ICT in Rural India: Dynamics of Inequality and Digital Divide

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Abstract

The spread of Information and Communication Technologies (ICT) is often stated as the harbinger of a new information revolution and thus an engine of a new economy. The attributes of these new technologies now increasingly dominate the explanations of contemporary change and development. Dissemination, propagation and accessibility of these technologies are viewed to be integral to a country's development strategy. Efforts and projects are under way to bring ICTs to rural areas because of the belief in the transformative potential. The role of ICTs in poverty alleviation and rural development seem to be largely touted in the academia as well as in the policy decisions. But, does the simple access to ICTs likely to alter the lives of the individuals in rural areas? It is argued that while the debate about insertion and enhancing potential of the ICTs into rural settings is substantial, its transformative power with respect to the lives of the common people is overestimated. The paper in progress is an attempt to debate and explore the application of ICT in the Indian situation. Implementation and functioning of the some of the e-governance policies and projects at the grass root levels in rural India are dealt. The paper seeks to explore the theories, practice and the praxis of the ICTs and its application. It elaborates upon the way they have become a powerful mode of symbolic representation of empowerment.

The 1980s and 1990s have witnessed serious discussions, deliberations and anticipation concerning new Information and Communication Technologies (ICT). It is neither a matter of radical technical innovations such as the Internet/ World Wide Web and its potential prospects, nor is it merely a widespread application of ICT devices and its services. What is involved is nothing less than a major shift in the way we think about the nature of such new technological development and their implications for the social, economic and cultural order. The recent interest in ICT and its perceived 'impact' in economic, social and cultural domains have been reflected across the whole spectrum of the media and public communication. Ideas and images such as 'information superhighways', 'cyberspace', 'information society', 'the networked society' which were largely confined to the realm of science and fiction writing are now employed frequently to describe the changes associated with new communication technologies. It seems as if McLuhan's vision of 'the Global Village' is at last being realized as we witness 'the death of distance' (Cairncross, 1997; Gates, 1996). Indeed, for some, the diffusion of various forms of computer technologies into our everyday worlds at work and home now means that computing is no longer about computers but 'about living' and the very essence of experience and life itself is all about 'being digital' (Negroponte, 1995:4-8).

Review of Literature

There has been a surge of academic writings with a special focus on the role and impact of new ICT and information structures. The striking feature of these writings tends to focus on the technical characteristics of the new devices or systems. Researchers with technical background such as computer science or computer applications have emphasized upon the radical social and cultural impact of new ICTs. However, they are marked by a weak theoretical and historical understanding of the complex interactions between technological change and society. Such contributions reproduce the kind of marketing and promotional hype advanced by very specific industrial interests and technocratic elite based in the high-tech sector. Thus as we enter the new millennium, there is a need to analyze the concept of information technology and assess its presumed social and economic benefits in the process of development. The technical attributes of the new ICTs increasingly dominate explanations of contemporary change and

development. Many sociologists see technology as an impetus for the most fundamental social trends and transformations. Indeed, understanding the role of ICTs in the economy and society is now central to social theory. While there are a variety of social theories that proclaim the radical transformation of the society all contain, at their core, claims about technological change and its social impact.

Daniel Bell, one of the most influential writers on the 'postindustrial society' argues that the significance of theoretical knowledge in its changing relation to technology, and the codification of theory as the basis for innovation (Bell, 1973:35). Although much of Bell's reference is on the western countries, such changing trends are visible in the developing countries too. In his 'three axial model', modern society is divided into three parts and each is ruled by a different axial principle. First, there is the **social structure,** which comprises the economy, technology and the occupational or stratification system (Bell, 1973: X-XI, 12-13). He says that in modern western society, the predominant axial principle of the social structure is *economizing* – a way of allocating resources according to principles of least cost, substitutability, optimization and maximization. The second is to do with **polity** and the axial principle here, according to him, is *participation*. The third is **'culture'** which refers to the realm of expressive symbolism and meanings. The axial principle of culture is the *desire for the fulfillment and enhancement of self*. Thus Bell's model of emerging information society suggests a change in the social structure, the consequences of which will vary in societies with different political and cultural configurations.

Jean- Francois Lyotard and Jean Baudrillard also have made specific analysis of the changing role of information, mass media and communication technologies and their implications. According to Lyotard, 'the status of knowledge' is altered as societies enter what is known as the 'post-industrialist age' and culture enter what is known as 'postmodern age' (Lyotard, 1984:3). He dates this transformation from the end of the 1950s, but like Bell he states that the pace differs according to country and sector. He is of the view that computerization may open up a situation of truly 'perfect information'. Unlike Lyotard or Bell, Baudrillard focuses attention on mass communication processes related to the sphere of consumption and everyday life. He stresses especially on the characteristics and role of new communication technologies, the expanding media,

cultural and heritage industries, the proliferation and circulation of signs associated with consumer goods and their impact in transforming the experience of the late twentieth century.

On the other hand, Manual Castells (1996) argues that revolution in information technology is creating a global economy, the product of an interaction between the rise in information networks and the process of capitalist restructuring. In the 'information mode of development', labour and capital, the central variables of the industrial society, are replaced by information and knowledge. In the resulting 'Network Society', the compression of space and time made possible by the new communication technology alters the speed and scope of decisions. Organizations can decentralize and disperse, with high-level decision making remaining in 'world cities' while lower-level operations, linked to the centre by communication networks, can take place virtually anywhere. Information is the key ingredient of social organization and flow of messages and images between networks constitute the basic thread of social structure (1996:477).

There are some contemporary theories that are technology-centered and these theories can be defined as third-wave models or transformative theories. The striking feature of these theories is a heavy reliance on the assumption that ICT is the key 'driver' of a fundamental transformation of the core economic structures and social relations, which have characterized the capitalist industrial societies for the past two centuries. They suggest that ICT is forging a radically new mode of production, one, which transforms the key social and economic relations of industrial capitalism. Besides a primary emphasis on the ICT factor, some of these analyses also refer to the transformative impact of the expanding economic role of information and /or of the emergence and diffusion of digital communication networks (Kelly, 1998).

The developing countries have always been emulating the developed countries in various ways. These theories can be applied to the Indian situation carefully to explain the emerging realities of the technology driven society and could then be related with the developed countries. The three waves as explained by Toffler are major changes in the civilization. The first wave came with the development of agriculture, the second with industry. Today we are in the midst of the third, which is based on information and is bringing about the transformation of countries across the globe. The presence of the 'third

wave model' has led to the trisection of world power. "Agrarian nations are on the bottom, smokestack countries in between, and knowledge-based economies on top" (Toffler 1980). In India one can see all the 'three waves' coexist and collide.

ICT and Development in India

Development can be defined as a "widely participatory process of directed social change in a society, intended to bring about both social and material advancement (including greater equality, freedom, and other valued qualities) for the majority of the people through their gaining greater control over their environment"(Singhal and Everett, 1989). Development is also a process, which enables the full realization of the potential of human beings, and the ultimate objective of development is the fulfillment of the human potential. Thus development can be understood at two levels, that is, at the level of individual development and the level of societal development in general. Both are interconnected and seek to improve the quality of life among the people. While discussing the role of Information and Communication Technology in development, communication plays a vital role. Development Communication is the concept often used to refer to the benefits of communication to further development. Some of the key elements in development paradigm are the following as suggested by Singhal and Rogers in the late 1980's:

- Greater equality in the distribution of development investments, information, and the consequent socio-economic benefits, by focusing development activities on the weaker sections of society.
- Popular participation, knowledge sharing, and empowerment to facilitate self-development efforts by individuals, groups and communities.
- Self-reliance and independence in development, emphasizing the potential of local resources.
- Integration of traditional and modern communication systems.

In India the adoption of ICT as a driver of the economy became visible only since 1990s. Free market economy in India paved the way for gradual growth of ICT technologies and its penetration both in economy and society resulted in a paradigm shift in the development process. Bill Gates has rightly said in his book "The Road Ahead"

that the Information Highways are a mass phenomenon or nothing. For developing countries ICT is having a measurable impact on the socio-economic conditions of the people and it is gradually being accepted. Development economists feel that ICT should not be treated as an isolated sector, but should be used as a lens to re-think development strategies, as a tool to enable all sectors and as powerful means to empower the poor.

It is argued that it is critical to understand how information and communication are vital to the lives and livelihoods of the poor and how ICT could enhance their access to markets, institutions, services, education and skills. One major contribution that ICT makes is to break the mutually reinforcing cycle of poverty and lack of information or access to ways of improving the fate of the poor. The poor lack access to information about income, earning opportunities and market prices for the goods they produce. To add to this, most of the time they are unaware of their rights, health and hygiene, public and welfare services. The poverty stricken condition of the poor gets accentuated due to lack of knowledge, education and the skills to improve their livelihood. Unless there is a strong democracy, they may lack even the political leverage necessary to have their voices heard. These observations have been confirmed in several projects where ICT has been applied in breaking the poverty, low productivity cycle and bringing some hope to the poor.

Computers provide a means of processing information efficiently. They can be used as a tool in management, business, local development, engineering and most importantly for governance in administration at different levels including the village level. The computer is not just a tool, but as described by Alvin Toffler in his work "Power Shift", a subversive, an electronic bulldozer, a change agent. Computer compels us to redefine our institutions. ICTs is adopted not only to improve the economy and raise the quality of life of the people but also to transform peoples' mind sets and facilitate rapid change (Ghosh, 2004).

ICT in Rural Areas

Most of the developing countries for a long time believed that 'telecom' in itself was a great luxury. But with other infrastructure hitting their lives, they are opening themselves to a whole new range of experiences. They are on the roads of realization that information revolution can transform their lives. Recent experiences with experiments like Gramdoot in Rajasthan, Bhoomi in Karnataka, 2Mbp universal connectivity in Andhra Pradesh, Gyandoot in Madhya Pradesh and e-Choupal across the country suggest that ICT has been quite useful for the rural masses and has met some of their immediate interest and enhanced the quality of rural life (Ghosh, 2004). Several cases articulate the benefits derived from the rural communities out of ICT technologies.

Internet and Villages

The Swaminanthan Research Foundation in some of the villages in Pondicherry is known for promoting the use of information technology and communications through a number of internet centers for getting information across to farmers and fishermen, and from them to urban centers. Dr. Swaminanthan, a top ranking agricultural scientist and administrator, and a winner of Magsaysay award for his accomplishment has been advocating a community-based approach to farm problems**.** He has trained local villagers in areas around Pondicherry to monitor information needed for farmers, fisherman, cattle growers and artisans and helped improve their lives. His foundation based in Chennai, has helped open *internet kiosks*, wherein a local person trained by the Foundation helps villagers to gain information on a variety of their needs. In addition, these kiosks also feeds the farmers information on local weather conditions, prices of various agricultural commodities in nearby markets, on healthcare and several other areas. The entire project is largely run by the people themselves. It is said that information from the computers in rural areas, where people live in thatched mud huts, has saved the life of a milking cow, prevented an old woman from becoming blind and routinely warned fisherman of stormy whether that can claim lives.

In another experiment in Tamil Nadu, professors from IIT, Chennai formed *"n-Logue"*, an institution to bring low cost communications to the rural and remote areas. 'n-Logue' is a rural internet service provider dedicated to providing internet access to villages. As a result villages have access to wide range of information to the villagers such as a technical course in Chennai, a birth certificate, an income certificate, a caste certificate, a school admission form, information about railway reservation in the city, complaints regarding non-functioning of water pumps, etc. Thus some of the villages in India stand connected to the world. ICT in future can possibly end the isolation of village communities.

Gyandoot and its Services

Gyandoot is an experiment conducted in one of the backward districts, Dhar in the state of Madhya Pradesh. The project aimed at setting up the intranet system that connects rural cyber kiosks throughout Dhar district, which has a heavy tribal population and very low literacy. The experiment involved an arrival of a computer and the availability of information on demand to the people. So Gyandoot provides government-related and other information to the public and enables them to get government forms and other papers they need from kiosks for a small fee. This experiment was awarded a Swedish award for community leadership. The project, however, is not an extenuation of the government, but is run as an independent institution by the local registered society called Gyandoot Samiti. The government input comes through the Dhar District Rural Development Agency, which has provided office space for the network server and project team, free of charge. The aim of Gyandoot is to use a district-based intranet to increase facilities available to the public regarding government policies and procedures, training and education, and commerce. The real benefit of the programme has been the increased awareness of what information technology could give the people and the ease with which this is accessed. The villagers finds that need not have to bow before the officers for such information, which he has right to know, and that right can be exercised by asking the computer operator to give him the information. This improves the feeling of empowerment amongst the people and thereby it waters the grassroots of democracy.

Gramdoot and its Services

While Gyandoot focused on the use of information technology in the backward districts, Gramdoot is a more compact and well-conceived project regarding the use of computers in the district areas. The project was conceived and executed by a young fiber optics company, Akash Optic Fibre Ltd. Through its subsidiary Akash broadband, the project seeks to bypass the high cost of rural telephony by making connectivity available for a number of different services thereby spreading the costs and making these services affordable to the targeted rural communities. The project was implemented in one of the districts in Jaipur, and with sufficient backing so that it could spread to whole of Rajasthan.

The range of services offered by Gramdoot includes e-governance, email, e-commerce, matrimonial services, market rates, expert advice, internet, cable, web conferencing, telemedicine and entertainment. Services like copies of certificates and land record are charged a small sum of Rs 20, while cable TV is provided at Rs 105 per month. The menu is prepared in consultation with the intended beneficiaries, so that there is a sense of participation on the part of rural communities. Some of the services are unique such as a web conference with a villager in another village, which costs only Rs 5 for a three – minute interaction. The use of optical fiber ensures that the quality of services is high and that multiple services could be provided. The Gramdoot project has all the efficiencies traditionally brought in by advanced corporate management thus making it more cost effective. It is designed to bridge the digital divide between rural India and the rest of the world by providing e-governance and rural convergence.

Computer and Land Records

Land record is the most vital document in any Indian farmer's life. It is the basis of the entire revenue administration, the area where the government pinches the farmer. For instance, buying and selling or pledging of land to get loans and several other interactions in the village depends upon the production of an authenticated land record document from the village officer who looks after the official matters. He is a powerful man who can make or break the lives of farmers in India. He can play around with the lives of

farmer as he has control over the small piece of paper, which documents the details of the land, which is actually the lifeline for most farmers. The government is aware that it is quite difficult for the poor and illiterate farmer to protect his land record against land lords and powerful local leaders.

An attempt is now being made to computerize all the land records and give computer outputs for these records a legal status. In Karnataka it is popularly known as '*Bhoomi Project*', which has won international awards like the recognition from the Commonwealth Association for Public Administration and Management and the Stockholm Challenge Award. The project in simple terms digitized some two million-land records in 27 districts. In practice this was a mammoth effort of transferring to the computer the handwritten records, many of them decades or even centuries old and in local languages. The government implemented the scheme taluk by taluk so that each farmer has switched from handwritten records to computerized ones. Gradually, the handwritten ones were declared as illegal from the date of implementation in each taluk. The most important outcome of the project so far as the farmer is concerned is that now he could walk into a kiosk and ask for a copy of his record for as low as charge of Rs 15 per copy within 30 minutes of applying, which is a record in e-governance in the country where delays in responding to such applications is the rule. More than five million farmers have already availed the Bhoomi service from various kiosks. Computerized records make farmers free from harassment by the government officials, middlemen, village level leaders, etc and farmers now have direct access to all information about their property which was earlier not possible.

Bellandur: An Electronic Village

Bellandur is a village situated 25 kilometers away from Bangalore, Karnataka and it comes under the Bellandur Gram Panchayat. The Bellandur Gram Panchayat is the first Panchayat in the country to introduce computers at village level governance making e-governance a big success. What makes this project unique is that the project is not being funded by the government, but it is entirely and exclusively the result of a private

initiative and the villagers themselves largely known as Village Development Committee (VDC).

Bellandur's e-governance project started with a single computer that was brought to the village in 1998 to replace the Panchayat's old typewriter. This brought Bellandur to the notice of Compusol, an IBM and Microsoft joint venture company, which is currently involved in research and development of e-governance software packages to suit the Indian context. Working closely with the panchayat members and village residents, Compusol managed to devise software packages to suit the needs of panchayat administration, handling the recording of property details, tax collection, data management and so on. Such an initiative has completely changed the way the panchayat function. Property-related records such as land revenue details and land dimensions are now stored in the computer. Records of bills paid are made available to members of the public. Since the software uses the local language, ordinary residents have experienced no problem in getting involved in the project. In addition to speeding up processes such as tax collection, property transfer and reducing the workload of the three bill collectors, the e-governance project has set off other developments. Following the computerization of tax collection, the panchayat has recovered a huge outstanding and this has allowed the panchayat to channel funds for other development projects such as macadamizing roads and digging bore wells.

It will be rather difficult to term Bellandur as village or gram any more as it has a appearance of a full fledged city full of commercial activity. There are several reasons for this village to attain the stature similar to that of a ‘satellite town’. Primarily, developmental activities are being undertaken under the initiative of both panchayat and VDC (Village development Committee). Roads are being repaired and macadamized which give a new look to the village. The basic need of the people of the villagers namely drinking water facility is being taken care of with the construction of bore wells. The water facility system has been properly channelised with water supply reaching every household and the residents in turn have to pay some minor amount as tax every month. The drainage facility has also been improvised with the construction of underground drainage that cost around 5 lakhs, which was borne by the VDC. Finally access to

Bangalore city also has helped in improvising and in the implementation of the basic infrastructure of the Belandur satellite town.

Generally as we enter an average village in India, we witness the scene of clogged water, slushy and muddy roads especially in the rainy season, and absolutely no healthy toilet and sanitation facility. However, Bellandur surprises most visitors with its underground drainage system and sanitation facility. Besides, household appliances, articles, fancy shops and facilities for photocopying, studios, and shops with computer appliances etc., are available, as is so in the city. All these luxuries have made this place a heaven for hundreds of employees who reside in this village because it is expensive for them to reside in the city of Bangalore. There are a number of government employees who commute everyday to the city for their employment and come back to their homes in this village. Similarly, there are a number of young software professionals who are employed in various firms in Bangalore who reside in this village, as it is difficult and expensive to do so in the city. Since schools are also being established, Bellandur is likely to have its own demand in the near future as it is being used as one of the many satellite hubs of Bangalore. Thus Bellandur is offering to a large population a life style similar to that of a city that is cost effective and pollution free. Once a village, this place has been slowly transformed into a township and mini-city like structure thus acquiring a new tag for itself as an 'Electronic Village'.

ICT and the Digital Divide

'Digital divide' is the gap in technology (computing and communications) usage and access. This manifests itself in many different ways: between the big company and the smaller companies, between the people in the developed and developing countries and also between the urban and rural populations. The divide is brought about by differences in education, language and income levels. The education divide limits the usage of computing. Language in countries like India is another barrier because most software is still only in English. The perceived market is too small to make investments in creating software for the mass market in different languages, because companies are not sure if they will recoup their investments. Income levels are a huge obstacle as most technology

is still dominated in dollars, which makes adoption beyond the scope of most individuals and enterprises, for whom earnings are in local currencies with unfavorable exchange rates against the dollar. The result then is the division of the world into two - one which has access to computers, communications and the internet, and the other, which does not have access to the above. Thus, there are sets of adversaries too in the package offered by the ICT. Besides giving rise to the 'Digital Economy' (or the knowledge economy), these technologies have also given rises to the 'Digital Divide,' further penetrating the already divided world of 'haves' and 'have-nots'.

Some of the fundamental queries, which need to be addressed are the following:

1. Is Digital/knowledge economy stopping at big towns and semi-urban towns?
2. To what extent it is affecting the rural and semi-rural areas?
3. Is computer education in rural areas adequate? What are the current educational approaches to spread computer education in rural and semi-urban areas?

These questions are important because for instance in Belandur Gram Panchayat, only Belandur village could enjoy the benefits of Information and Communication technologies. The other villages which also come under Belandur Gram Panchayat like Devara Bisanahalli, Kariyammana Agrahara, Haralur, Ambalipura largely remained unexplored and unaffected by the new technologies. Digital knowledge and economy is not necessarily getting into the interiors of deep rural areas. The impact of ICT is often felt only in the peripheral rural economy and society and that becomes a parameter for indicating the development of the region. For instance, Belandur's success seems to exaggerate the development of the entire Belandur Gram Panchayat. It goes unnoticed that the other villages in the Belandur gram Panchayat are relatively backward and have not been able to enjoy the benefits of the ICT revolution. Hence, the apprehensions about the hype and reality about these new technologies remain.

The computer education in rural areas is not quite adequate. The residents of other four villages besides Belandur in the Belandur gram panchayat were totally ignorant about the computer and its applications. The current computer educational approach to spread computer literacy is showing some positive results only in the semi-rural areas, as there is some degree of awareness about computer technology among the residents. But a more

intense approach is necessary to train those villagers who are completely disconnected with the city and township. Knowledge about computer and other technologies needs to be mediated through proper pedagogy, which connects the illiterate rural masses living in the interiors of rural India.

Bridging the Digital Divide

Digital Divide is one of the burgeoning problems encountered due to the uneven flow and dissemination of information and communication technologies both at inter and intra-societal whether it is regional or national level. What are the ways of overcoming the global digital divide? Jeffery (2003) throws light on the low-cost computing, open source versus proprietary forms of computer software, low cost internet access via community wireless local area networks and how these could bridge the digital divide at a global level. Many developing countries have tried and applied these strategies, and have been relatively successful in this regard. It could prove helpful to the policy makers and the organizations to ameliorate the global digital divide before bridging the digital divide within the region. It reflects the combined effort from both the developed and the developing countries in overcoming the global digital divide.

The Indian model of providing sustainable internet access for the rural poor needs to be widely discussed and debated. The 'Grameen Telecom Project' in Bangladesh and n-Logue kiosk model in India have shown some positive results. But the targets in terms of number and accessibility are far behind the anticipated proportions. James (2003) suggests some policy changes to bridge the digital divide and also ways of overcoming the divide by means of a new web based registry of information other than the World Wide Web. This proposal focuses on the supply side and is a welcome measure. It has a tremendous potential to bridge the digital divide provided it percolates at various levels. There should also be a promotion of universal access to ICTs rather than individual ownership of ICTs. Such an idea is novel and will be a success because of cheaper availability and appropriateness, but it requires a paradigm shift to designing new technologies in some cases, or innovations in the existing technologies. Diffusion of Information and Communication Technologies is crucial in bridging the digital divide

especially in the developing countries where the consequences are a threat to those whom, for one reason or the other are not participants in electronically mediated networks. To conclude it can be said that ICT policies if properly used and implemented will definitely be an instrument of reducing the divide rather than widening it sooner or later.

Conclusion

Information Technology is not simply another technology or another medium. It is a major change agent and has an explosive impact on the mass character. It initiates questions in people's mind and shall gradually increase their inquisitiveness with regard to their surroundings and situations around them. Further ICT envisages offering new opportunities for self-employment and entrepreneurship to a large number of people who are otherwise not able to participate in economic activities in a major way. It also needs to be understood that the most visible impact of IT on the life of a common man shall be felt if one is not required to visit a government office for day-to-day work and instead have all such interactions with government and its agencies through the internet.

A great lesson one has to learn from the application of ICT to public policies like poverty alleviation is that it cannot be an isolated move unrelated to the other economic policies. For the poor to fully benefit from the Information Revolution, there must be simultaneous efforts to get the conditions right for national economic growth, for stimulating complementary technological innovation, for rolling out infrastructure, for building appropriate ICT industries, and for utilizing ICTs in many sectors of the economy. It is not enough if there are pro-growth policies and institutions in place for the ICT revolution to be translated into economic growth. It is also important to assure that the poor share the benefits through progress. India's experience in the application of ICT underlines that a holistic approach is necessary to make it a success. An overall national commitment to ICT, with multiple leadership at various levels favouring ICT makes information technology profoundly affecting the lives of the people both in urban as well as rural areas for a better tomorrow.

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