ICT IN RURAL INDIA: ELUCIDATING BARRIERS AND CREATING OPPORTUNITIES

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Abstract

"Development is neither a simple, nor straightforward linear process."- (Haqqani, 2003)

The rural population represents two third of Indian population therefore their participation and involvement is more necessary in every aspect of governance. Duncombe and Heeks (1999) describe ICTs as an "electronic means of capturing, processing, storing and disseminating information". According to the United Nations Economic Commission for Africa (1999), ICTs cover internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information providers, network-based information services, and other related information and communication activities. Various initiatives in the recent past portrayed the significant role that the I.C.T plays in the realm of rural development. With the augmentation in population and competition in different areas of India, to cop up with demand in agriculture, to disseminate new expertise is requirement of new technologies. With the rising awareness amongst the citizens and their better experiences with the private sector– the demand for better services on the part of government departments became more pronounced.

The access of ICT helps in creating sustainable economic relationships and efficient markets. Moreover, it is also helpful in eradication of poverty and improving health .This paper discusses some landmark projects and throws a spotlight on current status of e-governance in rural areas and along with major impediments in their implementation. This paper has also provided a number of strategic initiatives used in Rural India in general. The need to carry out research on implementation of ICT in the rural market is of utmost importance. New outlook is needed to understand and manage pluralistic information flows and effectively use ICT. It does not make sense to achieve a developed status without a major and continuous augmentation of all villages.

Key words- E-commerce, Empowering, E-governance, Connectivity, Initiatives.

Introduction

The buzz word "Technology "is a double-edged sword in present days. It became a part of life and livelihood of any country. In the 20th century, rapid techno-logical advances led to rising standards of living, literacy, health and life expectancy. They also made possible a century of more deadly warfare, the industrialization of mass murder, global warming and ecocide. The promise of Information and Communication Technologies (ICTs) for the 21st century likewise presents both opportunities and challenges. ICTs are basically information-handling tools – a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information for the development of the country. They include the "old" and "traditional" ICTs of radio, television and telephone, and the "new" and "advanced" ICTs of computers, satellite and wireless technology and the Internet. These different tools are now able to work together, and combine to form our "networked world" -a massive infrastructure of interconnected telephone services, standardized computing hardware, the Internet, radio and television, which reaches into every corner of the globe.(UNDP Report, 2011)

In developing countries like India the concept of development linked up with the rural development. Most of the Asian countries are depended in rural areas. The Governments of those countries concentrated to develop or uplift the rural areas for strengthen their economical and social development. The specific concern here is the potential role and importance of ICTs in support of rural development. Current ICT initiatives tend to focus on infrastructure development and the extension of information and communication services from the centre to the periphery.(World Bank, 2010)

ICT benefits the poor by removing social, economic and geographic isolation by increasing access to information and education and by enabling poor people to participate in decision-making. India is also known for a number of ICT applications in e-governance and poverty alleviation, through the progress of ICT use. Michiels and Van Crowder (2001) have defined ICTs "as a range of electronic technologies which when converged in new configurations are flexible, adaptable, enabling and capable of transforming organizations and redefining social relations". The range of technologies is increasing all the time and there is a convergence between the new technologies and conventional media(Michaels and Van Crowder, 2001:8). This rapid and ongoing convergence means that devices such as digital cameras, digital video cameras and players, personal digital assistants, slide projectors and mobile telephones are also compatible with more traditional media such as radio (digital, satellite),television (cable, digital, satellite). The Government of India has made substantial efforts in the last few years to overcome the challenges, including that of connectivity of its 70 per cent rural population. Looking towards sustainable growth the government has announced that Rural Broadband Connectivity to all 250,000 Panchayats (local governments) in the country will be provided in three years to bridge the digital divide.

Review Of Literature

The context of rural development has changed rapidly in recent years (Ashley and Maxwell, 2002) but some three-quarters of the world's poor still live in rural areas. Furthermore, although in decline, agriculture remains the direct and indirect base for the economic livelihoods of the majority of the world's population (IFAD, 2008). There is an extensive literature on the costs/benefits of recent changes for rural areas (Killick 2000). The ICT is the main factor for the recent changes of the rural face. ICTs have a potential for economic growth and social empowerment. Using direct or indirect application of ICT, in rural development sector has also been referred to as "Rural Informatics". Rural economies can be benefited from ICT by focusing on social production, social consumption and social services in the rural areas. Sustained development using rural informatics is possible, only if ICT interventions are able to respond to the local needs and re-adjust as per the prevailing knowledge of the rural areas. In the rural context, development involves use of physical, financial and human resources for economic growth and social development of the rural economies (Burkey, 1993). By adopting ICT in mid 1990s, public sector underwent a major transformation (Bellamy and Taylor, 1998).

Particularly how far ICTs offer any new solutions to long-standing rural development problems and whether they can make a significant contribution to enhancing existing and ongoing initiatives. The lack of systematic, transparent recording and public documentation of government data also affects poor, as in the case of land records. Without land records as collateral, poor cannot obtain loans and often cannot get assistance from government poverty alleviation programs intended for small farmers (Warschauer, 2003). The context of rural development has changed rapidly in recent years but some three-quarters of the world's poor still live in rural areas. Furthermore, although in decline, agriculture remains the direct and indirect base for the economic livelihoods of the majority of the world's population (IFAD, 2010). ICT can play an important role in many aspects of rural development. It can also help to better govern various aspects of rural development. The working definition (used by the British Council) emphasizes that Governance involves interaction between the formal institutions and those in civil society. Governance refers to a process whereby elements in society wield power, authority and influence and enact policies and decisions concerning public life and social upliftment. ICT can strengthen the role of each governance pillar in rural development and poverty reduction and also it can facilitate speedy, transparent,

accountable, efficient and effective interaction between the public, citizens, business and other agencies. This not only promotes better administration and better business environment, but also saves time and money in transactions costs of government operations (IICD 2001).

Asia is home to 60 per cent of humanity. With some Asian countries, including China and India, averaging around 8 to 9 per cent of the continent's GDP, Asia as a whole continued to expand e-government services further. Investments were made horizontally to expand infrastructure, including support for broadband and mobile access, while at the same time governments reached out to provide greater online services and improve e-governance. In 2012, three of the world's top 20 e-leaders are from Asia, and the region as a whole has a higher level of e-government development than the world average. While there has been improvement in providing e-services across the continent, some of the largest gains are found in Western Asia. The Republic of Korea (0.9283), the world leader in e-government, is also the top performer in Asia with around double the average world e-government offerings. The 2nd slot is taken this year by Singapore (0.8474) followed by Israel (0.8100) and then Japan (0.8019).Figure (1) shows the ratings of India in respect of Republic of Korea with in context of Index and Metrics.(2012)

Figure 1 e-Government Readiness Index and Metrics
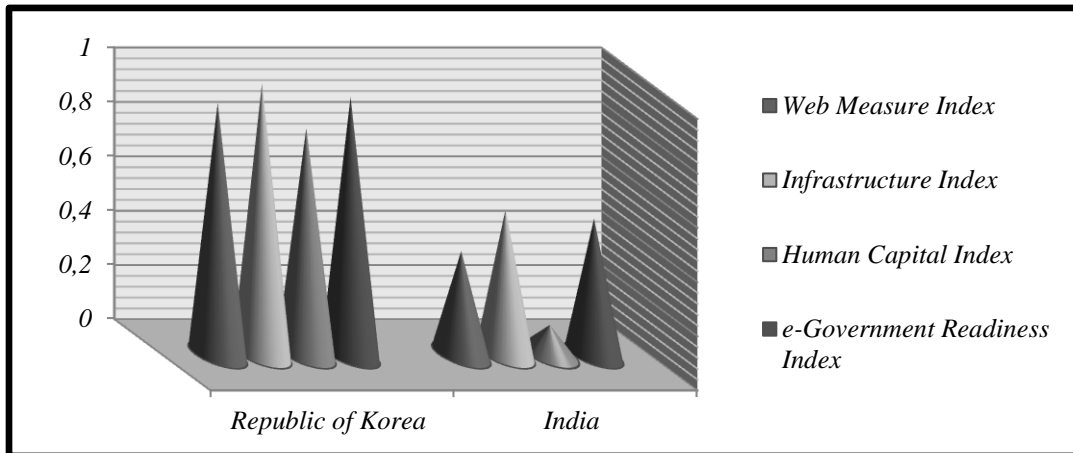
Source: UN (e-Government Report , 2012)

Objectives

This paper discusses some landmark projects and throws a spotlight on current status of e-governance in rural areas and along with major impediments in their implementation. This paper has also provided a number of strategic initiatives used in Rural India in general. The need to carry out research on implementation of ICT in the rural market is of utmost importance. In short:

- To study various initiatives taken by government, corporate, NGOs, etc. related to ICTs in rural INDIA,
- To study the various challenges and possible threats to implement ICTs into rural areas.

Research Methodology

This was a combination of a qualitative study and one based on a survey of prior work in the area. We conducted a literature review, and analyzed the advances and adaptations that have been made Methodology used here is secondary data and discursive analysis. Secondary data was accumulated through various sources like internet, reference materials, newspapers, magazines, Published reports; news reports of news channels, articles in journals were used.

Blending Of Traditional And Modern Technologies

According to the India 2011; a census data sheet , the population of India, at 1210.2 million, is almost equal to the combined population of U.S.A., Indonesia, Brazil, Pakistan, Bangladesh and Japan put together (1214.3 million)! In India more than 72% of the Indian population live in alienated rural areas who earn their livelihood from agriculture. Most of the villages are lacking proper ICT infrastructure, though India spends approx. 28% for ICT. The rural Tele-density is also very low as compared to the urban areas. A wide rural urban disparity, which is further aggravated on the regional basis, has created an acute divide in variety of social and economic activities including education. Latest world development indicators show that in information society indicators, i.e., computer, Internet, radio, television, newspapers etc. An explosion in the free flow of information and ideas has brought knowledge and its myriad applications to many millions of people, creating new choices and opportunities in some of the most vital realms of human endeavor. Yet most of world's population remains untouched by this revolution.

Application of ICT in processes of governance can be considered in two categories viz. for improving government processes and secondly for building interaction with and within civil society. The examples of the former category are: dissemination of public information grievance redressal mechanisms, utility payments and billing services (Mitra and Gupta, 2003). This intervention of ICT in public domain, managed by Government, is referred as e-Government. Secondly, ICT improves civil society participation in the governing process, which is also referred as e-Governance. e-Governance has a greater scope and connotation than e-Government, even though ordinarily the terms are used interchangeably (Andersen and Henriksen, 2006; Sahu, 2004). Post Independence, the Government took upon itself the major responsibility of development in rural domain. Many projects were implemented. As the access to radio was supreme during that period, the use of radio for rural development was conceived first. It came to be known as Radio rural forums. The expedition was carried out from February to April 1956 in five districts of Maharashtra state by All India Radio (AIR). In spite of several initiatives which were taken, some new projects offer services of following three types; Informational services disseminate generic (non-customized) information, such as agricultural practices, weather forecasts, and contact information. Transactional services involve an exchange of specific (or customized) informational services or funds between two or more parties using the ICT infrastructure. e-Governance services refer to transactional services that involve local, state, or national government. Providing land records, submitting user complaints to local officials, and confirming a user's presence on electoral rolls are examples. A more detailed description of the project is shown in Table (2) below.

Table 1- Projects/ Initiatives for ICT's development in Indian Context

PROJECT (Year)	MANAGEMENT	NO. OF USERS/DAY VS. TARGET POPULATION (PER CENTER)	STATED SERVICE OBJECTIVE	PRIMARY SERVICE TYPE AND CONTENT	USER SATISFACTION WITH EXISTING CONTENT AND ADDITIONAL SERVICE MOST DESIRED
Bellandur	Gram Panchayat	200 vs. 30,000	e-governance	e-governance tax collection	High. e-Governance
Boodikote	NGO	20 vs. 25,000	Information	Business Info: Loans and insurance	High. e-Governance
APOnline	State govt – private	75 vs. 15,000	e-governance	Business transaction: utility bills payment	High. e-Governance
Gyandoot	Government	10 vs. 25,000	e-governance	e-governance: forms and records downloads	Low. e-Governance
HP iCommunity	Private	13 vs. 22,000	All services	Business information: agricultural/ veterinary	Low. e-Governance
ITC eChoupal	Private	25 vs. 2,000	Transactions	Business transaction: agricultural/ veterinary	Medium. e-Governance
MSSRF	NGO	22 vs. 3,000	Information	Business information: agricultural	High. e-Governance
n-Logue	Private	20 vs. 2,000	All services	Consumer transaction: email	Medium e-Governance
Warana	Cooperative	40 vs. 6,500	Transactions	Business transaction: supply-chain management	Low e-Governance

Source: National Informatics centre (NIC) , Report 2004.

Bellandur Project is a gram panchayat e-government solution. Working closely with the panchayat members and village residents, the software was designed to suit the needs of panchayat administration. Bellandur Rational Unified Process (RUP), a set of software engineering tools, enables a phased and interactive approach to e-government. At present, the panchayat office has three computers, one for each of the bill collectors. All the district offices, taluka offices and gram panchayats are connected. The committee meetings are aired on the cable television.

Gyandoot (2000), which means "Purveyor of Knowledge" in Hindi, is a government-to-citizen,intranet-based service portal, implemented in the Dhar district of the state of Madhya Pradesh, India. Under the project, 38 kiosks have been established, with each kiosk covering approximately 38 villages in its vicinity. This has facilitated easy access to government services, for which the villagers previously had to travel to the district headquarters situated miles away. Nearly 6,000 complaints were filed in the first year, highlighting inefficiency in the workings of various departments of the district administration.

Hewlett Packard (HP) iCommunity (2002) is a multinational company and has decided to invest in the future of its business by learning more about developing country markets. The vision translates to on-the-ground engagement with such developing economies, creating an "i-community" ("inclusive-community") in the process. HP i-community program seeks to create robust ICT solutions that are economically self-sustaining while building leadership and capacity within the community. It also aims at establishing a scalable and replicable model for sustainable socioeconomic growth

ITC eChoupal (2000) Internet kiosks (e-Choupals) located in the villages allow farmers to gain access to information on weather, crop prices, scientific farming practices, farmer peer groups, soil testing services, trainings; this enables farmers to improve productivity and make better informed selling decisions.The initiative provides an alternative market linkage mechanism at a lower cost.

MSSRF (1998) is a non-profit trust registered in 1988 with its headquarters in Chennai. Headed by M.S. Swaminathan, a renowned scientist, MSSRF undertakes activities focused on job-led economic growth which is sustainable and socially equitable. Swaminathan's e-villages have developed a novel approach to empowering people through increased access to information. Computer terminals (rather than telecentres) have been pre-loaded with a database of useful information relating to government services, such as agricultural extension, health and the police that contain the relevant contact details for each village.

 N - L o g u e (2000) provides telecom and internet services in small towns and rural areas of India. For operational purposes N-Logue divides the country into service areas corresponding approximately to a taluka (Tehsil). Eighty-five percent (85%) of taluka headquarters in India have optical fiber today which acts as the backbone for telecom and internet connectivity. N-Logue ties up with a number of content providers such as state government, rural development ministry, agricultural ministry and fertilizer/pesticide manufacturers. N-Logue employs WLL technology as the basis for its village-level communications.

Barriers And Recommendations
Despite the developments in the Indian context there are still a number of barriers that need to be attended including providing necessary content for education, literacy, equitable access opportunities for all, enhancing libraries, particularly rural libraries and community centers role. It requires a bending of the powerful ICTs, which are highly flexible and moldable.

1. Infrastructure

The barrier that we face in ICT for development is designing and building technologies and networks that are suited for the needs of our citizens. Despite the growth of Internet, India has to provide a robust telecommunication infrastructure with suitable, sufficient and reliable bandwidth for Internet connections along with necessary hardware and software. Faster network with sustainable funding for their necessary infrastructure is the need of the hour.

2. Connectivity and Affordability

Access to the Internet as well as the telecommunications is confined mainly to the urban centers in India and the rural areas remain beyond the ambit of new technology. Despite the ongoing deregulation of India's telecommunications sector, its national teledensity is one of the lowest in the world at 8.44 (China with 49.74, Asia at 33.56 and world at 46.41) (ITU, 2005a). Hence connecting rural areas is a bigger challenge, because subscribers are geographically dispersed, sparsely populated and economically weak. Moreover telecom companies may not venture into remote villages because the purchasing power in the villages is not enough to recover the cost of connecting them.

3. Equitable Access

Access to ICTs alone cannot generate the knowledge or redress the social inequalities. This requires meaningful use of ICTs for accessing the contents in local language as well. One of the foremost things to be done is to provide universal access. It is imperative that any benefits of ICTs are shared equitably by all sections of society. One obvious implication is to make more and more e-governance services available through kiosks, which would save time and costs in terms of a reduced number of visits to the government offices and less corruption.

4. E-Literacy

Another attribute of the kiosks that affect their diffusion is the perception that the technology is complex and therefore only the educated people can understand and use it. The very image of a computer which they can use only with the help of an external operator is too complex for them. This situation is expected to get better with the improvement and propagation of the e-literacy skills among the masses. In spite such that , it is encouraging to note that out of total of 217,700,941 literates added during the decade, female 110,069,001 outnumber male 107,631,940.(census data sheet of India , 2011)

5. Strengthening Public and Rural Libraries

A very important reliance to rural development initiatives are the rural libraries. But the rural libraries in India are a forgotten identity and are suffering from the financial crunches. Though IT was introduced in rural development but these libraries were totally neglected as an asset in the dissemination of information to the rural population. Even the IT policy formulated in year 2000 showed little interest in developing such libraries. The rural administration should explore the tremendous potential of the rural libraries in bridging the digital divide and hence should understand the changing scenario and find better solutions to transform these into valuable centers.

6. Community Ownership of ICTs

A combination of community owned ICT enterprises and new wave of wireless and related technologies together may offer significant potential to extend networks and offer new services in rural areas. It can greatly reduce costs and maximize the use of value added community resources, enabling the emergence of a new business model that is both more economically sustainable and more empowering than anything else. Pooling users in the form of Tele-centers or community information centers enhances the ICT usage level, but extending the reach of the network serves the key challenge. In India, the Ministry of Information and technology have taken several initiatives for rural development through the community information centers.

7. Local Language and Local Content Development

Information network will be meaningful in a rural context only if there are local content. There is a requirement of local language accessible software that caters to the needs of the local citizens. The customization will help the government to know the citizen's need. Government has to ensure that the disadvantaged groups and communities are provided online content and services that are potentially usable. For e.g., e-seva is providing information in regional language also.

8. Cost and quality

Very few ICTs in use in rural development programmes in developing countries have been designed for that purpose. The result is that the technology is often too expensive and too fragile to be really used freely for public access. Projects that identify and cost the services they provide are more successful. The sustainability of ICTs projects is high when external component of the project funding is of a reasonable level and the activities are sustainable.

Conclusion

Information and communication activities are a fundamental element of any rural development activity. Creating information-rich societies is a key element of poverty alleviation and sustainable development. While education and training develop cognitive skills, it is information that gives content to knowledge. The importance of information for development is undoubted but important issues surround whose reality the information reflects, who is able to make use of that information and for what purpose. the role and potential of ICTs for rural development, it is useful to distinguish between knowledge gaps that refer to unequal distribution of technical knowledge and information problems, both of which contribute to underdevelopment. ICTs have the potential to address both these barriers to rural development by facilitating improved knowledge sharing and information exchange. However effective application of these technologies requires greater understanding of both the potential of the technologies in question and the social, political and cultural context in which they could be used. A number of simple approaches to ICTs are being developed in this way and the opportunities for experimentation and creative adoption of ICTs are likely to grow as the technologies become increasingly flexible. However, through a combination of dedicated local champions or intermediaries (Richardson, 1997; Mundy, 2001; Akakpo, 2001) and a cross-sectoral approach incorporating a range of local priorities such as health, education and agriculture the potential of ICTs has begun to show itself as a means of facilitating flexible approaches to address the multidimensional complex developmental needs of the poor. The strategic use of ICTs to develop CKPs in rural areas could ensure that both the knowledge and empowerment that result from increased information exchange are shared more equitably.

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