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Full Length Research Paper

Effective factors on the villagers' use of rural telecentres (case study of Hamadan province, Iran)

Farhad Lashgarara*, Alieh Karimi and Seyyed Mehdi Mirdamadi

Department of Agricultural Extension and Education, Science and Research Branch, Islamic Azad University, Tehran, Iran.

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Fast speed of the communication integration and information transmittal has caused something called information and communication technology (ICT). Because it is the first experience of e-services through rural ICT centers in Iran, different studies and investigations are needed to identify and apply the proper applications related to the village. This study is aimed at evaluating the factors affecting the villagers' use of rural telecentres from 2010 to 2011. This is applied study and the methodology is descriptive co relational. The main tool of the study is questionnaire. Statistical population of the study was 190686 villagers of Hamadan, Razan, and Asad Abad cities from which 230 ones were selected by proportional stratified sampling method. After data extraction, SPSS version 17 was used in the statistical analysis. Findings showed that most of the villagers' use of rural telecentres is little (38.3%), and their use of this kind of services was mostly related to post bank (2.75), computer and administrative services (2.31) and direct and indirect internet services (2.24). The only and the most important variable affecting the villagers' use of rural telecentres was the social –cultural factor which explained about 27% of the rural telecentres.

Key words: Iran, information and communication technology (ICT), rural telecentres, Hamedan province.

INTRODUCTION

Undoubtedly, ICT development in villages is one of the information society's objectives of activity and principles plan which has been discussed in the summit of heads in Geneva and Tunisia. ICT is internationally considered as the tool of village development in order to reduce poverty, digital gap and prevent the villagers' immigration to city (Nemati et al., 2009). Designing services in a way villagers can use without a physical presence in cities is one of the important duties of organizations in creating the e-government. The main form of access to information technology in villages is the establishment of remote communication center which is referred as center of ICT or rural telecentres. Rural telecentres, in addition to provide service of mail, mail–bank, telecommunication, and all governmental services, connect the villages with the internet and provide the communicational infrastructure necessary to cover all organizations' services. Theses centers provide the aimed villages with internet and establish one access point of internet for each village. Using rural telecentres, organizations can provide e-services for the villages so that most of the villagers' problems such as going to cities for using governmental services would be resolved. Telecenter (also known as telecottage) is a new concept of rural development which could help rural people getting access to economic, social, educational and training opportunities through the use of modern ICTs. The main services provided by telecenters, as introduced by Rao (2008), include: providing access to communication facilities (phone, Internet, e-mail, fax and mobile phone) and office equipments (printer, scanner, photocopier and camera), providing training in use of ICTs, and providing on-demand ICTs for development services (government services, job search, agriculture development, business enhancement, education and training opportunities, telemedicine, emergency relief and grievance redressal). Rao adds that "telecenters are equipped with the combination of telecommunication services (telephony,

*Corresponding author: E-mail: f_lashgarara@srbiau.ac.ir

fax, e-mail, Internet and voice over Internet protocol), office equipment (computers, CDROM/DVDROM, printers and photocopiers), multi-media soft-ware and hardware (radio, TV and video) and meeting spaces for local business or community use and training (Paryab and Zamani- Miyandashti, 2010).

Telecenters have gained prominence as the primary instruments for bringing the benefits of ICTs to poor communities where the technological infrastructure is inadequate and the costs of individual access to these technologies are relatively high. They provide opportunities for access to information by overcoming the barriers of distance and location, and by facilitating access to information and communication, they have the potential to foster social cohesion and interaction (Young et al., 2001). Telecentres present a huge opportunity for extending ICT access to rural communities in a flexible manner. They are meeting places where people access appropriate technologies, services, exchange ideas and connect to social networks. They have a huge potential to influence a development vision of a rural community by rallying civil society and government towards addressing pressing community needs. The Songhai Centre in Benin and the M. S Swaminathan Foundation in India have risen to that desirable influential status already. Several telecentres have embarked on this path as well. In a study entitled Investigation on effective factors on adoption and application of ICT in Fars province. Lahsaei and Habibi (2010) have concluded that there is significant relationship between the adoption and use of ICT with the villagers' occupation, age, education level, English language familiarity, knowledge and awareness, their attitude toward the infrastructures and equipments provided in the centers, kind and mode of providing services in the centers, motivation for using ICT, teaching computer sciences to the villagers, brokers skillfulness, villagers attitude toward the government objectives and investment in the centers. In the study of the contribution of rural ICT offices in rural development, Paryab and Zamani- Miyandashti (2010) resulted that rural telecentres was successful at providing easy access to information, internet, internet registrations, mail services and reduction of unnecessary footwork, but it was successful at making job opportunities. In the measurement of Khorasan province, rural people usage of Fava offices, Azadi and Moasheri (2010) indicated that there is relationship between rate of awareness of the centers and refer to them.

Results on effective factors on rural people usage of ICT offices in Khoarasan province by Gholi and Salari (2009) showed that the villagers' rate of awareness and understanding of provided services would be increased if their literacy level, getting necessary skills for using the services, communication and information exchange with villagers or out of the village environment, and trust to the centers' performance is increased. In obstacles and challenges development of rural ICT offices, Hamedanlou et al. (2009) indicated that lack of context and applications needed for the rural society, human resources capacity, coordination weakness and strategically coherence, infrastructure weakness, risk of investment, weakness of rural enterprises, and the current policies weakness are the most important problems and barriers of rural ICT centers development in Iran, respectively. Findings of the feasibility of establishment of ICT offices in rural areas by Noori et al. (2007) resulted that physical, social, economical and natural factors are respectively the most important factors which are effective in this field. In a research entitled the use of 'Mobile phone technology for rural development in Nigeria' by Owens (2006) concluded that the effect of cell phone on the economical development has caused a social and economical growth development. Findings of ICT application for business development in rural Vietnam of Thanh (2005) showed that villagers having computer were not skilled enough to use it; generally, villagers are interested in face -to -face dealing and exchanges. In the study of Internet Cafés in Asia and Africa –venues for education and learning? Conducted by Furuholt and Kristiansen (2007), they conclude that the main Internet café uses in Indonesia and Tanzania are related to seeking information, E-mail and chatting, respectively. They also reported that the main source of knowledge for learning to use the Internet including formal course, self-learning, asking friend and Internet café staff. Study findings of Prado et al. (2010) regarding evaluating ICT adoption in rural Brazil: a quantitative analysis of telecenters as agents of social change stated that overall, 108 respondents (20.1%) stated they used ICTs for reasons related to work, 84 (15.6%) reported using them for school work, and 131 (24.3%) indicated that they used them for personal reasons. Finally, e-Sri Lanka" The use of ICTs for poverty reduction by Withanage (2003) concluded that using ICT in the rural areas of Serilanka had problems such as villagers' disaffection of using internet, inaccessibility of telephone services in many villages, inefficiency of the English language literacy among the villagers to learn computer, villagers resistance to the computer system development, internet contents' undesirability for the villagers, equipments' expensive maintenance, and ICT educational centers' lack of quality.

Iran has a population of around 71 million, out of which, about 22 million (around 32%) live in rural areas (35191 villages). Iran's rural sector is having hard times struggling with prolonged drought, low commodity prices, high inflation, foreign imports, unstable agricultural policies and economy, growing gap of living standard between urban cities and rural areas, and lack of basic information and easy access to public services that could assist villagers to improve their livelihoods. To deal with the afore-mentioned problems, particularly the two last, ICT applications were considered by national and local officials, and the idea of rural telecentres was developed

Table 1. The rate of using rural people of rural telecentres (n = 230).

Cumulative percent	Valid percent	Percent	Frequency	Rate of using rural telecentres
37.8	37.8	29.6	68	Very little
86.7	48.9	38.3	88	Little
95.6	8.9	7	16	Moderate
98.9	3.3	2.6	6	Much
100	1.1	1.3	2	Very much
-	-	21.7	50	Non respond
		100	230	Total

Mode and median: Little.

to provide rural communities with access to the internet and applications such as e-government, e-commerce, e-learning, e-banking and other e-services. Iran's Ministry of Communication and Information Technology aimed at opening 10000 telecentrs by early 2010. Since then, about 8400 rural telecentres have been opened by May 2009. But, little information exists about how successful the offices have been in improving the lives of villagers (Paryab and Zamani- Miyandashti, 2010). In Iran, during the last years, rural telecentres development was one of the main government's major programs. An example is the fourth national development plan containing a legal duty for the ministry of communication and information technology for commissioning 10000 rural ICT centers and, especially, the strategic document of national ICT development. Currently, more than 7.51% of Hamadan population is living in village, in the other hand, because of the villagers' immigration to cities; ICT development has an especial role in reducing this process.

This development can exit the villages from isolation and, by removing the traditional borders between cities and villages affect the rural development, in addition to balance the city and village as well as integrating them. Thus, this study was aimed to identify and evaluate factors affecting the villagers' use of rural telecentres.

MATERIALS AND METHODS

This is an applied study. The analysis used in this study involved a combination of descriptive and quantitative research and the methodology is descriptive co relational. Statistical population of the study was 190686 villagers of Hamadan, Razan, and Asad Abad cities from which 230 ones were selected by proportional stratified sampling method. The main research tool is questionnaire. Content and face validity were established by a panel of experts consisting of faculty members and some specialists. Minor wording and structuring of the instrument were made based on the recommendation of the panel of experts. A pilot study was conducted with 30 persons. Cronbach Alpha score was between 0.677 to 0.893%, which indicated that the questionnaire was highly reliable. Dependent variable of this study is villagers' use of rural telecentres, to assess it, 8 statements were used in the form of a five-point Likert scale (from very little to very much) and the mean score of the answered questions was identified as the respondent's use of rural telecentres. According to the 5-item Likert scale, the maximum and minimum scores for each respondent were 40 (8*5) and 8 (8*1), respectively. So, based on the recordation, scores of very little, little, average, much, and very much effects were 8 to 13, 14 to 20, 21 to 27, 28 to 34, and 35 to 41, respectively. Independent variables of the research are socio-cultural, economic, environmental, managerial and educational factors and respondents' ability to work with ICT equipment, rate of accessibility to the ICT centers, rate of referral to the ICT centers, rate of motivation and keenness to go to the ICT centers, and rate of knowledge about the services provided by the telecentres.

For identify explaining variables, multiple regression analysis was used. Statistical analysis was done through SPSS Version 17.

RESULTS

Findings showed that the average age of the respondents is 36 years, the oldest is 76 and the youngest is 15 years. Most of the respondents educational level was lower than diploma (49.6%) and only 9.1% of them were associate degree or higher. Most of them (42.2%) had not enough skills for working with ICT tools and 2.2% of them were completely able. Most of the respondents (35.7%) had an average access of rural ICT telecentres and only 3.5% of them had an absolute access. Most of the respondents (37.4%) had an average rate of referral to rural ICT services centers and only 0.9% of them had a great deal referral. Most (33.5%) had an average rate of motivation and keenness to go to the rural telecentres and only 6.1% had a lot. Most of the respondents (38.2%) had an average knowledge concerning the services provided by the rural telecentres and only 1.3% of them had a great deal information. According to the results of Table 1, most of the villagers' use of rural telecentres is very little (38.3%) and only 1.3% of the respondents had very much use of these offices. According to mean statistics, Villagers' use of rural telecentres services mostly related to post bank (2.75), computer and administrative services (2.31) and direct and indirect internet services (2.24). 11 Items Likert scale was used to evaluate the effect of socio-cultural factors on the villagers' use of rural telecentres. Findings of Table 2 showed that most respondents (35.4%) believed that the socio-cultural factors have a little effect, while 9.2% believed that it is much. Statistical average for prioritizing was used to

Table 2. Influence of socio-cultural factor on using of people of rural telecentres (n = 230).

Cumulative percent	Valid percent	Percent	Frequency	Rate of influence
13.5	13.5	10.9	25	Very little
57.3	43.8	35.2	81	Little
90.8	33.5	27	62	Moderate
100	9.2	7.4	17	Much
-	-	19.6	45	Non respond
		100	230	Total

Mode and median: Little.

Table 3. Influence of economic factor on using of people of rural telecentres (n = 230).

Cumulative percent	Valid percent	Percent	Frequency	Rate of influence
32.3	32.3	26.5	61	Very little
67.7	35.4	29.1	67	Little
89.4	21.7	17.8	41	Moderate
99.5	10.1	8.3	19	Much
100	0.5	0.4	1	Very much
-	-	17.8	41	Non respond
		100	230	Total

Mode and median: Little.

Table 4. Influence of external factor on using of people of rural telecentres (n = 230).

Cumulative percent	Valid percent	Percent	Frequency	Rate of influence
11.1	11.1	10.4	24	Very little
46.5	35.5	35.5	77	Little
82.9	36.4	34.3	79	Moderate
99.5	16.6	15.7	36	Much
100	0.5	0.4	1	Very much
-	-	5.7	13	Non respond
		100	230	Total

Mode and median: Moderate.

prioritizing the effect of socio-cultural factor on the villagers' use of rural ICT offices. Findings showed that the maximum effect of these factors with the averages of 3.33, 3.21, and 3.21 were related to the cell phone usage culture, level of literacy, and trust the offices performance, respectively. 8 Items likert scale was used to evaluate the effect of economical factors on the villagers' use of rural telecentres.

Findings of Table 3 showed that most of the respondents (35.4%) believed that the economical factors have a little effect, while 0.5% assessed that very much. Statistical average for prioritizing was used to know the effect rate of each economical factor on the villagers' use of rural ICT offices. Findings showed that the maximum effect of economical factors with the averages of 2.90, 2.37 and 3.35 were related to reducing the cost of unnecessary dislocations, improvement of the villager's skills and income, and the ability of paying the cost of using the ICT services, respectively. In order to evaluate the effect of environmental factors on the villagers' use of rural telecentres, 7 Items Likert scale was used. Findings of Table 4 showed that most respondents (36.4) believed that the environmental factors have a little effect, while 0.5% believed that it is very much. Statistical average, for prioritizing was used to know the effect rate of each environmental factor on the villagers' use of rural telecentres. Findings showed that the maximum effect of environmental factors with the averages of 2.91, 3.08 and 3.13 were related to the factors of the distance between villages to cities, suitable location for the office in the village, and the offices' equipments and amenities, respectively. For evaluating the effect of managerial

Table 5. Influence of managerial factor on using of people of rural telecentres (n = 230).

Cumulative percent	Valid percent	Percent	Frequency	Rate of influence
14.7	14.7	12.6	29	Very little
51.3	36.5	31.3	72	Little
82.7	31.5	27	62	Moderate
94.9	12.2	10.4	24	Much
100	5.1	4.3	10	Very much
-	-	14.3	33	Non respond
		100	230	Total

Mode and median: Little.

Table 6. Influence of educational factor on using of people of rural telecentres (n = 230).

Cumulative percent	Valid percent	Percent	Frequency	Rate of influence
50.3	50.3	41.3	95	Very little
78.3	28	23	53	Little
92.1	13.8	11.3	26	Moderate
99.5	7.4	6.1	14	Much
100	0.5	0.4	1	Very much
-	-	17.8	41	Non respond
		100	230	Total

Mode and median: Very little.

Table 7. Influence of various factors on using of people of rural telecentres.

Valid percent	Mode	Various factors
43.8	Little	Socio-cultural
35.4	Little	Economic
36.4	Moderate	Environmental
36.5	Little	Managerial
50.3	Very little	Educational

factors on the villagers' use of rural telecentres, 9 items Likert scale was used. Findings of Table 5 showed that most respondents (36.5%) believed that the managerial factors have a little effect, while 5.1% believed that it is very much. Statistical average for prioritizing was used to know the effect rate of each managerial factor on the villagers' use of rural telecentres. Findings showed that the maximum effect of managerial factors with the averages of 2.91, 3.08 and 3.13 were related to the suitable offices servicing, availability of skilled experts, and the offices' on time and good-quality services, respectively. 7 Items likert scale was used to evaluate the effect of educational factors on the villagers' use of rural telecentres. Findings of Table 6 showed that most respondents (50.3%) believed that the educational factors have a little effect, while 0.5% believed that it is very much. Statistical average for prioritizing was used to know the effect rate of each educational factor on the villagers' use of rural telecentres. Findings showed that the maximum effect of educational factors with the averages of 2.22, 2.17 and 2.13 were related to the factors of using radio and TV for educating the villagers, providing necessary educations by the offices in order to make skills for using the services, and using the pioneer and inventive persons, respectively. In total, the effects of various factors on using of people of rural telecentres have been summarized in Table 7.

Findings of Table 8 show that most respondents (42.2%) have a very little ability for working with the ICT equipments and only 2.2% of them have a great deal of ability. Findings of Table 9 show that most respondents (35.7%) have an average access to the ICT centers and only 3.5% of them have a good deal of access. Findings of Table 10 show that most respondents (37.4%) have an average referral to the ICT centers and only 0.9% of them have many referrals. Findings of Table 11 show that most respondents (33.5%) have an average rate of motivation for going to the ICT centers and only 6.1% of are greatly

Table 8. The ability of rural people using of rural telecentres (n = 230).

Cumulative percent	Percent	Frequency	Rate of ability
42.2	42.2	97	Very little
64.8	22.6	52	Little
89.1	24.3	56	Moderate
97.8	8.7	20	Much
100	2.2	5	Very much
	100	230	Total

Mode: Very little median: Little.

Table 9. The accessibility of rural people to rural telecentres (n = 230).

Cumulative percent	Percent	Frequency	Rate of accessibility
20	20	46	Very little
45.2	25.2	58	Little
80.9	35.7	82	Moderate
97.8	15.7	36	Much
96.6	3.5	8	Very much
	100	230	Total

Mode: Moderate; Median: Moderate.

Table 10. The rate of reference of people to rural telecentres (n = 230).

Cumulative percent	Percent	Frequency	Rate of reference
25.7	37.4	59	Very little
52.2	26.5	61	Little
89.6	37.4	86	Moderate
99.1	9.6	22	Much
96.6	0.9	2	Very much
	100	230	Total

Mode: Moderate; Median: Little.

Table 11. The rate of enthusiasm of rural people for reference to telecentres (n = 230).

Cumulative percent	Percent	Frequency	Rate of enthusiasm
14.8	14.8	34	Very little
36.1	21.3	49	Little
69.6	33.5	77	Moderate
93.9	24.3	56	Much
100	6.1	14	Very much
	100	230	Total

Mode: Moderate; Median: Moderate.

interested and motivated.

Findings of Table 12 show that most respondents (38.2%) have an average knowledge and understanding about the ICT centers' services and only 1.3% of them have a good deal of information about these centers. Using the stepwise regression method, in order to identify the factors explaining the use of rural telecentres, 10 variables of cultural, economical, environmental, managerial, and educational factors in addition to the variables of respondents' ability to work with ICT

Table 12. The rate of familiarity of rural people with rural telecentres (n = 230).

Cumulative percent	Valid percent	Percent	Frequency	Rate of familiarity
21.9	21.9	21.7	50	Very little
51.3	29.4	29.1	67	Little
89.5	38.2	37.8	87	Moderate
98.7	9.2	9.1	21	Much
100	1.3	1.3	3	Very much
-	-	0.9	2	Non respond
		100	230	Total

Mode: Moderate; Median: Little.

Table 13. Stepwise regression of effective factors on rural usage of telecentres.

Variable	B	Beta	R Square	Sig.
Constant	6.956	-----	----	0.000
Socio-cultural (X_1)	0.320	0.516	0.261	0.000

equipment, rate of accessibility to the ICT centers, rate of referral to the ICT centers, rate of motivation and keenness to go to the ICT centers, and rate of knowledge about the services provided by the ICT centers were entered the equation, respectively. Variable of the social –cultural factors was the only one that entered the equation and had more effect than the other independent variables. In this stage, the correlation coefficient (R) 0.516, coefficient of determination (R^2) 0.266 and adjusted coefficient of determination (R^2_{ad} 0.261) were calculated. Thus, the variable of cultural factors, alone, explained about 26% of the variance of the villagers' use of rural telecentres (Table 13).

Linear regression equation of the factors affecting villagers' use of rural ICT offices' services is:

$Y = 6.956 x_1 + 0.320$

DISCUSSION

This study was aimed to identify and evaluate factors affecting the villagers' use of rural telecentres. Most villagers (38.3%) had a little use of the rural telecentres and only 1.3% of them had a great deal of use. In addition, findings of the study showed that the villagers have mostly used the services of mail-bank, administrative and computer services, and internet direct and indirect services. The most important and the only variable affecting the villagers' use of ICT offices services is cultural-social factors. Cultural factors such as cell phone usage culture, level of literacy and information, existence of local rural institutes, trust and certainty of the office performance, rate of communication and information exchange with other villagers, rate of the villagers' communication and information exchange with the outer environment, continuous relations with governmental institutes and organizations, using the local authorities, attitude toward in-person referral and using the services, availability of disagree or agree organizational cultures facing new servicing in the villages, and inattention to the cultural and geographical differences in the process of servicing affect the villagers' use of rural ICT offices services. Paying attention to social-cultural factors can be a factor affecting the process of rural telecentres objective achievement. This is confirmed by Thanh (2005), Withanage (2003), Owens (2006), Fekratnejad (2008), Mohammad-Gholinia and Salari-Tabas (2009), Azadinia and Moasheri (2010), Hamadanlo et al. (2009), Noori et al. (2007) and Paryab and Zamani- myandashti (2010). Consequently:

1) According to the prioritization of the villagers' use of available services in these offices, it is suggested:

i) Increasing the services related to the mail with a better quality.
ii) Carried out carefully by skilled persons, administrative and computer services should be increased in the offices.
iii) Because the direct and indirect internet services are welcome and according to the e-government objectives, all offices should connect to the internet; internet experts should work in the offices and teach the villagers.

2) Based on the effect of cultural-social factors on the villagers' use of rural ICT offices, followings are suggested to improve the villagers' use of theses offices:

i) Efforts should be carried out to increase the cell phone usage culture in the villages and send the villagers' needed information through SMS in order to encourage them.

ii) Offices' heads and personnel, skillfully and by providing sufficient services, should try to increase the villagers' trust.
iii) Local trustworthy and skilled persons should be used to introduce the offices to the villagers and motivate them to welcome offices.

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