

Evaluation of ICT Technology in India between Rural and Urban areas.

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ABSTRACT

Digital divide is defined as the gap that exists between those who have access to Information and Communication Technology (ICTs) and those who do not access to ICTs and thereby halts the economic growth of the country. Digital divide in national level shows the division between men and women of urban and rural with ICT. The present paper is mainly focused on India and and explore the problem of digital divide mainly in rural-urban India. In the context of present paper digital divide essentially means mobile and Internet divide between the rural and urban areas. This paper discusses about illiteracy, lack of skills, infrastructures, and investment in rural areas must be tackled if India is to diminish the gap of digital divide. Also addressing here towards, core technologies creation and exploitation, competence building, community participation and commitment to the deprived and disadvantaged would definitely help in bridging digital divide.

1. Introduction:

The development of ICT Has given us excellent economic growth across all areas world wide (Nandi, 2002) that leads to a rapid face of development. The cost of coordination through interactive communication enhanced Usage (Fletcher et al 2000) and leads to effective information processing can be achieved using ICT(Dean 2002, Gordon 2000). ICT gives better health care; improved education and training; access to job opportunities (Kuhn and Skuterud, 2000; Sumanjeet, 2008; Hecker, 2001; Motohashi, 2001); increased agricultural productivity (Poole,2001; Hooker et al, 2001). The issue of transparency is easier to manage with ICTs, which may result in monetary savings in addition to stakeholder confidence in the development process and system (Jesus, 2003). The status of ICT adoption is an indicator of its potentiality to exploit the economic opportunities affordable by the new technologies. . But the adoption of ICTs vary significantly across countries.

Table 1: Status of ICTs Adoption among Different Regions (Per 100 Inhabitants) 115 - 2015

Regions	Fixed Telephone	Cellular User	Internet User	Broad band User
Asia-Pacific	25.2	88.8	33.4	10.7
Latin America and caribbean	22.1	114.5	20.8	9.1
Europe	78.3	124.5	61.2	27.1
Australia	90	106.8	83	25
Afghanistan	10	70	5.9	0
Bangladesh	18	65	7	1.6
Cambodia	40	144	6	0.6
China	70	89	45.8	13.6

Georgia	39	115	43	10.2
HongKong	64	239	75	31
India	20	71	15	2
Indonesia	14	122	16	1.3
Iran	10	84.2	32	6
Japan	54	116	87	29
Kazakistan	16	118	54	12
Malaysia	33	145	68	9
Mongolia	12	125	18	5
Myanmar	2	13	2	0.2
Nepal	3	72	14	1
Nepal	3	72	14	1
New Zealand	47	106	83	30
Pakistan	11	70	11	0.6
Philipines	14	105	37	2.6
Korea	22	111	85	38
Russia	41	152	62	64
Singapore	80	154	70	26
Srilanka	14	96	22	0.2
Thailand	24	139	29	7.4
Turkey	22	93	47	11
Vietnam	11	130	43	5.6

Table 2 : Status of ICTs Adoption among Different Regions (Per 100 Inhabitants) based on income 1995 - 2015

Regions	Fixed Telephone	Cellular User	Internet User	Broad band User
Low income Region	14	15.5	5.8	2.8
Medium Income Region	38.5	61.8	34.4	4
High Income Region	68.5	155.3	98.2	27.8
World	43	77.5	47	15

Table 1 and 2 : Source Statistical Year Book 2014

Table 1 indicated the status of the ICTs adoption in different countries. Nearly in the defined data half of the countries (19 out of 31) less Telephone usage, Mobile usage comparatively and Internet usage. But the mobile usage has increased considerably in developing countries also. The calculation is being done per 100 inhabitants in that region and sources from Statistical hand book of asia pacific 2014. Table 2 indicates that high-income economies have two hand off times as many fixed telephone lines per capita as middle-income economies, and for high income four and half times the number in low-income economies. In the low-income countries and SAARC member countries-the number of fixed telephone lines per 100 people was just 4.0 and 3.3, respectively. In the least developed countries the number did not even reach 1 in 2006. At the same time, the number of mobile phone per 100 people was 14.5, 15.3 and 9.3, respectively, in lowincome economies, SAARC member countries and least developed countries. In highincome economies in the region, there are, on average 68 Internet users per 100 inhabitants.

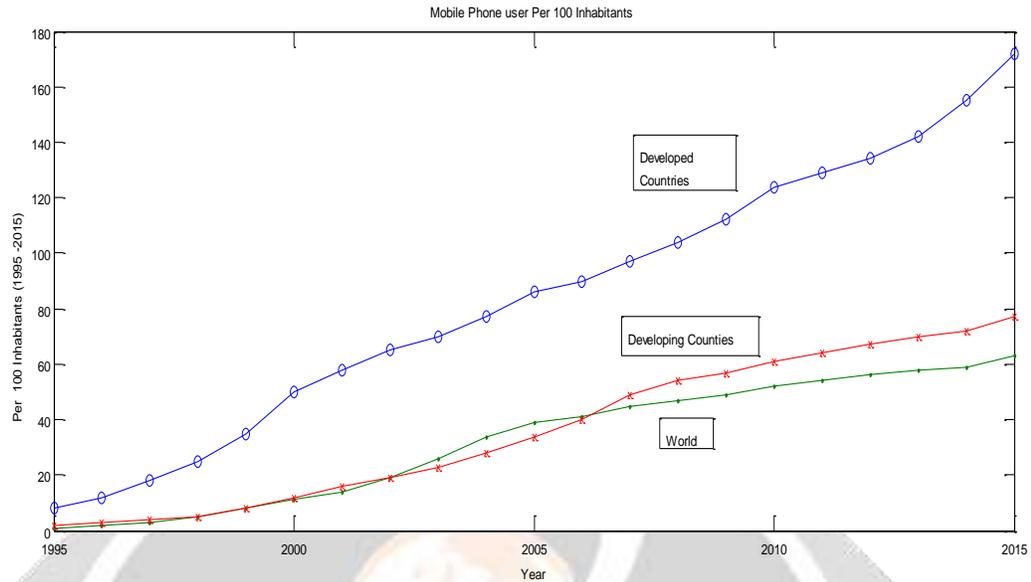


Figure 1 Mobile Phone users Per 100 Inhabitants [1995 – 2015]: Source : Statistical Year Book for year 2015.

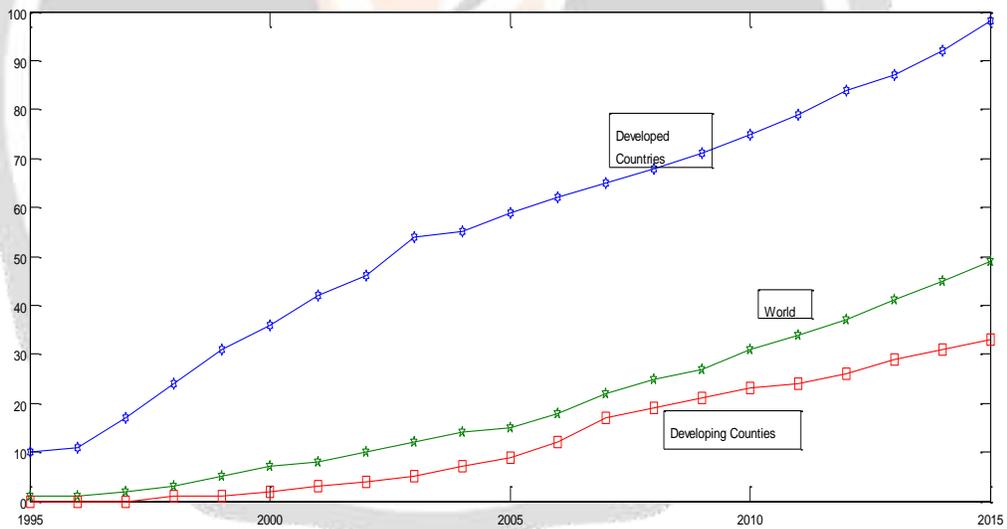


Figure 2 Internet users Per 100 Inhabitants [1995 – 2015]: Source : Statistical Year Book for year 2015

Figure 1 and 2 gives the graph between 100 Inhabitants per capita and year of ICTs. Figure 1 shows the Mobile users from 1995 to 2015, tremendous increase in mobile users world wide from 2007 to 2015 as red line crosses the mobile users in developing countries and nearly 99 % in developed countries. Figure 2 shows internet usage between 100 inhabitants in the region with respect to the year wise, it shows steady rise for the developing countries and world wide also. But to infer from this graph the developed countries showed steeper rise from 1995 to 2015 with leaving slow increase among the developed countries. From the above analysis, it is clear that there are millions of peoples in this world who do not have access to Internet, telephone, mobile phone etc. due to various reasons. Their inability to access

ICTs deprives them to reap the benefits of ICTs. This has led to a serious issue 'Digital Divide' between those who are participating in information technology revolution and those who are not (United Nations, 2006). In the recent past, the digital divide has attracted the attention of both scholars and policy makers for its economic, social and political consequences.

The main objective of the present paper is to study the problem of digital divide in the Indian context and address the challenges in bridging the gap of digital divide. The study also makes an attempt to identify the causes of digital divide in India. Further, in the end, an attempt has been made to suggest the policies to address the challenges of bridging the gap of digital divide in India. The present paper has been divided into five sections. Section 1 deals with the concept of digital divide. Section 2 discusses the present status of digital divide in India. In section 3, an attempt has been made to study the causes of digital divide in India. Section 4 tries to address the problem of digital divide by suggesting some policy options. Section 5 deals with the concluding remarks.

Section 1 Concept of Digital divide:

The term 'Digital Divide' is used to describe situations in which there is a market gap⁵ in access to the use of ICT devices measured by, for example the number of fixed line phones per inhabitants, or the number of mobile users or the internet connections in the population. Norris (2001); Mark, (2003) and Branko (2005) suggest that there are at least three major divides:

- A global divide between the developed and undeveloped worlds,
- A social divide between the information rich and the information poor
- A democratic divide between those who do and those who do not use the new technologies to further political participation. Thus digital divide can be defined as economic, social or cultural deprivation generated by missing ICT access and skills.

Four Different Measurement of digital divide is proposed here

1. Measure in Numbers in usage, availability and spreading over the entire region Which is used to give accessing the ICT in the region.
2. Depending on the presence of technology in the region and assets the measurement is the ability of usage: Measurement in terms of Ability of the usage.
3. Measurement related to actual usage: No of internet users, No of times hosting and level of hosting, e-commerce and e-governance.
4. Measurement in terms of commercial : Financial and Economic returns

The above four methods used to develop policies which can be used to reduce the digital divide and perhaps many technological problems like connectivity plays important role in framing the policies.

2 Digital Divide in India

India is one of the countries where telecommunication development activities have gained momentum in the past decade. The idea is to help modern telecommunication technologies to serve all segments of India's cultural diverse society, and to transform it into a country of technologically activities. Digital divide in india can be discussed through the following three sections: Teledensity, Mobile Phone and Internet.

2.1 Teledensity Divide:

The recent extraordinary growth in telecommunication connections in India⁹, which topped 121 million per month in 2015, has understandably grabbed the headlines. These huge numbers, however, disguise a disturbing reality, which is the enormous variation within India.

States	Overall
Andhra Pradesh	84.15
Assam	53.95
Bihar	51.17
Gujarat	95.6
Haryana	82.66
Himachal Pradesh	114.5
Jammu & Kashmir	76.03
Karnataka	94.5
Kerala	95.5
Madhya Pradesh	60.8
Maharashtra	93.41
Orissa	66.8
Punjab	103.78
Rajasthan	77.76
Tamilnadu	117.5
Uttar Pradesh	60.1
West Bengal	76.05
India	79.38

Table 3 Teledensity in india Souce TRAI 2014

Table 3 shows the teledensity in india, comparing same teledensity in 15 years before not even 25 % being achieved by some of the states. But now as per Table 3 all the states above 60% except bihar. Despite several policy initiatives to promote rural penetration, growth in teledensity continues to be skewed in favour of urban India. In fact, the rural population is much worse than it was, a few years ago compared to its urban counterpart.

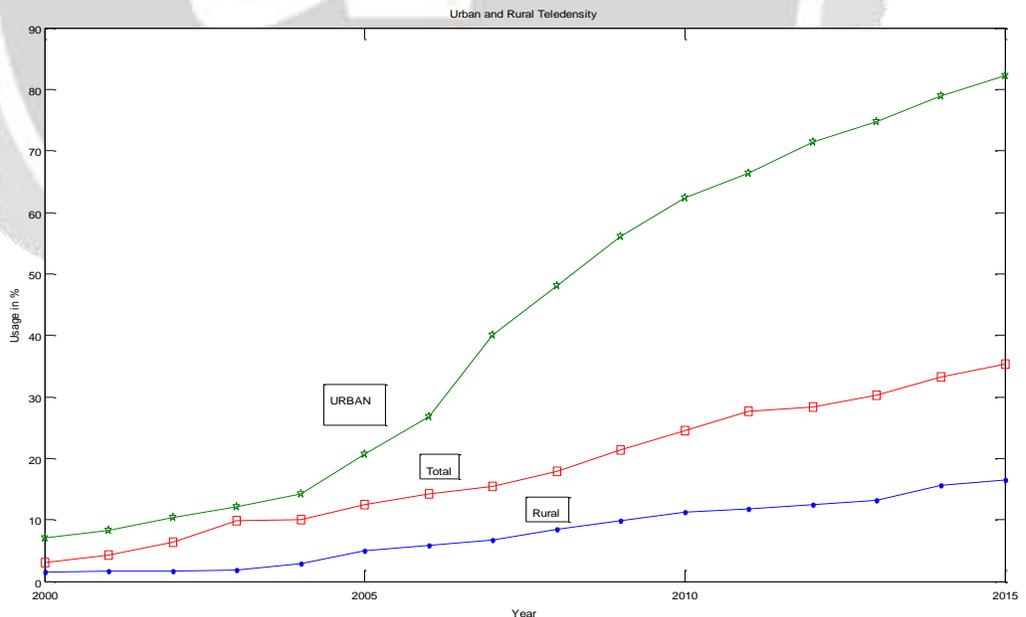


Figure 4 Urban – Rural Teledensity (Per 100 Inhabitants) TRAI 2014

Figure 4 shows the Rural and Urban Teledensity in india, it is clear that Urban areas far improvement comparing to the total and rural curves as in figure 4. The huge gap is due to many factors and inequality can be overcome by effective policy and guidelines from the government.

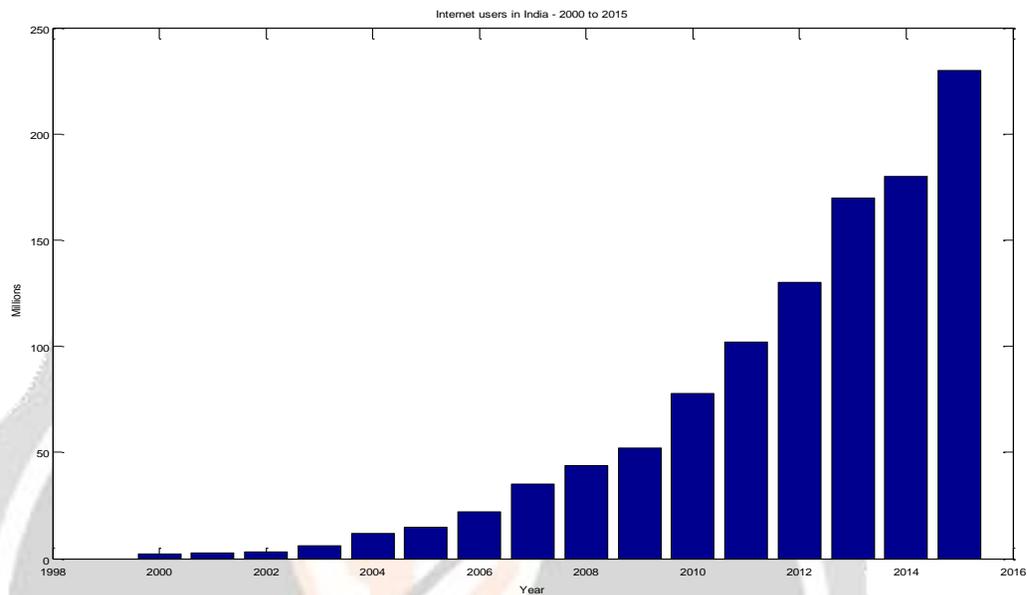


Figure 5 Internet user Year wise in india. TRAI 2014

2.2 Internet Divide:

Internet came to India in the early 1990. Many small to large Internet Service Providers have set up shop, triggering a price war and an improvement of service. Users are now estimated (57 Million claimed users) at over 49 million (42 Million as on September 2008) and, with a growth predicted to reach 5 billion. Figure 5 shows the Internet users in india as mentioned we have reached nearly 2.5 billion by 2015. In rural India only 1.2 per cent people have Internet access whereas it is 12 per cent in the urban India. Urban users continue to dominate Internet use contributing to 40.34 million of the 49.40 million odd users. 30.3 million urban people are using Internet on regular basis where only 5 millions are in rural areas. The number of active Internet users in urban India was 30 million. Disparities within the Indian states are huge. State like Delhi, Maharashtra and Tamilnadu have highest number of Internet subscribers followed by Kerala, Karnataka and West Bengal. Assam, North East-II, Orissa, Andaman and Nicobar and Uttaranchal have lowest Internet subscribers States of India.

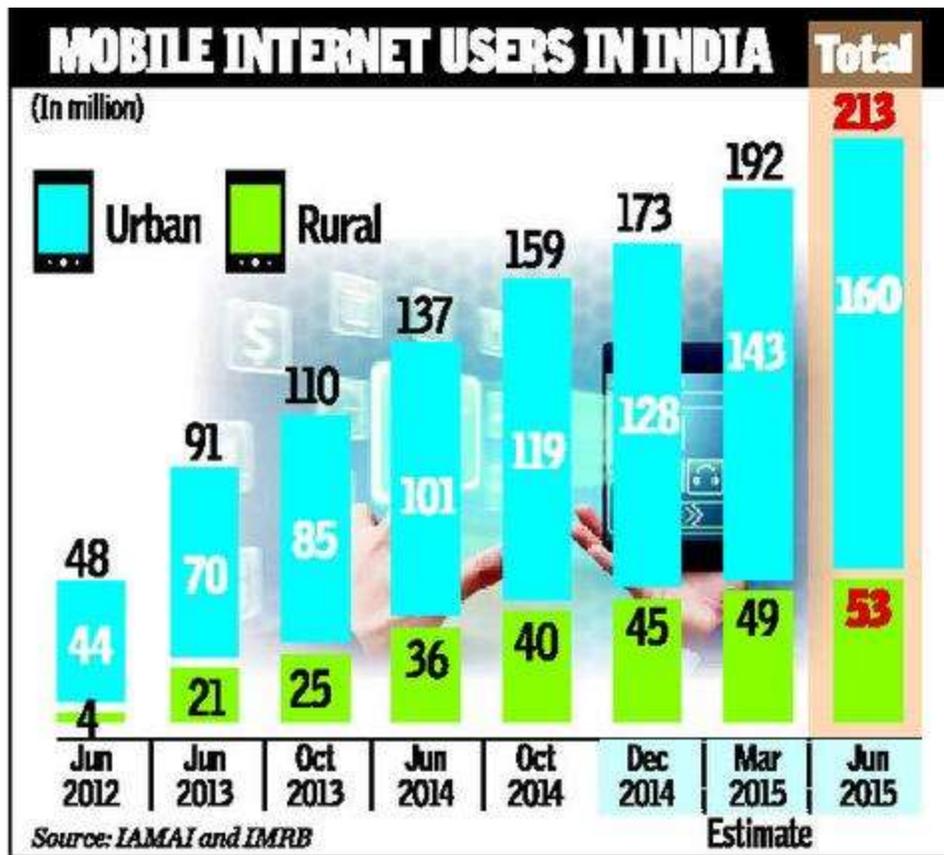


Figure 6 Mobile users in india.

2.3 Mobile Divide :

Mobiles have now become a necessity. India has seen a huge spur in mobiles in the past 5 years and it has penetrated even to the rural areas of India to a good extent. With entrants of CDMA 11 (Code Division Multiple Access) like Reliance communications and Tata Indicom the call rates have been reduced and usability has been increased. Thus, India has become the fastest growing mobile market in the world. The only country with more mobile phones than India is China. But, there is huge divide between mobile phone users in urban and rural areas. Figure 6 shows Mobile users in urban and rural india. Only one fourth users are from rural with remaining are from URBAN areas. But, it is expected that the gap will narrow down in the coming years. Mobile industry players are eyeing rural India as their new area of opportunity. Cellular service providers seem to be answering the call of the wild as they are entering the so far ignored rural market.

3. Determinants of Digital Divide

From the above discussion it is clear that there is huge gap of digital divide between rural and urban India. However, this gap varies from State-to-State. The undeniable fact is that there is noticeable problem of digital divide in India. It is a massive problem and a very complex problem too. It is not just about people who have access and those that do not; it is not just about haves and have-nots. It is about people becoming knowers and know-nots; and doers and do-nots; those who can communicate with the

rest of the world and those that cannot. In this light it is also important to find out some of the important reasons behind the digital divide in India. There are many reasons, which can be held responsible for digital divide in India. Compared to many developing and developed countries, India's capacity to bridge the digital divide is very poor. A Nation Online Survey (NTIA, 2002) found computer and Internet use correlate with poverty (family income), employment status, and educational attainment. Even age is also a major factor (Lenhart, 2000). Rural India has more than 70 per cent of Indian population. 75% of the poor are in rural areas, most of them are daily wages, self employed householders and landless labourers. Another important reason of digital divide in India is knowledge divide. Knowledge divide is directly related with digital divide. More educated people with computer knowledge and English language are able to access new technologies.

The gender issue is highly relevant in the developing countries like India. Women have less access than men in India due to various social and personal factors. Added to these, the growing population, insufficient funds, affordability, and delays in implementation of government policies and programmes have been some of the challenges that have lead to unequal development in the society, which is responsible for digital divide.

5. Policy for Addressing the Challenges.

The following points are proposed as Policy for addressing the challenges of Digital Divide.

1. First, as our earlier analysis suggests that relationship between education and ICT is critical. International evidence suggest (Pluss, 2004; Rheingold, 2000; Smith, 1998) that education is strong complement to use of technologies like Internet and that the relevant education levels are secondary and tertiary levels as they are expected to upgrade the national capacity for adaptation and innovation. Like many other developing countries, the main emphasis of Indian government is boost primary education that yields the higher rate of social returns. But, to bridge the gap of digital divide government should introduce some innovative policy measures to encourage students to go for further education in the rural areas.
2. There is need to promote technologies which are best suited for the rural India.
3. The main barrier in Indian rural society is the fact that people do not associate the benefits of the Internet and other communication technologies with their personal needs.
4. There is need to develop innovative strategies to address constraints the world's women face in their access to and use of ICTs.
5. ICT Training for Rural People.
6. Promotion of telecommunication infrastructure in the rural India is the most important condition for bridging the rural-urban digital divide and Indian government can play a very significant role in creating the IT infrastructure in the rural India.

Further, there is need for greater resources and investment by the private sector; as funds from governments and developed countries in implementing the ICT projects have been on the decline due to budget constraints and global economic slowdown. Last but not the least, with the effective deployment of ICT applications in the core areas of education, healthcare, and connectivity for redressing the grievances of the people in the countryside, the digital divide can be narrowed as wireless and satellite links have made them economical and affordable.

6. Concluding Remarks :

The explosive development of ICT, its applications, and the emergence of a global information society are changing the way people live. Enhanced access to knowledge is rapidly becoming a potent tool for empowering the people and communities. The present paper clearly highlights the problems of digital divide in rural India. Added to this, the paper revealed that the problems of digital divide also exist within and among the various States of India. While some people are rich and have many resources, others do

not. The educational system of India also has been slow to achieve the set target framed by various commissions and committees and schemes launched from time to time. The lack of sound ICT strategies and policies in India is the main cause of these troubles. Added to this, Inadequate Internet and telephone connectivity to India's rural areas, where more than 70 percent of India's population lives, is a key challenge for a number of government agencies. The gap of digital divide is getting narrower. It is expected the government policies and public private partnership will help in bridging the digital divide. But, it is not possible to completely bridge the gap of digital divide in India, as gender, age, culture, language, sex, etc. are all fundamental components that often affect daily activities and experiences including the virtual world.

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