Study of (ICT) for Rural Marketing & Development

Anil Khandare[1]

[1]*Associate Prof., P.D.V.V.P.F.'s, IBMRD, Ahmednagar*

ABSTRACT

The study is based on identifying the effects of "information" bought changes in rural India, and role of ICT to reach to this remote area, for making development within its economic environment. Information is integral part of growth. "Information is power and power is information" ICT purpose is to reach and aware grass root level for its success., whenever same one think of development of the entire country the major aspect must consider is technology. India is the modest of a knowledge revolution, complemented by the opening up of entirely new-vistas in information and communication technology. Information and Communication Technology (ICT) has emerged as an effective facilitator in the development of every society and is a prime driving force in the growth of rural economies. The Rural Market of India is showing an impressive growth largely due to changing lifestyle patterns, better communication network and rapidly changing demand structure of consumers of rural area. With the changing patterns of Rural Market, the role of ICT has increased from providing only the Networks to set-up the basis of updated technological programs in the rural area. It is widely believed that Information and Communications Technologies (ICTs) are effective tools in the development of rural India. Rural people are less knowledgeable rather than their city counterparts. Thus, technological advancement is necessary for every nook and corner of India.

Key words*:* Communication, ICT, Rural Marketing

Introduction

Statement of Problem

The statement of problem can further be described as,

1. To study various initiatives taken by government, corporate, NGOs, etc. related to ICTs
2. To study challenges and possible threats in order to implement ICTs in the rural areas.
3. To explores the possibility to implement various ICTs initiatives in all villages of India.

Concept of ICT's in Rural Marketing need to understand

ICT is a diverse set of technological tools, disseminate, store, bring value-addition and manage information. Knowledge becomes the basic resource for economic and developmental activities in the society, of which rural poor form an equal part. Rural India is in urgent need of knowledge empowerment and the challenge before us now is to enlist technology as an ally in the movement for economic, social and gender equity. A holistic development of India as a nation rests on a sustained and holistic development of rural India. ICT has emerged as a new way of reaching out to the people at grass root level. Computerized Rural Information Systems Project (CRISP) was launched in 1986 by the Ministry of Rural Development. Under this project, every district in the country was provided with computers and a software called CRISP (now re-named as Rural Soft) to help District Rural Development Agencies (DRDAs) to manage Ministry of Rural development programs more efficiently. Indian Government has realized the role of the rural development and the contribution of I.T. in the development of Rural Markets. In recent years information and communication technologies (ICTs) have been deployed in various initiatives in rural communities in the country. There are many projects underway that are using ICT to reduce poverty, overall rural development and promote good governance. A large number of projects are introduced in the rural area with many upcoming projects in pipeline; which are likely to be introduced by the Government in the short span of time. This study will illustrate various initiatives taken by government, corporate, NGO etc. related to development of information and communication technology (ICT) that have made a difference in the delivery of services or products in rural areas of India. It will also describe both the opportunities and challenges in the diffusion of ICT in the rural area through which people can be benefited and exploit the resources available efficiently. The research will be focused on literatures available on various projects related to ICTs in rural areas and implementing the same in India & will carry an analysis of primary data & secondary data builds on existing theoretical and practical work to know about different initiatives taken by government & corporate in terms of value creation and sustainable development and will discuss about key requirements for implementing ICTs for rural development.

Major ICT Initiatives in India

Despite the huge potential to harness ICT for agricultural & rural development, only a few isolated projects have been initiated in India. Many of these projects were started by NGOs, private organizations, cooperative bodies and governmental organizations. There have been some initiatives in India, using ICT for agricultural & rural development. Indian experiences

with IT projects are Warana Wired Village project (Maharashtra); Gyandoot project (Madhya Pradesh); Information Village project of the M S Swaminathan Research Foundation (MSSRF) (Pondicherry); iKisan project of the Nagarjuna group of companies (Andhra Pradesh);Milk Collection Centres of Amul dairy cooperatives (Gujarat); Land Record Computerisation (Bhoomi) (Karnataka); Computer-Aided Online Registration Department (Andhra Pradesh); Online Marketing and CAD in Northern Karnataka (Karnataka); Knowledge Network for Grass Root Innovations - Society for Research and Initiatives (SRISTI) (Gujaral); Application of Satellite Communication for Training Field Extension Workers in Rural Areas (Indian Space Research Organization); In addition to the above, a few non-governmental organisations (NGOs) have initiated ICT projects such as Tarahaat.com by Development Alternatives (Uttar Pradesh and Punjab); Mahitiz-samuha (Karnalaka); VOICES -Madhyam Communications (Karnataka); Centre for Alternative Agriculture Media (CAAM); etc. All these initiatives are about creating a IT enabled rural market from scratch by first developing it, solving its basic problems, figuring out what it needs and then designing a product or service built around that one need in rural areas. Brief description of some programs run by the Government & NGOs is as follows:

Agmarknet

AGMARKNET is Agricultural Marketing Information System Network that links all important Agricultural Produce Market Committees (APMCs). State Agricultural Marketing Boards/Directorates and Directorate of Marketing & Inspection (DM1) regional offices located throughout the country for effective information exchange on market prices related to agricultural produce. Through this web based information system, farmers now have choice to sell their produce in the nearest market at remunerative prices.

Agricultural Resources Information System (AgRIS)

Agricultural Resources Information System (AgRIS) is the Central Sector Scheme for strengthening / promoting Agricultural Information System in the Department of Agriculture and Cooperation (DAC) Ministry of Agriculture. This Project is based on the recommendation of the Report of the Core Group- V of the Standing Committee on Agriculture and Soils, National Natural Resources Management System (NNRMS) of the Planning Commission (March, 2000). It develops a comprehensive database on various parameters related to land use, inputs (seeds, fertiliser, agricultural technology, and agricultural credit) use, water use and decision support systems (DSSs) packages for strengthening advisory services to farmers. The AgRIS is a step towards establishing a location-specific e-Government mode! For the Poor.

Aksh

Aksh is a fiber optic cable company with its core competence in lay down and maintenance of cable. It has the license to lay down the cables in the rural areas. The bandwidth delivered by Aksh supports a large variety of services (including video interactions) which will lead to increase the level information exchange in between the people living in several areas of rural India.

Akshaya

Akshaya is a project of Kerala government to extend the benefits of new ICTs to all its citizens. It began with an e-Iiteracy campaign & the target of teaching basic computer skills to at least one person in every family. Malappuram is India's first e-literate district, with over 600,000 individuals having basic knowledge of computers, including the Internet. This is part of the Akshaya Project to bring e-Literacy to its people. The project involves setting up around 3000 multipurpose community technology centers called Akshaya e-kendras across Kerala. Each e-Kendra set up within 2-3 kilometers of every household run by private entrepreneurs; cater to the requirements of around 1000-3000 families. The locations of these e-kendras are strategically planned and spatially distributed even in the remotest part of the district to make available the power of networking and connectivity to common man. These e-kendras have the potential to provide G2C, G2G, and C2C. B2B and G2B services and act as decentralized information access hubs and service delivery points. A variety of corporate services like Business Process Outsourcing, hardware sales and services. Travel and tour arrangements, multimedia aided training programmes, IT enabled vocational training, product selling and financial services including rural e-banking have been made available to rural population through e-kendras.

Drishtee

Drishtee is a commercial organization, which was previously named as Cyber Edge with specific social objectives of targeting benefits to the rural poor built into its vision and strategy. It has built an organization with strong competencies broadly termed as 'rural IT-based service delivery.' It has the main work of developing the modules for the poor section of the society who cannot understand the international language. Various local language software applications have been developed, for e-governance, market price information, buying and selling etc. The modules are designed for the rural and semi-urban areas especially. Drishtee is present in 5 States and is currently available in six districts.

E-Cooperatives and Coop Net

This is an Internet enterprise development program for fostering agricultural and rural industries. Rural Connectivity is the lifeline of rural economy. There are about 5.5 Lakh cooperative societies with a membership of more than 236 Million and working capital of more than Rs. 3400 Billion. This network covers 100% villages and 85% of rural households, and occupies a key position in agricultural development with respect to resources use, inputs use, harvesting of water resources, marketing channels, storage facilities, distribution channels, value addition, market information, and a regular monitoring network system.

E-Mitra

E- Mitra is Rajasthan State Government started projects in year 2002 to deploy the I.T. enabled benefits, two projects came into existence namely under E-Mitra; Lok Mitra and Jan Mitra. Jan Mitra is an integrated electronic platform through which the citizens of Rajasthan can avail the benefit if getting the desired information regarding any Governmental Department. It has not only helped the Government by reducing the burden of attending every call, it has reduced the waiting time for the service and has lead to provide comfort to the citizens also. Lok Mitra is an urban electronic Governance Project which was launched in Jaipur city in year 2002, which helps the citizens to pay their bills online (land, Water, Bus Tickets and BSNL) leading the citizen to save the waiting time.

eNRICH

eNRICH is another ICT solution that has been developed as a Community Software Solution Framework addressing the needs of rural people. Through its customizable local language sensitive interface, eNRICH truly puts ICTs in the hands of its users. ENRICH, which was initially developed for UNESCO to facilitate intracommunity communications, was subsequently enhanced to work as a framework capable of networking communities and building collaborations between government and citizens, particularly mainstreaming the rural people who are most disadvantaged and underprivileged.

Gyandoot

It was established in January in year 2000 by the Government of Madhya Pradesh. It is an e-governance based module designed for the rural citizens. Gyandoot is an intranet in Dhar District that connects rural cyber cafes catering to everyday needs of the masses. It caters the need of the villagers by providing the information related to the prevailing rates of the agro-based commodities, Income Certificate, Domicile Certificate, Caste Certificate, Driving License, information regarding Rural Markets, the rate of land, etc. The module is designed with the aim to provide cost effective and sustainable delivery model to the people.

Cyan Sanchar

It is designed to bring affordable and cost effective services to rural India. It is a partnership project, between Bharat Sanchar Nigam Limited (BSNL), Government of Madhya Pradesh (GoMP) India and a Canadian business team comprising IBM Business Consulting Services and Sasktel International. The objective of this project is to develop a model for sustainable expansion of telecommunication services and ICT applications in rural India.

iKisan Project

iKisan is the ICT initiative of the Nagarjuna group of companies, the largest private entity supplying farmers' agricultural needs. iKisan was set up with two components, the iKisan.com website, to provide agricultural information online, and technical centres at village level. The project operates in Andhra Pradesh and Tamilnadu. Farmers are able to become members by paying Rs. 100 per year or Rs. 20 per month. Project services are available only to member farmers. The operators of the iKisan technical centres are agricultural graduates who act as the interface between the computer networks and the farmers. They are there to provide both on- and off-line information services. They collect online information from the iKisan.com website, and

pass it on to the farmers. In addition, they assist farmers to access information from the CDROM, comprising a vast database, with which each centre is provided. The operators, being agricultural graduates, are able to diagnose, analyze and advise about diseases and pests. With their knowledge of both agriculture and ICT, they probably constitute the best part of this project. The major objective of iKisan is to provide need based wholly agricultural expertise at village level, to increase the productivity of selected crops in selected regions.

Land Records Computerization

The project is a collaborative effort with Ministry of Rural Development providing funds to states for data collection, collation and site preparation etc. The States of Madhya Pradesh, West Bengal, Rajasthan. Maharashtra, Orissa, Uttar Pradesh, Sikkim, Andhra Pradesh, Pondicherry are already in an advanced stage of computerization of land records. Various kinds of land records software operational in different States include Bhoomi (Karnataka), Tamil Nilam (Tamil Nadu). e-Dharni (Goa), Bhuyan (Chhatisgarh), Apna Khata (Rajasthan), e-Dhara (Gujarat), Bhumi (West Bengal), Himbhoomi (Himachal Pradesh) etc.

Lokvani

Lokvani is another e-Governance effort initiated by District Administration of Sitapur, Uttar Pradesh in collaboration with NIC. Lokvani provides citizens an opportunity to interact with

government without actually visiting the government offices. The Lokvani network is spread across all the six tehsils and blocks of Sitapur. The services provided through the kiosks include information about various government schemes, forms, list of old-age pensioners, list of scholarship beneficiaries, allotment of food grains, allotment of funds to gram panchayats, land records etc.

N-Logue

The main impetus for n-Logue came from the IIT Chennai research group headed by Professor Ashok Jhunjhunwala. This group has been responsible for a stream of hardware and software innovations that enable rural IT-based service delivery, through WLL technology for delivery and implementation of various applications in the fields of education, health and agriculture. It follows a franchise model which provides an info kiosk (personal computer with Internet video conferencing facility, a scanner and a photocopier) at a low cost in the rural areas.

Panchayat Informatics

Government of India has also initiated efforts to provide 1CT solutions for streamlining the functioning of panchayats to enable easy access to information and services by the common man. Some of the applications in this area include National Panchayat Portal which acts as an Information & Service delivery point for respective panchayats and is designed to provide vertical & horizontal integration across rural areas, facilitating communication, message broadcast, fund transfer, monitoring of programmes etc., Priasoft which is an umbrella software catering to the administrative needs of Panchayati Raj Institutions (PRIs) and also serving the common man. This software solution helps in monitoring the accounts of Panchayati Raj Institutions by State RD/MoRD thereby bringing about transparency in Panchayati Raj Accounting. The receipts/expenditure details are available on the web for all, including village citizens to see. The software provides support for local language and is implemented in Madhya Pradesh (Panchlekha), Orissa, Tamil Nadu. Chhattisgarh for accounting, Karnataka for Property Tax (Aasthi) and in Andhra Pradesh as e-Panchayat. Besides it e-Gram Vishwa Gram Panchayat Monitoring System which maintains a record of village information of all families and provides necessary certificates to the common man, e-Panchayat, InfoGram etc are some other important applications. EPanchayat has been introduced in Andhra Pradesh. All the functions of the Panchayat are computerized and web enabled. Internet based services for Birth and Death Registrations, House Tax Assessment Collections, Trade Licenses, Old Age Pensions, Works Monitoring, Financial Accounting, MIS for Panchayat Administration are being provided as part of e-Panchayat system.

Additional services such as market prices and agricultural extension advice are also being provided to the citizens of the village through e-Panchayat. Info gram is yet
another ICT solution designed and developed for Village Panchayals. It envisages automation of the functions of a Village Panchayat and maintains on-line records thereby providing efficiency, accountability and transparency in the Panchayat Administration and also provides vital inputs for decentralized planning. The information and services provided through InfoGram includes Registration of Births/Deaths, House Tax,Licenses, Certificates (e.g. Income, Caste etc.), Accounts and Panchayat Information etc. InfoGram has been implemented in 20 Village Panchayats in Goa and some more are likely to be added to the list of implementations.

Participatory 3D Modeling (P3DM)

Participatory 3D modeling (P3DM) was introduced to Sasatgre, a village in the West Garo Hills in North Eastern India, as part of the IFAD supported North Eastern Region Community Resource Management (NERCRM) project in May 2003. P3DM integrates all aspects of the mapping process - participatory resource mapping, data collection and model building - as well as applications of the mode! for decision making, and for monitoring and evaluating changes in land use. The changes are recorded (using color-coding) on the 3D model and are digitized to produce a new-map, which is then returned to the community for analysis and further decisions.

Property Registration

Property Registration Systems aims at setting quality and time standards for all registration services. The features include registration of deeds on the transactions relating to immovable properties between citizens and include calculation of stamp duty; Revising the rates of market values, Deed writing, providing computerized copies of Records of Right (ROR), computerized history of transactions on property & land record mutation etc. Some of the implementations of Property Registration System include CARD (Andhra Pradesh), HARIS (Haryana), STAR (Tamil Nadu), PRISM (Punjab), PEARL (Kerala), ORIS (Orissa), Red (Gujarat) and CORD (West Bengal) etc.

RuralBazar

RuralBazar is an e-commerce solution developed by NIC to address the marketing needs of the rural producers. The software provides provision for simple showcasing of the products, off-line payment as well as on-line payment. It has been implemented in the States of Tripura, Goa and Tamil Nadu.

Rural Digital Services

Rural Digital Services provide a single window for all government services at village level. In the first phase of the project, the services offered include Birth/Death Registration and Certificates (Caste, Income, and Widow. Unemployment, No Tenancy etc.)- The application developed allows Biometric Authentication (using Finger Print) for login. The other important features include smart client technology for deployment and Unicode support for local languages. The software is operational in Karnataka and is currently available in Kannada and English.

Rural e-seva

It was initiated by Andra Pradesh Government to deliver e-governance facility. The centers are designed with the view to provide better governance facilities to the people of the Rural India. It is related to payment of electricity bills, telephone bills and local governmental bills to provide the benefits at their doorsteps.

Ruralsoft

It helps capturing monthly progress of various poverty alleviation schemes sponsored by the Ministry of Rural Development and State Rural Development Departments. The aim of this programme was to facilitate the monitoring and planning exercises in the area of poverty alleviation.

TARAhaat

It was developed with the vision to bring internet facility to the rural India. It is a franchisee based business model that attempts to generate revenues by focusing on the marketing services at local levels. It was initiated in Punjab with the introduction of different centers called as Kendra's which are connected to each other through the dial up internet connection with power backup facility also. The info kiosks provide online and offline services information on education, prevailing opportunities in the market and other useful information for the villagers. It provides the information in the local language and the portal is designed in such a pattern that semi literate population can also understand it without any difficulty. It provides many services like TARAbazar (for product information), TARAdhaba (for providing connectivity), TARAdak (connect to relatives at distance), TARAgyan (educate rural youth on various issues), TARAguru (helps in mentoring and consultancy, TARAvan (delivery of orders at remote areas), etc.

The Simputer project

Scientists from IISc and the Encore software brought this idea into practice. This project grew out of the dare need for an affordable access device for the rural population in the

country. The Simputer is a low cost portable alternative to PCs, by which the benefits of IT can reach the common man. It uses simple and natural user interfaces based on sight, touch and audio eliminating the need for IT literacy. The in built Smart Card feature enables the Simputer to be shared by a community. Approximate cost has been fixed to half that of the normal PC.

The Universal Service Obligation Fund (USOF)

The Universal Service Obligation Fund (USOF) of Government of India will spend Rs 5,000 crore to ensure cellular connectivity in rural areas across the country. USOF had set up 7,800 towers for the spread of cellular network. USOF had a fund availability of Rs 14,000 crore aimed at increasing the teledensity

Warana Wired Village Project

The Warana "Wired Village" project was initiated in 1998 by the Prime Minister's Office Information Technology (IT) Task Force. The stated goal of the project is not only to increase the efficiency and productivity of the sugar cane co-operative, but also to provide a wide range of information and services to 70 villages around Warana, a rural area located 30 kilometers northwest of the city of Kolhapur, in one of the richest states of India, Maharashtra. The project aims in fact at giving villagers access to information in local language about crops and agricultural market prices, employment schemes from the government of Maharashtra, and educational opportunities. The project has already increased the efficiency of the sugar cane growing and harvesting process, both in terms of time saved by the farmers on administrative transactions as well as in terms of monetary gains.

Corporate Initiatives in Bringing Technology to Rural India

Microsoft, Hewlett-Packard and IBM, apart from other IT companies, are creating technologies specifically for the Indian subcontinent. Putting computers in place is only a small step in a long journey for IT in rural areas. One community computer is simply not sufficient to meet the requirements of villagers. A number of factors are responsible for the digital divide - multiplicity of languages, cultural diversity, low literacy rates, price sensitivity, and the low usage of personal computers but technology majors are keen to establish direct contact with potential customers in rural areas, and setting up computer kiosks is an important step in this direction.These kiosks often serve as the only way rural villages can benefit directly from advances in information technology. They are focusing on ways and means to make IT accessible to common man. There are many initiatives taken by major IT companies in this regards like Indian Telecom Company Bharti Airtel entered into the rural telecom market with the setting up of 4,000 Airtel Service Centres (ASCs) in the

remotest villages of Maharashtra and Goa telecom circles. The strategy includes a combination of distribution and service under iServe Airtel Service Centre. Bharat Sanchar Nigam Ltd offered broadband connections to rural population at a discount rate after showing a strong presence in rural India. Center for International Development, Harvard, US, in collaboration with Indian government launched Sustainable Access in Rural India (SARI) project to take new technologies to the poorest and most remote parts of the country. Bangalore based Comat Technologies has launched an employment training programme for rural youth. Ericsson India developed new tower tube which is an eco-friendly and cost-effective concept fully encapsulating house base stations. The costs of the tower, when compared with the existing traditional towers, would be lesser by over 40 per cent in the tube tower. Hewlett-Packard has also started an iCommunity echoupal. The community project, at Kuppam, Andhra Pradesh, includes tele-medicine, online farming information system, and an electronic employment exchange solution, among other things. HP is focusing on ways and means to make IT accessible to common man.IBM's India is working on speech recognition, which aims to 'provide an easy interface for interacting with computers, particularly for those unfamiliar with computers and/or English' It is extending IBM's Via Voice recognition technology to build a speech recognition system for the Hindi language. Like HP1 s Script mail, this will also eliminate the keyboard. Infosys BPO, the back office outfit of Infosys Technologies Ltd proposes to tie-up with the rural BPOs, besides setting up a separate delivery team of 500 employees to service the local market. Intel focuses to improve rural education; it would help the government equip 100 mobile computer Sabs in vans throughout the country. Reliance Communication has formed a joint venture with Krishak Bharti Cooperative Ltd (Kribhco) for offering value-added services to mobile users in villages. Microsoft also showed its presence in rural India by setting up different kiosks. The kiosk is a computer centre that a local is trained to run. It will link (weekly markets), daily markets, and give the villagers daily inputs about the weather, prices, etc. Microsoft is working at tying in banks, financial institutions and other companies that might want to offer their products and services through these kiosks. Anticipating a strong business potential in rural market, Nokia team up with some micro finance institutions to get into the rural arenas. It has presently got into partnership with SKS Microfinance, having 653 branches across 15 States, and it is looking for more such tieups.In order to strengthen its hold on the rural markets, "Nokia India launched Nokia Life Tools, which are "a range of agriculture, education and entertainment services designed especially for the consumers in small towns and rural areas of the emerging markets" Last but not least, conceived by ITC in June 2000, e-Choupal has already become

the largest initiative among all Internet-based interventions in rural India, 'e- Choupal' services today reach out to more than half a million farmers growing a range of crops - soyabean, coffee, wheat, rice, pulses-, - in some 4,500 villages through 770 kiosks across four states (Madhya Pradesh, Karnataka, Andhra Pradesh and Uttar Pradesh). Sanchalaks - as they call it can access information in their local language on weather & market prices, disseminate knowledge on scientific farm practices & risk management, facilitate the sale of farm inputs (now with embedded knowledge) and purchase farm produce from the farmers' doorsteps. The company plans to extend the services other 14 states also, the net business of over 1 billion has been transacted so far. There are some other companies like Nokia-Siemens, Tata Consultancy Services, Tata Teleservices (TTSL), Venture InfoTech, etc who are also taking initiative to implement ICTs for betterment of rural infrastructure in the country.

Future Prospects of ICT in Rural India

There is great diversity in local conditions in rural India and the local needs are highly specific. The ICT implementation for rural marketing in India has to face the following challenges:

1. Illiteracy – you cannot use much of textual information
2. Middlemen - physical distances makes it difficult to provide proper price information.
3. Alternate media – not available.
4. Language - multiplicity and highly specific local languages
5. Easy loans - Reluctance of banks to provide soft loans to farmers.
6. Affordability – any new technology must be economical.

In the absence of timely and correct information about prices, arrivals and market trends, compounded with the problems of low cash-at-hand and proper advice, farmers are forced to sell their produce at lower-than-expected rates. The result is that the benefits of the 'green evolution' have not really percolated down to the farmers. There is a need to build partnership with rural clients for a sustainable business relationship and sustainable marketing relationship. There should be a long-term relationship between the firms and farmers for agro business projects, which are risky, long drawn and technical in nature. The presence of a number of desired features in a website leads to higher user satisfaction. Such features are broadly aimed at satisfying one or the other of the following immediate user objectives:

1. Ease of access
2. Up-to-date content
3. Layout, design, consistent themes

4. Easy navigation
5. Higher interactivity
6. Access through multiple media
7. Higher use of non-textual information
8. Multiple languages
9. Lower cost of transaction

The Web will have a great impact on the way rural marketing would be conducted in the future. The implementation of ICT in rural India must be carefully localized. The data collected may only be a snapshot of the websites for rural marketing but the challenges explored need to be addressed in order to make this tool effective for the development of rural India. The factors socio-economic, political and psychological, are very specific and the results in one market may not be applicable even to similar markets elsewhere.

Conclusion

This study helps to prospective researchers to know various initiatives taken by government & corporate which are undergoing a paradigm shift from being a regulatory requirement or a social obligation to being a viable business proposition. Further this study helps to get an insight about the certain issues of rural development with special emphasis on challenges for India to implement the same. The objective of this research paper is to know various initiatives taken by government, corporate, NGOs, etc. related to development of information and communication technology (ICT) which are in the forefront for rural development in India. This study looks at the challenges and possible threats to implement the same into rural areas. This study also explores the possibility to implement these initiatives in all villages of India as these initiatives are only taken in specific areas in certain states. "There is strong possibility to implement various ICTs initiatives taken by government, corporate, NGOs, etc in all villages of India in terms of value creation and sustainable development,"

References

1] Bhatnagar, S., Schware, R. (EdsJ (2000), Information and Communication Technology in Rural Development: Case Studies from India, Sage Publications India, New Delhi,

[2] Cecchini, S., Scott, C. (2003), "Can information and communications technology applications contribute to poverty reduction? Lessons from rural India", Information Technology for Development, Vol. 10 pp.73-84.

[3] Economic survey 2007-2008 (http://indiabudget.nic.in/es2007-08/welcome.html) Government of India, Ministry of Rural Development (http://rural.nic.in)

[4] Government of Kerala, Department of IT, Kerala State Library Council and Kailara Panchayath (2000).Rural Information centre for Kallara Panchayatha (http://www.keralagov.com/news/kailaraproject.htm)

[5] Government of Maharashtra. Maharashtra at a Glance. 2008. (www.maharashtra.gov.in)

[6] Gyandoot Samiti. (2001), Gyandoot Project (http://Gyandoot.nic.in)

[7] IFLA Social Responsibilities Discussion Group Composite policy paper. Recommendations, August 2000 (http://wvvw.ifla.org/Vn/dg/srdg/ srdg7.html)

[8] Information and Communication Technologies for Development (http://www.undp.org/info21/index5.htm)

[9] Jarboe, Ken, Five thoughts about the digital divide (http://www.darwinmag.com/read/thoLights/column.ht)

[10] Jhunjhunwala, Ashok, Making the Telecom and IT revolution work for us (http://www.tenet.res.in/papers/techolo.html)

[11] Kalpana Dasgupta. (2000). Rural Libraries in the changing environment in India: important factors for discussion (http://www.ifla.org/ViI/dg/srdg/srdg6.pdf)

[12] Keniston, K. (2002), "Grassroots ICT projects in India: some preliminary hypotheses", ASCI Journal of Management (http://web.mit.edu/kken/Public/PDF/ASCI- -Journal-intro_ASCI_version_.pdfs Vol. 31 No.1/2)

[13] Kohli Vanita. "Getting Wired, the Warana Way", in Business World, (www.businessworldindia.com/archive/990222/mktg4.htm)

[14] Machado, Julius and Vinu Wadgaonkar. "From Wilderness to Wonder: The Warana Miracle", in NABARD Parivar, House Journal of NABARD (National Bank for Agriculture and Rural Development, vol. 13, no. 2- 3, July- September 2000)

[15] M S Swaminthan research foundation. Information village research project (1999) (http://www.mssrf.org/informationvillage/informationvillage.html)

[16] National Informatics Centers ((http://home.nic.in)

[17] Raman, P.S. (2000), "Focusing on infrastructure and development of 'local content"1, India Abroad, (http://www.indiaabi-oadonline.com)

[18] Schonfeld, E. (2001), "The guru's guru". Business 2.0, http://www.business2.eom/articles/mag/0, 1640, 17005, 00. html)

[19] UNDP, Technology achievement Index-Asia Pacific, Human resource Development Report. Mishra,Satyan, Connecting India village by Village (www.iicd.org/base/story_read?id=4956)