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Empowerment of the Members of Rural Women's Cooperatives: The Impact of ICTs in Rural Districts of Urmia County, Iran*

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Abstract

This survey study investigates the contribution of information and communication technologies (ICT) to empowering the members of rural women's cooperatives. The population of interest consisted of all members of rural women's cooperatives of Urmia County, Iran. Using Krejcie and Morgan's table and following a simple random sampling method, 152 individuals were selected as the research sample. A questionnaire was the main tool for data gathering, structured on the readiness, action, and impact (RAI) communication model. The validity of the questionnaire was verified by a panel of experts. To assess its reliability, Cronbach's alpha coefficient was calculated for the main scales of the questionnaire (α = 0.76 to 0.90). Interview was also used as a complementary instrument to collect data. Results showed that rural women had no favorable view toward readiness, related activities, and the impacts of ICT on their empowerment. Apparently, members of the rural women's cooperatives are stuck at the readiness level. Consequently, they lose many opportunities that make cooperatives more fruitful over time. If they could get better access to ICT instruments, one can hope that positive steps would be taken to other levels i.e., activity and impact. Moreover, four variables, readiness, activity, work experience, and level of education, were recognized as significant predictors of ICT-induced empowerment.

Key words

empowerment, rural women, rural cooperatives, ICT, Iran

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Introduction

Although women make essential contributions to rural livelihoods and make up almost half of the agricultural labor force in almost all developing countries, their ability to access resources and employment opportunities remains limited. This situation has prevented them from fully enjoying their capacity to improve their lives and to better contribute to economic growth (Dekens & Voora, 2014; Mlambo-Ngcuka, 2017; Terry & Gomez, 2011). Indeed, rural women face persistent structural constraints around the world (Dekens & Voora, 2014). To encourage rural development, the empowering of rural women seems to be crucial, which in particular means identifying opportunities for them in each specific context (Alexandru, Ianculescu, Parvan, & Jitaru, 2007; Okafor, 2016; Pankaj & Tankha, 2010). Information and Communication Technology (ICT), as an effective tool, can provide opportunities for promoting empowerment among rural women. In keeping with this function, this study examines the impacts of ICT intervention on empowering the members of rural women's cooperatives in the rural districts of Urmia, Northwest Iran.

As Oppenheim Mason (2003) has noted, empowerment is the ability of people to control their own destinies and is impacted by other people in the society. According to the World Bank (2004), it is the process of increasing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes. Being empowered, indeed, is beneficial not only for the women themselves but for their whole family (UN, 2012). The empowerment issue among rural women, generally, focuses on specific aspects like self-confidence in solving problems (Novo-Corti, Varela-Candamio, & García-Álvarez, 2014), providing better answers to children's queries (Ahmed, Creanga, Gillespie, & Tsui, 2010), improving professional growth and finding opportunities to be creative (Ulrichs, 2016), discovering new ways of doing home-related tasks (Kaaria, Osorio, Wagner, & Gallina, 2016), and gaining the trust of others and feeling they perform a useful role in society (Irshad & Sathyadevi, 2015). That is why major international organizations, such as the UN, have put gender equality and women's empowerment on their agenda through the Millennium Development Goals (Smyth, 2007). However, many studies have specifically focused on improved economic conditions for women as being essential for their empowerment (Rabayah, 2010).

Traditionally, rural women are perceived as individuals are not independently capable of earning an income (Mlambo-Ngcuka, 2017); they are relegated mainly to household duties and poorly paid labor (Terry & Gomez, 2011). Without the power to work and earn a reasonable income, their voices are silenced (Dekens & Voora, 2014). Thus, expanding self-owned agribusinesses in terms of entrepreneurship activities, and increasing their participation in rural producer associations, financial cooperatives, and unions are considered as effective ways of promoting empowerment especially in markets or value chains that are traditionally male-dominated (Berntsen, 2017; Peterson, 2004). However, organizing cooperatives and also group working for rural women can be an excellent way of sharing risks and accessing education, communication services, agricultural inputs, credit, and market connections (Kaaria et al., 2016; Kwapong, 2007) which in turn make access to economic opportunity, social equality, and personal rights possible (Bacon, 2010). In empowering women economically, it is necessary to help the members of women's cooperatives gain their rightful access to productive resources and appropriate knowledge (Berntsen, 2017; Novo-Corti et al., 2014). The one point of note is that knowledge and information are the prerequisites for being able to make decisions as the core concept of empowerment. Information and Communication Technology deserves special attention in this context as, along with other means, it can encourage empowerment in a cooperative agency. Undoubtedly, ICT is revolutionizing our lives, our ways of interacting with each other, and day-to-day life and work. Generally, as Sandys (2005) has pointed out, ICT encompasses technological innovation and convergence in information and communication leading to the development of so-called information or knowledge societies. Effective use of ICT can promote empowerment of societies through greater inclusion, well-being, cooperation, and participation (Mansell & Wehn, 1998). Information and Communication Technology also has the potential to improve interaction between governments and rural people, fostering transparency and accountability in governance. "Many developing countries around the world are implementing ICT for rural people's development, through knowledge-based economic development," Tongia (2006, as cited in Laizu, 2014, p. 2) has noted. In cooperatives, ICT is also playing a major role especially through technologies like cell phones and the internet (Nagamani & Veni, 2016). Improving rural women's access to health care and education services

through the expanded use of ICT channels and strengthening rural women's use of ICT for political participation, advocacy, and networking are also prioritized.

According to Iran's last population and housing census in 2016, rural women represent 12.64% of the total population, and 48.72% of the population in rural areas (Statistical Center of Iran, 2018). They clearly involved in rural economic activities such as farming, dairying, food processing, and handicrafts (Golmohammadi & Ghafoorian, 2017; Golmohammadi & Honari, 2016). As such, empowerment of rural women is an important thrust area for many rural and agricultural development programs implemented by various governmental and non-governmental organizations in Iran (Vakil Heidari & Hassanzadeh, 2014). Credit policies, therefore, have been put in place to encourage the establishment of women's cooperatives for generating employment and more organized income for women (Karimi, 2013). According to Golmohammadi (2011), in recent years, agriculture and rural cooperatives in Iran have diversified themselves into various areas of socio-economic activities. Based on the available information, in 2015, the number of women's cooperatives was 22,652, of which only 325 are operating in rural areas of Iran as active rural women's cooperatives (Iran's Ministry of Cooperatives, Labour and Social Welfare, 2015). These entities, as the main local-based organizations, performed impressively during the last two decades in empowering women in the villages of Iran (Golmohammadi & Ghafoorian, 2017). Yet, rural women in Iran have limited access to resources and public spheres due to socio-cultural restrictions and lack of access to information (Dadvar-Khani & Choobchian, 2015; Golmohammadi, 2011; Golmohammadi & Ghafoorian, 2017) which may mean they miss out on many opportunities to effectively work in cooperatives. Most rural regions of Iran face problems related to communication coverage and access to ICTs (Golmohammadi, 2011). This situation is exacerbated in the border areas of the country, where communication coverage is more limited, particularly for rural women characterized as culturally deprived people who are not able to communicate freely or even use the currently available ICT devices. Therefore, this study has focused on the contribution of ICTs to empowering the members of rural women's cooperatives in border areas of Iran and specifically to examine the views of the members of these cooperatives regarding the level of access to and usage of ICT and its impact on rural women's cooperatives. Factors affect-

ing ICT-induced empowerment of the rural women's cooperatives members were also an intended focus of the research.

Methods

Different approaches and methods such as Participatory Rural Appraisal (PRA) and Strength, Weakness, Opportunity, and Threat (SWOT) have been used to study empowerment issues in rural development studies. One of the models applied to study the role of ICT is the RAI model (Readiness, Activity, and Impact). A very useful representation of the RAI model stages related to the three areas of the S-shaped path of the diffusion model for new technologies has been presented in Figure 1 (Tavakol & Ghazinouri Naeini, 2011). This model is helpful in assessing the effectiveness of ICTs in empowering individuals; the initial stage focuses on the need for information regarding factors that enable and hinder empowerment; a more mature stage looks for empowering activity through the use of ICT; and the final stage measures the impact of using ICT on the economy and society (Edquist, Hommen, & McKelvey, 2001; Selhofer, 2003). These three stages are better clarified in the case of the cooperative members as shown below:

Ⅰ. *Readiness* includes issues of preparation and access to technical infrastructures that are necessary to support and empower the members of rural women's cooperatives (Edquist et al., 2001; Tavakol & Ghazinouri Naeini, 2011).
Ⅱ. *Activity* relates to the state of empowering which means examining and profiling those in rural women's cooperatives who are applying ICT possibilities and those who are not. This stage may identify leading sectors and applications (Selhofer, 2003).
Ⅲ. *Impact* examines the additional and multiple effects of ICT, by evaluating whether and to what extent empowerment makes a difference in terms of efficiency and creation of new sources of wealth (Edquist et al., 2001).

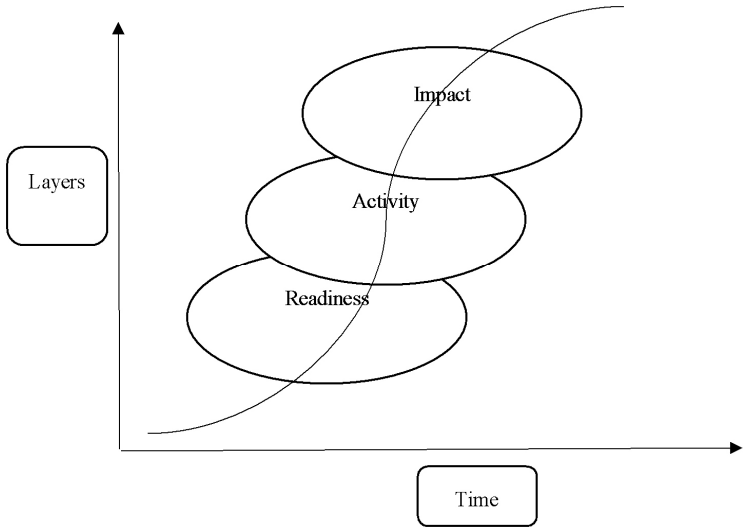

Figure 1. Schematic representation of RAI model. Source: Tavakol & Ghazinouri Naeini, 2011, p. 37.

The Study Area

The study was conducted in rural areas of Urmia County, West Azerbaijan Province, located in the border areas between Iran and Turkey (Figure 2). This county has an area of 5,251 km^2 (https://en.wikipedia.org/wiki/Urmia) and includes 17 rural districts subdivided into 315 villages (Statistical Center of Iran, 2018). It has the highest rural population, 289,760 people, of all the counties of West Azerbaijan Province (Statistical Center of Iran, 2018). While it includes regions with cold climate characteristics, it is also known as a leading area for agricultural products and fruits (e.g., wheat, potatoes, tobacco, apples, and grapes) and its rural population is mainly engaged in agriculture and animal farming. The findings of the last census conducted in 2016 showed that the literacy rate of rural women (67.6%) is lower than that of rural men (84.9%) in Urmia County (Statistical Center of Iran, 2018) and women farmers in rural areas of Urmia are generally observed to be lacking in knowledge, facilities, and equipment compared to male counterparts in areas such as land use, affairs management, and marketing of products (Karimi, 2013).

According to the current documents of Urmia's Rural Cooperative Office, only three villages (Chanqaraloy, Rahim Abad, and Karim Abad)

were recorded as having active rural women's cooperatives (Iran's Central Organization of Rural Cooperatives, 2017). Therefore, these three villages, located in the north part of Urmia, were targeted for our study. The women's cooperatives of these three villages are active entities, either producing local handicrafts and local foods (like processed crops and byproducts of farm crops) or just by selling household goods in nearby villages. Moreover, these cooperatives also provide progressive opportunities for their members to take advantage of educational classes held on diverse issues by different institutions, mainly the agricultural extension office.

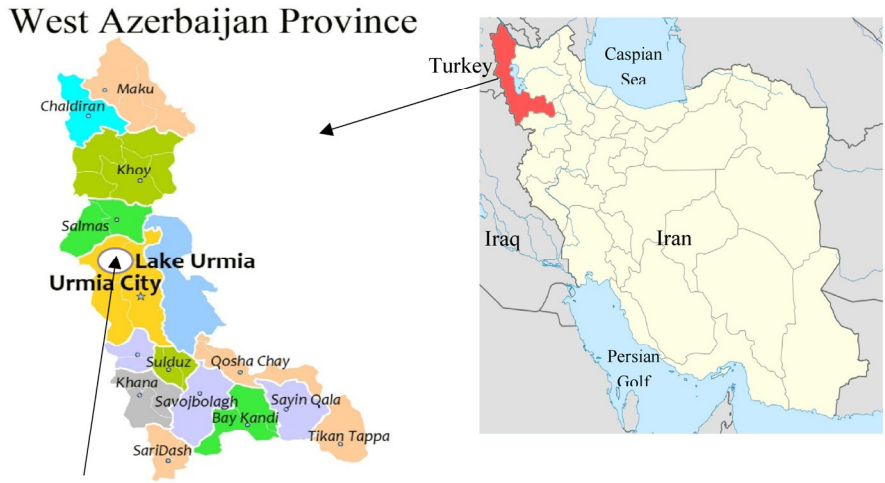

Figure 2. A general map of Iran illustrating the location of the study area. Source: https://commons.wikimedia.org/wiki/Category:Maps_of_West_Azerbaijan_province.

Sampling and Data Gathering

A survey research was conducted from July 2016 through February 2017 to understand the extent of the influence of ICT on the empowerment of women members in rural women's cooperatives in Urmia County. Devices such as computers, cell phones, radios, and other facets of the changing means and methods of communication available to people today like access to the internet, were included in our definition of ICT. The members of the rural women's cooperatives were selected as the unit of analysis for the face-to-face interviews. Thus, the population of interest consisted of 265

rural women who were members of these groups, from whom a sample of 152 individuals was selected using simple random sampling techniques. They were interviewed based on a structured questionnaire of 50 questions designed based on the three layers of Readiness (10 items), Activity (9 items), and Impact (31 items). An in-depth literature review was used to develop the study instrument. As such, the questions were designed in accordance with the complex features of women's empowerment in such a way that they illuminated most aspects of women's lives. A 5-point scale (5 = *strongly agree* to 1 = *strongly disagree*) was used to measure respondents' opinion for each question. Moreover, personal and professional characteristics, including kind of membership, age, level of education, work experience, and the name of the rural cooperative respondents were included in the questionnaire. The validity of the questionnaire was verified through the judgment of a panel of academic experts. To assess its reliability, Cronbach's alpha coefficients were calculated for the main scales of the questionnaire (α = 0.76 to 0.90). Data analysis was carried out using SPSS software (version 20). In addition to the questionnaire in this research, we used interviews to gather supplementary information. For this, 15 active members were chosen to discuss the topic with the aim of accessing additional information which might be neglected in our questionnaire. All participants were given the right to refuse to participate or to refuse to answer any question they felt uncomfortable about. During the data gathering stage, only four individuals declined to participate; these were replaced by others chosen at random.

Results

Sample Description

Table 1 summarizes the demographic profile and descriptive statistics. These findings indicated that 70.4% of the respondents were ordinary members and 29.6% of them contributed to a management committee. The majority of the rural women who participated in our study were aged between 31 to 40 years old, showing a mean age of 37 years. While the majority of women (57.2%) had primary or secondary education, the rest had progressed beyond this to diploma or academic level. With a sample mean of 9.5 years for experience in work or income-earning activities, our re-

spondents distributed unequally in this regard by showing 55.9% with 10 years or fewer, 24.3% from 11 to 15, and 19.7% with 15 years or above.

Table 1
Personal Characteristics of Survey Participants (N = 152)

Variable	Variable Details	Frequency	Percent
Membership status	Ordinary	107	70.4
	Management committee	45	29.6
Age (years)	< 30	26	17.1
	31 to 40	95	62.5
	> 41	31	20.4
Name of the rural cooperative	Chanqaraloy	84	55.3
	Rahim Abad	37	24.3
	Karim Abad	31	20.4
Level of education	Secondary school or lower	87	57.2
	Diploma	47	30.9
	Academic education	18	11.8
Work experience (years)	≤ 10	85	55.9
	11–15	37	24.3
	≥ 15	30	19.7

Description of the Rural Women's Views Regarding ICT

To understand the current shortcomings and also the impacts of ICT on the personal and work life of our respondents, coefficient of variation score was used to sort their answers by importance. They were categorized based on the study model, that is, Readiness, Activity, and Impact levels, presented in Tables 2 to 4.

As mentioned earlier, the readiness level should encompass indicators that basically reflect the current situation of a cooperative's technological infrastructure and devices (such as computers, laptops, tablets, audio and video media, and access to the internet) used by members to communicate with others. Particularly important were the indicators that express the real potential of cooperatives to develop their activities domain, for example, the willingness of members to initiate electronic enterprises or businesses,

and availability of devices and knowledgeable persons to establish virtual communication between members and cooperatives. Among 10 statements that inquired about the readiness component, the statement "There are knowledgeable persons for solving probable technical problems in our co-operatives ($\overline{X}$ = 3.79)" ranked in first place, followed by the statements "There are communication and information devices in our cooperative ($\overline{X}$ = 3.25)" and "The members are able to use communication devices ($\overline{X}$ = 2.52)" in second and third place, respectively. Although these statements were the first three priorities of respondents' views among a total of 10 questions, their low scores showed that the cooperatives had not succeeded in providing an enabling environment for their members. The statement "There are facilities for learning how to use communication technologies in the cooperative ($\overline{X}$ = 2.17)" placed last (Table 2).

According to the responses in the interviews conducted by the authors, active members insisted that rural women cooperatives have relatively moderate access to ICT instruments, either in terms of hardware or software; they added that the quality of this access is quite poor. They also stated that not all the cooperatives are equally equipped with high-quality ICT devices. They frequently pointed out that not only do cooperatives have some difficulties in getting access to internet services; the bandwidth provided is also inadequate. They insisted that consequently, they lose many opportunities which could make cooperative activities fruitful. The outcomes shown in Table 2 are in accord with these findings.

Table 2
Ranking the Respondents' Views by Readiness Level

Item	*M*	*SD*	CV[a]	Rank
There are knowledgeable persons for solving probable technical problems in our cooperative.	3.79	1.20	0.317	1
There are communication and information devices in our cooperative.	3.25	1.28	0.394	2
The members are able to use communication devices.	2.52	1.00	0.397	3
The necessary training to gain skills for working with computers is provided in our cooperative.	2.58	1.07	0.415	4
Different educational courses for working with the internet are held in our cooperative.	2.75	1.15	0.418	5

Item	*M*	*SD*	CV[a]	Rank
Members have access to the internet in our cooperative.	2.55	1.15	0.451	6
There are rules for the application of and access to product marketing information.	2.82	1.28	0.454	7
There are enough devices in our cooperative to acquire new information.	2.50	1.16	0.464	8
There are suitable conditions for providing necessary materials in our cooperative through online shopping.	2.13	1.01	0.474	9
There are facilities for learning how to use communication technologies in the cooperative.	2.17	1.19	0.548	10
Mean[b]	2.71	0.613	0.226	-

Note. [a]: Ranking is based on the coefficient of variation.
[b]: Mean shows the average mean score of total statements.

Table 3 shows a descriptive statistic of the statements used to measure activity component. Findings indicated that the statement "All the members can use the available devices in cooperatives in the same way ($\overline{X}$ = 3.49)" ranked first, "Most of the women are members of virtual network groups ($\overline{X}$ = 3.03)" and "I can carry out my own web-based affairs without asking help from others ($\overline{X}$ = 2.62)" ranked in second and third place, respectively. The statement "Most marketing activities are done by using the internet ($\overline{X}$ = 2.60)" was ranked last. A precise examination of the findings indicated in Tables 2 and 3 revealed that our respondents' views on the *Readiness* and *Activity* components were almost the same (mean scores of 2.71 and 2.77 out of 5, respectively). However, it also showed how our respondents regarded their position as weak.

Activity indicators are supposed to give an insight into the nature and growth rate of using ICT. Although the findings of this study revealed that our respondents were somewhat capable of using ICT equipment, post-study interviews indicated they had not achieved these abilities as a result of being members of the cooperative. They learned how to use devices such as computers and smart phones at home and with the help of friends and family members. This finding was emphasized further by the management committee or those who were in charge of the administration of the cooperatives (board of directors). The active members who participated in our supplementary interviews stated that due to the deficiencies of cooperatives in providing ICT devices, they were trying to be updated with communication technologies by using their own cell phones or computer de-

vices at home. However, these attempts are not progressive enough to provide them with the same opportunities as men who commonly and easily encountered with many participation opportunities in the community.

Table 3
Ranking the Respondents' Views by Activity Level

Item	*M*	*SD*	CV[a]	Rank
All the members can use the available devices in cooperatives in the same way.	3.49	1.23	0.355	1
Most of the women are members of virtual network groups.	3.03	1.12	0.370	2
I can carry out my own web-based affairs without asking help from others.	2.62	1.01	0.385	3
The internet has provided good conditions for the provision of needed materials in our cooperative.	2.72	1.18	0.434	4
Most of the tasks are performed using computer and internet.	2.75	1.13	0.441	5
The majority of women use the internet in our cooperative.	2.55	1.15	0.451	6
Individual members have the ability to communicate with each other and the other cooperatives using the internet.	2.56	1.19	0.465	7
When members are in the cooperative, they spend most of their time working with devices such as computers, cell phones, etc.	2.63	1.28	0.487	8
Most marketing activities are carried out using the internet.	2.60	1.33	0.512	9
Mean[b]	2.77	0.74	-	-

Note. [a]: Ranking is based on the coefficient of variation.
[b]: Mean shows the average mean score of total statements.

As Table 4 points out, the impact component is divided into five categories: Having a sense of worth (feeling worthwhile), ownership and decision-making rights, the right of access to resources, the right to control over life, and power of influence, each of which is supposed to indicate the influence of ICT on the personal and professional life of the rural women. It should be noted that these sub-categories have a horizontal rather than a hierarchical orientation. The respondents' answers to the question "How much impact do they think ICT has had on different aspects of their lives?" showed that the statements "to feel one has a better place in society ($\overline{X}$ = 2.48)," "to improve my own and my family's economic status ($\overline{X}$ = 2.88)," "to find new ways of carrying out home and cooperatives' affairs ($\overline{X}$ = 2.53)," "to learn how to better prioritize home and cooperative work

($\overline{X}$ = 2.60)," and "to have an effective role in improving my life and the lives of others ($\overline{X}$ = 2.70)" had the highest priority in each sub-category mentioned above. Detailed examination of these findings indicated that ICT's influence on the personal and professional life of the rural women who were members of the cooperatives was not noticeable ($\overline{X}$ = 2.54).

Table 4
Ranking the Views of Respondents for Impact Level (ICT-induced Empowerment)

Category	Item	*M*	*SD*	CV[a]	Rank
Having a sense of worth	To feel one has a better place in society	2.48	1.10	0.443	1
	To have a feeling of having a useful presence in the society	1.78	0.80	0.449	2
	To carry out my personal and professional affairs better than in the past	2.49	1.13	0.454	3
	To gain more success in performing cooperative affairs	2.30	1.08	0.470	4
	To participate in the various meetings and ceremonies	2.46	1.27	0.516	5
	To do things with more confidence and stability	2.13	1.16	0.545	6
Ownership and decision making	To improve my own and my family's economic status	2.88	1.12	0.389	1
	To help and give advice to my friends and relatives in decision making	2.55	1.02	0.400	2
	Paying attention to my comments while planning and decision making in the cooperative	2.61	1.11	0.425	3
	To be empowered in defending myself and my family's rights outside the home	2.61	1.15	0.441	4
	To express my own views with more confidence at the cooperative's meetings	2.27	1.10	0.495	5
	To be able to gain the trust of others	2.79	1.50	0.536	6
	To feel more freedom on deciding how to do work	2.63	1.20	0.625	7
Access to resources	To find new ways of carrying out home and cooperatives' affairs	2.53	1.02	0.403	1
	To have a better knowledge of the cooperative's products sale	2.69	1.25	0.465	2
	To have access to the various information resources	2.21	1.43	0.467	3
	To be able to gain the credit to raise my family's economic status	2.48	1.42	0.573	4
	To be able to better communicate with more people	2.35	1.43	0.609	5
	To be able to sell homemade products	2.59	1.34	0.647	6

Category	Item	*M*	*SD*	CV[a]	Rank
Control over life	To learn how to better prioritize home and cooperative work	2.60	1.06	0.408	1
	To be able to better control my child's activities	2.60	1.11	0.427	2
	To find opportunities to creatively carry out my personal work	2.48	1.10	0.444	3
	To change my worldview of life	2.30	1.08	0.470	4
	To make better use of my leisure time	2.69	1.31	0.487	5
	To have self-confidence in solving my problems	2.53	1.30	0.514	6
Power of influence	To have an effective role in improving my life and the lives of others	2.70	0.95	0.352	1
	To provide better answers to my children's queries	2.70	1.00	0.370	2
	To have positive impacts on my family life	3.10	1.20	0.387	3
	To gain better experience in carrying out the cooperative's affairs	2.76	1.10	0.398	4
	To have an important role in setting up the cooperative's programs	2.85	1.20	0.421	5
	To improve my professional growth by being in contact with other members of the cooperative	2.62	1.14	0.435	6
	Mean[b]	2.54	0.62	-	-

Note. [a]: Ranking is based on the coefficient of variation.
[b]: Mean shows the average mean score of total statements.

As Table 5 indicates, while the *power of influence* is more favorable than the other sub-categories, all of them show similar moderate to weak mean scores. As expected, the mean score of the impact component is also lower than the readiness and activity components.

Table 5
Ranking of the Impact Level (ICT-induced Empowerment) Sub-categories

Category	*M*	*SD*	CV[a]	Rank
Power of influence	2.78	0.555	0.200	1
Ownership and decision making	2.62	0.584	0.223	2
Control over life	2.59	0.620	0.234	3
Having a sense of worth (feeling worthwhile)	2.27	0.576	0.253	4
Access to resources	2.49	0.739	0.297	5
Mean[b]	2.54	0.615	0.241	-

Note. [a]: Ranking is based on the coefficient of variation.
[b]: Mean shows the average mean score of total statements.

Multiple Regression Analysis

To examine what factors affect the women's ICT-induced empowerment, a regression analysis was run with the ICT's impact as the dependent variable and independent variables of readiness, activity, age, education, and work experience. Then, to ensure a lack of autocorrelation between the variables, a Durbin–Watson test was done. The DW statistic showed an acceptable value of 1.98 which is justified by the valid range of 1.5 to 2.5. Given that there was no correlation between the errors (the difference between the actual and predicted value gained by the regression equation), the regression test could be used (Montgomery, Peck, & Vining, 2001). Accordingly, a stepwise model was run to determine the regression model. Table 6 demonstrates that four independent variables of readiness, activity, work experience, and education could explain 38.6% of the variation in the variable of women's ICT-induced empowerment or impact. In other words, these variables are the significant predictors of the women's empowerment (Impact). Readiness (β = .336, p < .0001) appeared to contribute most to the model, followed by activity (β = .304, p < .0001), work experience (β = .288, p < .001), and education (β = .182, p < .001).

Table 6
Multiple Regression Analysis

Variable	B	β	T	*Sig.*
Constant	12/30	-	3/12	0.002
Readiness (x_1)	0.452	0.336	4.62	0.000
Activity (x_2)	0.482	0.304	5.21	0.000
Work experience (x_3)	0.243	0.288	3.84	0.000
Education (x_4)	0.238	0.182	4.505	0.009
Age (x_5)	0.023	0.030	3.12	0.378

Note. R = 0.606 R^2 = 0.386 R^2_{Ad} = 0.357 F = 8.50 *Sig.* = 0.001 DW = 1.98

Discussion

As emphasized in many sources, empowering is defined as changes in life circumstances that enable individuals to raise their capacity to manage life more enriched and rewarding. With the concept of empowerment becoming widespread, improvement in the situation of rural women is a major

issue in achieving rural social sustainability.

In rural districts of Urmia, women are not recognized to an equal extent as men in their contribution to the family income although they are involved in many activities, such as farming, fuel gathering, post-harvest activities, making and selling handicrafts, and rearing domestic animals (Zarabi, Alizadehasl, Rahimi, & Babanasab, 2017). While the establishment of women's cooperatives in the Urmia rural areas was essentially aimed at improving women's economic status through collective actions, they also intended to encourage some progress in women's access to various information resources, communication services, and education. Generally, low literacy, lack of computer literacy, and language barriers[1] are other challenges in the Urmia rural women's community. According to the last census conducted in 2016 in the country, the literacy rate of Urmia rural women (67.6%) is lower than that of rural women nationally (72.9%). Nonetheless, the status of rural women's cooperatives was relatively fine in terms of their members' literacy. However, based on the observations made by the authors and feedback from active members, the studied rural women's cooperatives did not have the appropriate level of information and communication equipment. The infrastructural weaknesses and inadequate equipment quality were rather related to the lack of appropriate facilities, arising from the lack of public clear cut rules and financial support. This has led to inefficiencies in learning how to apply technologies to address the cooperatives' needs, for example, providing the required materials through online shopping (Table 2). In fact, the deficiency in infrastructural level can be considered as the limiting factor for rural women. The interview findings, however, revealed that most of the members were able to learn how to work with various communication devices, either as a professional user, for example, in the case of smart phones, or as an amateur user, for example, in the case of complicated computer programs. These results are consistent with the findings of studies done by Okafor (2016), Bacon (2010), Alibaygi, Karamidehkordi, and Karamidehkordi (2012) and Laizu, Armarego, and Sudweeks (2010) when they concluded that rural people, especially women and socially marginalized communities, are facing problems in trouble-free communication and accessing information

[1] The main language in the study area was Turkish, while the Persian is the formal language in Iran.

technologies.

Although the use of communication and information technology equipment at the workplace or in houses in Iran's rural areas has not yet reached a satisfactory level, in most places, including cooperatives and even grocery stores, there is at least one or more computing device for recording daily affairs but not enough to share with the local community. Considering the capabilities of the internet for marketing and exchanging information with other business entities, the use of computing devices by cooperatives was not a permanent feature of their activities. In the report published by the International Development Research Centre, Mathew (2003) has emphasized that these shortcomings have been introduced as inhibitors of women's progress. Okafor (2016) has also obtained results that confirm the findings of our study. In another study, Arivanandan (2013) assessed the social and economic affairs of rural women through two types of ICT, that is, cell phones and internet at home. The results indicate that most women search for jobs using cell phones and personal contacts. Therefore, applying the communication and information technologies in rural areas is expected to empower rural women.

The impact indicators focus on the ICT's additional effects for empowering stakeholders, that is, the impacts on production processes and personal abilities in the cooperatives, and more generally in the society. In total, our respondents' view about the impact of using ICTs in cooperatives was not remarkable. This suggests that the current level of ICT dissemination in rural women's cooperatives cannot fundamentally change the personal and professional lives of rural women membered in cooperatives. Even though the members believed that they had gained some new knowledge, opportunities for change, increased self-confidence, and new social relations due to using ICT instruments, they were not fully satisfied with the current level of ICT devices in their cooperatives. These results are in tune with the findings obtained from studies done by Tavakol & Ghazinouri Naeini, (2011), Alibaygi et al. (2012) and Laizu et al. (2010). These studies tacitly concluded that rural women are not able to use the technologies due to social control and economic factors.

In general, among the three levels of the RAI-based technology dissemination model, rural women's view regarding the readiness level was somewhat more favorable than the others, which are, activity and impacts. However, all three levels scored poorly from the women's perspective. This

study also revealed that the most significant predictors of the women's ICT-induced empowerment are readiness and activity. Although there are no related studies that directly used the RAI model in this context, the results of a few studies that applied this model completely or partially in other contexts are presented. Hadi Purnomo and Lee (2010) showed that, according to agricultural extension officers, farmer readiness was the limiting factor in the implementation of ICT programs. This finding is fully in tune with our outcomes from the statements examined for the readiness level. The study by Tavakol and Ghazinouri Naeini (2011) is partly in line with the results of this study, when they concluded that ICT diffusion in Iranian industries has not reached much of the expected activity or impact level and is still in the median level of readiness.

Conclusion

Rural women's cooperatives were originally perceived as platforms for members to become more social, more familiar with new insights, and to develop new relationships with other women. Information and communication technologies are also of interest in developing these capabilities. Building social relations and power with other members has enabled many of them to learn how to decide in specific situations and work toward establishing a power basis equal to that of men. In addition, the empowered women can inspire and support new members to start their own empowerment process in the long run. In general, however, our findings revealed that the members of these rural women's cooperatives are stuck at the readiness level. If they can get better access to ICT instruments, one can hope that a positive step would then be taken to the other levels, that is, activity and impact. Considering the improvement of rural people's situations in the core of developmental attempts, providing the women's cooperatives with ICT services as a minimum could be a useful way to encourage rural women to become more involved in participatory activities. Furthermore, it can be noted that active and in-depth female engagement in ICT in terms of learning and education will motivate them to become more empowered. To encourage women to become empowered and to overcome the current shortcomings, intensive efforts should be made to promote a culture of cooperation among rural women in order to collectively provide the ICT devices. In this regard, holding workshops, educa-

tional classes, and setting up media programs tailored to the status of rural women could be beneficial. Keeping in mind that women's participation in social activities has attracted the attention of policymakers, it is suggested that more supportive policies should be put in place to equip rural and disadvantaged districts with a qualified infrastructural base. Although such policies in terms of e-government services have been promoted in Iran in recent years, making ICT accessible to all categories of society, especially in remote areas, must be prioritized more. To do this, equitable access to ICT, training in software development that is user-friendly for those with low literacy skills, provision of ICT services, and embedding ICT literacy in the adult literacy education program for rural people are of great importance. Then, there would be some potential for rural people and rural women in particular, to further their development. Finally, the current situation regarding information and communication technologies within the context of the systematic view of three levels of readiness, activity, and impact should be continuously studied and improved to optimize the status of rural women's cooperatives.

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