

A LITERATURE REVIEW ON IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY TOOLS ON RURAL SOCIETY OF INDIA

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Abstract: This paper presents a review of the various study made by different investigators, researchers regarding implications of ICT Tools on rural societies of India; significance and role of ICT in Rural Development; Rural Community development and after knowing the observations made by various researcher, investigator and experts concluded that ICTs play a major role in environmentally sustainable rural development; rural community development. ICTs have remarkable contribution towards improvement of economic and social development of societies in rural India. In developing country like India, to create information rich societies, to empower poor people, to reduce digital divide, sustainable development of rural community's dissemination of ICT in grassroots level of rural villages is necessary.

Keywords: ICT; BLIS; CIC; MVAS.

1. Introduction

Literature review provides coherent picture of the study. It is helpful for proper planning of the conducting study. The review of past investigations in particular investigating area gives guidelines to the investigator to carry out study in that area. ICTs has proven, to be valuable contribution for solving development related issues and problems of society and perform successful task in Agriculture, Education, Industries, Banking, Governance, Business, Health, Tourism, etc. in rural and urban area of country **and** hence ICT becomes a most popular tool of all human beings aspect of life in rural and urban society. Review presented below includes literature pertaining to implications of Information and Communication Technology and its Tools on rural society as well as application of Information and Communication Technology for Rural Development and related aspects.

2. Objectives of Review of Literature

The main objectives Review of Literature is:

- 1) To identify the observations and conclusions made by different investigators, researchers regarding implications of ICT and its Tools on rural societies of India.
- 2) To know the opinion and observations in various reports made by various researcher, experts on the development of rural communities through Information and Communication Technology and its Tools.
- 3) To identify role of ICTs in rural development.

3. Information and Communication Technology (ICT)

Information and communication Technology consists of hardware, software, networks, and media for collection, storage, processing, transmission and presentation of information voice, data, text and images [29]. Information and communication Technology (ICT) is the combination of three magic revolutionary words, 'Information', 'Communication' and 'Technology'. 'Information' is disseminating and promoted using 'Communication' and

transmitted through 'Technology' [16]. The term 'Information and Communication Technologies' (ICT) can be used to embrace a multitude of standalone media, including telephone, television, video, tele text, voice information systems and fax, as well as those requiring the use of a personal computer fitted with a modem. The latter can include direct dial-up services such as electronic banking, file exchange and closed information services [28].

4. Review of Literature on some related studies to satisfying above stated objectives

4.1 Implications of ICT and its Tools on rural societies of India- following are some studies taken from different sources referenced to study implications of ICT and its Tools on rural societies of India.

(1) A study conducted by **Reddy (2003)**²³ to identify the opportunities and advantages of ICTs for governments. ICT offers huge possibilities to the government to increase its efficiency and meet the challenges and goals in all aspects of its activity. Authors also mentioned the advantages of IT applications in governance which includes access, storage, processing, organization and transfer of information and data to various levels of administration and increase Transparency and to provide cost effective and speedy discussions and meetings, quick and speedy action based on timely reliable information etc to the peoples.

(2) **Kumaresan and Chitra (2003)**⁹ made a study to assess the need of rural information centers in the villages of Tamil Nadu. According to the authors the villagers who are dependent on different professions other than agriculture for livelihood have no such facility that fulfils their information requirements from information center. Authors studied twenty villages in the state of Tamil Nadu to access the need for rural information centers.

(3) **Simone and Scott (2003)**³ made a study to identify whether the information and communications technology applications contribute to poverty reduction from Indian perspective. According to the authors ICT can reduce poverty by improving poor people's access to education, health, government and financial services. In this study authors discussed some ICT projects for poverty reduction in rural India and concluded that ICT can empower the poor by expanding the use of government services and to reaching the poor and realizing the potential of ICT in the area of opportunity, empowerment and security is a difficult endeavor.

(4) **Prasad K. N. (2004)**²¹ in his article entitled as "digital divide in India narrowing the gap; an appraisal" stated that the Modern ICTs can contribute to resolving the problems of a rural society of India and the major obstacle which has prevented rural areas from benefiting fully from the great potential of ICT is the low penetration of telecommunication services. Author also made observation that the rural community and individuals need to be empowered by enhancing their capacity to access, select and use information for development efforts, whether they relate to literacy, food, health and family welfare, population growth, environment, trade employment, etc.

(5) **Jangid (2004)**⁷ the paper entitled as "Information technology: boon or bane" concluded that information technology is not the panacea for every problem in society however it is only a tool and do not provide solution to all the problems. Information Technology has huge potential to make information rich societies and has some positive and negative or harmful effects. In this paper author made observation in Indian context on Internet, it is urgent need to customize the internet's content and providing meaningful information which will benefit the rural and tribal areas and suggested that the government should apply a two pronged strategy providing easy and cheap access to the internet to the common man and carrying out the necessary infrastructural reforms to support the information revolution to bridge digital divide.

(6) **Midda and Mukhopadyay (2006)**¹⁵ conducted a study on "Information and communication technology in e-education". In this study the authors were discussed the significance of computer and internet in education. And stated that ICTs provide a new and innovative way to education, the invention of new technologies such as computer, the internet and www can be used in education electronically known as e- education which improving the quality of education and provides lifelong education for all.

(7) **Ogunsola (2007)**¹⁹ made a study to examine the implications and opportunities opened to Africa in the current information age- especially as they relate to the acquisition of technology for increasing productivity as well as enhancing live hood . Author stated that ICT cannot offer instant cure for the challenges and concerns of any society, but the ICT can be a tremendous enabler for the development process of society and can boost the productivity, innovation, access to knowledge and information and in the promotion of transparency. The paper finally recommends that the economy should be totally de-regularized to allow full private sector participation with a view to enabling them invest in infrastructural sectors which is important part of the economy.

(8) **Asheeta Bhavnani et al. (2008)**¹ conducted a study to examined the role of mobile telephones in sustainable poverty reduction among the rural poor and concluded that economic and social benefit of mobile telephony will be highest in rural areas, which currently have limited or less telephony services. The induction of mobile phones does have a positive impact on sustainable poverty alleviation. The multiple benefits to the mobile phone: from reducing negative aspects such as corruption, crime, high prices, etc. and to increasing positive aspects such as levels of education, efficiency, health.

(9) **Shukla and Gautam (2008)**²⁵ made a study to examine digital divide in rural areas of Uttar Pradesh. According to the authors, ICTs can play an important role in sustainable rural development, and by establishing

tele centres in the rural area which facilitate socio-economic empowerment. The authors also noted that the presence of newer ICTs such as e-mail or the Internet was less compared to older ICTs like radio, television and landline phone and suggested that if properly deployment of ICTs in CICs, Panchayat Offices then these offices will become information hubs or kiosks and it can be interpreted that wider coverage, enhancement and upgradation of ICT initiatives required, especially for those who cannot afford it and do not have access to the information that is likely to improve their health, education, livelihood, and can protect them against vulnerable situations.

(10) **Surabhi Mittal et al. (2010)**²⁶ conducted a study to look at the impact of mobile phones on the crop sector in India with a focus on small farmers. The result was based on information collected through group discussions and interviews with farmers of Uttar Pradesh, Rajasthan, Maharashtra and New Delhi and with fishermen in Pondicherry. According to authors the rapid growth of mobile telephony and introduction of mobile-enabled information services provide solution to overcome existing information issues in agriculture which limit the agricultural productivity such as physical infrastructure, problems with availability of agricultural inputs and poor access to agriculture-related information, etc and also bridging the gap between the availability and delivery of agricultural inputs and agriculture infrastructure. The study found evidence that mobiles are being used by the farmers to increase productivity in agriculture.

(11) **Leisa Armstrong and N. Gandhi, (2012)**¹⁰ made a study to investigate the factors influencing the use of Information and Communication Technology (ICT) Tools by the farmers of rural villages of Ratnagiri district of Maharashtra state, India. Authors were selected 100 respondents from one Tehsil Ratnagiri district and key stakeholders government officials and agricultural industry workers. Two different questionnaires were provided to farmers and key stakeholders. The study was revealed that, rural farmers of Ratnagiri district still not been adopted ICT fully and there is a massive opportunity to enhance the broadcasting of agricultural related information that farmers receives from government officers, fellow farmers and relatives. Most of the farmers were used TV and mobile phone to collect agricultural related information and also noted that number of factors constraining the dissemination of ICT in Ratnagiri District such as the gap between the currently used technology and the technology preference as well as the factors such as gender and land ownership did not significantly affect the use of ICT tools and also effective use of technology is a necessary prerequisite for the successful use of ICT by the farmers. Strengthening and motivating farmer groups to use the technologies such as internet, home phone is important to facilitate access for ICT facilities. Moreover the authors opined that establishing IT based information centres in rural areas could boost access to market information.

(12) **Balwant Singh Mehta, (2013)**² conducted a study by using field Survey method to explores the socioeconomic impact of mobile phone usage in rural areas of the two Indian States such as Punjab and Bihar and the survey revealed that, mobile phones have reduced the cost of accessing information and helped users to make communication with their relatives and migrant family members and to gather timely information related with agricultural and non-agricultural purposes and also Mobile users get benefit by obtaining timely information on a variety of subjects, including on employment opportunities and higher education for their children, funds transfer, etc. The author also noted that in Punjab state, peoples were early adopted new technologies and hence there is high usage of mobile value-added services (MVAS) and innovative uses like transfer of funds and agricultural related information. Finally the author made conclusion, With the spread of mobile use, it is very likely that it could be an arena of innovative activity, reducing costs and thus increasing incomes at the 'bottom of the pyramid'.

(13) **Jayade, K. G et al. (2014)**⁸ published an article entitled as "Study of Information Communication Technology in Agriculture in Vidarbha Region of Maharashtra State of India." and concluded that ICT has improved the economical condition of the farmers in Vidarbha Region of Maharashtra state;

ICT is advanced tools to disseminate the modern agricultural knowledge to the farmers and it plays an important role for the development of economy by enhancing the effectiveness of agricultural market, productivity and competitiveness in Vidarbha region of Maharashtra state. ICT and Mobile technology not only improved the package of practices but also improved the agriculture through knowledge dissemination by e-agriculture but also reduced the gap among agricultural scientists, extension worker and farmers.

4.2 Developments of rural communities through Information and Communication Technology and its Tools

Following are some studies taken from different sources referenced to study development of rural communities through Information and Communication Technology and its Tools.

(1) **Manish Kumar, Chitra Pathak and Singh (2001)**¹² made a study to identify the information source of rural poor in U S. Nagar district of Uttaranchal. In this investigation the authors said that "India is on the way to become a super power in the information technology" and noted that in rural areas poor still depends on their local communication system such as interpersonal sources of communication, mass media which playing curial role to dissemination of information and creating awareness among the rural poor. The main aim of this paper was to discuss the information sources of rural poor regarding development messages.

(2) **Upadhyaya (1996)**²⁷ conducted a study about the role of information technology in community development. According to author Community development process involves policy makers, decision makers, planners, workers, etc. The main source to access information is from block level information systems (BLIS) and it is highly useful in the development process. This article focuses on the sources, uses and services which may be offered by the BLIS. The author suggested a way to reach the unreached using Information Technology and make the development programmes a success and also suggested that policy makers must make their effort to suggest and to develop the proper information systems for their use to provide better service to the community and bridging the digital divide.

(3) **Mathur and Ambani (2005)**¹³ in this paper authors said that the application of ICT opens huge opportunities and possibilities to access information source and ICT based services for the development of rural India and other developing countries. The modern technologies being developed and can help to crossing barriers present in providing information resources at a low cost and make applications feasible and profitable. In this paper authors were discussed some cases studies which focuses on whether ICT has been effectively used for the benefit of the rural societies and analyzes the opportunities of ICT.

(4) **Mehtha and Kalra (2006)**¹⁴ Information and Communications Technology (ICT) can reduce poverty by improving poor people's access to education, health, government and financial services and also noted that in India, combine or individuals efforts made by the Government and some non Government organisation or private organisation to established ICT projects in rural area, to provide services to the rural people but these ICT projects are not successful implemented in grass root level due to variations in geographical area or have not been successful in reaching to every one of the society. In this paper the authors suggested some technological solutions of various problems and give a ways ICT technologies successfully and efficiently implemented in rural areas to meet social objectives set by these projects.

(5) **Sharma (2007)**²⁴ made an inquiry on information needs and sharing pattern among rural women of Madhya Pradesh state with the principal objective was to find information needs of the rural women community of Gwalior districts of Madhya Pradesh and other objective to find out the nature, sources and purpose of information, which they required and analyzing the time and money spent for gathering most reliable sources of information. Analysis of data reveals that 93.7% women are getting information through television and 35.17 percent of the women under study are consulting religious leaders for their information needs. Moreover 81.37 percent respondents share information with their family members and all women are familiar with telephone while only 33.79 percent women used Tele phone facility, and 2.75 percent rural women are familiar with internet.

(6) **Grimshaw and Kala (2011)**⁴ - The use of information communications technologies (ICTs) in facilitating rural development by providing agricultural extension services, current market price information, connecting rural laborers with wage-earning opportunities, etc. and study showed that how ICT have “empowered rural people and transformed livelihoods in agriculture by filling information gaps, raising awareness, building skills and extending social networks”.

(7) **Rasheed Sulaiman et al. (2011)**²² made a study to explore the role of Information and Communication Technologies in empowering Indian rural women through a review of ICT initiatives in India and concluded that, many ICTs based projects are disseminating useful information, knowledge for rural women, but many of them are not able to make use of that information, due to limited or no access to sources of support and services; and also noted that the community radio was found to have the greatest potential in reaching women with locally relevant content; ICT has massive potential to create new employment opportunities for rural women and to contribute significant gains in efficiency and effectiveness in rural women enterprises; efforts are also made to bridge the different types of digital divide such as rural-urban ;men-women.

4.3 To identify role of ICTs in rural development

Following are some studies taken from different sources referenced to identify role of ICTs in rural development through Information and Communication Technology and its Tools.

(1) **Indiresan (1989)**⁶ The modern technology and computer dominated technology will rapidly replace the conventional production technologies but basically their value is as information processors and concluded that all development is rely on knowledge and as knowledge transmission and dissemination which is more difficult in rural areas as compared to cities, electronic and computer systems are a greater necessity for rural development than for urban development.

(2) **Neelameghan (1998)**¹⁷ published an article, “Information Technology and Rural development”. This paper focus on the scope and issues relating to rural development and use of emerging information and communication technologies to support rural development, and related policies and strategies. In this article the author noted that the rural people has a three- purposes relating to information and communication, such as to enable them become more productive and efficient in their economic activities; to enhance their capacity to disseminate the valuable native knowledge they gain ; to facilitate reliable village data collection and analysis needed for development planning. And also author suggested that the rural communities and individuals need to

be empowered by enhancing their capacity to access, select and use information as a basis for and in tandem with all other development efforts whether they relate to literacy, food, health and family welfare, population growth, environment, trade and employment.

(3) **Malik and Bhardwaj (2001)**¹¹ made an inquiry on the strategy of using IT for rural development. According to the authors in the nineties Indian society has been witness of transformation of from an industrial society to an information society. This change made by Information Technology, telecommunication, computing and micro electronics. Increasing deployment of IT application which determining factor in social and economic issues, the boom in satellite and cable T V channels, introduction of Mobile phones, India world on internet the large international network connecting 30 lakh computers, all these are a sign that arrive information society in the country. The authors also said that these new information technologies can provide enormous possibilities in agriculture and Rural Development sector. Moreover the use of these technologies needs to be planned very accurately at the village level.

(4) **Gulati Archana (2008)**⁵ published a paper entitled as “Dialing in rural prosperity through universal cellular connectivity” and concluded that mobile connectivity has tremendous potential to transform rural India. The Mobile connectivity can improve rural productivity, reduce dependence and can ensure that rural schemes actually meet to their planed benefits and thus sustainable growth for our country is possible.

(5) **P. Syama Thrimurthy (2009)**²⁰ published an article entitled as “Information communication technology for rural areas”. In this paper, author made an attempt present the importance of ICT, initiatives of ICT for rural areas and the obstacles that are to be faced while implementing various ICT projects of different States & Union territories for enhancing employment generation, agriculture counseling, entrepreneurial activity, increase market access, education and knowledge, to addressing health challenges, rural empowerment, women empowerment of women, good governance, etc. to upward the rural live hood.

(6) **Sabharwal and Sidhu (2011)**¹⁸ conducted a study on “ICT IMPLEMENTATION IN RURAL INDIA”. According to the authors the emergence of modern ICTs such as telephony; the Internet has tremendous opportunities for rural development. In this study the authors discussed some popular agricultural websites of the Government Departments, private profit-motivated as well as non-governmental organizations (NGOs), has information provision to serve peoples and to identify the barriers to communication.

5. Conclusion:

ICTs can play a major role in environmentally sustainable rural development; rural community development. ICTs have remarkable contribution towards improvement of economic and social development in India and have positive impact on rural society. In the developing country like India, to create information rich societies, to empower poor people, to reduce digital divide, sustainable development of rural community’s dissemination of ICT in grassroots level of villages is necessary.

References

- [1] Asheeta Bhavnani ,Rowena Won-Wai Chiu , Subramaniam Janakiram Peter Silarszky, The Role of Mobile Phones in Sustainable Rural Poverty Reduction available at http://siteresources.worldbank.org / EXTINFORMATION ANDCOMMUNICATION AND TECHNOLOGIES /Resources/The_Role_of_Mobile_Phones_in_Sustainable_Rural_Poverty_Reduction_June_2008.pdf accessed on 11 March 2017.
- [2] Balwant Singh Mehta, “Capabilities, costs, networks and innovations: impact of mobile phones in rural India” working Paper available at <http://www.capturingthegains.org/pdf/ctg-wp-2013-29.pdf> accessed on 15 March 2017.
- [3] Cecchini Simone and Christopher Scott. (2003). Can information and communications technology applications contribute to poverty reduction? Lessons from rural India. , Information Technology for Development, Vol. 10, Issue 2 (2003): 73 – 84.
- [4] David J. Grimshaw and Shalini Kala (2011) – Strengthening Rural Livelihoods: The impact of information and communication technologies in Asia - Practical Action Publishing Ltd., UK and the International Development Research Centre, Canada.
- [5] Gulati Archana (2008) - “Dialing in rural prosperity through universal cellular connectivity” - Kurukshetra – A Journal of Rural Development, Ministry of Rural Development, Government of India, Vol. 57, No. 1, ISSN-0021-5660.
- [6] Indiresan, P.V. (1989). Technology planning for rural development. *IASSI quarterly*, 8 (1), 52-63.
- [7] Jangid, Umesh Arya. (2004). Information technology: boon or bane. Ed by Kiran Prasad. Information and communication technologies; recasting development, New Delhi: BR, 67-80.
- [8] Jayade, K. G., Khot, P. G., Ambani, G. - Study of Information Communication Technology in Agriculture in Vidarbha Region of Maharashtra State of India. International Journal of Software and Web Sciences (IJSWS), 9(2), June-August, 2014, pp. 115-119. Available at www.iasir.net accessed on 15 March 2017.
- [9] Kumaresan, S.C. and Chitra, Alosia. (2003). A study on the need for rural information centers in the villages of Tamil Nadu. *Annals of library and information studies*, 50,137-145.
- [10] Leisa Armstrong N. Gandhi, 2012, “Factors influencing the use of information and communication technology (ICT) tools by the rural famers in Ratnagiri District of Maharashtra, India”, ECU Publications 2012, available at <http://ro.ecu.edu.au/cgi/viewcontent.cgi?article=1104 &context=ecuworks 2012> accessed on 12 March 2017.
- [11] Malik, Netrapal and Bharadwaj, Neelam. (2001). Village information centers: a strategy of using information technology for rural development”. *IASSI quarterly*, 19(3), 103-113.
- [12] Manish Kumar, Chitra Pathak and Singh, A.K. (2001). Information sources of rural poor: a study in US Nagar district of Uttaranchal. *IASSI Quarterly*, 19 (3), 123-133.
- [13] Mathur, Akshay and Ambani, Dhirubhai. (2005). ICT and rural societies: Opportunities for growth. The international information & library review, 37 (4), 345-351.

- [14] Mehtha, Sanjeev and Kalra, Manmeet (2006). Information and Communication Technologies: A bridge for social equity and sustainable development in India. *The international information & library review*, 38(3), 147-160. Available at http://www.sciencedirect.com/science?_ob=Article.
- [15] Midda, Abdul Momin. And Mukhopadhyay, Sripathi. (2006). Information and communication technology in e-education. *Journal of library and information technology*, 2(1), 42-48.
- [16] Mr. Atul D. Newase; Dr. Jitendra Sheetlani; Dr. Ranjit D. Patil; ICT: A Super Highway to Reaching the Unreached Rural Communities of India, *IOSR Journal of Computer Engineering (IOSR-JCE)*, Volume 18, Issue 6, Ver. VI (Nov.-Dec. 2016), PP 08-11.
- [17] Neelameghan, A. (1998). Information technology and rural development. *Information studies*, 4 (1), 55-61.
- [18] Nikhil Sabharwal, Gaganpreet K Sidhu, ICT IMPLEMENTATION IN RURAL INDIA available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.613.5951&rep=rep1&type=pdf> accessed on 16 March 2017.
- [19] Ogunsola, L.A. (2007). Africa in the global village: the challenges of co-operation and linkages in the 21st century. *Library progress (international)*, 27 (2), 165-179.
- [20] P. Syama Thrimurthy (2009) "Information communication technology for rural areas" – Edited by P Adinarayan Reddy – Science and Technology for Rural development – The Associated Publishers, New Delhi.
- [21] Prasad K.N. (2004). Digital divide in India narrowing the gap; an appraisal. *Information studies*, 10(3), 523-558.
- [22] Rasheed Sulaiman V, N J Kalaivani, Nimisha Mittal, P Ramasundaram, CRISP Working Paper 2011-001 "ICTs and Empowerment of Indian Rural Women. What can we learn from on-going initiatives?" available at <http://www.crispindia.org/docs/4%20crisp%20working%20papericts%20and%20empowerment%20of%20women.pdf> accessed on 12 March 2017.
- [23] Reddy, Naresh. (2003). I T for governance: opportunities. *Information technology for participatory development*. New Delhi: Centre for information research and development, 135-142.
- [24] Sharma, Aravind Kumar, (2007) Information needs and sharing pattern among rural women; a study. *IASLIC Bulletin*, 52 (3), 159-167.
- [25] Shukla, Saurabh and Gautam, J. N. - Impact of information communication technology in rural areas of Uttar Pradesh: bridging the divide. Ministry of Rural Development, New Delhi.
- [26] Surabhi Mittal, Sanjay Gandhi, Gaurav Tripathi, "Socio-Economic Impact of Mobile Phones on Indian Agriculture", working paper no.246, Indian Council for Research on International Economics Relations, New Delhi. Available at <http://www.icrier.org/pdf/WorkingPaper246.pdf> accessed on 12 March 2017.
- [27] Upadhyya, Padma V. (1996) *Information Technology and Community Development*. Role of libraries in national development. New Delhi: ILA, 323-328.
- [28] Warner M. F., Adoption of ICT in agricultural management in the United Kingdom: the intra rural digital divide. *Agriculture Economics*, 48(1), 2002, 1-<http://www.agriculturejournals.cz/publicFiles/59184.pdf> accessed on 03/12/2016.
- [29] World Bank Group (2002), URL:[http://web.worldbank.org/WBSITE/EXIERNAL/ TOPICS/EXTGENDER/EX11CTTOOLKIT/0"contentMDK: 20273967-menu PK: 54 2826 -pagePK: 64168445 -p iPK64168309-theSitePK: 542820, OO.html](http://web.worldbank.org/WBSITE/EXIERNAL/ TOPICS/EXTGENDER/EX11CTTOOLKIT/0)