

Analyzing Strengths, Weaknesses, Opportunities, and Threats of Rural ICT Development in Iran's Villages

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The Information and Communication Technologies (ICTs) are being increasingly used by the governments to deliver its services to both rural and urban people. Obviously, access and application of ICT will provide services to improve the income and welfare of rural poor. This will help reducing rural poverty and improve quality of life. In Iran, importance of using rural ICT benefits and advantages has been taken into attention by the government and policy makers seriously. However, complexity and diversity of ICT issues and domains have made it difficult to employ ICTs appropriately. Therefore, this research aimed at exploring strengths, weaknesses, opportunities, and threats of rural ICT development in order to support planners making the best possible decisions. Results showed the best strategic planning type was WT strategy (removing weaknesses and decreasing threats) for rural ICT development in Iran for midterm and long term plans. Another strategy include ST strategy (decreasing threats and enforcing the strengths) can be also used in short term. [Ahmad Yaghoubi-Farani et al. **Analyzing SWOT of rural ICT development. International Journal of Agricultural Science, Research and Technology, 2011; 1(1):17-26**].

Keywords: ICT, rural development, SWOT analysis, Iran

1. Introduction

The Information and Communication Technologies (ICTs) are being increasingly used by the governments to deliver its services to both rural and urban people. Evidences show the ICTs have facilitated the design of solutions to offer government services for social development projects at the rural areas (Ramarao, 2004). Rural people constitute the greater part of the population of developing countries and often lack access to basic needs such as water, food, education, and health care, leading to low life expectancy and poverty. These conditions, considered harsh by the majority of the rural population, result in their migration into urban areas, often in search of formal employment, as the only option for survival (McCalla and Brown 1999). Access and application of ICT will provide services to improve the income and welfare of rural poor. This will help reduce rural poverty and improve quality of life. In addition, ICTs can accelerate rural development by facilitating knowledge management provided that significant policy, institutional networking and infrastructure could be required at all rural areas (Rao, 2007).

ICT can play an important role to bridge the information gap between the farmers and the market. The use of ICT can remove information imperfections and barriers that account for the

inefficiencies in the market. Also, ICT can remove information problems in the output market. Both the input and output markets can gain from the use of ICT tools (Mehta, and Kalra, 2006).

It was felt that access to information (e.g. health, agriculture, education or government schemes) would at some level lead to individuals being able to act on that information and empowering themselves (Heeks, 1999). One way to combat the technological determinism is to have more of a focus on information and less on technology. Another way for making rural information systems projects relevant is to invite community participation (Caspary and O'Connor, 2003; Colle, 2005; Roman and Colle, 2002; Proenza, 2001; Whyte, 2000).

ICT covers internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services, and other related information and communication activities (Janneh, 2008). In addition, cited from Chowdhury (2000) "ICTs encompass technologies that can process different kinds of information (voice, video, audio, text and data) and facilitate different forms of communications among human agents, among



Abstract

Received: 11 April 2011,
Reviewed: 13 April 2011,
Revised: 15 April 2011,
Accepted: 20 April 2011

humans and information systems, and among information systems"(p.33).

In Iran, importance of using rural ICT benefits and advantages has been taken into attention by the government and policy makers seriously. Accordingly, ICT development plans have been considered as high priorities of both national and rural development programs at all dimensions and domains like, telecenters, post, Internet, and ICT offices. However, complexity and diversity of ICT issues and domains as well as various ministries responsible for ICT services have made it difficult to apply ICTs appropriately. Therefore, it is essential to explore both internal and external environments of rural ICT development deeply and precisely. This research aimed at exploring strengths, weaknesses, opportunities, and threats of rural ICT development in order to help planners making the best possible decisions.

2. Theoretical framework

There has been a mass of research in the literature about ICT services in rural context reviewed in all over the world. For instance, Shirazi and his colleagues (2010) found that ICTs have an impact on social and political activities i.e. influencing democracy all over the world. Accordingly, information and communication technologies (ICTs) are central to information access and participation in social and political life (Bennett and Fielding, 1997; Becker, 2001; Harwit and Clark, 2001; Snellen, 2001; Drezner and Farrell, 2004).

The use of ICTs in international development work expanded greatly in 1990s. This expansion was due to the increased availability and affordability of ICT equipment, the simplification of use and support of equipment, improved access to electricity, more affordable internet and the growing use of ICTs by donors and NGOs themselves. A number of studies by the World Bank and other organizations also affirmed the importance of access to information for improved health and social well-being, and the role of communications in economic development (Howard, 2008).

Anderson et al (1999) stated that multipurpose community telecentres can play a key role in the "information renaissance" in developing countries and ensure universal access. Locations for telecentres must be carefully selected, and should take into consideration the "level of potential demand for communication and information services from a large number and wide range of users", infrastructural considerations and socio-cultural issues. The telecentres needs to provide a stage for rural communities to address their training and development needs and vision (Anderson et al. 1999). ICT services as a key element can improve access the

England's rural residents to different rural services (Moseley and Owen, 2008).

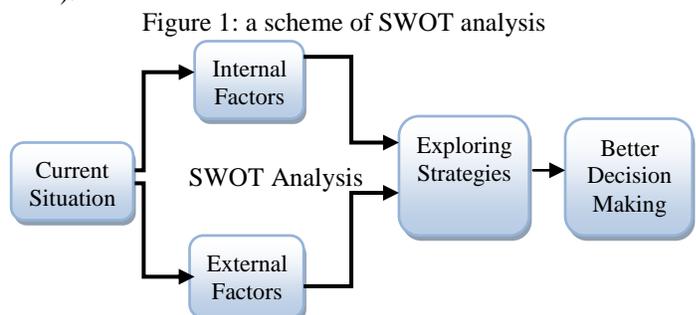
According to Abdullah and colleagues (2010) rural ICT applications first must be well adopted for livelihood of rural communities. Second, a successful rural ICT required not only cost effective but also must be reliable, sustainable and in harmony with available local resources.

Conventional media, for example newspaper, radio, and television have played a major role in rural development over many years. However, these traditional media are only one-way communication. ICTs are the convergence technologies which include Information Technology (IT) and Telecommunication technologies. ICTs have the immense potential of getting vast amounts of information to and from rural populations in a more inclusive timely, comprehensive and cost-effective manner, and could be used together with traditional media such as radio and television. With these technologies, rural people can play an active role and be more involved in the development process (Munyua, 2000).

Use of ICT in the rural and agricultural sectors, is expected to bring about a fundamental transformation in the nature of production in terms of labor, productivity, growth, and development. Penetration of ICT is again expected to reshape the method of work and market systems and the way in which individuals and communities can track and access information and services, leading to changes in the structures of markets, improve the quality of life, deepen the participatory values of democracy and many more major advances in terms of human development indicators (Saravanan, 2006).

SWOT analysis of rural ICT

The internal and external environments are two important parts of the strategic SWOT analysis process. The internal factors usually can be classified as strengths (S) or weaknesses (W), and the external factors can be classified as opportunities (O) or threats (T). These factors make up SWOT analysis (Gasparotti, 2009). On the basis of the data analyzed using a SWOT analysis new or better strategies can be explored leading to make better decisions (Figure 1).



SWOT analysis is a powerful tool that helps those formulating strategies to focus on factors other than the successes of other countries. Indeed, strategies cannot be defined solely by detecting the most attractive opportunities. Often, comparative advantages must be analyzed by identifying a fit between strengths and potential opportunities. In certain cases, SWOT can be used to provide advice on how to overcome a certain weakness in order to enable a country or a region to pursue a compelling opportunity. In general, a SWOT analysis leads to the following different strategies (Box 1):

- S-O strategies pursue opportunities that are a good fit to the system's strengths.
- W-O strategies overcome weaknesses to pursue opportunities.
- S-T strategies identify ways that the managers of the system can use the strengths to reduce their vulnerability to external threats.
- W-T strategies establish a defensive plan to prevent the system's weaknesses from making it highly susceptible to external threats (UN, 2005).

Box 1: SWOT Matrix

		Internal factors	
		Strengths	Weaknesses
External Factors	Opportunities	S-O strategies	W-O strategies
	Threats	S-T strategies	W-T strategies

It should be noted that changes, innovations and new trends affect SWOT analysis, mainly by creating new opportunities. In addition, the results of SWOT analysis must not be static. This is a tool that should be used to create discussion, think out of the box and build a strategy that is realistic and creative (UN, 2005).

For example United Nations conducted a SWOT analysis on ICT and knowledge society in Arab countries. The selected strengths, weaknesses, opportunities, and threats in this study included the following:

Strengths: good communication and transportation facilities; sound international relationships with high potential countries; preparation for information and communication technology (ICT) free zones, cyber cities and business parks; developed financial sector; completion of key national information society policy documents.

Weaknesses: lack of ICT professionals; high computer illiteracy rate among the population; lack of awareness concerning the benefits of the knowledge society; insufficient level of technological restructuring of the economy;

Opportunities: The rapid availability of new technologies; modernization of countries and their economies; not lagging behind industrialized economies; creation of job opportunities; provision of ICT sector related training; creation of career opportunities for students, to encourage them to remain in the region; availability of best practices related to projects in such areas as e-Government, e-learning, e-health and e-business.

Threats: increase in debt as a result of the computerization process or political opportunism; no guarantee of success in the ICT sector or of ICT applications; depersonalization as a result of new technologies; problems related to not establishing highly competitive markets; slow take-off of e-business and e-commerce in the global arena.

According to FAO's studies in Latin American Countries i.e. Ecuador, some strengths of ICT in rural areas were: enhance governmental capacities to accomplish appropriate information and to access better development options, improve information and knowledge flow through ICT in rural areas, develop and increase number of grassroots organizations and NGOs, and promote innovative practices through the use of Internet and telecenters. Additionally, the most important weaknesses about rural ICTs were stated by FAO such as: lack of telecommunication infrastructure in rural communities and the high costs of connectivity, the fundamental infrastructure problems about ICTs, lack of coordination between private, NGOs, and public sectors about priorities of rural needs, dispute between social and non-governmental organizations in relation to the governmental sector about the needs of small and medium farmers to have information at the right time to ensure their production; very high illiteracy in the rural areas and no "digital culture", and a few efforts to train ICTs by agencies and organizations as well as use a top-down approach, use pre-established purposes and not participatory processes that seek to solve the real needs of the populations (FAO, 2004).

The workshop held by FAO (2005) in Georgia, explored the SWOT factors on effective communication and information management for rural development. These included:

Strengths: providing Education and training in up-to-date ICTs to rural people, ability to access relevant and required information, provide and introduce modern Technologies and technical tools for rural farmers, providing information to rural villagers on time and on site, rural people can be actively involved in program making, availability of databases, dissemination of information and advice to farmers through ICTs, and highly qualified and experiences specialists and consultants.

Weaknesses: low level of computerization, lack of experts in ICTs at local level, few opportunities to disseminate information on the local level, absence of service centers in the regions.

Opportunities: improve or progress governmental policy, availability of funds, increased demand for information and markets, availability of new technologies for rural communities, developed civil society, strengthening collaboration and contacts.

Threats: weak governmental Policy, instability within and outside the country, psychological factors like distrust to government and competition, availability of facilities and technologies to villagers, financial problems.

The SWOT factors about progresses and challenges of E-government in Africa have been identified by Hafkin (2009) as follows below:

Strengths: late adopter advantages, and ability to borrow solutions from others.

Weaknesses: high illiteracy rates, poor telecommunication infrastructure, lack of democratic governance, political instability, lack of IT-specialized human capital, and paucity government resources.

Opportunities: increase citizen participation (push democratic governance), reengineer admin for efficiency gains, foster other ICTs applications, stimulate ICT use-knowledge

Economies, promote transparency, and reduce corruption.

Threats: cyber security issues, citizen monitoring, repression, and increase urban. rural divides (Hafkin, 2009).

According to Gulati (2009) a number of challenges may be expected from any government when want to provide rural ICT services. Some of these are: lack of awareness about Universal Service Obligation schemes amongst target beneficiaries and unsuitable and insufficient rural marketing by private operators, the problem of misappropriation of public access telephone services by influential rural people, and lack of power in the rural areas impacting utility of rural ICT services. Bailur (2007) showed the complexity of rural participation in ICT projects, a top-down notion, weak co-optation, and lack of resources as the problems faced to develop ICT projects in rural areas. Howard (2008) believes too many projects about ICTs were ill executed for various reasons: limited local buy-in, flawed economic models, inadequate training, and the use of inappropriate equipment. From the donor perspective, the most important failure of ICT initiatives was the inability of these centers to persist without the continued intervention and financial support of donor organizations.

3. Material and Methods

This study was a quantitative-qualitative applied research conducted through a survey. It is thus a non-experimental research as far as control of the variables and collection of the data concerned. Statistical population of the study consisted managers working at 12 different Ministries involved in rural ICT, namely Ministries of Jihad-Agriculture, Cooperation, Interior, Health and Medical Education, Energy, Road and Transportation, Education, Post and Telecommunication, ICT and IT, Insurance and Labor, and Science, Technology and Research. A sample of 40 managers was selected for both qualitative interviewing and quantitative surveying. The research was done during two phases. First, each four original sectors of the study include strengths, weaknesses, opportunities, and threats were determined through both in-depth interviews and an extensive literature review. The second phase was done by surveying on the research samples in order to gather quantitative data. The research method for gathering qualitative data was in-depth interviews and data analyzing method was content analysis. The research instrument for collecting quantitative data was a questionnaire. The questionnaire composed of two parts: the respondents' individual information and the items obtained from first phase containing strengths, weaknesses, opportunities, and threats associated with rural ICT development. The questionnaires were validated by an expert team also pre-tested for reliability. SWOT analysis technique was employed for analyzing strengths, weakness, opportunities, and threats (SWOTs). This technique was employed to recognize both SWOTs and strategic sites required to a better planning for future. Accordingly, cumulative coefficients of variations (CV) for each SWOTs component were used for comparing weaknesses with strengths, and threats with opportunities. Such a comparison may well depict four strategic sites: SO (the area surrounded by strengths and opportunities called invasion or forward-moving strategy); WO (the area surrounded by weaknesses and opportunities called shift-in-direction strategy); ST (the area between strengths and threats named diverse strategy); and WT (the area surrounded by weaknesses and threats called diminution or withdrawal strategy).

3. Results and discussion

3.1. Results

Individual information of studied respondents is shown in table 1. The results reveal a good situation of managers in terms of age, management experience, and level of education to answer different questions of the study. Nevertheless,

gender of respondents shows a rather low percent of women's manager (15%) in this study.

Table 1: Individual information of respondents (n=40)

	Min	Max	Mean	SD
Age(year)	27	53	39.7	6.5
Job experience(year)	2	30	13.9	7.8
Management experience(year)	0	29	7.6	8.1
Level of education	B.Sc and lower (22.5%)	M.Sc (62.5%)	P.HD (15%)	
Gender	Female (15%)	Male (85%)		

Strength analysis of rural ICT

In analyzing every four factors include strengths, weaknesses, opportunities, and threats different items were gathered. The items then ranked according to a three steps process. First, the respondents were asked to rate items in terms of how important each item was in a scale include nothing=0, very low=1, low=2, more or less=3, much=4, and very much=5. Second step was done by rating respondents' views about impact of each item according to a six ranking scale from nothing=0 to very much=5. For calculating final value of each item, the mean of its importance was multiplied to the mean of its impact. Finally, the priorities were gained by comparing the mean of items to coefficient values (C.V). The smaller the value for C.V, the higher the priority for item is given. Based on this new prioritization, three items of strengths were found as the highest priority. These included: developing basic ICT services for villagers; involvement of

managers in rural ICT services; and extending use of media all over rural areas in country (Table 2).

Weakness analysis of rural ICT

Table (3) shows priority of weaknesses of rural ICT by considering both importance and impact of items. Analyzing weaknesses in this study showed that delivering rural ICT in Iran suffers from some factors more than others. These include: inadequate attention to information system, unclear policies and strategies to provide rural ICT and lack of requirements for top managers to provide rural ICT services (Table 3).

In addition, content aspects of information were places in the table by the least priority i.e. inattention to ethnic, language, religious, and geographic differences during informing process; focus on informing incomplete and improper contents; and inattention to gender or client sensitive or needs (Table 3).

Opportunity analysis of rural ICT development

Different opportunities can be created by developing rural ICT in Iran. Of them the most important opportunities were determined as: upgrading level of knowledge and education among rural people; improving culture of access and use ICT services in country; enhancing socio-economic growth of villages at the country level; and making available infrastructure (electricity, telecommunication, and electronic technologies) related to basic services in rural areas (see also Table 4).

Table 2: Ranking strengths of rural ICT in terms coefficient of variations (C.V)

Strengths	Importance × Impact			Priority
	M	SD	CV	
Developing basic ICT services i.e. Post and telecommunication for rural people	13.25	6.23	0.470	1
Involvement of managers in rural ICT services	10.22	4.84	0.473	2
Extending use of media all over rural areas in country	11.75	5.89	0.501	3
Establishment and development ICT offices in villages	9.15	4.76	0.521	4
Better cognition of operational managers towards importance of ICT	10.65	5.72	0.537	5
Understanding the need for regional and decentralized activities	9.17	5.00	0.545	6
Developing affordable ICT services	9.75	5.59	0.573	7
Increasing rural students and graduates	12.17	7.10	0.583	8
Improving agricultural products	10.02	6.11	0.610	9
Engaging different institutions i.e. Cooperatives and NGOs in order to work at rural areas	10.87	6.87	0.632	10
Making familiar the staff of concerned organizations with rural ICT services	9.87	6.56	0.664	11
Developing human capital in rural areas	6.8	4.54	0.668	12
Shifting the activities of rural services to private sectors	10.95	7.37	0.673	13
Encouraging the public to use modern technologies for rural areas	9.85	7.13	0.723	14
Total	32.10	63.3	8.173	-

Table 3: Ranking weaknesses of rural ICT in terms coefficient of variations (C.V)

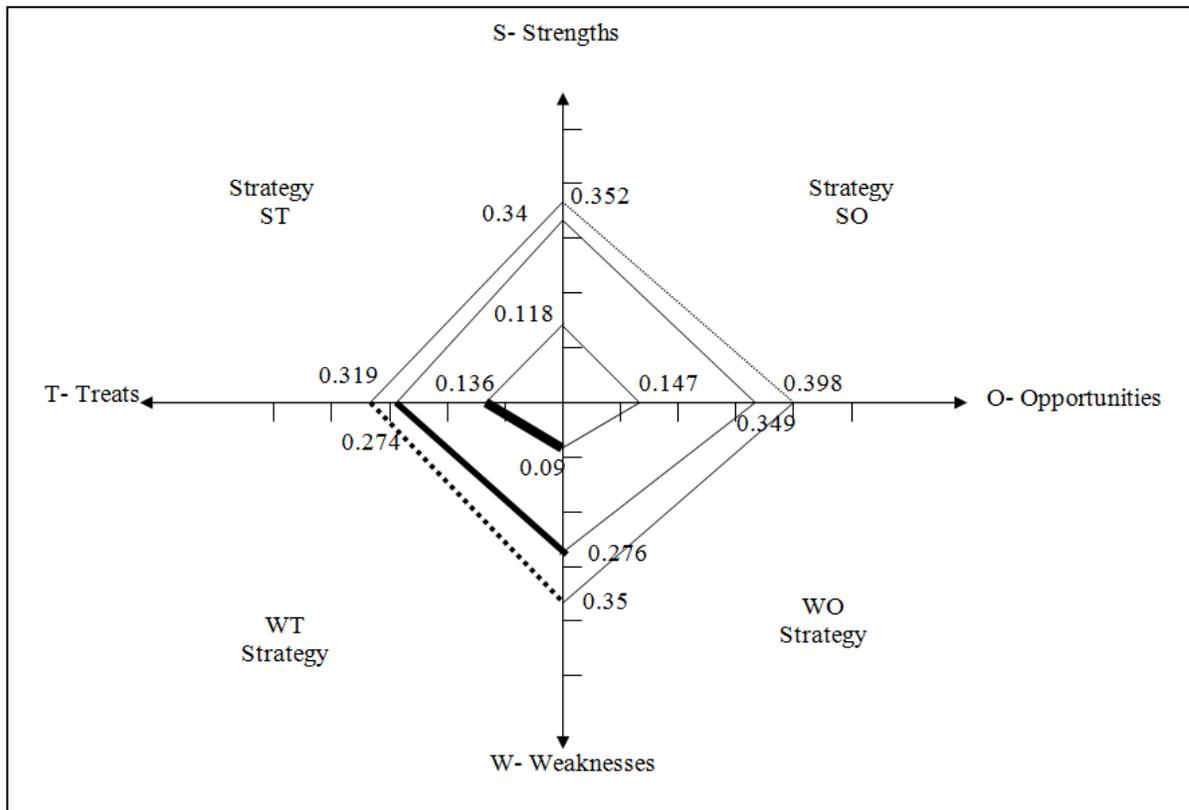
Weaknesses	Importance × Impact			Priority
	M	SD	CV	
Inattention to information system of available services for rural clients	11.97	5.67	0.474	1
Unclear policies, strategies, and priorities regard to informing by ICT offices	12.57	6.03	0.479	2
Inadequate requirements in order to shift top managers to provide ICT services	14.27	6.97	0.488	3
Focus on providing basic(infrastructural) services including post, postbank, telephone, and internet	11.27	5.64	0.500	4
Inadequate knowledge of executives into ICT offices and their performance	13.32	6.81	0.511	5
Lack of identifying and classifying clients	12.12	6.24	0.514	6
Focus on awareness through media rather than practical efforts	11.9	6.13	0.515	7
Dependency of ICT activities to skillful individuals	14.25	7.44	0.522	8
Inadequate contacts between the administrative and rural people	14.15	7.433	0.525	9
Inadequate knowledge on the part of public sector authorities towards rural ICT	13.3	7.01	0.527	10
Low knowledge on the part of the majority of rural people	14.52	7.66	0.528	11
Inadequate skills level of local service providers	12.65	6.85	0.541	12
Disintegrated and dispersed governmental plans and activities	10	5.44	0.544	13
Inattention or low attention to regional policies	13.8	7.67	0.556	14
Lack of systematic needs assessment to provide potential rural ICT needs	11.62	6.55	0.563	15
Low level of knowledge, attitude, and skills of managers about ICT	11.72	6.64	0.566	16
Fail to make Scientific site surveying for creating the service offices about rural ICT	9.6	5.46	0.569	17
Lack of long time policy and program regarding rural ICT	13.85	7.96	0.574	18
To make false IT's activities and services instead of ICT	11.72	6.80	0.580	19
No definition for available services i.e. banking, education, economy, health, and electronic	11.65	6.91	0.593	20
Limited informing rural people to make potential and infrastructure	12.02	7.31	0.600	21
Consider rural internet instead of rural ICT	11.85	7.22	0.609	22
Low trust of top managers towards working in regional and local sectors	12.07	7.47	0.619	23
Task- oriented organizational structure to provide rural ICT rather than process-oriented	10.57	6.56	0.620	24
No coordination among responsible sectors on rural ICT	10.42	6.53	0.626	25
Limited courses for updating information of staff about rural ICT	10.77	6.806	0.631	26
Inattention to gender or client sensitive or needs	9.7	6.19	0.639	27
Focus on informing incomplete and improper contents	10.4	6.65	0.640	28
Inattention to ethnic, language, religious, and geographic differences during informing process	9.95	6.85	0.688	29
total	92.11	22.4	35.0	-

Table 4: ranking opportunities of rural ICT development in terms of coefficient of variations (C.V)

Opportunities	Importance × Impact			Priority
	M	SD	CV	
Upgrading level of knowledge and education among rural people	12.92	6.27	0.485	1
Improving culture of access and use ICT services in the country	10.5	5.193	0.494	2
Enhancing socio-economic growth	11.17	5.75	0.514	3
Making available infrastructure related to basic services in rural areas	13.3	6.91	0.519	4
Achieving to client- oriented purposes	10.05	5.55	0.552	5
Improving inclusive and exclusive post and post bank services	10.67	6.065	0.568	6
Decreasing socio-cultural resistances in using rural ICT services gradually	11.07	6.39	0.577	7
Shifting people to use information exchange system	11.35	6.56	0.578	8
Using available resources of organizations and agencies (spatial, physical, technical, and human)	12.27	7.14	0.581	9
Encouraging private sectors to conduct rural ICT services	11.75	6.85	0.583	10
Shifting government towards taking changes in methods and processes of providing services	10.47	6.35	0.606	11
Transferring more services to post, post bank, and telecommunications	10.45	6.46	0.619	12
Matching ICT offices, service providers and rural people	9.82	6.250	0.636	13
Eliminating mediators or dealers and to be shorter supply chain	11.3	7.24	0.641	14
Better accessing and using technology by rural people	10.02	6.61	0.659	15
Diversifying rural labor market	9.42	6.79	0.721	16
Developing research activities on rural ICT	8.42	6.17	0.732	17
Enhancing rural ICT contribution to Gross Domestic Production (GDP)	9.42	6.96	0.739	18
Total	11.11	42.4	398.0	

Table 5: ranking threats of rural ICT development in terms of coefficient of variations (C.V)

Threats	Importance × Impact			Priority
	M	SD	CV	
Limited insights of managers and planners to providing rural services	13.27	4.84	0.365	1
Lack of purposeful use from private sector potentials	13.97	6.28	0.449	2
Too decision makers about providing rural services	14.87	7.11	0.478	3
Rapid job mobility between responsible managers and rapid changes in ICT plans	16.15	7.91	0.489	4
Lack understanding of ICT's benefits in socio-economic development	13.15	6.71	0.510	5
Using ICT as a constant basic services not as an opportunity	11.9	6.13	0.515	6
Ignorance of national culture building about ICT	12.8	6.84	0.534	7
Not enough contract service providers who are skillful and experienced	12.4	6.65	0.536	8
Organizational and cultural resistance to change	12.62	7.03	0.556	9
Not defining services in terms of regional balance and distribution of needed services	12.42	6.92	0.557	10
Inattention to train qualified persons who provide services in rural ICT offices	11.87	6.80	0.573	11
Not defining macro level ICT services for rural people	12.6	7.28	0.577	12
Negative cultural effects particularly in high traditional societies	9.5	5.51	0.579	13
Dependency of ICT providers on government	13.4	8.12	0.606	14
Poor rural people and high rate of illiteracy	12.92	7.89	0.610	15
Not enough training about how to provide rural ICT	11.08	6.81	0.615	16
Total	81.12	9.4	319.0	-



Item's importance in terms of weight coefficient
 Impact of the item
 Interactive impact of both

Threat analysis of rural ICT

Analyzing the threats of rural ICT development shows sixteen threats that menace rural ICT. The most important of them were: limited insights of managers and planners to providing rural services; lack of purposeful use from private sector potentials; too decision makers about providing rural services; and rapid job mobility between responsible managers and rapid changes in ICT plans (Table 5).

However, the threats like severe dependency of ICT 's funding to government; too number of rural people who are under poverty level and not able to pay services' costs; not enough necessary administrative instructions about knowing how to provide rural ICT could be considered at the lowest level of threats (table 5).

3.2. Discussion on exploring strategies

As mentioned before, SWOT analysis is a powerful tool in formulating strategies in order to identify a fit among strengths, potential opportunities, weakness, and threats. An analysis was made for finding strategy type suitable for rural ICT. This was done according to the findings on strengths, weaknesses, opportunities, and threats (SWOT) and with emphasis on coefficient of variations (CV) in three cases namely, a) weighting coefficient of the items importance, b) the impact of the item under the current situation, and c) the interactive effect of both a and b.

There are different methods in order to depict the sites of strategic situations in SWOT, one of which is rectangular method. In this method CV of each of the four factors are shown on the diagram. Accordingly, four points are obtained that form a rectangular when connected to each other. The less the surface of each area is limited between two axils; the strategic area is located there.

As seen in diagram (1) three rectangular has depicted in terms of CVs for three statuses, items' importance, items' impact, and interactive impact of both. In analyzing first scenario about importance of items, four points in terms of CV were: 0.136, 0.118, 0.147, and 0.09. On the SO site, the surrounded area between S (Strengths) and O (opportunities), the calculated area was 0.0087 (SO= 0.0087). The calculated areas of three other sites were: ST=0.008, WO=0.0066 and WT=0.0061. The least area is regarded to WT, therefore this area is strategic site and the retreat strategic type should be used (see diagram 1).

In analyzing second scenario about impact of the items on current situation, four obtained areas on SO, ST, WO, and WT were respectively: 0.059, 0.047, 0.048, and 0.038. In this scenario the least area

is located on WT too. Therefore, here also retreat or withdrawal strategy should be applied. Third scenario where the interactive between both importance of items and impact of the items was analyzed, the surrounded areas on the four sites were respectively: SO= 0.07, ST=0.056, WO=0.07 and WT=0.055. As a result, the WT site had the least area (see diagram 1). According to results to the effect that strategic sites are located on WT it is concluded that decreasing weakness and threats simultaneously are more important than paying attention to increase opportunities and strengths.

4. Conclusions and recommendations

According to the findings of this study it is concluded that building awareness for using rural ICT by rural people as well as creating motivation of managers into extending service area on a rural ICT context are two basic and initial elements in order to develop rural ICTs. These elements can be improved by using the strengths like available mass media and basic services on information and communications.

The results showed that weakness of management, organizing, and planning system of rural ICT, generating awareness about available and prepared ICT services and inattention to an extensive information system have still remained as the most important weakness during rural ICT development.

About opportunities for rural ICT development, it is concluded that cultural preparation, socio-economic potentials of rural community, and basic infrastructures for rural ICT development are the most important opportunities which were recognized during this study.

Contrary to available opportunities which were related to human aspect, the available threats in rural ICT development were related to organizational aspect of providing services. Accordingly, items such as weak insight into improving information of managers and planners, lack of using organizational capacities, no integrated and coordinated macro policies regarding rural ICT services, and rapid changes on position of managers were listed as the threats which have the highest priority.

The best strategic type was WT strategy (removing weaknesses and decreasing threats) for rural ICT development in Iran. Another strategy include ST strategy (decreasing threats and enforcing the strengths) can be also used because of very close distance between two strategic site of WT and ST. Therefore, it is recommended that diverse strategy can be used in short term and retreat (withdrawal) strategy can be employed for midterm and long term. This means weaknesses of rural ICT development should be decreased, the strengths should be enhanced and the threats need to be limited.

By considering findings of each four factors it is suggested that a planning and management system has to be developed and implemented thereby weaknesses and threats of rural ICT development are diminished.

In order to improve rural ICT development every four cases of SWOT should be considered on basis of three aspects include time, task, and human resources.

Acknowledgement

The authors gratefully appreciate to Post Research College affiliated to Iran's Information and Communication Technology Research for financially support of this research.

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