000	75,149,669
All	61.06	45,884,144	32,838,619	75,149,669

Source: [12].

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