Multipurpose community telecenters for rural development in Pakistan

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Abstract

Purpose – The paper aims to: assess the situation of rural population in Pakistan and information facilities available to them including telecommunications, computers and public libraries; document the community information initiatives in terms of objectives, institutional framework, staff, services, use, finance, technology and lessons learned; understand challenges and opportunities regarding the establishment of multipurpose community telecenters (MCTs) in rural areas of Pakistan; and to propose a model for the establishment of MCTs in Pakistan in terms of policy formulation, planning, management, funding, building, equipment, technology, services, target groups, marketing and sustainability.

Design/methodology/approach – The study is based on literature review and interviews of persons involved in activities of providing information to the rural community in Pakistan selected from the telecommunications sector, libraries and national and local non-governmental organizations.

Findings – The paper highlights the role of MCTs in rural development. It assesses the situation of the rural population in Pakistan and information facilities available to them including telecommunications, computers and public libraries. The paper documents existing community information initiatives in terms of objectives, institutional framework, staff, services, use, finance, technology and lessons learned. It presents challenges and opportunities regarding MCTs in rural areas of Pakistan. A model is proposed for the establishment of MCTs in Pakistan in terms of policy formulation, planning, management, funding, building, equipment, technology, services, target groups, marketing and sustainability. The paper also discusses how MCTs can be an alternative to rural public libraries.

Originality/value – The paper presents a model for the establishment of MCTs in Pakistan in terms of policy formulation, planning, management, funding, building, equipment, technology, services, target groups, marketing and sustainability.

Keywords Information centres, Telecommunications, Rural areas, Public libraries, Pakistan

Paper type Research paper

Introduction

Pakistan, the second largest country in South Asia, covers around 800,000 km and is one of the ten most populous countries in the world with a population base of 149 million, of which approximately 61 percent lives in rural areas. The economy of Pakistan is primarily driven by agriculture, which accounts for the largest share of gross domestic product (GDP), contributing about 24 percent to the economy and employing 48 percent of the total work force. Pakistan is one of the world's largest producers of raw cotton, which serves as the input to drive the textile industry – the mainstay of industrial activity in Pakistan. Pakistan's per capita income per annum is about US$492. There are currently over 50,000 villages in Pakistan, which have a population between 100 and 7,000 inhabitants. Currently, nearly one-third of the

The Electronic Library
Vol. 23 No. 2, 2005
pp. 204-220

0264-0473
DOI 10.1108/02640470510592906

population can be classified as poor – a proportion that rises in rural areas (Pakistan. Ministry of Finance, 2003). Pakistan's literacy rate is 48 percent and in rural areas it is only 37 percent. The country's rural areas lack basic facilities such as proper education, health care, clean drinking water, proper sanitation, better communication facilities, better employment opportunities, etc.

The new information and communication technologies (ICTs) have had a great impact on decision-making processes, markets, the media, local empowerment, the targeting of marginal groups and employment. ICTs have a huge potential to play their role for social and economic development of rural population. These technologies can be used for poverty alleviation in rural areas. They can help create a more democratic environment, which is a pre-requisite to social development. ICTs have allowed the creation of a global marketplace where it is possible to access a wide variety of information, goods and services. Development-oriented ICT applications include e-government (to improve public services), e-business, e-learning, and e-health.

Since the urban population already enjoys the fruits of ICTs, the rural dwellers also need these facilities to bridge the vast information gap between the two communities. Owing to unavailability of infrastructure and some other problems people living in rural areas cannot afford to have these facilities. Establishment of community telecenters is a way to enable rural community to use modern inventions for their development. It is a powerful concept to bring "state of the market" technologies to traditionally neglected "back of the market" communities. Telecenters are a means to expand equitably the telecommunications network and give rural communities the chance to adopt ICTs to their benefit, strengthen social ties within the community and economic ties with the outside world.

The first telecenter for this purpose was established in the mid-1980s in a rural farming community in Sweden to provide services, training and jobs to the local community through computers and modern telecommunications equipment. The use of telecenters has spread rapidly and examples can be found around the world. They are being implemented in different forms by governments, development institutions, non-profit organizations and entrepreneurs, and are modified based on local opportunities and conditions. While the success of telecenter projects has been mixed, it has been noted that in communities with active telecenters there is a visible and identifiable change in the skills and capacities of the people and institutions.

Various forms of telecenters include basic telecenters, telecenter franchises, civic telecenters, phone shops and cyber community centers. For the last ten years the International Telecommunication Union (ITU) and Unesco have been introducing multipurpose community telecenters (MCTs) in a number of countries as pilot projects. An MCT can be defined as a technology hub that allows a community to establish many programs and services which provide social, economic and information technology (IT) support. MCTs are structures that encourage and support communities to manage their own development through access to appropriate facilities, resources, training and services. "Multi-purpose" means that a telecenter is able to provide different user groups within a community, with a range of services relating to different domains (from education/training to business, from health to local governance), and it does so by offering several technologies. "Community" refers both to local community ownership and community access through the telecenter. MCTs rely on such resources as public

and community libraries and local mass media in order to facilitate access to information services and to improve the dialogue between citizens and local/national institutions.

Emphasizing the important role of ICTs in the development of humankind the World Summit on the Information Society (2003) recommended that "governments, and other stakeholders, should establish sustainable multi-purpose community public access points, providing affordable or free-of-charge access for their citizens to the various communication resources, notably the internet. These access points should, to the extent possible, have sufficient capacity to provide assistance to users, in libraries, educational institutions, public administrations, post offices or other public places, with special emphasis on rural and underserved areas".

The two-thirds of Pakistan's population living in rural areas is far behind the rest of the world in social and economic development. Although the government tried hard to build an infrastructure to provide ICT facilities to the country's rural community, because of other prohibitive factors everyone in this community will not be able to take benefit from the advantages of these technologies. In this grave situation the establishment of MCTs in rural areas may be a viable option. These MCTs, once established in rural areas, will provide a range of services focused on the needs of rural residents. Farmers will be able to check information on market prices for their products, read weather forecasts and learn about new agricultural technologies while other rural residents will be able to access information as needed. In addition, they will be able to get benefit of telemedicine as well as distance education through MCTs and they can easily communicate with their relatives and other contacts.

MCT study

To ascertain the role and benefits that MCTs could bring to Pakistan a study was conducted to achieve the following objectives:

(1) To assess the situation of the rural population in Pakistan and information facilities available to them, including telecommunications, computers and public libraries.

(2) To document the community information initiatives in terms of objectives, institutional framework, staff, services, use, finance, technology and lessons learned.

(3) To understand challenges and opportunities regarding the establishment of MCTs in rural areas of Pakistan.

(4) To propose a model for the establishment of MCTs in Pakistan in terms of policy formulation, planning, management, funding, building, equipment, technology, services, target groups, marketing and sustainability.

The following methodology was undertaken for situation analysis of Pakistan and model development:

- The related literature was collected through the internet, personal contacts and other sources and reviewed.
- Unstructured interviews were conducted of the selected persons involved in activities of providing information to the rural community in Pakistan. The persons were selected from various sectors such as telecommunications, libraries

and national and local non-governmental organizations (NGOs). Interviews were conducted using e-mails, internet chatting and telephone.

ICTs in Pakistan

During recent years Pakistan has been quick to realize the importance of ICTs in the development process. The government and the people believe that these technologies have tremendous potential for countries like Pakistan. There is a general trend towards ICT education among the young generation. The government is giving incentives for development and export of software and the telecommunications infrastructure is being upgraded to meet the high demand for bandwidth and allied data communication facilities.

Pakistan has made steady progress in expanding telecommunication networks and services in recent years. Pakistan Telecommunication Authority (PTA) was established in 1996 to regulate the telecommunication industry in Pakistan, including matters related to protecting consumers' interest, licensing regime, tariff regulation, type approval of equipment and interconnection arrangements. The PTA has in its jurisdiction internet service providers (ISPs), data operators, cellular phone companies, card pay phones, cable networks and other services falling in the ambit of telecommunication sector. Key features of the present telecommunication infrastructure in Pakistan include the following.

Fixed line telephone

Pakistan Telecommunication Company Limited (PTCL) is the incumbent service provider for provision of fixed line telecommunications. Established as public limited company in 1996, PTCL is 88 percent owned by the Government of Pakistan. It has shown impressive growth in the past five years and manages a well-developed domestic telecommunication infrastructure of over five million access lines served by nearly 3,000 exchanges, a nationwide fiber-optic backbone over 4,500 km long and international communications through sub-marine cable and satellite links (Pakistan Telecommunication Company Limited, 2004). PTCL has installed more than 1.5 million new telephone lines since June 1997. As a result, teledensity (defined as the number of operational telephone lines as a percentage of population), at 2.87 percent, has increased by 6 percent per year. Comparing this figure to the 10 percent teledensity in Asia and the 17 percent teledensity globally shows that Pakistan is at the lower end of the scale. The telecommunication network in Pakistan is almost entirely digital. As a result of a tariff rebalancing programme initiated by the Government in 1997, the prices of long distance and international calls have been significantly reduced in recent years. By expanding facilities in the country, PTCL has shown a record ever profit over Rs23 billion for the financial year closing June 2003 (Pakistan Telecommunication Authority, 2004).

Besides PTCL, there are two organizations created by the government that also provide access services. One is the National Telecommunication Corporation (NTC), which by the end of 2002 provided around 72,000 access lines to the government and defence forces. The other is the Special Communications Organization (SCO), which operates a network of around 92,000 lines in the more remote northern areas, as part of a special development program.

Some five years ago, in order to address the urgency of the shortfall of telecommunication access in the country, the PTA approved a franchise concept. This concept allows private wireless local loop (WLL) operators to collaborate with PTCL's infrastructure for expansion of the payphone network in the country. As a result PTCL signed operations and maintenance (O&M) contracts with four interested parties, namely Telecard, Worldcall, Telips and Pak Datacom. For all four operators no particular areas were required to be covered. However, a general preference was given to rural areas and the operators were required to deploy their WLL payphone services according to the following three tiers: 30 percent of the lines should be deployed in urban areas; 30 percent in sub-urban areas; and 40 percent in the rural areas. Telecard only has rolled out 125,000 lines in the country.

Cellular phone

Cellular usage is growing strongly after the introduction of the Calling Party Pays (CPP) regime in the year 2000. Currently, four operators provide service to about three million cellular subscribers all over the country. Although the number of subscribers has more than tripled in the past two years yet it shows a penetration rate of around 1.4 percent, one of the lowest in the Asia-Pacific region. The PTA will soon issue cellular phone licenses to two more operators. According to conservative estimates, the total number of mobile subscribers will surpass the fixed-line subscribers by the end of 2004. It is also estimated that there is a potential demand of about 25 million cellular subscriptions by 2018 (Pakistan Ministry of Information Technology IT & Telecommunication Division, 2003).

Rural telephony

According to PTCL sources only 2.4 percent villages have telephone facilities. The rural teledensity of Pakistan is only 0.77 percent as compared to urban teledensity of 5.76 percent. Mainly due to the fact that providing copper fixed-line services to these areas can be cumbersome, time consuming and above all is too expensive (approximately Rs15,000 or US$250 per subscriber). Providing telecommunication in the rural areas has been a very important item on the PTA's agenda. PTCL intends to connect 50 percent of Pakistan's villages by December 2004 through use of WLL technology. PTCL has recently issued a tender for commissioning of WLL system for 195,000 customers in rural areas of Pakistan (Pakistan Telecommunication Authority, 2003).

According to the Federal Minister for Information Technology the deregulation policy in the telecommunication sector will have a universal service obligation clause for all the players in the market. A percentage of their revenues will have to go for the development of the telecom sector in rural and less lucrative regions of the country. Not only the PTCL, but also the new entrants will also have to make a contribution towards this spread of telecommunications in the country. To serve the underdeveloped and underserved rural areas the Ministry has recently established a universal service fund that will ensure that the telephone network rollout will be adequately funded. In November 2003, PTCL announced a massive relief package for its rural customers by reducing new telephone connection fee from Rs1,850 to Rs500. The PTA has recently allowed individuals/companies to use mobile phones as public call offices in rural

areas. Moreover, in a recent statement the PTA stated that they "had directed the mobile phone operators to formulate their roll out plans for larger coverage of their services especially in the less affluent and needy areas so that a common man could get benefit from this facility".

Computers

PCs are rapidly becoming a household item in the big cities of Pakistan. Most professionals possess a PC either in their workplaces or in their homes. Currently the number of PCs in Pakistan is believed to be some 700,000 and their number is increasing at about 100,000 per year. In spite of a drastic fall in the prices of computer hardware in recent years it is still too expensive for the vast majority of the rural population in Pakistan due to their low income levels. In rural areas less than 5 percent of schools have computer laboratories as compared to nearly one-fourth of educational institutions in urban areas which have their own computer laboratories.

Internet

ISPs became operational in the country in 1996. By mid-June 2000 the country had 0.1 million internet subscribers and a coverage in only 29 cities. Today more than 200 ISPs provide internet access, which is accessible in more than 1,800 cities and towns (Pakistan Telecommunication Company Limited, 2004). The estimated number of internet users in the country is 3 million. According to recent claims of the PTCL internet access is available to 95 percent of Pakistan's population. Low internet access charges have encouraged internet usage and acceptance by the Pakistani public. To encourage internet use in some small and remote areas, where it is too expensive to establish local services, PTCL charges phone calls to connect with ISPs in the nearest city at local rates instead of long distance rates. This practice has increased the number of cities and areas connected to the internet.

The last four years have seen a mushrooming of internet cafés all across Pakistan, in both urban and rural areas. How many internet cafés exist in Pakistan? There are no central data on this topic because no formal survey was conducted in this regard. According to rough estimates a large number of people are able to access the internet using the thousands of cyber cafés which seem to be present in every neighborhood from large cities to small towns. Cyber cafés and other public internet facilities offer a very cost-effective and convenient way of accessing the internet to the public, the vast majority of which cannot afford to have their own individual internet account with an ISP, because of their low income level which makes owning a computer a luxury. However, the productive usage of internet in Pakistan is quite limited and it is mostly used for messaging, chatting, e-mail, entertainment and pornography (90 percent) and research (10 percent) (Wolcott and Goodman, 2000).

IT policy

The Government of Pakistan launched the first national IT Policy in August 2000. Features of the policy regarding the role of IT in development cover such aspects as:

- Include a compulsory, modern and up-to-date computer literacy module in the matriculation curriculum for high schools.

- Launch a scheme for providing low-priced computers and internet connectivity to universities, colleges and schools through a public-private sector initiative.
- Barriers to the induction of new technologies (e.g. WLL) by the private sector will be removed to ensure the spread of communications to under-served and un-served areas of Pakistan.
- Encourage telecommunication companies and carrier network service providers to develop and upgrade rural telecommunications facilities. The Government is fully committed to the universal service obligation principle and a mechanism for provision thereof has been provided in the telecom sector policy.
- A number of international satellite operators have already begun to provide high-speed internet access. These services should be encouraged to overcome bandwidth limitations, not only in urban areas but also in the rural and suburban areas, for basic internet connectivity.
- Develop new ways to use IT to help solve the most pressing problems of human and economic development/education, health, poverty alleviation, rural development, and care for the environment.
- Elimination of all import duty on computer equipment and accessories (Pakistan Ministry of Science & Technology IT and Telecommunications Division, 2000).

Cable television

Cable television is a growing industry in Pakistan as more and more international television channels are showing there keen interest to enter Pakistan market. In view of government media regulations, which are monitored by the Pakistan Electronic Media Regulatory Authority (PEMRA), most of the existing channels offer digitized and encrypted signals. About 9 million households have television sets out of which there are around 2 million cable television subscribers. There were 900 licensed cable television network operators by 2002. The unbundling of cable television has been partially done as PTCL provides international transmission access to international channels to these cable television operators throughout the country.

Public library system

There is no organized public library system in Pakistan. According to a survey conducted in 1996 there were 302 public libraries mostly located in large cities and towns. The existing public libraries are under the charge of municipal and social bodies. The majority of these libraries are in a very deplorable condition and their holdings are mainly out-of-date fiction books. Only a few are properly staffed and one seldom finds a qualified librarian. The services of these libraries are quite limited and the main sources of income are regular grants from the annual budget of the municipal body and the subscriptions charged to the public (Haider, 1998). During the 1980s, 4,373 box libraries were established in rural areas but their fate is unclear (Khurshid, 2000). The 1998 National Education Policy provides for the establishment of rural public libraries up to the union council level, but no practical step has been taken so far. The literate people in rural areas quench their thirst of information through personal

libraries, private subscription libraries, school/religious school libraries, mosque libraries and shrine libraries.

Community-based information systems

The concept of MCTs is entirely new in Pakistan. Services provided by a typical MCT are available separately to a great extent in urban areas and to some extent in rural areas. For instance, there are internet cafés, public call offices, pay phone shops, fax shops and computer training centers all run on commercial basis.

The only examples of community-based information services in rural areas are three Cyber Community Centers (CCCs) established in 2001. The first such CCC in the country was launched in Gwadar in south-west Balochistan in March 2001, followed by one in Mithi in south-east Sindh, and Usterzai Payan, Kohat in NWFP. These CCCs were set up by the Sustainable Development Networking Program (SNDP) of the IUCN in collaboration with local NGOs (i.e. Baanhn Beli at Mithi, Rural Community Development Council at Gwadar and Al-Asar Academy at Usterzai Payan, Kohat). The purpose of these centers was to serve the local community by providing them the opportunity to access the rich information resources available on the internet (Siochru and Rashid, 2001). The latest information collected about these three CCCs reveals that one center (Usterzai Payan, Kohat) is restricted to the internet and other software training for the students of a community school. The internet facility is not offered to the general public. However, the other two centers are serving the general public, and information about them is summarized below.

The objective of setting up these CCCs was to provide access to information and communication channels that were previously beyond the reach of the poor and disadvantaged communities resident in remote areas of Pakistan. These CCCs were set up by national and international NGOs in collaboration with the most prominent local NGOs. Both centers were opened in computer training centers already working under local NGOs. The idea of CCCs was initiated by the SDNP, which contacted the local NGOs for partnership. SDNP provided training in internet skills and web development, and worked as the ISP.

Both centers have a single technical person each to train users and help them in surfing. In the case of their absence from the center there is no back-up arrangement, and this fact badly affected the centers. The technical persons at both centers who started the centers left the job after some time. Now it is difficult for new staff to run the centers, especially as the new staff have no training from the SDNP.

Both centers were the first internet centers in their respective areas. The services provided at these centers include internet surfing, sending e-mails, assisting to write, send and translate e-mails, and printing e-mails/attached files. Specialized courses on the use of internet were offered against payment at both centers. Mostly young people attended these courses. The centers are open for 12 hours (10.00 a.m. to 10.00 p.m.) for six days a week. In the beginning at the Mithi center, ten to 12 people used to visit, then after two to three months the rate of average users reduced to four to five visitors a day. At the Gwadar center, on average ten to 15 people, mostly form the young population, used to visit during early period. However, the number of daily visitors declined with the passage of time.

Both centers offer internet access at the rate of Rs30 per hour. They also charge for other services. The average monthly income from the Gwadar center is between Rs2,500 and Rs3,000. On the other hand average monthly expenditures are around Rs8,000. Thus the center has been operating under a deficit of Rs5,000 per month which is too much for an NGO working on a not-for-profit basis. The management of the NGO is worried about the sustainability of the center. The problem of financial sustainability is the same for the Mithi center. According to one of the staff of the NGO running the center, they might shut down the center if they do not get immediate financial aid from external sources.

The Gwadar center is connected to the SDNP ISP in Karachi through the Turbat telephone exchange. The Mithi center is connected to an ISP in Hyderabad. The connectivity with ISPs in these areas is not reliable. Some of the frequent disconnection and interruptions were telephone exchange related. This interruption results in additional telephone calls, which frustrates net-surfers. There is an insufficient number of PCs available at both CCCs (three at Gwadar and one at Mithi) and the machines used for internet service are quite old. Therefore, there are hardware problems on frequent basis which result in interruption in the CCCs' services. Unavailability of hardware/software maintenance services in these remote areas also causes service break downs.

A number of lessons have been learned with respect to these CCCs:

- There is lack of awareness in rural community about the benefits of using the internet. The vast majority of CCCs' visitors come for entertainment purposes rather than for educational or research work or to gain knowledge. They do online chatting most of the time. Even the majority of the visitors are not interested in exchanging e-mail messages. However, there are some individuals who have gained a lot of information through the internet about their hobbies and businesses.
- The centers provided job opportunities to computer literate youths, although these are small in number. However, people found the centers a good source for hunting jobs.
- The rates of internet use per hour are too high to be affordable for poor villagers.
- The CCCs failed to provide opportunities for local women to use internet facilities. It is a common and strong perception among the local population that the internet is just an entertainment medium and, therefore, it is not wise for women and children to learn and use it.
- The CCCs have proved successful as a catalyst in improving internet services in remote areas (by attracting commercial cyber cafés), but commercial cyber cafés provide services at cheaper rates and pose a serious threat to the sustainability of CCCs.
- The SDNP model of CCCs is not financially sustainable.

Future initiatives of telecenters

The experience of CCCs established by the SDNP has opened up the idea of the use of such centers in rural development in Pakistan. The Ministry of Information

Technology, with the help of the IUCN, is planning a project for setting up more community telecenters in rural areas.

The Strategy and Plans Wing of PTCL has also drafted a plan to establish tele-info-centers in the semi-urban, rural and remote areas of the country. The aim of this project is to provide "universal access" in rural and remote areas where the majority of people live. The objectives set for this project include to:

- promote access to basic telephone, internet and IT services;
- test the viability of different ideas, services and community solutions;
- demonstrate sustainability of tele-info centers (based on experience of similar concepts);
- evaluate impact of providing access to modern ICTs in rural and remote areas;
- contribute PTCL's bit in rural community development service;
- enhance participation of private sector;
- help to improve community efficiency productivity and business in rural and remote areas; and
- create a chain of economic activity leading to long-term PTCL projection and business development.

The services proposed for telecenters include national/international PCO facility, fax, internet, e-mail, voice mail, word processing, document printing, document scanning, computer hands-on training, photocopying and multi-media. It is proposed that, to start telecenters, existing telegraph office buildings can be used which are already under the custody of PTCL. The maximum number of telegraph offices was 444 in 1998, which is reduced to 324 in July 2003.

Another project, which intends to establish a public telecenter in the remote region of Gilgit in Northern Pakistan, is the Gilgit Internet Service. The project was started in October 1999. Funded by a grant from the International Development Research Center (IDRC), International Center for Integrated Mountain Research (ICIMOD) and the Commission on Science and Technology for Sustainable Development in the South (COMSATS), the project is entitled "Pilot Project for Providing Internet Services in Northern Areas of Pakistan". This project has the objective of establishing internet connectivity in Northern Pakistan, while investigating the technical, cultural, organizational and regulatory challenges of providing internet services in this remote setting. The project focuses on the use of internet services by the local population, local government, and locally operating non-governmental and international organizations. There are now over 115 subscribers to the Gilgit Internet Service, where at the same time, telephone calls remain both unreliable and expensive.

The Gilgit Internet Service remains the only initiative in Pakistan providing connectivity to rural areas of the country. COMSATS, having previous experience running internet services in six major cities in Pakistan, operates and manages the internet service in the Gilgit region, while ICIMOD offers project administration services. Trained local staff operate the VSAT link between the Gilgit Internet Service and the COMSATS service in Islamabad. The Gilgit Internet Service aims to serve over

1,000 internet users. The local region will benefit from the training services offered by the soon to be established Public Internet Center at Gilgit. The Public Internet Center will also offer internet facilities to local businesses, and low-cost access to individuals who cannot afford to purchase computers for home or office use. It is expected that the Gilgit Internet Service will contribute an enabling tool to enhance the educational, training, skills building and socioeconomic activities in the local region.

The wider goal of this pilot project includes investigating and developing skills required for establishing a sustainable public internet service in regions with poor quality or non-existent telecommunications infrastructure. It is hoped that the lessons learned from the Gilgit Internet Service will provide valuable tools for adaptation in other remote regions of the world. Despite its successful operation, the Gilgit Internet Service still faces the challenges of overcoming telecommunications infrastructure and electricity related problems.

As users and services continue to increase, it is expected that the internet service should be able to obtain a sustainable operational base. COMSATS is pursuing SCO, the local telecommunication company, to provide dial up access to the whole northern areas including Skardu, etc., to connect to the Gilgit POP Internet Service under this new scheme.

Challenges and opportunities for MCTs in rural areas of Pakistan

The establishment of MCTs in rural areas of Pakistan will have to face the following challenges:

- Literacy is the lowest in rural areas. Two-thirds of the villagers cannot even write their name in any language. Women who are almost half of the rural population are only 10 percent literate.
- The majority of the rural community in Pakistan is not aware of the services and benefits of new ICTs regarding their needs. The internet is perceived in rural areas as an entertainment medium and youngsters mostly use it to see pornographic sites. Therefore, the elders do not like their women or children to have internet access.
- The cost of setting up the telecommunication infrastructure in rural areas is prohibitively high for operators in this field. They can earn more profit by investing less in densely populated urban areas. Hence, providing telecommunication services to villages is at their least priority.
- Pakistan has now a good level of access to the internet. However, the internet is English-dependent, and in Pakistan, the level of capability in using the English language is sometimes alarming. To be able to use the internet, particularly in rural areas where 99 percent of the population do not know basic English, much more content in national and local languages is needed.
- An unreliable supply of electric power is another hindrance in the provision of ICT-based services. For instance, in Gwadar, electricity is available for only ten hours a day. According to the sources of WAPDA, the largest power supply company in Pakistan, only 58 percent villages have the facility of electricity.

- Various experiments of MCTs carried out in the world show that this idea is not commercially attractive and there are little chances of their sustainability without external aid.
- Volunteers working for rural development are not aware of the use of ICTs in this field.
- There is a lack of political will for the provision of information services. Local governments with a low budget have to provide other basic needs such as education, health, electricity, clean drinking water, etc. Information provision is one of their lowest priorities.

In spite of all challenges mentioned above the following opportunities are available for initiating the idea of MCTs in Pakistan:

- The majority of the poor population of Pakistan lives in villages (39 percent of the rural population as compared to 22 percent of the urban population are below the poverty line). They cannot pay for a telephone facility or PCs. Even if some of them can afford to buy PCs, the maintenance, supplying parts, and training people how to use them are more difficult in the remote areas. In these circumstances the only way to help the rural population to provide access to ICT is the opening of MCTs.
- Awareness at government as well as national and international NGO levels is seen now. The government promotes ICTs through various initiatives such as e-commerce, e-government, IT education, deregulation of telecommunication, etc. The Ministry of Information Technology is already planning to set up such centers in rural areas. International organizations like ITU, UNDP and Unesco are ready to provide financial/technical support for this purpose.
- There are examples of indigenous web resources providing information services to villagers. The examples are TelMedPak (for tele-medicine) and Pakissan (to help agriculturists).
- There is a great potential of providing distance education through MCTs in rural areas. Allama Iqbal Open University (AIOU), the first Open University in Asia, has established over 1,400 study centers throughout the country. 58 percent of its students belong to rural area. The opening of Virtual University is another step in the way of providing distance education through ICTs in Pakistan.
- The new local government system suits the provision of such services at local level. Powers of many federal and provincial departments have been shifted to local governments at district, tehsil and union council levels. There are over 6,000 union councils in the country (a union council represents four or five small villages). Now it is the duty of union councils to open libraries and reading rooms for the public. A department to promote IT is to be set up in each district in accordance with the new local government ordinance. The new Nazims and Naib Nazims (elected administrators of local government (Pakistan. National Reconstruction Bureau, 2001) are educated having at least secondary school certificate. They can understand comparatively easily the need of providing ICT-based services in their respective areas.

- The government-owned PTCL has announced subsidy on telecommunication services in rural areas. It is already working on the provision of WLL technology as an alternative to copper wire infrastructure in rural areas.

Model for the establishment of MCTs in rural areas of Pakistan

In light of the above discussion it is inevitable to set up MCTs in Pakistan to play their effective role in economic and social development of rural population. A model for the establishment of such centers is proposed here. Some international studies and guidebooks on which the theoretical framework of this model is based include Colle and Roman (2003), Community Technology Centers' Network (2003), Latchem and Walker (2001), Qvortrup (2001), and Unesco (2003).

Policy formulation

Although the key implementers of most of the development policies are local bodies yet the job of policy making is in the hands of the Federal Government. The Federal Ministry of Information Technology should take initiative to set up MCTs in rural areas. It may form a task force for this purpose with representatives from the Ministry of Education, Ministry of Local Government and Rural Development, Pakistan Library Association, telecommunication operators in private sector, and national and international NGOs. Technical experts from the field of IT may also be included in this task force.

Planning

It is proposed that the pilot project should be initiated first. After a year or two MCTs can be set up on full scale. The national level task force may invite concerned government departments and user groups to express their views regarding applications and service development. It may organize a meeting with representatives of collaborating organizations to define their needs for services and capacity development, as well as their roles and contributions to the project. Community needs must be assessed before starting a center. Key target groups and types of services to be provided should be decided at planning stage.

Management and control

Experiments with MCTs in other developing countries reveal that the commercial or franchised model has more potential of self-sustainability. The national task force may invite franchisees (national or local) to open MCTs. As these centers have less financial attraction government departments may provide subsidy and other help in the following forms:

- Local government can provide building on subsidized rent.
- Local government can provide special funds for library material that has no commercial attraction.
- National task forces can provide training, technical support and coordination among various organizations for financial aid/subsidy.
- International and national NGOs can provide equipment, as it is the major expenditure of a center in the beginning.

- Telecommunication companies can charge subsidized rates for telephone, fax and internet services.
- The electricity supply company can provide electricity at a subsidized cost.
- Local schools can help in marketing MCT's services.

To safeguard the rights and benefits of the community it is recommended that an advisory committee should be formed for each telecenter. This committee should have representatives from various local government departments, local political workers, local NGOs and users of the center.

Funding

To set up MCTs in rural areas the franchisees should be helped in providing start-up costs fully or partially by public funding or international donor support. The provision of services from various government departments on concession can attract franchisees. Some of the MCTs' services (such as phone, fax, internet, e-mail, etc.) have potential for cost recovery. The local government should provide a regular budget for library material.

Building and equipment

An MCT may be set up in local government office, school, community center, post office, or any private house or shop. The minimum building requirement of a center is two rooms, one for internet, phone, fax and photocopier and the other for training purposes. The second room may also be used for meetings or library reading room. The equipment initially needed for a center may include three to four PCs, a laser printer, a photocopier, a UPS, a scanner, a CD-writer, a laminator, a binder, a telephone set, a facsimile, a television, a video cassette player and an audio cassette player. Software requirements include office applications (word processing, spreadsheets, databases, desktop publishing, presentations), internet browser, anti-virus programs, educational software, recreational software, networking software, web page design and multimedia software.

Technology

WLL may be the best option to provide connectivity to the proposed MCTs in rural areas. In remote and inaccessible areas where WLL is not available satellite communication may be an appropriate and practical solution, but it is not economical. The extra cost should have to be borne by the government. PTCL may provide internet access at the local call charges with no multi-metering.

Services to offer

Regarding services to be offered at an MCT, the development of the center can be divided into two phases depending on its success and needs of the community. Basic services which should be offered during the first phase may include: telephone; sending and receiving fax messages; access to computers; printing; scanning; photocopying; access to internet; sending, receiving and translating e-mail messages; providing meeting space for small groups; access to government forms and information; word processing; training in computer use; binding; showing videos; laminating; lending

library materials and providing reading room. Advanced services to be offered in the second phase may include developing local databases; designing and maintaining web pages; supporting distance education; tourist information; tele-medicine; tele-trading; graphic design; video or still camera hire; employment agency; and online banking.

Targeted user groups

According to the community needs following groups may be targeted as users of an MCT:

- local government functionaries;
- teachers and students;
- health workers;
- farmers;
- small business entrepreneur;
- local NGOs;
- sports clubs; and
- general population.

Promotion and marketing

Telecenter services may be promoted through local advisory committee, local government functionaries, posters, leaflets and brochures. Traditional communication systems within the rural community may be used to promote the center at the outset. These include community meetings, opinion leaders, religious institutions and the school system.

Sustainability

Sustainability is the most important issue in the development of MCTs in rural areas. Networking of telecenters can help in sustainability. Such cooperation may facilitate access to technical support and assistance; common training sessions; and the opportunity to plan for collaborative ventures and projects. To be sustainable, MCTs require to offer services and content that meet the needs of the community. There is little relevant information and knowledge available electronically in a language and format rural people in Pakistan can understand and use. Relevant content needs to be developed and adapted to user-friendly interfaces. The need for cross-sectoral public/private partnership, involving also local actors has already been highlighted.

MCTs as an alternative to rural public libraries

As mentioned above an effective public library system is non-existent in Pakistan's rural areas. People fulfill their information needs through informal sources. The government is always busy in fulfilling other basic needs and fully ignores setting up public libraries. The establishment of self-sustained MCTs can be an alternative to such libraries. As proposed in the model, if MCTs acquire some books, subscribe to some newspapers and magazines, and provide some area for study, these can serve the purpose of a public library. This new form of rural public library will fulfill the information needs of rural dwellers not only through traditional sources (books,

newspapers, magazines, etc.), but also through modern electronic sources (audio-visual material, CD-ROM, databases, internet, etc.). The library function of MCTs is not financially sustainable. For this purpose local governments can provide some support to MCTs instead of setting up independent public libraries. This support can be in the form of building and a regular grant for books and magazines.

Conclusion

In spite of poor economic conditions, Pakistan has achieved, in recent years, a significant advancement in its telecommunication sector. The number of subscribers to fixed-line and cellular phone has increased and there are computer and internet users in large numbers. These facilities concentrate on big cities and rural areas are still far behind in getting the benefits associated with such facilities. There is a dire need to set up community-based facilities for providing information and communication technologies to rural dwellers. Bearing in mind the successes and failures of some international and national initiatives, a financially sustainable model for the establishment of such multipurpose community telecenters can be first pilot tested and then implemented in Pakistan. With some support from local government these MCTs can also serve the purpose of modern rural public libraries and bring them on a level of their urban counterparts.

References

Colle, R.D. and Roman, R. (2003), *Handbook for Telecenter Staffs*, available at: http://ip.cals.cornell.edu/commdev/handbook.cfm (accessed November 25).

Community Technology Centers' Network (2003), *Center Start-up Manual*, CTCNet, Cambridge, MA.

Haider, S.J. (1998), "Public libraries and development planning in Pakistan: a review of past efforts and future needs", *Asian Libraries*, Vol. 7 No. 2, pp. 47-57.

Khurshid, A. (2000), *Planning and Management of Library and Information Services in Pakistan*, Library & Information Services Group, Karachi.

Latchem, C. and Walker, D. (Eds) (2001), *Telecentres: Case Studies and Key Issues*, The Commonwealth of Learning, Vancouver.

Pakistan Ministry of Finance (2003), "Economic survey, 2002-2003", available at: www.finance.gov.pk/survey/home.htm (accessed November 25, 2003).

Pakistan Ministry of Science & Technology IT and Telecommunications Division (2000), *IT Policy and Action Plan*, The Division, Islamabad.

Pakistan Ministry of Information Technology. IT & Telecommunication Division (2003), "Draft mobile cellular sector policy", available at: http://pakistan.gov.pk/itandtelecom-division/informationandservices/draftmobilepolicy24122003.pdf (accessed January 2, 2004).

Pakistan National Reconstruction Bureau (2001), "The SBNP local government ordinance 2001. A comparative analysis", available at: www.nrb.gov.pk/publications/SBNP_Local_Govt_Ordinance_2001.pdf (accessed December 5, 2003).

Pakistan Telecommunication Authority (2003), "Consultation paper on telecommunication in rural areas of Pakistan", available at: www.pta.gov.pk/xml_news/consultation_paper_rural_areas.pdf (accessed November 25, 2003).

Pakistan Telecommunication Authority (2004), "Telecom status report 2002-2003", available at: www.pta.gov.pk/publications/telecom_status_report_03.zip (accessed May 1, 2004).

Pakistan Telecommunication Company Limited (2004), "Monthly review", available at: www.ptcl.com.pk (accessed May 1).

Qvortrup, L. (2001), "A means to social, cultural and economic development of rural communities and low-income urban settlements: impact of community teleservices centres (CTSCs) on rural development", available at: www.itu.int/ITU-D/univ_access/casestudies/qvortrup.html (accessed November 25, 2003).

Siochru, S.O. and Rashid, R. (2001), "Sustainable Development Networking Programme, Pakistan, End of the project evaluation, final report", available at: ww.sdnp.undp.org/rc/forums/mgr/sdnpmgrs/pdf00002.pdf (accessed December 1, 2003).

Unesco (2003), "Ten steps for establishing a sustainable multipurpose community telecentre", available at: www.unescobkk.org/ips/ebooks/documents/tensteps/index.htm (accessed November 20).

Wolcott, P. and Goodman, S. (2000), "The internet in Turkey and Pakistan: a comparative analysis", available at: http://mosaic.unomaha.edu/TurkPak_2000.pdf (accessed November 25, 2003).

World Summit on the Information Society (2003), "Plan of action", available at: www.itu.int/dms_pub/itu-s/md/03/wsis/doc/S03-WSIS-DOC-0005!!PDF-E.pdf (accessed December 1).

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