

INTERNATIONAL PLANS AND EXPERIENCES IN STRENGTHENING THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES ON RURAL DEVELOPMENT WITH AN EMPHASIS ON IRAN

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Abstract:

One of most important issue of information and communication development all over the world is serving information and communication technologies to rural and out of the way areas. Therefore, any solution that could reduce information accessibility distance between city and rural areas is considered valuable and in consistent with information society development. Thus, communication and information technology ministry contemplate special plans for rural information technology development. In Iran, It had been planned to provide minimum necessitous access to communication and information technologies for 10000 villages till the mid of 2005. For this purpose, required funding had been assessed and its administrative and managerial structure has been designed. In addition, it was expected that till the end of forth Development Plan, 20000 villages should be benefit from communication and information technology services.

Nowadays, the issue is not using or not using these technologies, but the issue is how to use them and their implementation in different social and economic areas so that maximum profit obtains from these technologies.

Nowadays domination on digital gap is one of most important issues of developing countries including Iran. Rural areas are exposed to digital gap more than other areas. These areas deprived from most of the development indicators (such as education, welfare and communicational facilities and occupation) and this deprivation maybe get severe with the emergence of newer information technologies in comparison with urban areas. This maybe led to peasants' migration to urban areas for acquiring better social and economic positions and thereby survival of villages faces with more challenges than before.

In addition to the mentioned threat, information and communication technologies provide a unique opportunity for bridging the existing gap between undeveloped and developed areas. If villagers could catch this opportunity and use the information and communication capabilities and potencies, not only their survival are not faced with mentioned threats but also villages become dynamic and productive areas that warrant food security of society. Therefore, in present study the role of deploying ICT services centers in Iran investigated.

Operational definition of words

1-2-1- Information and communication technology (Curtain R., 2002)

Information and communication technology is defined as a series of methods and technologies that are used for facilitating and implementation of production, collecting, organizing, storing, retrieving and broadcasting process of information, providing that two

essential conditions met; i.e., applying computer sciences as a processing tool and communication as a intercommunication highway.

1-3-1- Virtual organization

Virtual organization is some sort of network organization that using the newest information and communication technologies such as internet and intranet that making possible personal and organizational interactions between themselves and with others beyond space, time and organizational boundaries.

1-3-2- Remote working (Teleworking): (Cheshmberah & Soleymanifard, 2001)

Some sort of job arrangement by which personnel acquit their tasks flexibly from time (part time or full time) and space (far from their office or mobile) point of views.

2-1- Introducing project of equipping 10000 Iran's villages with ICT services centers

Considering that the current study has been defined based on the project of equipping 10000 Iran's villages with ICT center, it is necessary to introduce this project in the following matter.

Information and communication technology ministry in a comprehensive national plan in 2005 specified that 10000 villages should be equipped with ICT services centers. These centers provide internet access of villages in addition to various services such as mailing, post bank and telephone. They provide at least one access point of internet in each of these villages. It also increases telephone coefficient in villages. In addition to mailing and communication services, these centers provide necessary backgrounds for serving other governmental services. Governmental organizations such as agricultural Jihad bureau, rural cooperative, health, care and medical education ministry, education ministry and other organizations serve different services to villagers. Employing information and communication technology centers of villages, these organizations could offer their services electronically and resolve some problems of villagers including city traffic for using these services.

1-3-1- Project goals

The main purposes of this project are as follows:

- a. Providing integrated information and communication services to villagers
- b. Increase of telephone influence coefficient in villages and family accessibility to telephone
- c. Providing a bed for developing electronic government services
- d. Better access of villagers to internet
- e. Offering required space and communicational facilities to other government organizations in villages

Regarding great capabilities of information and communication technology in rural areas development, during several past years this technology has been considered as an effective tool for reducing economic poverty, improving health and educational services and increase of villagers association in national and international levels in villages. Accordingly, hereunto extensive studies and measures have been conducted. International Communicational Unity, International Bank and United Nations are pioneers in this field.

In the following some international requirements of this project are stated:

- 1- Information society and Iran commitments in development information technology and rural communication
- 2- Social and economic recommendations of Asia and Oceania in the field of rural ICT centers
- 3- International Bank and development of information technology and rural communications

2-3-1- The effects of developing information and communication technology in Iran's rural areas

Although, influence coefficient of information and communication technology in Iran's villages is low, but developing this technology could have a considerable effects in short-time periods. The effects of developing rural information and communication technology could be evaluated from economic, social, cultural and political points of view that will discussed later.

Economic, social, cultural and political impacts of ICT centers are as follows:

- a. Social effects
 - Decrease in villagers migration
 - Development of rural education
- b. Economic effects
 - Development of agriculture
 - Increase of efficiency and performance of productive units
 - Improvement of economic efficiency of production (economic management of agricultural activities)
- c. Development of rural labor force
 - Engagement in the process of market forecasting programming
 - Empowering rural associations
 - Familiarity with new modern production methods
 - Familiarity with personal and social rights
 - Development of rural industry
- d. Cultural effects
 - Giving information
 - Cultural development
- e. Political effects
 - Electronic domination
 - Electronic elections

3-1 -The role of information and communication technologies in rural development

Information and communication technology has an important role in economic, social, cultural and political booming of villagers (Naghavi & Gerzin, 2003). The first question that maybe comes in the mind of officials about information and communication technology is that for which village? Among low income people, peasants and ranchers, who needs the internet, computer and telephones? How Information and communication technology could improve economic conditions of these villagers? While developing these technologies in the urban areas is at the beginning of a long way, how we could explain development of these technologies in villages?

Regarding this fact that major productive labor force of society live in villages and government services to this sector has not a fair distribution and they have a little share in development plans, this leads to irregular migration from rural to urban areas for accessing urban facilities.

Drabenstott argue that there are five challenges in forming a rural economic as follows (Shirmohammadi & Shami 2002):

- 1- Exploitation from digital technologies
- 2- Encouraging entrepreneurs
- 3- Using new agricultural methods
- 4- Improving capital of labor force
- 5- Supporting rural environment

Three cases of five mentioned cases are connected to digital economy directly that highlights the necessity of using information and communication technologies. Therefore, rural

development and rural economic growth is not attainable without assistance of information and communication technologies.

3-2- limitation of developing information and communication technologies in Iran's villages

If we accept that information and communication technologies provide new facilities and capabilities for development of villages, we should know limitations and difficulties of this task to resolve them effectively. Most important limitations for developing internet in villages are as follows (Barani & Ghodsi Raii, 2002):

a) Lack of appropriate communication infrastructures

At the moment, there are not suitable communicational infrastructures for developing information and communication technology in villages. They suffer from lack of internet services centers and, therefore, eager villagers have to connect to the internet by urban servers. This connection has two main defects. From one hand, due to distance between city and village, it is expensive and from other hand due to analog connection of communication lines in villages, in addition, data send and receiving is slow due to disruption in network.

b) Lack of personal computers in all of the villagers home

In spite of progressive import of PCs and development of computer market centers, a small portion of rural families own personal computers in their homes. Therefore, there is a tendency bias of information and communication technology toward wealthy people.

c) Lack of computer utilization knowledge among all villagers

Low literacy rate is recognized as one of main problems of rural societies. If one accept ability of using computer – it recognized as computer's literacy – as the most essential component of applying information and communication technology, it is obvious that exploiting this technology is limited to youth generation.

2-3- Expectations and prospects of developing information and communication technologies in villages

It seems that for achieving a rural sustain development and food security in national level, rural and crop production should be considered more than any issues. For this purpose we need producers that have required capabilities in the field of their occupation to improve their ability in this scope.

This ability considered as the most critical and essential cultural infrastructure for sustain development. Critics believe that Iranian personality alteration is the cornerstone of Iran development. Therefore, following cases could be considered as the goals and prospects of information technology development (Barani & Ghodsiraei, 2003):

- a) Consolidation of cultural through consolidating transcendental humanitarian values
- b) Consolidation intellectual Independence and empowering innovative personality instead of passive one
- c) Consolidation financial independence and fostering productive thinking
- d) Facilitate participation of villagers at decision-making and programming through provide the possibility of receiving comments, viewpoints and recommendations to governmental organizations.
- e) Helping villagers for satisfying their needs including principal (sublimation of culture) and subsidiary needs (such as recreation). Simultaneously alongside internet development in villages there are some worries and fears that are considered as critical cultural concerns. One could consider following concerns as examples:

- 1) Device considered as a target: This question should be taking into account that "information technology is developed for achieving which goal or goals or meeting

what needs of rural society?" there is this concern that information technology considered as a goal rather than a device.

- 2) The risk of one-sided information current and gradual cultural transformation in villages: due to the lack of software science and weakness of various utilization of computer and little knowledge of foreign language, it is possible during utilization of internet a one-sided impure current formed and this device that was considered for the purpose of sublimation of culture and meeting necessary needs of rural society is used as an exclusive device for unnecessary things by youth and a large number of villagers could not use it effectively for meeting their vital needs.
- 3) The possibility of bias of information networks toward non-villagers managers: the subjective view of officials toward villagers maybe leads to this possibility that not only decisions for programming made without rural society needs but also their inconsistent norms and intellectual frames be imposed on rural society despite the willing of villagers.

4 - successful experiences of Information and communication technology projects in the world

In this section, some successful experiences in the field of technology are introduced. For this purpose, developing countries or currently developed countries have been chosen.

4 -1- Information and communication technology in India

Development of information technology in India commence at the early of 1990 and software export from 128 million dollar at 1991 exceed 6 billion dollar till 2000 and 10 billion dollar at first nine month of year 2001 and should be reach 87 billion dollar based on anticipated plan (50 billion dollar will export to abroad) and employment in this sector will be 2.2 million. The success of India in achieving predetermined goals during 10 years and gaining equivalent earning growth of 50 % in year is a representative of proper plan and programming and their appropriate execution during past decade. This success not only leads to increase of software export to more than 10 billion dollar in country that its total past year export was 42 billion dollar but also extensive employment in technology parks so that only employment in call center of these technology park from 10000 persons at the year of 2000 reached 30000 persons at the year of 2010 and this trend is continuing progressively. British airways, General Electric American Express, Amazon, AOL, Dell companies are some examples of Fortune 500 list that transfer their call centers into India and some other great companies like Yahoo, Sun, Microsoft are transferring their call centers into India that this fact leads to more employment and bringing currency for India.

4-2- Information and communication technology in Singapore

Singapore is one of those countries that its experience in the field of information technology is short but through a comprehensive plan with three stages extends information technology into all areas of society. This plan that is named information technology of 2000 has been designed with the purpose of making Singapore into a complete electronic island or a "smart" one which now is passing the final stage of third level. The plan of information technology of 2000 is one of most critical national plan of Singapore that turn it into owner of one of most extended informational infrastructure in the world. One of main goals of this plan is training expert forces and their employment. Improvement of social welfare level, reinforcement of society's economic, local, international relations, and increase of individuals capabilities are some properties of this plan (Rahmani, 2001).

4-3- Information technology in Malaysia

Malaysia is one of the informational pioneers in the world. Malaysia state decided to conduct its country into the age of information with the purpose of advance the development goals in national level (Rahmat, 2002). Malaysia has been provided a vast employment and added value in the field of information and communication technology. The purpose of industrialization of Malaysia is converting this country into a developed nation at the year of 2020. At 1983, industrial material export was 30 percent of total Malaysia export. At 1993 it reached 74 percent and at the year of 2000 this value exceeds 80 percent. A part of this success is due to a national road map that vote to Export Promotion Council at the mid of 1980. Information and communication technology export forms the main portion of industrial export of Malaysia.

4-4 A Successful story from Africa

Villagers in the rural areas of Uganda that have no direct access to telecommunications have relied on village phone operators for their communications needs. Bringing information and communication technology (ICT) to rural and isolated communities in Uganda has been made possible through an MTN and Grameen Foundation project established in 2003. This project facilitates the purchase of specialised mobile phones by rural entrepreneurs through microfinance loans to enable them to serve as village phone operators in areas with no telecommunication infrastructure. The Grameen Foundation acts as a facilitator between the telecom and microfinance sectors. To date, close to 7,000 new village phone operators have set up business in Uganda.

This village phone project has been cited as one of the ten successful ICT business model by the Commonwealth Rural Connectivity Report following a study conducted by the Commonwealth Telecommunications Organization. The report that was issued in London, UK, on 19 June 2008, also highlighted Ghana's eCare services as an innovative ICT business model that can be replicated throughout Commonwealth Africa to bridge the digital divide.

4-5- Rural Telecommunication in Laos

The purpose of the project is to provide basic telecommunication infrastructure in rural areas of Laos. The inadequate means of communication are a major obstacle to economic development there.

Approximately 1000 connection points were completed in rural areas under the three initial phases of the project and 1500 additional connections have been financed during the current phases 4th and 5th in order to connect approx 75% of the Laos' rural districts to the telecommunication network.

The administration and small entrepreneurs are provided with individual telephone lines whereas the public is served via public call offices. Beside voice services users have access to fax, email and internet. Investments are accompanied by a technical assistance component to assist the Lao Government and the regulatory body to improve sector organisation and set-up.

4-6- Fencepost - New Zealand

Fonterra's supplier website, Fencepost.com is a unique community & business channel used by Fonterra dairy farmers throughout New Zealand to monitor their business performance and stay in touch with the company and each other. Fonterra Co-operative Group Ltd is a leading multinational dairy company investing in organic dairy industries

and products, owned by 12,000 New Zealand dairy farmers. This is the world's largest exporter of dairy products, exporting 95 percent of their production. Fencepost.com is an Internet e-cooperative & e-agricultural portal, focused on farmers' needs. Fencepost.com provides its users with specific industry and personal output information, market and commodity updates, free weather updates, industry-related news, expert advice, discussion groups, sporting news and email as well as special deals on farm goods. Fencepost.com provides expert knowledge base articles, up to the minute awareness of environmental issues and solutions, sharing of information amongst suppliers through online discussion groups, and up to the minute communications with Fonterra.

Fencepost.com has an ongoing aim to leverage the power of the internet to ensure best farming practices and productivity tools can be shared across the supplier base to ensure Fonterra suppliers remain as world leaders in milk production and milk quality. Online voting in elections, calculations affecting capital expenditure for farmers in maintaining their co-operative memberships, forecasting of annual supply trends and payout predictors, livestock trading and classifieds advertising are other services provided by Fencepost.com while its Rural jobs database is hugely successful both within New Zealand and internationally. Today more than 70% of Fonterra's 11,500 farms are registered to utilize the site - these farms account for more than 80% of the company's national milk production. A wide range of communication tools, productivity tools and interfaces with company systems are used on a daily basis by farmers spread throughout rural New Zealand. Although in its early days, Fencepost.com has succeeded in establishing a truly national community and a truly national business tool. Supporting and optimizing business practices for the farming and rural sector right across New Zealand, the platform is favoring the creation of new business models, based on a set of interactive tools, is developing the ability to spread best practice among farmers nationwide.

5-1 - Summary and Conclusion

5-1-1-Deployment model ICT services in rural areas of the provinces of Iran

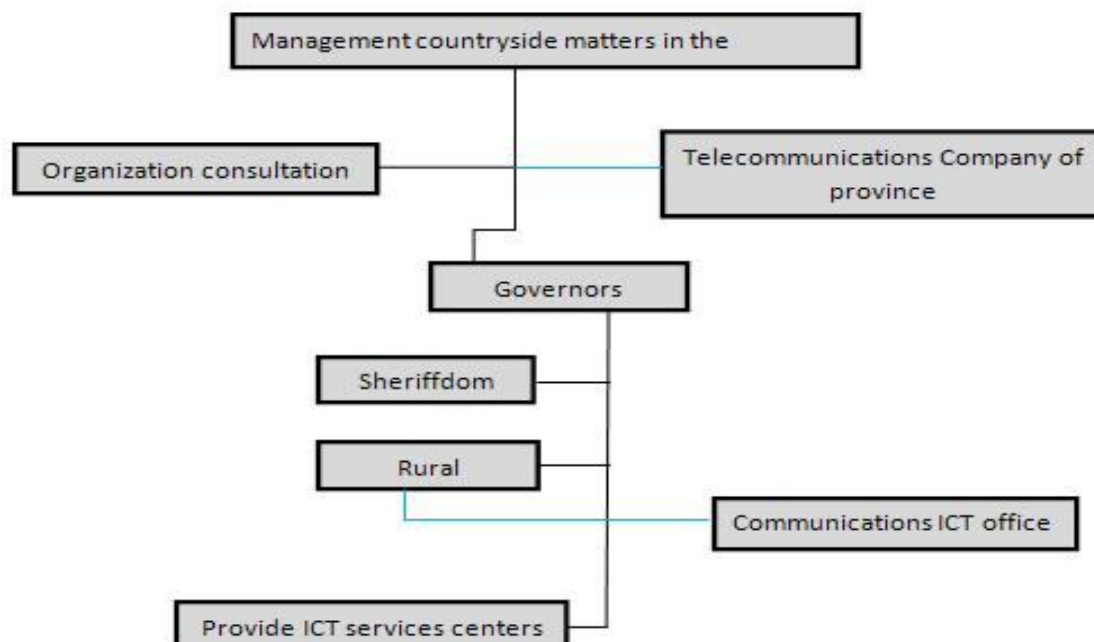
Model to reduce the digital divide is the first step that takes into account the villagers to facilitate the connection to the Internet and services based on ICT, and in the second step definition and method of providing ICT services to be provided. Then, those steps set shown as follows:

Model reduction of digital divide is shown in Figure below In which the four factors which operate on the success of these factors in dealing with rural ICT centers and the reduction of rural gap.

Operational structuring of the deployment ICT services model in rural areas of Iran

To goal of operating in both the designer in this section should create centers of information technology and rural communication. In all villages of the national Ict project in Iran, they are equipped with this type of offices and on the basis of these offices and the possibilities can be found in them in order to operating (Model limit the digital divide in rural areas) that skips this step.

But to goal in the implementation of the sector (definition of ICT services in rural areas) without the design and the demarcation of the village it is necessary to gate the need to establish a center in the village under the supervision of officials of the village and the council village. Management of this center should be in the custody of the villagers or the village itself and with the supervision of non-governmental organization. On this basis the structural designer take Figure 1:



In respect of the relationship between the sectors, the form must be said that the organization non-profit organization overseeing the reduce of digital divide to find the factors in common and supervising them, and also undertakes to supervise the center (providing ICT) up to that time, which can in which the people and members of the village of supervision and management. Cooperation and deal with the owners of the advantages of a model to reduce the digital divide in the village helps to oversee this task in the village, such as the youth of the village who wish to be under the program area of ICT and use of the possibilities existing in the offices of ICT in the village primary teachings are presented to them.

5-1-2- An overview about role of ICT centers in rural development

1. In abovementioned countries, a common factor has been led to their progress in rural development, i.e., having a comprehensive specific and defined national plan "based on available position and resources".
2. Teleworking and virtual organizations could be a background for employment of deprived people of least developed areas including villages, in addition, could leads to decrease of some of other problems such as air pollution, traffic congestion and geographic migration.
3. Individuals will reconcile themselves with the new technology with the progress of information technology. Therefore, field of study selection, training courses and new services should be executed with regard to personal and organizational considerations.
4. Regarding software susceptibility and communicational infrastructures, there is the possibility of implementation fundamental plans of teleworking, but lack of communicational, legal and cultural structures, lack of information and financial transactions security (electronic money) resulted in the late entrance to this scope of information technology.
5. It is noticeable that in majority jobs teleworking considered as a tool for facilitating the task process of other occupations. In other words, teleworking is not a job. For example, in a team work like extending software, group leader exchange different

parts of the prepared program with other member of the group through e-mail. Although interaction and meeting between members is necessary for their consistency.

6. In Iran, Some of main reasons of use of ICT plans in the province are as follows:
 - a. State management of projects, subsequently, lack of consistency in procedures and policies
 - b. The change of state managers and pause of activities due to the change of managers preferences
 - c. No relation with private and non-state sectors for more participation in project execution
 - d. Lack of private and non-state sectors in project management
 - e. Lack of defining a mechanism for more participation of expert and professional forces in management and execution of projects
 - f. Lack of organizing communicational network of beneficiaries especially clients, managers of industrial – service units, state and non-state and other sectors
 - g. Lack of attention to occupational and economic aspects of ICT plans and lack of programming for interrelation between plans and executed projects according to the villagers' needs and local and foreign market
 - h. Lack of a physical structure and a specific place for some projects and their dependence to other plans and programs
 - i. Lack of supporting and regulating organizations for conducting these projects

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