

## Information Technology in Rural India

Y. Srinivas<sup>1</sup>, N. Venkatanarayana<sup>2</sup>, A. Sreeram<sup>3</sup>, J. Vijayasekhar<sup>4</sup>,  
G. Yugandhar<sup>5</sup>, M. Rathan Reddy<sup>5</sup>,

<sup>1</sup>Department of Information Technology, GITAM University, Hyderabad

<sup>2</sup>Department of Mathematics, Dr. B. R. Ambedkar Open University, Hyderabad

<sup>3</sup>Hyderabad Business School, GITAM University, Hyderabad

<sup>4</sup>Department of Mathematics, GITAM University, Hyderabad

<sup>5</sup>Department of Computer Science & Engineering, GITAM University, Hyderabad, India

**ABSTRACT:** Communication is one of the major components and driving force for the development of rural areas in India. Communication can be done in many ways among them conventionally communication includes electronic media, human communication and in the present days Information technology (IT). Villagers also have their own information needs. They need to know about their village, their districts, natural resources around them, about seasons and monsoons, about market rates of different commodities and about government schemes. They also need to know how much money is being allocated for rural development in their area and how much is being spent. And all these so-called bits of information are related intensely to their lives and livelihood. A connected PC is an effective tool to do all this and much more.

Technological changes further compounded the direction of rural development as Information and communication technology (ICT). It has led to indiscriminate applications and use of ICT in every aspect of information dissemination, management and governance of development. Apart from the development, the introduction of communication in the educational process for open and distance learning is seen as a step towards improving the quality of education and bridging the social and educational gap.

**Keywords:** Rural Development, ICT.

### I. INTRODUCTION

Information technology has become the buzzword in India these days. One hears about it everywhere from stock markets to government corridors across the country. Everybody wants to do something connected with IT be it a school student or a politician. They are looking at IT as the ultimate panacea. The ever-growing media attention on success stories are fuelling this appetite for IT. And within this craze for IT, the focus is on the internet or the World Wide Web. Generally, there is an IT friendly atmosphere in the country. Information Technology is increasingly moving to the core of national competitiveness strategies around the world. Information Technology has given enormous power to individuals with unprecedented access to information and knowledge with important consequences in terms of providing education and access to markets of doing business and social interactions among others. Computers can only provide information, transmit it from one place to another and with the advent of the internet, make communication instant. Approximately 70% of Indian population lives in rural areas. Today rural development is essential for the development of Indian Economy. The role of Information Technology has increased from providing only the Networks to set-up the basis of updated technological programs in rural areas. The rural market of India is showing an impressive growth largely due to changing life style patterns, better communication network and rapidly changing demand structure of consumers of rural area.

### II. IMPLEMENTATION OF IT IN RURAL AREAS BY INDIAN GOVT

Fortunately, India took to IT early compared to many other developing countries. The nationwide network of computers set up by the National Informatics Centre took the PC to every district in the country, making government level interaction and communication faster for planners. The internet has now given us an opportunity to take the PC to every village. It has a definite role to play in rural education, health and agriculture. In the Indian situation, a PC need not be a personal computer. It can be a community computer. In the day time, it can be used to educate children at primary and middle level in the village school. In the evening,

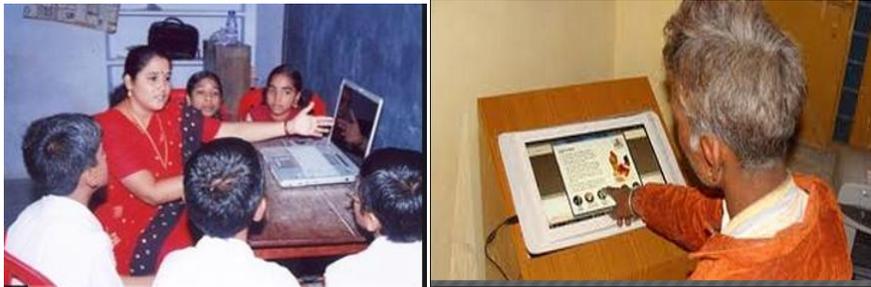
the community computer can turn into a "cyber dhaba" for villagers – where they can access web-sites of their choice and get information that they can use.

### III. IT IN RURAL SECTOR

In rural sector in underdeveloped countries information Technology include the following namely Education and Health Care.

#### Education

- Affordable high quality education in rural areas.
- Confidence, speaking flawless English, computer literature students.
- Increased educational awareness in rural societies.
- Estimated growth in education in today is 23.4% and it can be increased to 68.3%



#### Health Care

- Health care is yet another area where IT can play a major role in rural areas.
- Health care facilities was not good between 1950s and 1980s
- Now Information Technology has improved care, primarily through more timely diagnosis and intervention, reduction of medical errors, and better communication with the care team.
- Doctor or the paramedic staff at the local PHC or sub-PHC can access latest information about health schemes and seek advice from specialists about diseases or ailments they cannot diagnose or treat



### IV. ICT IN RURAL DEVELOPMENT

ICTs can be broadly defined as the set of activities that facilitate the capture, storage, processing, transmission and display of information by electronic means. ICTs offer remarkable opportunities for the alleviation of poverty and employment generation. ICTs enhance the opportunities of rural communities by

- Improving their access to market information and lower transaction costs (for poor farmers and traders);
- Increasing efficiency, competitiveness and market access for firms in developing countries.
- Enhancing the ability of developing countries to participate in the global economy and to exploit their comparative advantage in factor costs (particularly skilled labour).
- Health and
- Education.

Furthermore, ICTs promote greater transparency and speed up the decision-making processes of governments, and thus empower rural communities by expanding their use of government services and reduce risks by widening their access to micro-finance. However, barriers to access, high costs and minimal human resources often prevent those living in poverty from reaping the benefits of ICTs. When the private and civil sectors work together as partners, the benefits of ICTs can be greatly enhanced, returns to the community can be improved, and profits can be increased.

## V. FACTORS PREVENTING RURAL COMMUNITIES FROM REAPING THE BENEFITS OF ICTS

There are a number of important factors preventing rural communities in developing countries from reaping the benefits of ICTs. Without developing access models that can address these factors, the rural masses will be left far behind urban dwellers, who are closer to digital opportunities. Constraints include:

- Lack of awareness about the benefits of ICTs – despite the growing numbers of people who own a computer and have Internet access, most people in developing countries have little opportunity to connect to the Internet, and therefore are unaware of the socio-economic benefits and stimulus that ICTs can bring to their lives. Because of the absence of demonstration projects in some countries, very limited information is available to assess and to advocate the impact of ICTs on development.
- Lack of access facilities – access facilities include computers and connectivity in rural areas. The cost of computers is still beyond the purchasing power of the majority of individuals in developing countries. The Internet is often far too expensive to be accessible to ordinary citizens and most public service institutions. It is often available only in urban centers, where most Internet service providers (ISPs) have their market.
- Language barriers in using the Internet – these prevent people from familiarizing themselves with the benefits of Internet-based information resources, which invariably require an ability to understand international languages, especially English. As a result, most people in developing countries cannot read and understand most of the Internet content. Another factor is the high illiteracy rate among rural people.
- Lack of local language information products– a lack of suitable information products tailored to the needs and assimilation capacities of rural people in developing countries. In order to better adjust their investment decisions, people need updated information on market prices, new agricultural technologies and methods to raise the quality of their products, adapt to changing climatic conditions or demands of agricultural markets.
- Non-availability of government information online – most countries do not have pro-poor ICT policies and plans to reorient relevant government institutes as electronic service providers to boost rural development.
- Lack of motivation to use information over the Internet – despite connectivity, people will not use ICTs unless they are motivated to do so. The prevailing modality of Internet access requires a certain level of competence from the user that many individuals in developing countries do not have.

Rural development programmes comprises the following:

1. Provision of basic infrastructure facilities in rural areas i.e., schools, roads, drinking water, electrification, etc.
2. Improving agricultural productivity in rural areas.
3. Implementing schemes for the promotion of rural industry, increasing agricultural productivity, rural employment, etc.

## VI. E-LEARNING TECHNOLOGIES FOR RURAL INDIA

Computer based training and video based training have been very common for several decades in software industry. Specific software applications have been built and computer based training has been developed for them using easy to use authoring tools.

The student based in rural India will be able to access the content all over the world by using Internet. They can access various e- books and digital libraries from various well-known universities like Stanford, Harvard, etc. Internet will also permit virtual laboratories by which students using laboratory instruments connected to the advanced internet will be able to conduct a laboratory experiment remotely.

## VII. NATURAL LANGUAGE INTERFACES

Natural language technology which could be of great use for e-learning. This is a way by which humans can communicate with the machine in a language that is natural to them. Natural language interfaces along with the touch screen technology and voice enabled inputs could be a way by which the National Literacy mission could be achieved through a process of parallel learning and the cycle of literacy followed by computer literacy and usage can be broken.

Ministry of Information Technology is already in several projects such as Bharat Bhasha Kosh, web learning system in Indian languages, Speech synthesis system.

## VIII. IT-ENABLED SERVICES IN RURAL INDIA

### A. e-Sagu

e-Sagu (*Sagu* in Telugu means *cultivation*) is a system which provides Agriculture experts (Scientist's) advice to remote farmers through internet. It was developed at International Institute of Information Technology (IIIT), Hyderabad under supervision of computer science Prof. P. K. Reddy. Reddy realized that the farmers in

rural areas are facing problems and low yields because of non-availability of timely expert advice. He noted that agriculture expertise and knowledge is available in India but there is gap in dissemination of expert advice to the farmers. By using Web Technology and database concepts Reddy's team developed an agricultural expert advice dissemination system. Using it farmers now get quick (about 24 hours or one day), timely and personalized expert advice (consultancy services). This model is very cost effective, scalable, replicable and sufficiently efficient.



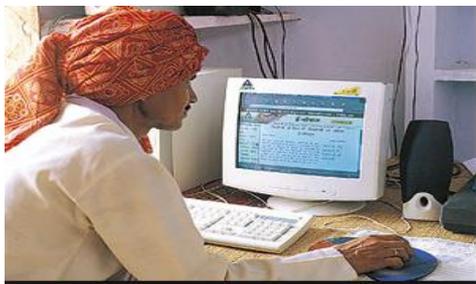
### B. Gyandoot

In year 2000, *Gyandoot* (*Gyandoot* in Hindi means Purveyor of knowledge) intranet based information and service delivery project was taken up by Government in Dhar district of Madhya Pradesh in Central India. The network is Govt. owned. This intranet connect 34 rural cyber cafes kiosks called "*Soochanalayas*", each giving service to 10 Gram Panchayats (local government body) and in total serving 30000 populations. Services planned through *gyandoot* are commodity/*mandi* (local market) prices, issuing domicile/caste/income certificate, land holders Land rights certificate and loan pass book.



### C. e-Chaupal

e-Chaupal (*Chaupal* in Hindi means *A gathering place*) is an initiative taken up by one of the India's large corporations ITC's International Business Division to give farmers the best price of their agricultural produce by eliminating role of middlemen using a set of Information and Communication Technologies (ICT). *Echaupals* are totally owned and set up by ITC. Typical e-*Chaupal* kiosk consists of a Computer and Internet connection via telephone line or VSAT link.



## IX. IMPROVING ACCESS TO MICROFINANCE: SMART CARDS

Microfinance is an important tool for poor people to reduce, mitigate and cope with risk. Computerization, Smart Cards, and software systems providing loan tracking, financial projections and branch management information can reduce costs and help microfinance institutions reach clients more efficiently.

Smart Cards with an embedded microchip containing information on clients' credit histories are helping SKS, a microfinance institution operating in the Medak district of Andhra Pradesh to reduce transaction costs. One of the main problems faced by SKS, which follows the peer-lending model developed by the Grameen Bank, is the high cost of service delivery to the poor. All cash transactions take place at village group

meetings and each transaction takes about 90 seconds per person. Much time is spent not only on paperwork but also discussing terms and conditions and counting coins. Office computerization alone would not bring much time savings because staff would have more free time during the day, but not in the mornings and evenings when people in villages are available for meetings.

Smart Cards have been identified as a solution to the high cost of delivery, because they can lead to gains in efficiency, eliminating paperwork, reducing errors, fraud and meeting time. Potential savings in operations are estimated to be around 18 percent. Once all of SKS operations are conducted with handheld computers, a read-only device will be left in each village for clients to check the information stored on the Smart Cards. Microfinance projects like SKS enable poor people and their micro businesses to gain broader access to financial services.

## **X. IMPROVING SOCIO-ECONOMIC**

One of the key components of improving socio-economic status of people in villages is to ensure that their products find right kind of markets and reach these markets in minimum time without number of middle men involved in it. The reach of IT in rural areas will provide unique opportunities to producers of rural products, agriculture/agro-processing products, rural handicrafts etc. to have direct access to markets. Internet will enable advertising of rural products produced even in the remotest villages to global markets. The agriculture extension worker can access latest information on farm technology and products, and disseminate the same to villages.

## **XI. CONCLUSION**

The empowerment of rural communities is crucial for the development of the rural region. Bringing the people in the rural region in the main stream of digital technologies to access and adopt modern technologies is a major concern now a days. Rural development implies both the economic development of the people and greater social transformation using latest technologies.

## **REFERENCES**

- [1]. Sushmita Mukherjee, Application of ICT in Rural Development: Opportunities and Challenges, *Global Media Journal - Indian Edition. Winter Issue / December 2011, Vol. 2, No.2.*
- [2]. <http://www.slideshare.net/amitjha800/it-in-rural-indiaopportunities-and-challenges#btnNext>
- [3]. [http://www.bioinfo.in/uploadfiles/13256528641\\_1\\_2\\_JHPC.pdf](http://www.bioinfo.in/uploadfiles/13256528641_1_2_JHPC.pdf)
- [4]. <http://itd.ist.unomaha.edu/archives/1.pdf>
- [5]. Cecchini, S. and Raina, M. (2002), "Warana: the case of an Indian rural community adopting ICT", available at: [www.iimahd.ernet.in/egov/ifip/apr2002/article3.htm](http://www.iimahd.ernet.in/egov/ifip/apr2002/article3.htm)
- [6]. Telecom Regulatory Authority of India (2003), "Consultation paper on accelerating growth of Internet and Broadband penetration", Telecom Regulatory Authority of India, New Delhi, p. 84.