

## **Role of ICT in the Social Development of India**

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Since very early, it has been recognized that Technologies are the essential element to understand the societies, human behavior and social change. That is why technology must be analyzed as a complex social process. Mainly we find two types of approaches in the sociological analysis of technology, one that analyzes the logic inside the technological development and its influence on the various societies and the other that analyzes technology as a social process. From the perspective of socio economic development, technology plays an outstanding role in the evolution of society and current economies. There have been intensive studies that focus on how technology affects society and culture and also how they interact. Sociologists across the world accepted that the interaction of technology, economy and society has created a new social context, in which the social structures that had characterized industrial societies are redefined ‘ the emergence of the net society, as a new dominating social structure in the information era is a world wide phenomena’<sup>1</sup>. (Castells, 1997:24) affects directly economic, social, cultural and political activities in varied reign of the world, including India. Governments worldwide have recognized that the deployment of ICT can play an important role in socio-economic development of country. In fact “some countries regard the development and utilization of ICTs within their economy and society as a key component of their national vision to improve the quality of life, knowledge and international competitiveness” they are busy with constructing the necessary infrastructure, designed policies and plans to transform their economies into an information and knowledge economy. Knowing that ICTs are apparently essential to the social development and economic growth, “developed countries like USA, Canada, and a number of European countries, as well as Asian countries like India, Singapore, Malaysia, South Korea, Japan, and South American countries like Brazil, Chile, and Mexico among others, and Australia and Mauritius either already have in place comprehensive ICTs policies and plans or are at an advanced stage of implementing these programmes across their economies and societies”<sup>2</sup>.

### **I. MEHODOLOGY**

Present piece of work is an attempt to analyze the implications of ICT in three important areas of social development health, education and employment in rural and urban slums, where majority of population living under the presence of poverty, illiteracy and poor access to resources. The analysis is based secondary sources like academic articles and reports, documents with a focus on contribution of ICTs towards the achievement of the above mentioned specific areas of social development.

The paper is divided in two sections; in first, we outline the concept of ICT and its current situation in India. Second part of paper highlight the concept of social development in brief and its implications in the sector of education, health and employment/livelihood opportunities and then conclude.

### **ICT AND ITS CURRENT SITUATION IN INDIA**

The phrase information and communication technology has been used by academic researchers since the 1980s, and the abbreviation ICT became popular after it was used in a report to the UK government by Dennis Stevenson in 1997<sup>3</sup>. There are many definitions of ICT the most appropriate I found in the context of this paper is -A group of interrelated technologies (electronic devices) for accessing, processing and disseminating information is called ICT or Information and Communication Technologies(Duncombe and Heeks, 1999). It is a system of electronic network activated through a complex hardware and software systems linked by a vast array of technical protocols(Mansell and Silverstone, 1996)<sup>4</sup>.

Here we should remember that ICT has no universal definition, as "the concepts, methods and applications involved in ICT are constantly surfacing on an almost daily basis. The broadness of ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form, e.g. personal computers, digital television, email, robots<sup>5</sup>,thus this term encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing etc.<sup>6</sup>

When we talk about the social context of ICT it is complex and it includes the interactions between people, their knowledge and their skills; technology and its history; processes and practices; products and services; goals and strategies; structures and cultures; etc. ICTs are designed, unambiguously, to support social

& organizational structures. Therefore, we couldn't assess the role of ICT in isolation we must acquaint ourselves with the need and problems of that society. In India, much studies carried out on measuring the impact of the IT industry on the various sectors of human development. But researchers in ICT and development sector claims that there is a clear need to collect more ICT data in India in a comprehensive and comparable fashion, particularly on the use of ICT by individuals, households and businesses<sup>7</sup>.

Available data on ICT, shows significant growth of these sectors in recent two decades. IT industry in India comprises of software industry and information technology enabled services (ITES), and business process outsourcing (BPO) industry considered as a pioneer in software development and a favourite destination for IT-enabled services. The Indian software and services exports including ITeS-BPO exports is estimated at US \$ 49.7 billion in 2009-10, as compared to US \$ 47.1 billion in 2008-09. Percentage of export of ICT goods total manufacturing export of India is 2.84 in 2008-09. While for this same year the percentage of import of ICT manufacturing goods of total import is 7.08, shows the need of more efforts in manufacturing ICT goods. On the Other hand, the growth of Telecommunications is also startling in recent years, country has emerged as one of the fastest growing telecom markets in the world. Indian telecom has become the second largest wireless network in the world after China. The current addition of about 15 million connections per month puts the telecom sector on strong footing<sup>8</sup>. In recent years India has more or less maintained its position in the ICT development index, ranking 118th in 2007 (International Telecommunication Union –Measuring the Information Society, 2009)<sup>9</sup>. Some of the key ICT indicators for the Country are given as follows:

**ICT Indicators – India**

ICT parameters	Value	Year
<b>Internet users (per 100)</b>	6.9	2008
<b>Internet subscribers (per 100)</b>	1.09	2008
<b>Broadband subscribers (per 100)</b>	0.45	2008
<b>Mobile coverage (%)</b>	61	2007
<b>Mobile subscribers (per 100)</b>	20.8	2007
<b>Personal computers (per 100)</b>	3.17	2006–2007
<b>Internet affordability (US \$/month)</b>	6.6	2007
<b>Mobile affordability (US\$/month)</b>	2.5	2007
<b>Radio subscribers S(per 1000)</b>	107.3	
<b>Households with TV (%)</b>	32	

Source: [www.itu.int](http://www.itu.int); [www.mdgs.un.org](http://www.mdgs.un.org); World Development Indicators Database; [www.cia.gov](http://www.cia.gov) infodev..pdf

The statistics illustrate significant progress of telecom sector with 61% mobile coverage, however the other parameters like the overall access of internet connection, number of internet subscribers and use of personal computers shows that still India has very limited bandwidth per Internet user and low home computer and Internet penetration rates. It is surprising to see such a low Internet penetration rate particularly since the price basket for Internet services is low when compared with other countries in the region. This suggests that price of ICT services is not the main barrier to higher ICT levels; it is more likely due to limited ICT infrastructure or limited access to it<sup>10</sup>. The inability of a large portion of the population to access and effectively use ICTs and the possible benefits they enable to raise the problem of digital divide in India, which challenges the government's vision to use ICT as a tool for raising the living standards of the common man and enriching his life towards this end<sup>11</sup>. It is also noteworthy, that ICT spread over both organized and unorganized sector of manufacturing but its contribution for unorganized sector is negligible<sup>12</sup>.

“Statistics paint a mixed picture of the current situation. On the one hand, India is now the world's fourth largest economy in purchasing power parity terms, and has enjoyed high growth rates for over a decade rising to an average of over 8% per annum in the period 2004-7 (World Bank 2007). On the other hand, India was ranked as 130<sup>th</sup> out of 188 countries on the human development index 2015(UNDP,2015)<sup>13</sup>, which is a composite index based on life expectancy, literacy and education levels, and economic standard of living. Shocking statistics include the percentage of malnourished children under 5 being 46%, the adult female literacy

rate as only 48%, and the percentage of the rural population using adequate sanitary services as 18% (World Bank 2007, UNICEF 2004)<sup>14</sup>. and 25% of the people still live below the poverty line (unstats,2007)<sup>15</sup>.

**Table 3**  
**Urban Rural Internet Users(millions)**

Internet user ship in India	2005	2006	2007	2008	2009
Urban-internet using individuals(regular)	17.63	21.95(24%)	25.17(14%)	30.03(19%)	33.15(10%)
Urban –internet using individuals(occasional)	5.20	1.65(68%)	5.15(100%)	10.31(100%)	5.85(-43%)
Urban –internet using individuals(total)	22.83	23.60(3%)	30.32(33%)	40.34(33%)	39(-3%)
Rural-internet using individuals(regular)	Na	Na	Na	5.06	5.42(7%)
Rural-internet using individuals(occasional)	Na	Na	Na	4.00	2.07(-48%)
Rural-internet using individuals(total)	Na	Na	Na	9.06	7.49(-17%)

Source: juxtaconsult.online, 2009

Therefore, it remains a challenge for the government and other agencies to successfully permeate the impact of technologies in all the nook and corners. Existing literature from many quarters have revealed that excepting the influential lot and also chunks of middle class, ICTs have remained out of access to most of the rural, poor and marginalized communities.<sup>16</sup>

#### ICT AND SOCIAL DEVELOPMENT OF INDIA

Before assessing the role of ICT in social development of India we have to understand concept of social development in brief. About social development, available literature and descriptions though inclusive to economic development but it emphasis the progressive improvement in the living condition and quality of life enjoyed by society and shared by its members. It is more concerned with human beings, a unit of investment in health, education, social welfare etc. It visualizes institutional and structural reforms to provide greater social justice. As stated by Amartya Sen “Social development means equality of social opportunities”(1995). Therefore we can say that-

“Social Development is the promotion of a sustainable society that is worthy of human dignity by empowering marginalised groups, women and men, to undertake their own development, to improve their social and economic position and to acquire their rightful place in society.....” - Bilance, 1997 The Copenhagen Social Summit 1995 defined Social Development in terms of three basic criteria: • Poverty Eradication • Employment Generation • Social Harmony .

Besides this general description of social development, there is a need to see social development in the specific conditions of India . As stated by Tamilnadu Social Development Report 2000 “We need to see social development • as a Socio-Economic Cultural Right • as the root of democracy and a process of participative decentralization • as the process of removing inequalities and ensuring social justice • as the mechanism of empowering the marginalized sections of our State: dalits, women, children, fisherfolk, tribals, labour. Given the large heretogeneous nature of India, national indicators often hide the considerable varations that exist from State to State, region to region.,It is thus important to obtain a picture of the levels of living of the disadvantaged regions and groups of people in a country in order to evaluate the success of national development programmes in improving the life of the less well off.”(India Human Development Report, 1999)<sup>17</sup>Though the above hurdles in the path of social development, we must remember that sincere human efforts and with the impact of various forces of social change things are changed. In this realm, the new technologies are expected to directly improve human development through the application of highly developed ICT skills to improving governance, facilitating the empowerment of poorer households and communities and rendering the delivery of the benefits of extension programmes and welfare schemes more transparent and efficient.<sup>18</sup>

In a vast country like India, the effective use of ICT in **education sector** has the potential to eradicate the problems of low literacy, limited access of fomal education to the disadvantaged, high dropout rate, poor quality and lack of infrastructure in schools of rural / urban slums for the foster development of nation. Furthermore, it can be used as a tool to overcome the issues of cost, less number of teachers, and poor quality of

education as well as to overcome time and distance barriers<sup>19</sup>. This will ultimately lead to provide quality education to the physically distant or backward areas and bridge the digital divide in India. Considering this, in India ICT has been emphasized right from 1992 the National Policy on Education to make education of good quality, accessible and affordable to all, using the latest technology available. In August 2009, government making education a fundamental right for every child in the country but still India has a vast number of poor and uneducated in the rural and urban slums.

Experiences of using ICTs for education across the country also reflect this diversity. At all levels, from infrastructure availability to availability of trained faculty, there is tremendous variation between urban and rural areas, developed and less developed states, and access for economically and socially weaker sections vis-à-vis the more wealthy in the country. Elite private schools have access to the most advanced offerings of ICT-enabled education in the market, the bulk of government schools and poorer private schools face severe disadvantages in terms of infrastructure and capacity. Government's efforts will have to be focused toward this vast majority<sup>20</sup>. Recent statistics reveal that 28.39 percent (2004-05) of poor still live in rural area of india<sup>21</sup>. Schools in many villages do not have basic amenities to provide quality education. According to ASER study, **half of all rural schools do not have a functioning toilet. quarter do not have access to drinking water<sup>22</sup>. Question is how such schools will able to provide ICT enabled education ?** We can't overlook the other issues also like low literacy, less access to quality education, as result even those deemed to be literate are perhaps not competent enough to receive IT education. Teachers are typically cautious of technology; this is the case for not only teachers in the rural areas but for those in urban areas as well. The prevalence of such circumstances in schools of rural and urban backward areas is a big challenge for the adoption of ICT in education sector. However, the Government of India has been making constant efforts to improve the availability of ICT data for policy making and research. In this context the formation of National Knowledge Commission (NKC) in 2005, is a significant effort. The NKC recommendations outline a roadmap for strengthening the education system from school education to general higher and professional education, as well as skill development in India, with a focus on how to leverage available technologies to improve access and quality of education<sup>23</sup>. The successful implementation of ICT related projects beneficial not only to individual but the whole nation. Table Given below shows the benefits of ICT in education<sup>24</sup>.

#### **Benefits of ICT in education to the main stakeholders**

<b>Stakeholder</b>	<b>Benefits</b>
Student	<input type="checkbox"/> Increased access, <input type="checkbox"/> Flexibility of content and delivery, <input type="checkbox"/> Combination of work and education, <input type="checkbox"/> Learner-centred approach, <input type="checkbox"/> Higher quality of education and new ways of interaction.
Employers	<input type="checkbox"/> High quality, cost effective professional development in the workplace, <input type="checkbox"/> Upgrading of employee skills, increased productivity, <input type="checkbox"/> Development of a new learning culture, <input type="checkbox"/> Sharing of costs and of training time with the employees, <input type="checkbox"/> Increased portability of training.
Governments	<input type="checkbox"/> Increase the capacity and cost effectiveness of education and training systems, <input type="checkbox"/> To reach target groups with limited access to conventional education and training, <input type="checkbox"/> To support and enhance the quality and relevance of existing educational structures, <input type="checkbox"/> To ensure the connection of educational institutions and curricula to the emerging networks and information resources, <input type="checkbox"/> To promote innovation and opportunities for lifelong learning.

Source: (UNESCO, 2002)\*

*\* Table is adopted from Hattangdi A. & Ghosh A., article on "Enhancing the quality and accessibility of higher education through the use of Information and Communication Technologies"*

Realizing the advantages of ICT in education, in our country major government schemes have a component of funding allocated for using ICTs in education sector. Eleventh Five-Year Plan reflects the importance of ICT in the education scenario of India. With the collaborative effort of the Ministry of Human Resource Development (MHRD), Department of IT and Department of Telecom, ICT make its presence felt in 378 Universities and 18,064 colleges of India. While "National Policy on ICT in School Education" proposed programme for ICT literacy for all secondary schools it also suggested that all states develop an ICT literacy curriculum to instill basic as well as advanced ICT skills among secondary school students, to foster an environment of ICT-enabled teaching-learning. Apart from these the government had taken many initiatives some of them are: **ICT @ Schools** scheme launched in 2004, currently scheme is being implemented in all states and union territories of India, the **Sarva Shiksha Abhiyan** (SSA) encourages states to use ICT and the satellite EDUSAT\* (Indian Space Research Organization (ISRO) launched EDUSAT (Education Satellite), the first Indian satellite built exclusively for serving the educational sector. to enhance the distance education system in the country)\*, Rajiv Gandhi Project for EDUSAT Supported Elementary Education (RGPEEE) is another initiative aimed at harnessing the benefits of EDUSAT; It is operational in Madhya Pradesh, Chhattisgarh, Uttar Pradesh, and Bihar, Universal Service Obligation Fund (USOF) since 2002, providing access to telegraph services, mobile services, and broadband connectivity to people in the remote and rural areas at affordable and reasonable prices, Microsoft Teacher training under Project Shiksha for Kendriya Vidyalaya, and Navodaya Vidyalayas, National Institute of Open Schooling, Indira Gandhi National Open University, Gyan Darshan/Gyan Vani, National Knowledge Network and Sakshat Portal are some of the intervention in educational technology to improve the quality of education. In addition to these schemes, states have their own major ICT-related initiatives in educational institutions like "Chalta-Phirta Mobile Bus" for slum clusters of New Delhi, "Eklavya computer-aided self-learning" initiative in Chhattisgarh, IL&FS Education and Technology Services Limited (IETS) is in the process of implementing IT solutions for SSA Bihar. ICTs are also being used extensively for education in India through the pioneering efforts of some private players and NGOs, some of these are National Institute of Information Technology (NIIT), Azim Premji Foundation's Computer-Aided Learning Program Project "Shiksha," Microsoft, Digital Empowerment Foundation, Centre for Science, Development and Media Studies, Community Radio, Educomp Solutions Limited etc<sup>25</sup>. In a vast country like India with lots geographical, cultural variations and disparities, it has been evident from available data and studies that some interventions have been immensely successful in one area, but the some interventions in another part of the country have not succeeded.

These statistics illustrate one aspect that is called "the Digital Divide" – the inability of a large portion of the population to access and effectively use ICTs and the possible benefits they enable. Uneven access to ICT tools and networks -within country reflects, and threatens to intensify, existing inequalities.

ICT can also have an active role in **health sector**, particularly in rural and backward areas. At present the health sector of India coping with the various challenges, some of them are- poor access to health services for a huge geographical area, high population density, lack of transportation, inaccessibility of health services in rural and backward area, low doctor and hospital beds, low budget, inadequate sanitation and hygiene, poor nutritional status, skewed food habits and lifestyle. It is disheartening that India is among the bottom five countries in public health with 21 percent disease of the global disease burden. It is estimated that approximately one million Indians die every year due to inadequate health care services and 700 million people have no access to specialist care<sup>26</sup> (ASSCOHAM, 2014). Since very early, it has been realized that to combat with this grim scenario, introduction of ICTs enabled services should be encouraged in health sector. But the penetration of health information communication (HICT) technology in our country is very low as compared to developed countries. However, implementation of ICT based tools and services in delivering healthcare have not been experimented on a wide scale, few initiatives have so far shown encouraging results. The midwives in Andhra Pradesh, now use the handheld computers which is giving them more time to serve the patients in the villages. According to a report by World Bank, it has saved them 40% of their service time. Likewise, in Sisu Samrakshak, a joint initiative by the government of Andhra Pradesh and UNICEF that is based both in Andhra Pradesh and Karnataka, a pilot project is running to make use of ICT for integrated information for Early Childhood Development. Sisu Samrakshak has been able to make positive changes by providing access to rapid, precise and up-to-date information on issues of child health, maternal care, HIV/AIDS, water supply and sanitation. Moreover, they provide information and vocational training support intermediaries such as Anganwadis, Auxiliary Nursing Maids (ANMs), teachers and other workers in health care<sup>27</sup>.

In Uttar Pradesh a health programme called 'Aarogyam' was launched as an end-to-end community-based digital health mapping project. Through this, citizens anywhere in India on any existing telecom network, can access information with respect to their health profile. It also provides a health database for a future

healthcare strategy. Then there is the Mother and Child Tracking System under the NRHM, (national rural health mission) where the focus of the project was to keep track of each pregnant woman from registration to post natal care<sup>28</sup>. Currently the use of health information and management systems is seen as a key prerequisite to improved health care delivery and the better assessment of health programmes (Braa et al 2004). Ministry of Health and Family welfare and Ministry of Commerce and Information Technology jointly creating national information infrastructure for capture and dissemination of health information and services. Telemedicine, Tele-pathology not only increases the accessibility, it could also provide health care services at affordable price and negated the travelling expenses of rural people for medical consultation. ISRO implemented telemedicine project around the country by GRAMSAT (Rural Satellite)

The deployment of Health Information and Management system, (HIMS) managing health records of their institution in digital format make easy to retrieve the data as compared to data stored in physical format. HIMS is almost in all the states of India. Some states like Delhi, Maharashtra and Rajasthan respectively high level of penetration<sup>29</sup>.

In Tamil Nadu, Health Information Systems was successfully launched to strengthen information practices within primary healthcare with the larger aim to improve processes concerning healthcare delivery for the rural community. Another example is that of GVK EMRI, which handles medical emergencies through the “108 Emergency service”. This is a free service delivered through state of art emergency call response centres. It has ambulances across the states of Andhra Pradesh, Gujarat, Uttarakhand, Goa, Tamil Nadu, Karnataka, Assam, Meghalaya, Madhya Pradesh, Himachal Pradesh and Chhattisgarh. As per records, response times, and cases treated, healthcare services in the above-mentioned states have improved, especially in some of the less accessible areas<sup>30</sup>. Thus the use of ICT in health sector bridging the gap between the existing and required health services.

The emerging ICT-enabled **employment opportunities** matter because countries around the world are looking to create more good jobs, which have positive economic and social implications for workers and for society” (Chris Vein, 2013)<sup>32</sup>. In the context of developing country like India ICT can contribute to better employment opportunities in both, through improved labour market facilitation and direct employment. Using electronic job marketplaces, employers and employees can match labour skills and availability to satisfy their demands. For example, TARA haat, a portal designed to serve villages in rural India, provides job opportunity information on local web sites in local languages. In addition, the establishment of local telecenters in countries such as Bangladesh, India and Senegal has created direct employment for thousands of local women and men.

It also enables people and enterprises to capture economic opportunities by increasing process efficiency, promoting participation in expanded economic networks, and creating opportunities for employment<sup>33</sup>. In rural and backward areas of India, through ICT people connect with the local, regional and national economy and access markets, banking/financial services and employment opportunities<sup>34</sup>. Mobile telephones and telephony over the Internet can be provided to people who have never had access to conventional circuit-switched wired telephone networks<sup>35</sup>. As a result, the development of the mobile phone applications industry has created new opportunities for small- and medium-sized enterprises (SMEs)<sup>36</sup>. For example in rural Gujarat a large cooperative RUDI to sell agriculture produce from local farmers. In order to fill their local orders self employed womens association (SEWA) with the association of Vodafone tailored an mobile application for RUDI to manage their business. As a result the burden of time and travel cost dramatically reduced<sup>37</sup>

More broadly, IT may help leapfrogging in other forms of economic institutions: village artisans may advertise and sell their creations on the Internet, without ever having been part of a conventional retail supply chain<sup>38</sup>. Kiosk projects, Organizations like STAR: (Simplified and Transparent Administration of Registration) Chennai SETU - Integrated Citizen Facilitation Centres of Maharashtra, provide ICT services to enhance their capabilities for better livelihood opputunities rural and backword areas. Such efforts in ICTs enhance rural productivity of farmers, fisherman by receiving weather forecasts, advice on farming practices, and specific training. It enables solution sharing between local people and communities, providing access to practical information on small business accounting, weather trends and farming best practices. For example The kiosks in various projects like ITC e-chaupal, n-Logue etc has enabled thousands of small farmers to track the crop prices. They can now negotiate crop prices in the wholesale market more confidently<sup>39</sup>. The general presumption behind these efforts is that resources spent in this manner have a positive return on development large enough to justify a possible diversion from other uses that directly address those basic needs. This can be done in a sustainable manner depends on the supply conditions for IT-based services in rural and backward areas of our country. In this context, it is disappointing that Electric power is in many ways more of a problem than telecoms connectivity, and this is true throughout India. The reason is a serious institutional failure. The production, transmission and generation of electricity in India are seriously inefficient, as a consequence of poor organizational incentives and vested interests in the traditional public sector. For rural IT access, the lack of power for long periods seriously hinders accessibility<sup>40</sup>.

Adding to this lack of basic and proper education and inadequate skills and training prove to be roadblocks for the poor rural people who are not able to cope with the new work environment that is predominantly machine based. Therefore not many people of rural and backward areas able to take benefits of ICT Whether due poor accessibility, lack of infrastructure or inadequate skills. However, Comprehending these challenges of Ict in marginalized communities of India there are many efforts underway to demonstrate the concrete benefits of IT for rural populations, and to do so in a manner that makes economic sense.

## II. Conclusion

Certainly Information and Communication Technology has great relevance in the development scenario of India, If implemented properly ICT can surely bridge the gap between economically and technology backward and forward classes..However,despite the tremendous growth of ICT technology in India, one of the main problem in adoption of ICT in rural and backward areas are ICT illiteracy, the significance of bridging this divide, stems mainly from the fact that rural areas often lack or lag behind urban areas in terms of essential infrastructure and services such as transportation, health,education and government services availability.In fact, the Digital Divide -the disparities between the “connected” and the “unplugged” - is really a reflection of the age-old divides of poverty, education, and restricted human choice. In this context we must understand that the goal of using ICT with marginalized groups is not only about overcoming the digital divide, but rather enforcing and furthering the process of social inclusion, which is required for the development of India. So, this necessary that the government, technology industry and society should work together to deploy ICT to accelerate economic and social development in marginalized segment of India. Proper training and implementation of ICT programmes in simple way and language which is easily understandable by this segment (marginalized people) can surely bring desired in the development of India. The success stories of ICT use has proven the significance of ICT in the social development of marginalized people.

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