The Impact of Digitalization in Rural India

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INTRODUCTION

If information is critical to development, then telecommunications, as a means of sharing information, is not simply a connection between people, but a link in the chain of the development process itself. The role of telecommunications in transmitting information can be particularly significant in rural areas where alternative means of obtaining and conveying information such as personal contact, transport, and postal services are likely to be less accessible.

Television transmission in India was started in the year 1959 by Doordarshan but its regular transmission commenced in 1965. The first satellite based reception programme known as the Satellite Instructional Television Experiment (SITE), was conducted in 1975-76 in collaboration with NASA and ISRO in India and it was an experimental satellite communications project which made available informational television programs to rural India. The main objectives of the experiment were to spread education via satellite broadcasting, and to help India gain technical experience in the field of satellite communications with special focus on developing rural India. The experiment was conducted for one year from 1 August 1975 to 31 July 1976 and covered more than 2500 villages in six Indian states. The programmes were produced by All India Radio and broadcast by NASA’s ATS-6 satellite. The experiment was successful, as it played a major role in helping to develop India’s own satellite program, INSAT. The project showed that India could use advanced technology to fulfill its socio-economic needs (Gille L 1986).

Telecom Regulatory Authority of India (TRAI’s) earlier recommendations dated 14th September 2005 on “Digitalization of Cable Television” had identified the need for a national plan for digitization. In 2007, the Authority constituted a group consisting of members drawn from the TRAI, the Ministry of Information and Broadcasting, Prasar Bharti, consumer organizations,

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broadcasters, MSOs, DTH operators, cable operators’/ distributors’ associations and technical experts to deliberate on issues relating to digitization. The report of the group which stressed the need for mandating digitization in a phased manner by the Government was forwarded to the Ministry of Information and Broadcasting.

The key findings from research and pilot projects in rural and developing regions show that telecommunications can contribute to social and economic development. There has been progress in developing models that can predict quantitative financial benefits of investment in rural telecommunications, typically based on the theoretical underpinnings of the role of information in economic activities. There is also substantial evidence on benefits that result from specific applications of telecommunications in various sectors such as distance education, medical consultation, administrative support, and transport substitution. Some studies also conclude that benefits are proportionately greater in areas of low teledensity, but it is not clear whether this is because each added increment of telecommunications is a greater percentage of the installed base than in high teledensity areas (Heather E. Hudson 1995).

THE EMERGENCE OF DIGITIZATION PROJECT IN RURAL AREAS

The emergence of India as a global player in software development, IT, and call centre operations is one side of an information revolution that has also begun to impact on governance and development at a domestic level in areas such as e-governance, e-commerce and e-health. The state, private and civil sectors have invested in a number of initiatives throughout India aimed at extending the benefits of the information revolution to rural and remote areas. The state continues to invest in ICTs for development – from its support for Village Public Telephones (VPTs) to its enabling the computerisation of land records such as the Bhoomi project in Karnataka.

Bhoomi, involves the digitalisation of all land records and the provision of access to these records via information kiosks and fingerprint authentication systems in the State of Karnataka. Gyan Ganga, is an ambitious project aimed at the provision of information, connectivity, education, e-health and e-governance broadly with in the parameters of the right to information, in the state of Gujarat. The Bhoomi project is to bypass corrupt land revenue officers and their power to control access to these records, and to bring some transparency in land revenue transactions and records, and Gyan Ganga to bring the multiple benefits of the information revolution to the rural people (Pradip Thomas 2009).

THE ROLE OF MOBILE PHONES IN RURAL DEVELOPMENT

Lack of physical infrastructure, improper availability of agricultural inputs and poor access to agriculture-related information and market are the major
constraints on the growth of agricultural productivity in India. The fast growth of mobile telephony as compared to fixed line telephony and the recent introduction of mobile enabled information services provide a way to overcome existing information irregularity. It also helps to bridge the gap between the availability and delivery of agricultural inputs and agriculture infrastructure.

According to Surabhi Mittal’s (2010) study, mobiles are being used in ways which contribute to productivity enhancement. However, to leverage the full potential of information dissemination enabled by mobile telephony will require significant improvements in supporting infrastructure and capacity building amongst farmers to enable them to use the information they access effectively. As mobile penetration continues to increase among farming communities and information services continue to adapt and proliferate, the scope exists for a much greater rural productivity impact in the future (Surabhi Mittal et al., 2010).

TELECOMMUNICATIONS AND ECONOMIC GROWTH

Laurent Gille’s study states that without telecommunications, the organisation, management and coordination necessary between the specialised units within an increasingly diverse economic system are not possible. He argues that the development of the communication network creates for a decentralization of the economic system necessary to achieve growth. Working from the basic question of what produces demand for telephones in developing countries, Gille explains that the non-linearity of telecommunications development and economic growth. He suggests that there are three stages. The first is the original development phase: because the telecommunications network is in a nascent state it grows faster than the surrounding economy. Second comes the stage of industrialisation, when growth in telecommunications lags behind other sectors. The reasons for this lag relate to the part played in telecommunications growth of the residential telephone. Gille makes no policy recommendations, but his work indicates that developing countries should expand communications networks for those economic sectors which are contributing the most to national wealth and survival—for many and these implies communications for agriculture.

One emerging field of television does show promise for contributing to development, but high production costs with only moderate advertising potential mean commercial media will be slow to embrace it. The telenovela, pioneered in Brazil, has established some success in distributing ‘pro-social’ messages, promoting birth control, effective health practices, and political participation, for example. Pilot ‘edutainment’ programs following the telenovela model are proving effective in Egypt and South Africa (Chris A. Paterson 1998). Swasti Mitter (2000) states that national and international teleworking could contribute to sustainable development only when the
economic, social and cultural contexts of the people concerned are sensitively taken into account.

Prabha Sharma describes in his research paper that the potential of digital libraries is to help grow our economy and can be essential resource for human learning and development. Digital technology can make the works of man or needed information accessible to all, whether they live in a village or in an urban area. Networking of already developed sectors to ultimately set up a digitized National Library System may prove to be a better solution. This can help to move the nation toward realizing the enormously powerful vision of ‘anytime, anywhere’ access to the best of human thought so that individual is not isolated from the knowledge resources. This may be difficult but it is possible to achieve.

Malhan I.V. (2005) describes that the growing digitization of information has created an information explosion to a level which the humanity has never witnessed before. In such scenario cooperation, collaboration, synergy and convergence of work and efforts are the means to ensure accessibility of best possible information services to user communities. The growing amount of digitized information have bridged the information accessibility gap for some by providing access to enormous volume of information on desktop but it has created the problem of digital divide for those who have no access to information technology infrastructure or lack competencies to effectively use it. It suggests that a massive collaborative effort is required for imparting information literacy to people to build their capacities to derive adequate benefits from the digital revolution.

**TELECOMMUNICATION NETWORK IN INDIA**

India has the second largest network with 562.15 million telephone connections at the end of December 2009. It has grown very rapidly in the range of 40 per cent per annum, which has permitted the addition of nearly 300 million connections in the first two and a half years of the Eleventh Plan. The Eleventh Plan of Department of Telecommunications (DoT) aims at bridging the digital divide between the urban and rural areas and extending broadband connectivity.

Rural telephony is an integral part of the Universal Service Obligation Policy which is executed through the Universal Service Obligation (USO) Fund. GBS for the Eleventh Plan for DoT was fixed at Rs. 1,752 crore with IEBR component of Rs. 89,582 crore.

The rural areas in the country have experienced rapid growth in telecom services and the tele-density has risen from 5.9 per cent in March 2009 to 21.16 per cent in December 2009. The total number of rural communications at the end of December 2009 was 174.53 million compared to 47 million at the start of the Eleventh Plan. In November 2004, an agreement was signed with BSNL to provide public telephones under the Bharat Nirman Programme to
66,822 uncovered villages. As on December 2009, 61,186 village public telephones (98 per cent) had been provided. However, BSNL has informed DoT that 4,520 villages cannot be provided public telephones due to various reasons. Certain areas, for instance are affected by extremism, some villages are depopulated, and certain villages are not traceable or are those that have been submerged.

**INDIAN GOVERNMENT'S ACTION ON THE INFORMATION TECHNOLOGY REVOLUTION**

According to mid-term appraisal of eleventh plan period, broad physical target in telecom sector for the rural India is to provide 100 million rural telephone connections by 2010 and reach 200 million connections by 2012 that is to achieve rural tele-density of 25 per cent. The number of rural connections added up to December 2009 is 174.53 million and present rural tele-density is 21.16 per cent which is clearly visible in the Table 1. According to the table, compared with public sector in the telecom, private sector is taking a lead which indicates the liberalization policy of the Government of India has been clearly giving positive results for the economy. The table clearly indicates that compared with wireline subscribers, wireless subscribers are more in numbers which indicates people are willing to adopt new technologies in the telecom sector. Due to the entry of private sector in the telecommunication sector, rural area also getting benefits of telecom revolution in India which is a welcoming sign of inclusive growth in India.

The development of the Information, Communications Technology (ICT) sector has transformed the way we live and the way that business is being conducted at all levels. It has helped India in creating a knowledge society. The expansion of ICT into all sectors will help to achieve the Eleventh Plan objectives of inclusive growth, enable us to achieve our objectives in education and healthcare, as well as in reaching social benefits to the intended beneficiaries amongst the socially and economically weaker sections. It also holds great potential in spreading knowledge and awareness to the rural sector, especially to the farm sector and enables it to improve productivity and incomes through the adoption of better cultural practices, greater awareness of the situation in markets and prices and improved information about the management of pests and the constraints from weather related events.

The Eleventh Plan has laid emphasis on a world class telecommunication infrastructure as a vehicle of inclusive growth. A digital divide has arisen in terms of internet and broadband connectivity between the urban and rural India and policy has to address this issue squarely. With convergence of technologies, it is now possible to provide multiple services on a single platform and on a single device. To take full advantage of the technology, digitalisation of broadcasting network should be given priority and a complete switchover
made to digital transmission by 2015, as planned. The National e-Governance Plan (NeGP) requires that ministries and departments be encouraged to provide services online and there are guidelines for spending 2–3 per cent of budgetary allocations for ICT development and e-governance programmes.

THE ROLE OF DIGITALISATION IN RURAL HEALTH

Digitalisation in rural India has penetrated in the areas of health and in this regard, a case study has been conducted namely, Real-Time Bio-Surveillance Program (RTBP) by Directorate of Public Health and Preventive Medicine, Tamil Nadu, India with collaboration of IITM’s Rural Technology and Business Incubator (RTBI), LIRNEasia, Sri Lanka, National Centre for Biological Sciences, Bangalore and Department of Health and Family Welfare, Tamil Nadu. The case study states that the target site was Sivaganga district, one of the most economically backward districts located in southern part of rural Tamil Nadu, involving four PHCs (Nerkuppai, Thirukostiyur, Keelasevalpatty and Sevanipatty) and 25 HSCs covering a rural population of over 68 000 people.

Another case study which is related to Sustainable Tele-Health Network for Preventive and Curative Interventions is a tele-health initiative of World Health Partners in collaboration with private and NGO resources harnessing technology and existing social and economic infrastructure in Uttar Pradesh, India. In this project, village entrepreneurs invest in setting up service centres where they earn income by linking with city based doctors to provide health care to rural clients. More serious cases are referred to higher level of private care providers which also earns them an incentive which is normally a percentage of the fee that the client pays. Local communities are mobilized through advocacy building and other social activities including word-of-mouth campaigns, mass-media and infotainment and social marketing of user-friendly health services. The operational strategy of WHP divides skills, resources and competencies on the basis of location and interconnects them to either provide care or facilitate care by a service network as shown in figure below. Neurosynaptic Communications is the technology partner of WHP providing end-to-end ICT platform and services (biomedical devices, computing and communication system hardware and software as well as telehealth application software. Experiments to enable village level providers to connect patients from their homes with doctors in cities using cell phones have been successful. Future adoption of such paradigms is expected to integrate this data also into the current EMRs.

Disaster Management and Proactive care in Tele-Health Network is a social initiative of Amrita Institute of Medical Sciences (AIMS) employing different network infrastructures and collaborators for various scenarios of health care delivery with each type of network connected in different colour lines in different remote parts of India particularly in the State of Kerala with the help of Indian Space Research Organisation by using Satellites. In all
Table 1
Achievement of Public and Private Organisations in Promoting Telecommunications in India up to Dec. 2009

<table>
<thead>
<tr>
<th>Service Provider</th>
<th>Total Telephone Subscribers (in Million)</th>
<th>Market Share of Total Telephone Subscribers %</th>
<th>Wireline Subscribers (in Million)</th>
<th>Wireless Subscribers (in Million)</th>
<th>Market Share of Wireless Subscribers %</th>
<th>Rural Subscribers (in Million)</th>
<th>Market Share of Rural Subscribers %</th>
</tr>
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<tbody>
<tr>
<td>Public</td>
<td>99.3</td>
<td>17.7</td>
<td>31.6</td>
<td>67.7</td>
<td>12.9</td>
<td>32.3</td>
<td>18.5</td>
</tr>
<tr>
<td>Private</td>
<td>462.8</td>
<td>82.3</td>
<td>5.5</td>
<td>457.4</td>
<td>87.1</td>
<td>142.2</td>
<td>81.5</td>
</tr>
<tr>
<td>Total</td>
<td>562.2</td>
<td>100.0</td>
<td>37.1</td>
<td>525.1</td>
<td>100.0</td>
<td>174.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Dept. of Telecom Govt. of India
endeavours the services are delivered totally free under the free sponsorship of Indian Space Research Organisation (ISRO) and health care providers expenses borne by Mata Amritanandamayi charitable trust. Due to the social initiative, disaster hit areas and rural areas in India have benefitted more.

This case study is an example of initiative run by Apollo Hospitals Group, a private enterprise owning a chain of over 45 tertiary hospitals, over 110 Telemedicine centres and 740 pharmacy outlets across the country. Now known as the Apollo Telemedicine networking Foundation (ATNF), it was the first in the country to setup a Rural Telemedicine centre in 1999 in Aragonda (in Andhra Pradesh). Today, ATNF is perhaps India’s largest private turnkey provider in the area of telemedicine with over 150 telemedicine centres in India and abroad. ATNF works with multiple entities including the Central and State Governments, medical bodies, private and public sectors and offers customized solutions addressing telemedicine support for primary, secondary and tertiary level of healthcare.

The system can scale from fully electronic, web-based transmission to email and in some cases even hard-copy courier based collection depending on the situation. In 15 villages ATNF is has recently experimented its Telemedicine solution ported on to mobile platforms in collaboration with Ericsson’s Gram-Jyothi program in an effort to make Tele-Health services available on a 3G network. Apollo has also entered collaboration recently with Cisco for integration of Cisco’s Tele-presence solutions into its Tele-Health network.

A few social upliftment network focused on different parts of rural India to improve health care which is being a very bad state and would have brought up a good progress in rural folk’s health care.

**MISSION 2007- EVERY VILLAGE A KNOWLEDGE CENTRE**

The Mission for achieving a knowledge revolution in India derives strength and confidence from the numerous outstanding initiatives underway in the country under the sponsorship of central and state governments, civil society organisations, academia and the corporate sector. The beneficial impact of ICT on the rural economy and quality of life is now widely recognised. What is now needed is the launching of a self-propelling, self-replicating and self-sustaining model of ICT for rural regeneration and prosperity. This can be achieved in a short time and at a low transaction cost by the functional fusion of the large number of programmes in progress at the micro-level. Such a fusion of objectives, strategies and programmes can be achieved only by creating a platform for partnership.

**CONCLUSION**

In India some efforts have been made here and there to bridge the digital divide. The wireless in Local Loop (WLL) technology developed by IIT
Chennai has helped in providing the Internet connectivity to 250 community Kiosks that offer these services to over 700,000 people in rural India” (Gaur, 2003, p.108). Keeping in view the size and population of the country, a number of well planned and coordinated initiatives are desired for making the technological infrastructure available and training masses at various levels.

References


Prabha Sharma “Digital Libraries: Reaching Out to People with Special Reference to India”, Rajasthan University Library.


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