

Crush The Poverty By Information And Communication Technology

Khizer Hayat Khuhawar, Zeng Jianqiu, Samo Farkhunda, Yuan Ye

Abstract: This paper discusses the role of information and communications technologies (ICTs) to reduce the poverty in rural areas of Islamic Republic of Pakistan. Pakistan is now on the way of development and ICT is considered as a magic tool which can boost the economic growth further enhanced the Socio-Economic development. In this paper, poverty profile along with its root cause and socio-economic condition will be analyzed. Finally, ICTs based model is proposed for rural areas which can promote economic growth through empowerment and opportunity so as to reduce the poverty level across rural areas of the country. By the implementation of proposed ICT based model, the rural sector could enjoy great advantages thus to improve their living standard.

Key Words: Information and Communication Technologies (ICTs), Poverty, Economic growth, rural community.

1. Introduction

Information is power and power is information, without information there cannot be growth. ICTs are considered as a powerful tool of technologies and resources to generate, disseminate, hoard and manage the information. Knowledge and information are the basic sources of development for economic growth in the poor society ^[1]. The most topical findings are that the ICTs play an important role to boost economic growth and to reduce poverty. All kind of technologies which facilitate the communication, data processing and electronically broadcast the information using radio, TV, Internet and cellular phones are included in ICT ^[2]. In the industries, ICTs has a significant influence towards cost effectiveness, competitiveness and productivity, which is a great advantage for developing countries to improve their economy. Poverty can be reduced by providing direct access to the health, education and all government services to the common people using ICT ^[3]. ICTs are not magical cure for poverty itself; it could be only when it is used by proper way and at the right time. Many developing countries remain largely poor because they do not contribute actively in modern technologies therefore industrial revolution bypass them ^[4]. Due to rapid increase in population and lack of knowledge, poverty has great influence on living conditions of the rural poor of Pakistan.

The limited resources and large family sizes are the main causes of poverty. Majority of children do not have basic education facility therefore their parents engage them in labor activities. Ultimately this situation falls in the child labor on one side and increase in the illiteracy on other side ^[5]. Poverty level in Pakistan has been increasing very rapidly and every day it is multiplying ^[6]. Majority of people depends on agriculture but the situation of agriculture is deteriorated in the past few decades because of corruption and mismanagement in water distribution. A major finding showed that the agriculture growth rate is less than one percent per year and negatively affect the rural households' benefit. The poverty is significantly increased because of shocks in agriculture, along with decline in non-farm employment opportunities. Poverty as an unfinished agenda for the 3rd world countries like Pakistan was presented in ^[7]. Due to bad situation of law and order and tribal disputes make the poverty level even much worsen in rural areas, therefore, they do not have access to education and health facilities. Furthermore, it is also revealed that the earnings of the potential families are reduced due to the people's vulnerability to natural disasters and uncertainties. A link between ICT and poverty reduction has been reported in ^[8], where implementation problems of ICT centers (telemedicine) were addressed. Telemedicine are assumed to be a revolutionary technology, as it can affect the life of poor citizens to great extent. Overall findings suggested that the main problems in implementing Telemedicine are connectivity, unavailability of equipment, unavailability of trained personnel, lack of education and recurring cost. A successful telemedicine system could be established, if such issues were dealt properly. New technologies utilization for poverty alleviation has been focused in ^[9]. The use of new technology in alleviating poverty can only be successful if people are convinced of its value and if it is easily accessible, user-friendly and affordable. In this paper, poverty level along its root cause is analyzed in detail. Socio-economic growth of Pakistan is discussed. Current policies of ICT with results are reviewed. Poverty reduction will be examined in the light of current ICT policies. Finally, an ICT based model is proposed for rural areas to reduce the poverty. The rest of paper is organized as follows: Section-2 covers Poverty profile and social-economic status of Pakistan. Section-3 explains Causes of Poverty in Pakistan in detail. Section-4 presents proposed model based on ICT for poverty reduction. Section-5 concludes the paper.

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2. Poverty profile and social-economic status of Pakistan

larger than urban population across the country which is showed in table-2^[14].

2.1 Trends of poverty

Poverty is the result of economic, political and social processes that interact with each other in such a way to further aggravate the deprived poor living. Pakistan today faces the challenges of rising poverty, with almost one-third of its population classified as poor. This translates into nearly 46 million people currently living below the international poverty line of \$1 a day. The poor are not only deprived of income and resources, but they also lack basic facilities like education, health and clean drinking water. Concern for human development has not been enough of priority^[11]. Table-1 shows the poverty incidence profile over last seven years.

Table1- Incidence of Poverty^[12]

| Year | Impact of Food Inflation on Poverty | |
|---------|-------------------------------------|-------------------------|
| | Head Count Ratio (%) | Number of poor Millions |
| 2005-06 | 28.68 | 45.74 |
| 2006-07 | 29.47 | 48.12 |
| 2007-08 | 33.81 | 56.55 |
| 2008-09 | 36.11 | 61.84 |
| 2009-10 | 38.41 | 67.35 |
| 2010-11 | 40.71 | 73.10 |
| 2011-12 | 43.01 | 79.08 |

2.2 Understanding Rural Poverty

Averagely about 80% to 90% in and Africa, the majority of the population lives in rural areas, therefore all target poverty groups are located in the rural areas^[10]. Pakistan also has more rural areas than urban, and rural areas are observed higher poverty and worse human development indicators than urban counterpart^[13]. The rural population is

Table-2: Rural and Urban Population (Millions)

| Year | Rural Population | Urban Population |
|------|------------------|------------------|
| 2008 | 107.67 | 85.74 |
| 2009 | 109.07 | 60.67 |
| 2010 | 110.46 | 63.05 |
| 2011 | 111.82 | 65.28 |
| 2012 | 113.16 | 67.55 |
| 2013 | 114.48 | 69.87 |

The extent of poverty also varies among rural areas within the country, for example, arid and desert zones or steep hill-slope areas are facing the worst poverty level. Such areas are often isolated in every sense. Non-farm employment opportunities are few and the demand for labor tends to be highly seasonal. Rural areas mostly depend on agriculture and therefore overall economic growth depends on the development of rural community. Agriculture currently and in future will remain vital to well-being economy of rural sector and in many parts it will represent economic activity as its main option. In Pakistan, directly or indirectly more than 72% of population depends upon agriculture but the heavy pressure on agriculture land and extreme shortage of water decrease the productivity of land. Agriculture should meet the full demands of the country but it failed to fulfill the needs of time, as now it cannot provide the employment to the rising population which results in poverty. There is a very low production of small farmers which is enough for them. Due to corruption, mismanagement and maladministration, the progress of agriculture sector is not as satisfactory as it could have been. As an agriculture country, the share of agriculture in country GDP growth is very low. This situation is clearly depicted in the form of low agriculture share in annual GDP growth rate in Figure-1^[15].

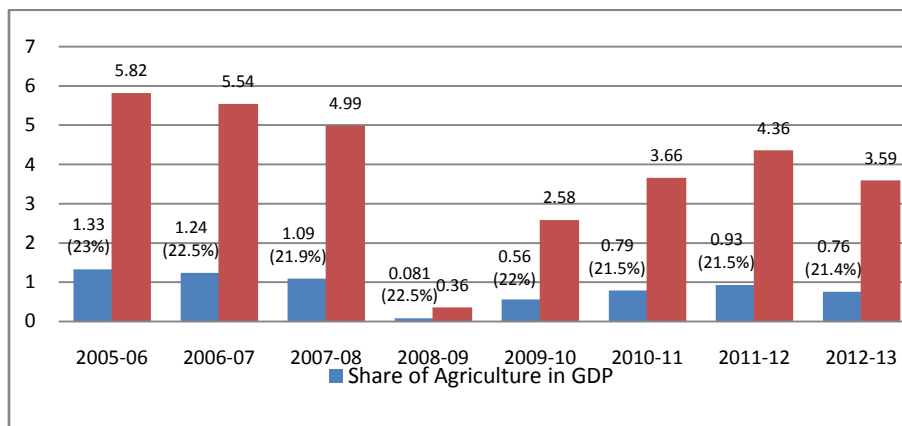


Figure-1 Agriculture share in GDP growth rate

The populations of rural sector are considered as less educated and less healthy and they also suffer from limited opportunities for employment. Since in low-income rural community, a significant share of economic activity is

devoted for the production of basic commodities, especially staple foods, for which the income elasticity of demand is low. To reduce the poverty it needs either a shift of actions to production of various other goods and different services

with higher income elasticities of demand, or a major increase in productivity, or both.

2.3 Socio-Economic Status

Pakistan is a developing country and faces all social problems that developing countries face along with political instability that aggravates the problems further. Currently Pakistan has many challenges to face in the form of social and economic problems. The negligence of the government in the past has resulted in various social and political issues, therefore small problems become monster. Currently, the country is passing through a critical state where law and order situation is the main challenge. Terrorism and internal security threats have claimed many lives and pose great challenges. All the measures taken by the government to improve the situation sees ineffective. Illiteracy is also another problem of Pakistan. The education head in budget is hopelessly low because of increased defense cost. The literacy rate of Pakistan is claimed to be 56% and it also includes those people who can read and write their name in national language. Corruption is another huge social problem. Various large government run organizations are frequently defaults and bailout packages have to be announced to keep them running. Transparency International recently published its report in which Pakistan's score is 27th among the most corrupt nations of the world [16]. Unemployment is also regarded as a major social problem. Most of the population in Pakistan's consists of youth who are unemployed. Child labor is widespread in Pakistan which further creates social and economical problems.

3 Causes of Poverty in Pakistan

3.1 High population growth

Due to rapid growth in population per capital income of Pakistan has been reduced and the living standard is also fallen down very much. Overpopulated country always faces many problems and large amount of the income uses on the consumption and very small amount of income is

saved for the development of the country [17-19]. Figure-2 shows the annual population growth rate of Pakistan.

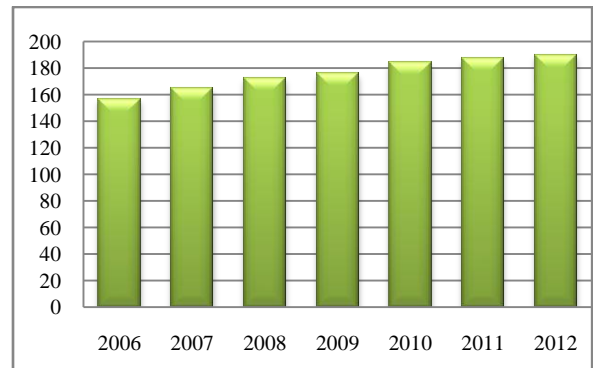


Figure-2 Population Growth rate

3.2 Low GDP with high Inflation and Unemployment

Gross domestic product (GDP) the major and important economic indicator of the country represent business activities and also country's productivity level supports by it. The inflation rate of Pakistan is very high nowadays; when inflation rate crosses the logical limits that will create a negative effect on the rate of GDP growth. It reduces the value of currency resulting in uncertainty of value of profit & loss of borrowers, lenders, buyers and sellers. Over limit inflation deliver harmful effects accordingly and decline economic growth and investment in the country. High cost imposes on economies and societies due to inflation and affect the poor extremely. Inflation and unemployment have always negative relationship. Unemployment increases because of high inflation and vice versa. Because of high inflation, the costs of essential food items are very high, even it is very difficult for poor peoples to make arrangement of two times meal for them. This is the main and important reason of poverty in rural areas of Pakistan. Usually in Pakistan there is no proper job opportunities for peoples therefore they always remain poor [20-21]. The relation between GDP, unemployment and inflation is shown by Figure-3.

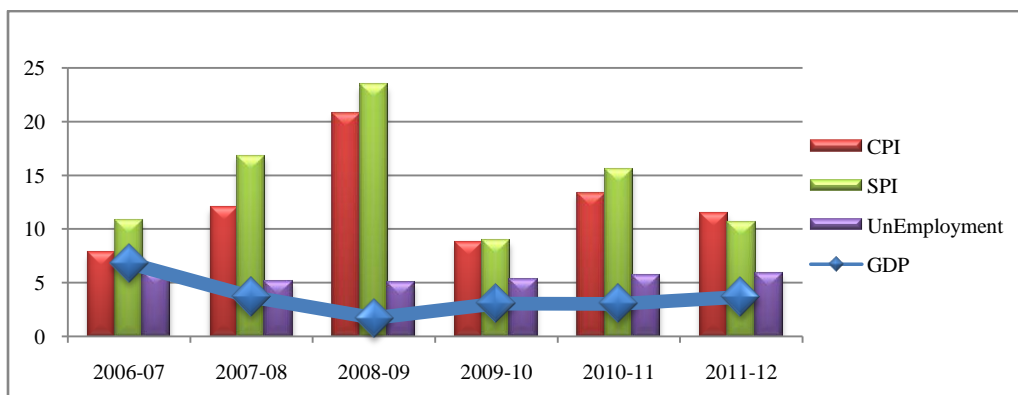


Figure-3 GDP, Unemployment and Inflation

3.3 Flood 2010-2011

Poverty sharply increases due to 2010 and 2011 floods in Pakistan. The socio-economic and educational problems constantly cover the flood affected areas and the great

losses in basic infrastructures also push the peoples in extreme poverty. Table-3 shows the damages and reconstruction costs by sectors [22].

Table-3 Flood Damages and Reconstruction Costs by Sectors

| Sectors | Damages | | Reconstruction Cost | |
|--|----------------|--------------|---------------------|--------------|
| | Rs. Million | US\$ Million | Rs. Million | US\$ Million |
| Irrigation and Flood Management | 4,8763 | 55 | 9,526 | 109.5 |
| Housing | 85,465 | 982.4 | 91,510 | 1051.8 |
| Agriculture, Livestock & Fisheries | 160,107 | 1840 | 26,590 | 305.6 |
| Transport & Communication | 26,468 | 304 | 33,902 | 388 |
| Energy | 1,240 | 14 | 292 | 3.4 |
| Social & Gender | 44 | 1 | 65 | 0.7 |
| Financial, Private Sector & Industries | 27,254 | 313 | 8,178 | 94 |
| Education | 12,014 | 138.1 | 22,589 | 259.7 |
| Health | 1,258 | 14 | 864 | 9.9 |
| Water Supply & Sanitation | 1,204 | 14 | 1,900 | 22 |
| Governance | 1,953 | 22 | 4,768 | 54.8 |
| Environment | 2,763 | 32 | 2,874 | 33 |
| Disaster Risk Management | - | - | 1,827 | 21 |
| Social Protection | - | - | 34,126 | 392.3 |
| Total | 324,533 | 3730 | 239,011 | 2747 |

3.4 Corruption in Society

Corruption is basic problem and a great hurdle in the development of Pakistan. Corruption frequently conjures up descriptions of persons getting rich but it is a great fact that the corruption always throw the people in poverty and poverty pushes up the corruption. Corruption causes the great problems such as weakness in social, economic and political institutions. According to Transparency International Pakistan (TIP), corruption in Pakistan manifests itself in different forms, including extensive fiscal and higher level political corruption, misuse of power and favoritism. There is a highest level of corruption found in development mega projects, procurements and bank loans.

The loss to the national exchequer estimated over 200 billion rupees per annum^[23].

3.5 Backwardness of Agriculture

In Pakistan, directly or indirectly more than 72% of population depends upon agriculture but the heavy pressure on the agriculture land and extreme shortage of water decreased productivity of land. Agriculture should meet the full demands of the country but it is failed to fulfill the needs of time, as now it cannot provide the employment to the rising population, which results in poverty. There is a very low production of small farmers which is enough for them. Figure-4 shows the growth rate of agriculture sector in the past couple of decades^[24].

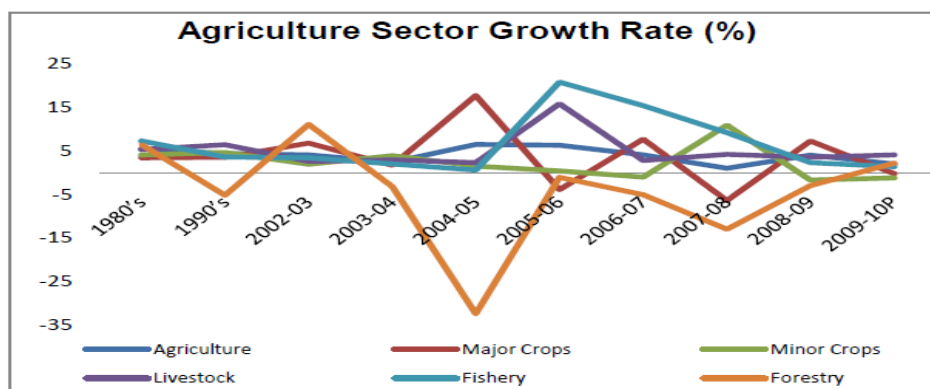


Figure-4 growth rate of agriculture sector

4 Proposed ICT based Model

Pakistan being an agricultural country, majority of its population is living in the rural areas and mostly depends on agriculture; therefore overall economic growth mostly depends on the development of the rural sector. In view of the current mentioned situation, an ICT based model is proposed in the form of deployment of ICT-centers in rural areas. The main objective of proposed model is to

provide the direct access of ICT to rural communities so as to increase their abilities for achieving more resources of income. The model will provide fairness of opportunities and improvement in rural communities by accessible information and services. The deployment of ICT based rural community telecenters integrates the rural community with new technologies and leads them to the creation of opportunities for intensifying their agricultural products, in

this way to reduce the poor vulnerabilities. Besides all assessable information, a motivation is created for the rural community to access the ICT based centers and eliminate factors which create their fear from technology. The model consists of ICT-Rural Development Department (ICT-RDD),

Rural Community Centre (RCC) which is further divided into ICT-Training Centre, RKM, Television (T.V) and Radio. The Technical and Financial support Department will provide the financial and technical support to the RCC through the ICT-RDD and when required it has direct access also.

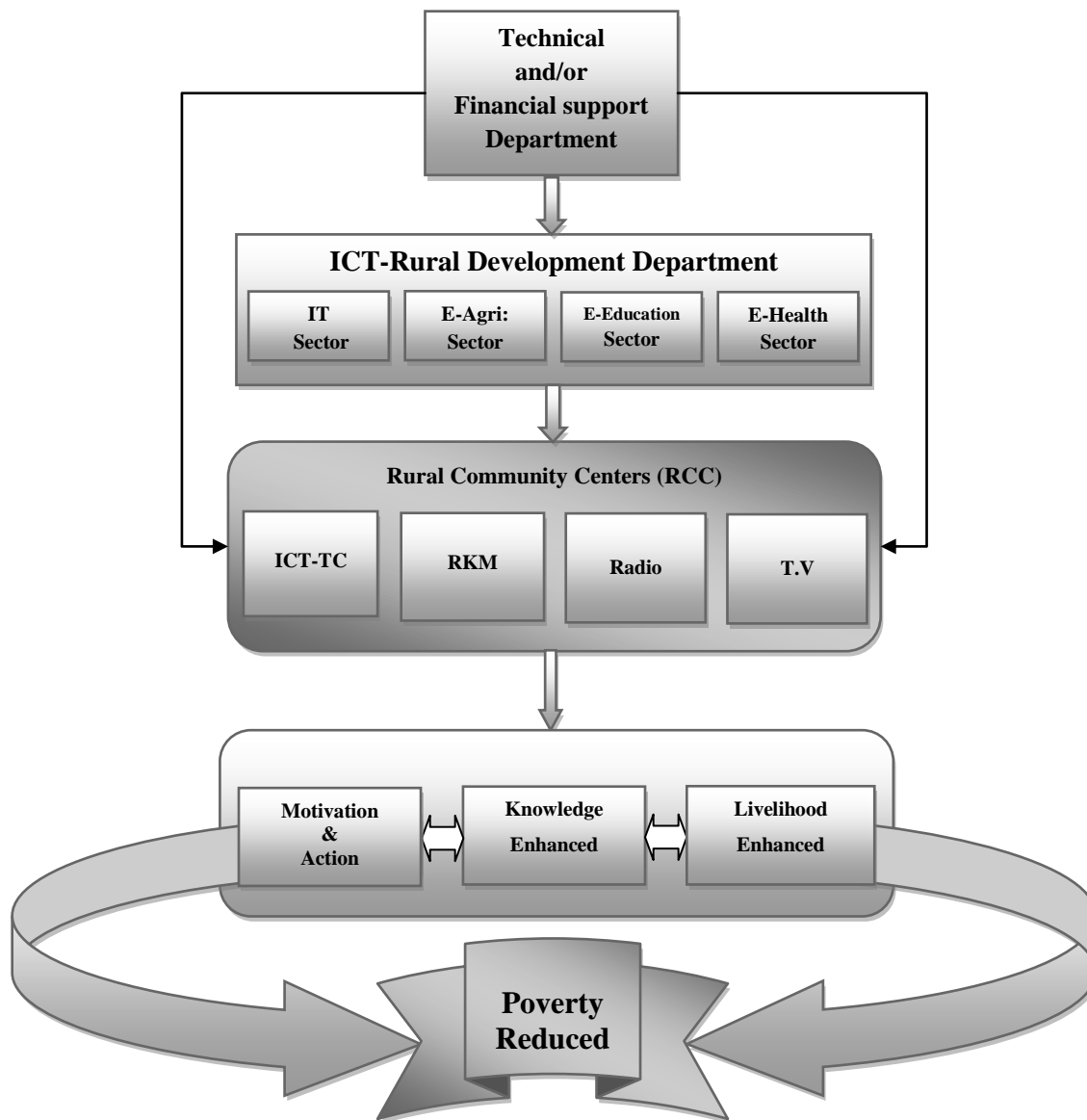


Figure-5 Proposed ICT based Model

4.1 ICT-Rural Development Department (ICT-RDD)

The main objective of this department is to collect the information about health, agriculture, education and IT departments. ICT instructors in rural community centers will also be trained for the latest update by this department. The main purpose of RDD is to provide awareness to rural Communities who needs more care and attention.

4.2 Rural Community Centre (RCC)

This is a very important component which consists of ICT-Training Center (ICT-TC), Rural Kiosk Machine (RKM), TV and radio. RKM will be placed in RCC which facilities the rural communities for 24 hours. ICT instructors will be

responsible to train the rural peoples about RKM usage and how they can retrieve information from the RKM directly in their own languages.

4.2.1 ICT-Training Centre (ICT-TC)

The department of ICT-RDD will establish ICT-Training Center in every village. Therefore, it will provide basic education about the usage of RKM for each faction of rural sector. These centers will help to educate common people to retrieve required information on almost every rural aspect from the RKM.

4.2.2 Rural Kiosk Machine (RKM)

To give the benefits of Information Technology to the doorsteps of farmers, Rural Kiosk Machine launches. The specific usage of this machine is to provide information on agriculture, agro-chemicals and agro related issues. The main interface of RKM is in English, but it can be a multilingual interface to help the rural peoples who speak different national and regional languages like Sindhi, Punjabi, Balochi, Urdu, Pashto and Brahvi. The user friendly interface in RKM in local language consists of all required information such as audio/video and text information, maps and landmarks for total crops, knowledge about fertilizers, seed and seeding, land preparation, plant protection, irrigation practices, poultry farming, wood cutting, dairy, bee and fish farming, handy crafts, fruit gardens, livestock, market prices, flood and weather forecast, health, education and employment.

4.2.3 Television (T.V) and Radio

The television and radio play a vital role in a nation's life as they affect the ideas and behaviors of all sorts of people. T.V and radio are a very cheap and easily accessible to everyone therefore usually majority of people in all villages watch T.V and listen to the radio. The T.V and radio present various kinds of informative and entertainment programs. Educational programs of different kinds are also presented on the T.V and radio. There are special programs on the T.V and radio for the farmers and workers. In these programs, policies of the government in different fields of national life like health, education, industry, agriculture and science are discussed.

4.3 Needs of ICT and its relevant Services

It is necessary to introduce modern technologies and updated information in telecenters for the betterment of rural communities. It will not only help but also motivate the rural communities to efficiently utilize the information from the telecentres when required. All the community telecentres will be connected with the Internet and equipped with two computers, printers, Rural Kiosk Machine (RKM), Fax Machine, VCR, Television, telephone and various printed materials that are free of charge. Every telecentres will be connected to all other tele-centres of region and update through secured web sites.

4.4 Training and Capacity Building

Proper training is considered as a key for the success of any system. After the implementation of our proposed system, staff in the rural community centers will be trained twice a year. The training modules include Telecenter operation, Web or Internet search, Data management, Health and safety and the Modern agriculture techniques. It is also a naked fact that the People in rural areas are usually uneducated; therefore they are incapable of using the computers and RKM. In this case the school based telecenters will have a great advantage, because the staff and the students can easily be trained and they will help to translate the useful/required information to the farmers, common villagers and their families. The role of students, teachers and the staff of rural community centers is vital in bridging information with the common villagers and farmers in interpreting such information to help overcome their fear to use of modern technologies.

4.5 Access to capital assets

Despite the accessibility of information, insufficient access to other sources of assets has stalled many farmers from taking action such as adapting the modern technologies and new lively hood strategies or intensifying the agricultural production. Furthermore it is also fact that there are limited small loan facilities for the rural communities. Such situation can be harmful for the agricultural productions.

5 Conclusion

This paper has endeavored to increase the knowledge and understanding of ICTs as a tool to crush the poverty. The research findings show that due to lack of information, communication and backwardness of agriculture, the rural society is suffering from multi-dimensional problems. Poverty rate is significantly enormous as compare to urban areas. There is a need to strengthen the deployment of information infrastructure, therefore to reach the poorest and remotest areas through better education facilities. Upon the findings, an ICT based model is proposed which can used to significantly improve the education, commerce, social, cultural and economic life of the poor peoples of Pakistan especially in rural areas. The proposed model will be most beneficial if it comes with access to other livelihood resources and assets such as financial credit, health, education, electrification, roads and other basic services. It can improve the poor living standards, sustain their escape from poverty. Its implementation in the form of the rural kiosk machine will change the lifestyles of the rural community in a short period of time.

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