

A sustainable model for use of ICTs in rural Pakistan

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ABSTRACT

The major part of Pakistan is comprised of rural areas, which are underdeveloped and lack of facilities as compared to their urban counterparts. The main reasons for this underdevelopment are; low priority assigned by the government in developing the infrastructure, lack of interest of private sector to exploit the potential of rural areas and inability of private sector to invest in the development of rural sector. Only a marginal percentage of budget is being spent in the development of rural people specially on the education. This has in turn become a main hurdle to gain, accept and to implement the new technologies in the agriculture sector as well as other rural sectors (as agriculture is not the only source of development in the rural areas of Pakistan). We must think about that 70% community to produce good manpower by providing them the latest facilities and up-to-date information in less time and in a short way. To accomplish this purpose we are proposing an ICT-Training Centre consisting of an area wise wireless networked Rural Kiosk Machines placed at every village, which will be updated through a central place of information (ICT-Rural Development Department (ICT-R2D)). Initially the people of rural areas need some help from ICT-R2D to understand the system, but then they can develop themselves and interact with other world through Rural Kiosk Machines directly for their daily life matters and up-to-date information. By using this model this major proportion of our population can play an important role not only to develop their life but also to develop the country.

Keywords: *ICTs; rural development; poverty alleviation; Sustainable Model; ICT-R2D; ICT-TC; RKM, area wise wireless network.*

INTRODUCTION

Pakistan has a total population of 165.8 million ¹ and is divided into four provinces viz., North West Frontier Province (NWFP), Punjab, Sindh and Balochistan. Provinces of Pakistan are further divided into Divisions and Districts and every district has a major proportion of rural area.

Table 1: *Divisions, Districts and Rural Population*

	Divisions	Districts	Rural Population
NWFP	7	24	79%
Punjab	8	34	72%
Sindh	5	21	57%
Balochistan	6	22	84%

Also in other areas of Pakistan e.g., FATA, Azad Kashmir and Northern Areas most of the population is living in rural areas. The rural population of Pakistan is approximately 70 % (Sandhu, 2003) of the total as mentioned individually for all the four provinces in the Table 1.²

Pakistan has a dismal literacy rate of 36.8 percent; gender wise males have a 50 percent literacy rate while females have 23.6 percent literacy. The 36.8 percent literacy rate also takes into account all those individuals who can even write their name. In addition, the total expenditure on education is only 2.9% of the National Budget. The government has tried to eradicate illiteracy, but government projects for mass literacy have become administrative and bureaucratic nightmares. This is one of the reasons why Pakistan hasn't been able to improve its literacy level.

Among the two population groups living in the cities and in the villages, it is the rural population that suffers the most. Unemployment in rural areas has risen to 7.55 percent³ in 2004 from 6.94 percent in 2000, but the unemployment rate in urban areas has decreased to 9.80 percent in 2004 from 9.92 percent in 2000. There are currently around 2.28 million jobless people in the rural areas and 1.44 million in the urban areas. Pakistan's rural population has been largely ignored by efforts at improving mass literacy. The educational facilities provided by the Pakistani government have been of a substandard quality with no thought to the people's needs or advancement.

Pakistan's economy has undergone considerable diversification over the years, yet the agricultural sector is still the largest sector of the economy. Over the last one decade i.e. 1990s (Table 2)⁴ agriculture grew at an annual average rate of 4.54 percent per annum but the overall performance of agriculture during (2000-01 to 2003-04) was below than the average of 1990's. This situation can be improved if we provide proper information and have strong and fast communication with farmers.

Table 2: Agriculture Growth (Percent)

Year	Agriculture	Major Crops	Minor Crops
1990-91	4.96	5.69	3.51
1991-92	9.50	15.48	2.37
1992-93	-5.29	-15.60	3.95
1993-94	5.23	1.24	12.62
1994-95	6.57	8.69	6.91
1995-96	11.72	5.96	4.89
1996-97	0.12	-4.33	0.94
1997-98	4.52	8.27	8.13
1998-99	1.95	-0.02	4.23
1999-00	6.09	15.42	-9.10
Average of 1990s	4.54	4.08	3.84
2000-01	-2.2	-9.9	-3.2
2001-02	-0.1	-2.5	-3.7
2002-03	4.1	6.9	0.4
2003-04	2.2	1.8	2.6
2004-05 (P*)	7.5	17.3	3.1

P* -Provisional.

While agriculture is a central activity in rural life, rural does not necessary mean farming of crops as there are significant numbers of the rural population who are engaged in many other activities, some of them are listed below:

- Poultry Farming
- Fish Farming
- Dairy Farming
- Live stock
- Fruit Gardens
- Bee Farming
- Wood cutting
- Handy crafts etc.

In addition to basic agriculture all these things are also very important and of our daily use. Increase in the production rate and well in time consumption is not only helpful for the rural population but also helpful for the urban people and ultimately for the country. No doubt rural areas have very hardworking people, but they have lack of skills, information and direct contact with the consumer or buyer. Lack of skills reduces production rate and lack of information and contacts decreases profit.

With all these statistics we came to know that even though the rural population is more in proportion they are living with substandard and poor life. Most of them are uneducated and jobless. Unfortunately, if some of them get education, they try to move towards urban areas for better job and the situation remains same. If government thinks only about the education of rural people, that is insufficient. So, there is a need to improve their lives at their own place in such a way that they love to live there with their own resources. So, there is a need for horizontal coordination among Government Departments and vertical co-ordination between local initiatives and national policy-making to ensure an integrated response to address rural community and to promote rural development.

EXISTING PROBLEMS

The rural community is suffering from multi-dimensional problems mainly due to unavailability of information and lack of communication, this includes the lack of:

- Education
- Income, because they are not getting good production due to lack of information and also they don't know where to sell their products
- Agriculture information including soil, water, crops, seeds, fertilizers and modern farming techniques.
- Healthcare including childcare
- General Knowledge and latest information about markets, market rates, weather and flood forecasts and other related information according to the geographical position.
- Community Development

PROJECT SCOPE

Equality of opportunities in social life and development of the rural areas of Pakistan, through accessible information and telecommunication technologies and empowering people to across the digital divide.

PROJECT OBJECTIVE

- To provide a forum for the exchange of knowledge and national experiences in promotion of ICT for development in the rural area through Training Centre.
- To produce a tested set of resource and training materials on concepts, issues and approaches to promote and realize the access of ICTs for all through Rural Kiosk Machine.
- Equality of opportunities for persons who are in rural areas and are uneducated, financially marginalize or disable.
- Fast and easy access of updated and latest information.
- Bridging of communication gap between rural and urban communities.
- New market opportunities for agricultural inputs, products with the development of electronic auctions and market places and elimination of middle man in marketing transactions.
- Direct transaction of agricultural inputs, products and services to target consumers.
- Dissemination of knowledge and research to rural community.

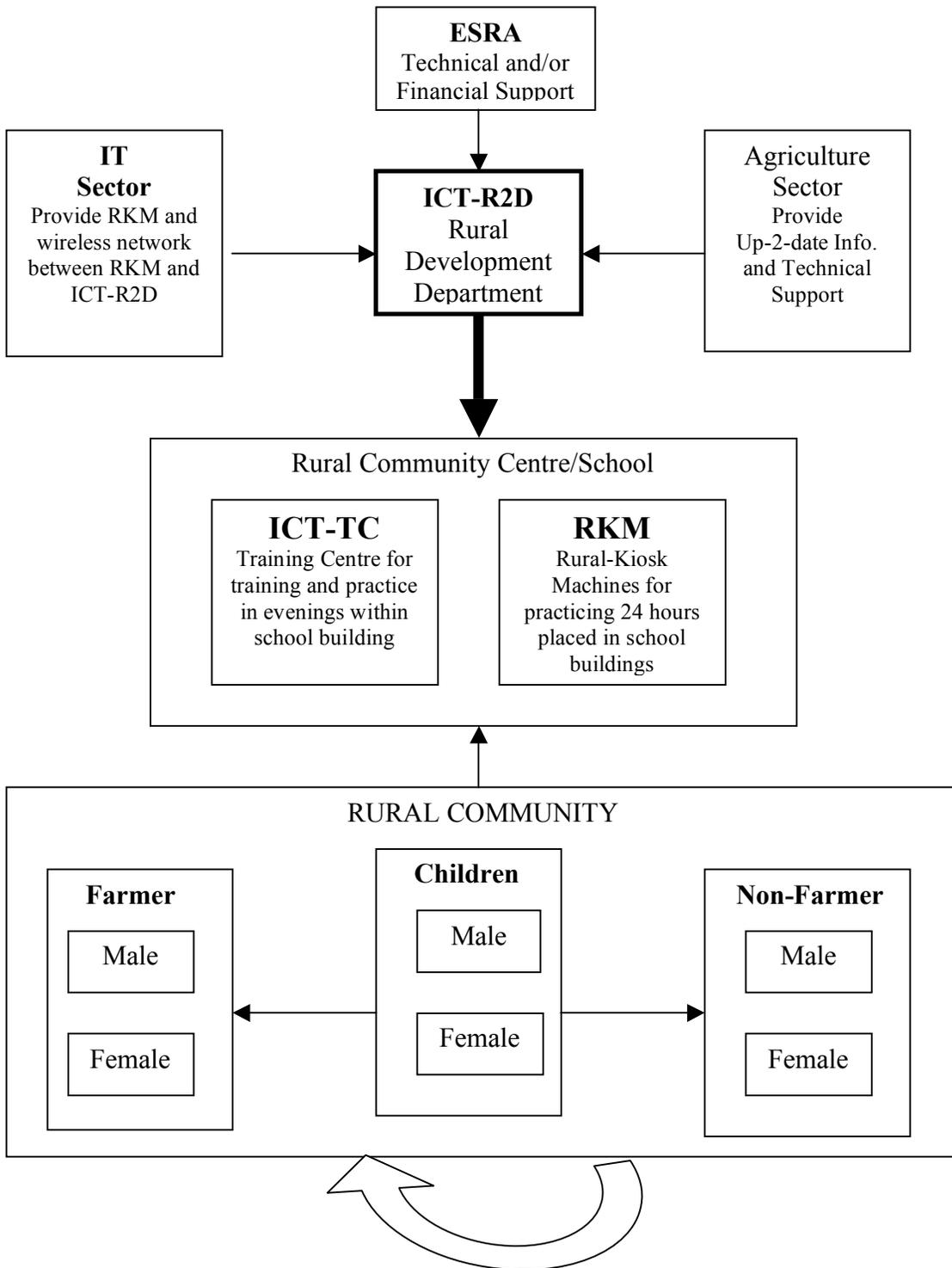
PROPOSED MODEL

The United Nations Millennium Declaration adopted by over 180 heads of governments in September 2000 stated that, given an increasing digital divide, we need “to ensure that the benefits of new technologies, especially ICT, are available to all”. ESCAP as the regional United Nations organization covering the entire Asia and Pacific region is dedicated to make the commitments pledged at the highest level work to the benefit of the rural poor.

What does this mean for rural development in the region? Economic and Social Commission for Asia and the Pacific (ESCAP) has reviewed over 30 projects of varying success that have brought ICT services to rural areas in Asia ⁵. Leaving details aside, in short, the following is what we have found to be of essence if people in rural areas were to benefit from the ICT revolution as ICT can be regarded both as a driver and enabler (Herselman, 2003):

- First, they need to be technically connected
- Second, they need to have physical access to connection
- Third, content and services must be developed according to local needs
- Fourth, there needs to be sustained capacity building.

In the proposed model we have considered all these points and for technical connection we are using RKM which will provide physical connection between the ICT-R2D department and rural community. Then these RKM's will be updated through different departments, by using area wise wireless connection according to local needs. Initially people will be trained by ICT-R2D in the community training centres i.e. ICT-TC and then people itself will be able to use the RKM for getting the information.



Educated community will then train the rest of the community

Figure 1: Proposed MODEL for sustainable ICT Project for Rural Pakistan

Rural Community Centre

Rural Community Centre is the central component which consists of Rural Kiosk Machine (RKM) and ICT-Training Centre (ICT-TC). Rural school building will act as a rural community centre which will hold RKM and facilitate the people for 24 hours. The same building will also work as ICT-TC for discussion and trainings in the evening timings for the rural community. ICT teacher/instructor of that ICT-R2D department will help the people that how to use the RKM and how to get information from that machine directly. After some time the rural people itself help other people and this process of self learning will accelerate in a very rapid way like use of mobile phones in Pakistan.

Rural Kiosk Machine (RKM)

In a move to take the benefits of Information Technology to the doorsteps of farmers, Indian Farmers Fertilizer Cooperative Limited (IFFCO) launched "Agri kiosks" in 2003 with specific focus on providing information on agriculture, fertilizer industry, agro-chemicals and the co-operative sector at the touch of a button. It guide farmers through a text and audio mode through the various agricultural practices, land preparation, seed and seeding, fertilizer application, irrigation, plant protection among others. Indian Farmers Fertilizer Cooperative Limited has tied up with Department of Marketing and Inspection, National Informatics Centre and various local agencies to provide latest information from market centres.

In Pakistan, a similar kind of machine is being developed and its working prototype is placed at Centre for Information Technology, University of Arid Agriculture Rawalpindi. It is complete with respect to information in English and its multilingual interface, to support rural communities speaking Urdu, Pashto, Sindhi, Balochi and Brahvi is being developed.

Pakistan National Language is Urdu but it is spoken only 9% as a first language. Punjabi is spoken 65%, Sindhi 11%, Others (Pushto, Saraiki, Baloch, Brahui etc.) 24% and English is very rare in rural areas. That's why there is a need for such a kiosk which can present information in all languages. And I have already stated that agriculture is not the only source of development in the rural areas of Pakistan therefore we need to develop a kiosk machine also for other source of rural development that's why I give the name for this machine Rural Kiosk Machine in the model. This machine will consist of user friendly interface in local language having all the required information which is mentioned in the introduction part. E.g. weather information in one corner and will update on hourly basis by using wireless connection by ICT-R2D department which will take information from concerned department.



Figure 2: Rural Kiosk Machine

The Rural Kiosk Machine will contain the following information in local language:

- Maps and landmarks
- Text, audio and video Information for all crops
- Fertilizers information
- Land preparation
- Seed and seeding
- Irrigation practices
- Plant protection
- Poultry Farming
- Fish Farming
- Dairy Farming
- Live stock
- Fruit Gardens
- Bee Farming
- Wood cutting
- Handy crafts
- Flood and Weather forecast
- Market prices

The Rural Kiosk Machine and its installation will be sponsored by ministry of IT. These machines will be connected through wireless connection to the ICT-R2D department. All the RKM machines will be updated centrally through ICT-R2D department.

ICT-Training Centre (ICT-TC)

ICT-R2D department will responsible for providing basic education for use of RKM for each faction of rural area by establishing ICT-Training Centre at each school in every village even though it is very small. If school is not available in the village then RKM should be placed at well known secured central place of the village. These centres will provide education on how to get information from the RKMs on almost every rural aspect.

Education Sector Reform Assistance (ESRA)

The Education Sector Reform Assistance (ESRA) Program should support R2D to achieve strategic, significant, and sustainable improvements in education. The educational process should foster self-development, provide people with the ability to realize their full potential and provide them with the appropriate skills which will earn them job and income opportunities. The ability of young people to avail themselves of education and training without leaving their areas has important consequences for the population profile of rural areas. So the policies should be that they don't leave their areas.

ICT cannot be promoted without education. Education and training have a vital role in generating and sustaining economic activity. The availability of a well educated and flexible workforce facilitates economic diversification and the attraction of income and job creating opportunities to rural areas. The development of new technologies, for example, requires a flexible labor force with a high level of general education and possessing good basic skills in handling information technology. The education and training systems must ensure that the needs of all factions of rural dwellers are addressed and it can develop to their full potential.

Agriculture Sector

Agriculture sector is the single most important contributor to the economic and social viability of rural areas. Agriculture employs 79.4%⁶ of rural women and 60.8% of rural men of the rural population and, while employment is declining in relative terms, the sector continues to play a defining role in the rural landscape and is a conduit for major public support for rural communities. Agriculture is, and will remain in future, critical to the well being of the rural economy and, in many areas, represents the main option for economic activity. Maintenance of a healthy agriculture sector is, therefore, an essential component of a comprehensive rural development strategy.

In this model agriculture sector will play a vital role by providing up-to-date localized information to ICT-R2D department about each and every aspect of agriculture including soil, weather, crops, fertilizers, water, machinery, seeds, new technologies, cropping patterns, new cash crops etc. ICT-R2D department will then update the RKM's at every place.

ICT-Rural Development Department (ICT-R2D)

This department will get latest information from agriculture, IT and other related departments and will update the RKM's and will provide training to ICT instructors for the latest updates at rural community centre. The purpose and theme of the ICT Rural Development Department is the same with an amendment that it will work only for the development of the 70% population which need more attention and care and can be more productive for the development of country, but its cyclic process and hope it will accelerate rapidly with the passage of time. Even in some European countries like Italy after the first world war in 1950's the situation was same as now in Pakistan but they have developed a lot and now they are equipped with the latest technology and people love to work in the villages and in the farms.

Sustainability of the project

We can make this project sustainable by using one or more options given below:

- We can earn some money by providing printouts for the required information.
- We can earn some money by providing printouts of reports for land ownership etc.
- We can earn some money by the registration charges from people who want to do online sale and purchase.
- We can earn money by getting some percentage on every online transaction.

- We can add some money in the dues which each person submit to the government according to his/her land size, like TV charges in electricity bills.

CONCLUSION

With the implementation of this proposed model either by fully sponsored by the government of Pakistan or with the financial support of ESRA and all other technical supports provided by different sectors as clearly mentioned in proposed model *fig. 2* the rural community can get maximum benefits to improve their education, knowledge, health, skills, earnings and living standard. This model can help to reduce the "electronic gap" between rural and urban communities. Especially the rural kiosk machine can change the lifestyles of the rural community in a short period of time. No other rural development project can grow faster than this proposed model.

Endnotes

- 1 <https://www.cia.gov/cia/publications/factbook/print/pk.html>
- 2 http://www.infopak.gov.pk/public/country_profile_index.htm
- 3 http://www.dailytimes.com.pk/default.asp?page=story_14-6-2004_pg7_20
- 4 <http://www.finance.org.pk/survey/chapters/02-Agriculture.PDF>
- 5 http://www.infopak.gov.pk/public/country_profile_index.htm
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