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Factors affecting ICT adoption among rural users: A case study of ICT Center in Iran

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ABSTRACT

Rural ICT centers are the initiative of the third millennium and widen the accessibility horizons of information and Communication Technology among disadvantaged groups of societies, and play a significant role in rural development processes. Adoption of new technology in rural Iran has been the main challenge and focal point of all agricultural extension activities since the modernization era of the 1950s. Consequently the rapidly growing gap between urban and rural economy has reinforced the critical role of ICT in creating an equal society. Identifying the factors which foster adoption of ICT is among the important challenges of alleviating digital divide. ICT centers attract different groups within rural communities and create a forum for unprivileged rural settlers to learn about and to use computer and internet. This paper attempts to identify the factors influencing the adoption of ICT in rural Gharn Abad's ICT center of Golestan Province. The sample included 218 individuals, who were selected by stratified random sampling method. Survey method was used, and data was analyzed by correlation as well as multiple regression techniques. Based on the results, the existence of ICT center itself, with various funding sources, reinforced the adoption regardless of the users' economic status. At the same time, the other factors such as individual, social, the households' informative & communicative, as well as the innovation related factors were found influential. This case study could be used as a sample for planning, establishing, and developing the ICT centers in the other similar situations.

1. Introduction

Information and communication Technology in the first decade of the third millennium proved its vital role in poverty alleviation and sustainable development processes. ICT as a third millennium's phenomenon cannot meet the third millennium development goals unless being adopted by different groups within societies. Research projects which explore issues relating to ICT adoption may contribute to decreasing the ongoing digital gap in a society. Based on review of the literature, it has strengthened livelihoods, has especially ensured food security and has increased income opportunities for local communities. ICT has been regarded as a livelihood intervention and community development tool.

For example, Australia, India and Malaysia have integrated ICT within their rural development processes effectively. Within Iran, the access of urban young people to internet is increasing dramatically and many government organizations are

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offering online access to their links. Nevertheless young people in rural areas of Iran suffer from the widening digital gap (UNCTAD, 2006). Iran's ranking of the ICT Development Index (IDI) (including: access, use and skills) in 2010 was 87 out of 152 countries whereas Korea's ranking was 1 and Chad's ranking was 152. Comparing with some other countries such as United Arab Emirates, Qatar, Bahrain, Saudi Arabia, Turkey and Oman with the respectively rankings of 32, 44, 45, 46, 59 and 60, Iran suffers a good position in ICT. Furthermore, the percentage of households with internet access in Iran has been reported 20.8% at 2010, which in comparison with other countries such as Korea Republic (96.8%), Qatar (84%), Bahrain (74%), United Arab Emirates (65%), Saudi Arabia (54.4%), Turkey (41.6%), and Oman (27.7%) (ITU, 2011) is in a lower status. The rural population of Iran involves 31.4% of the whole population (Statistical Center of Iran, 2007) and is conventionally characterized by illiteracy, poverty and powerlessness.

The percentage of the rural settings with a population of over 100 people, which are connected to the information networks, is 16.6% (Ministry of Information and Communication Technology, 2008). The remoteness of official organizations from rural settings and insufficient income in companion with a lack of communication technology has resulted in huge rural-to-urban migration.

The research context: the department of ICT in Iran has targeted the year 2015 for full internet coverage throughout the country. However, with due attention to rural poverty, the households cannot afford owning personal computers, that illuminates the crucial role of ICT centers in bringing about justice, equity, and fostering sustainability. Consequently, two challenges exist: (1) the scattering of villages throughout Iran with the average of 23 households per village, and (2) the adoption of ICT by the rural settlers themselves.

Towards achieving sustainable human development goals, establishment of ICT centers in rural areas of developing countries has been encouraged by United Nations Development Program. In the year 2002 for the first time, as a pilot project, Gharn Abad village alongside of Caspian Sea in Northern Iran, was selected. In this area farming is the prevalent occupation, whereas some are engaged in off-farm and seasonal jobs. This center is a two-floor building with 560 m^2, located in Golestan Province which includes the following operational units: Conference and theatre room, ISP unit, instructional classes, café-net, and Tele working unit. The activities engage internet and email search, climate news, agricultural information, e-business, and English training courses. This center receives different financial aids from various sources such as: local peoples' donations, the government, private sector, and the Iranians who live overseas. The users (who are between 9 and 31 years old) consist of the primary/secondary school and university students, farmers, housewives and Tele workers who participate in the Center's activities. The participant members belong to six villages being located between 2 and 10 km from the center. Gharn Abad is the first e-village in Iran (Jalali, 2007). In 2003 three more centers were established in the other rural settings through a joint project operated by both UNDP and Management and Planning Organization of Iran (MPO). The villages included Maranak village in Damavand Township of Tehran Province, village of Tiss in Chah-Bahar Township of Sistan-Baloochestan as well as Mahabad of Ardestan Township in Isfahan provinces (MPO, 2005). However, based on the field observations, the only successful ICT center which maintained its momentum was Gharn Abad. This center was the winner of 'E. Asia 2007 Award' for the best project, with regard to its creativity and technology orientations in Asia Pacific (Jalali, 2007). Iran's lower status in the economic and telecommunications indices (compared with the Southeast Asian countries) illuminates the need for researches on the adoption of ICT, with due respect to the following: high percentage of rural population and the alarming digital gap between urban and rural societies. Accordingly, new technological innovations often fail because too much attention is still given to technical-related features without taking into account the most important parameters which directly relates to the users' adoption phenomenon (Verdegem & Marez, 2011). The main objective of this research is to study the parameters which affect the ICT adoption in Gharn Abad ICT Center to finally generalize the outputs for establishing several ICT centers throughout the country.

2. Literature review

The review of the literature illustrates almost a similar social context for the adoption of ICT in general, in most of which the common issue is economical factor. The contribution of this study to the literature is its specific focus on a rural forum in which information and communication technology is operational with its specific characteristics. Krysa (1998) has determined the constraints of using computers by teachers in schools: time, hardware and software access difficulties, attitudes of administrators towards computer, teachers' attitudes, educational problems, teacher training and their personal computer skills (1998). Based on Krysa's study, personal computer skill as an individual factor was included in the conceptual model. Luchetti and Sterlacchini (2004) through an econometric analysis on a sample of Italian Small and Medium Enterprises (SMEs) showed that the adoption as well as the effective use of ICTs depended, firstly on the types of ICT, and secondly on different firm characteristics (2004). The relevance of the mentioned study is its emphasis on characteristics of ICT (that is, the innovation) and firm characteristics (that is, the adopter's). Consequently, characteristics of individuals (as the adopter's characteristics) and of the ICT (as Innovation's characteristics) are considered in the conceptual model. Cheong (2002), studied the characteristics of the users and nonusers of internet, and demonstrated the users as being younger, more educated, and with more annual income. Besides, gender, income, and the years of experiences were stimulators of the internet users. Cheong, in the second part of the paper has applied regression and correlation analyses. The independent variables were: (1) the use of media; (2) family functions such as having meal or watching TV with the family; (3) assessment of media credibility; (4) perceived value of the Internet; and (5) demographic factors, annual households' income, occupation and educational levels. The dependent variable was 'the internet use based on the weekly