

A Study on Aspects of India's Digital Divide

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ABSTRACT

Change is the only constant and so with changes in time, world changes. What was latest yesterday becomes outdated today and in today's world technology is changing at such a fast pace that if one is not well equipped and informed then the possibilities of missing many important opportunities in life is inevitable. Though change is inevitable and one must learn new technologies to adapt to this ever changing world, equipping oneself is not taking place at the same pace in every corner of the world. Developed countries are better equipped and learn faster whereas developing and under developed countries fail to implement changes due to lack of infrastructural access and learning skills. This difference is leading to a division among countries, societies, race and people in harnessing technology fruitfully and is termed as digital divide. An attempt is made by the researcher through this paper to explore the digital divide that exists in India and bring to the front the penetration of internet and its usage by the people in India; also the initiatives under the ambitious Digital India Program is highlighted in the paper to find out India's progress in transforming itself into a digital society.

1. Introduction

The second largest populous country in the world after China, India has got majority of its increasing population in the working age group which gives it the advantage of surpassing China by 2025 not only in terms of population but also in terms of its economic development as more working population implies more development. But this can be possible if the young population is equipped properly to face competition. The world is changing, information and communication technology has peeped into all walks of our lives. A technology savvy population is the need of the hour and the country can reap dividend from its young population if they are well equipped with technology. ICTs refer to all the technology used to handle telecommunications, broadcast media, intelligent building management systems, audiovisual processing and transmission systems, and network-based control and monitoring functions (<https://www.techopedia.com/definition/24152/information-and-communications-technology-ict>). Information and Communication Technologies are the culmination of information technology and communication technology. Diffusion of ICTs in financial, educational, healthcare sectors has made these sectors more dynamic and up-to-date and in the absence of knowledge about using ICTs, the potential to reap dividend from the young population will go in vain. This is the age of Information and Communication Technologies (ICTs) but still there are people unable to access it which is leading to a division in the society – between the 'techno-savvy' and the 'non-savvy'. This division is termed a "Digital Divide".

1.1. Concept of Digital Divide

The term digital divide was coined in the mid 1990s, in an atmosphere underlying the issue of whether regulation should be built into the Telecommunication Act of 1996 to offset market forces arising with the new information infrastructure (Loader, 1998). This term refers to the gap between

individuals, households, businesses and geographic areas at different socio-economic levels with regard to their opportunities to access information and communication technologies and their use of the Internet (Emmanouil & Alexandropoulou-Egyptiadou). Digital Divide refers to the gap between people with effective access to digital and information technology and those with very limited or no access at all (<https://www.igi-global.com/dictionary/digital-divide/7600>). OECD defines Digital Divide as 'the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICT) and to their use of the internet for a wide variety of activities' (OECD, 2001). Digital divide is also defined as the differences due to geography, race, economic status, gender and physical ability in access to information through the Internet, and other information technologies and services; and in the skills, knowledge, and abilities to use information, the Internet and other technologies (Lor, 2003). The term digital divide also refers to the disparities between societies and nations (Paul, 2002). It includes the imbalances in physical access to technology as well, as the imbalances in resources and skills needed to effectively participate as a digital citizen (<https://www.owlgen.com/question/what-do-you-understand-by-the-term-digital-divide-explain>). The term is closely related to the knowledge divide as the lack of technology causes lack of information and knowledge (ibid). Thus it can be said that this divide is causing a serious and new kind of poverty in the society i.e, information poverty.

Digital divide is a global phenomenon as 'haves' and 'have nots' exists not only in economically poor countries but also in the so called developed countries, between countries and also inside any single given country (Singh, 2004). In this light, the countries of the world may be divided into three groups (ibid):

- i. Rich countries of the world who are dominant players in the information and communication revolution.

They are the greatest beneficiaries of this new technology.

- ii. Some developing countries that have the potential to benefit from information technologies. They work for bridging the digital divide.
- iii. Other countries that show inadequate capacity to benefit from information technology. These countries are in danger of being left behind. These countries may discuss their structural inequalities that cripple their ability to participate in information technology revolution.

2. Objective

- To examine the determinants of digital divide in India.
- To examine the initiatives undertaken by the Government under Digital India Program to bridge digital divide in India.

3. Research Methodology

The researcher has made an attempt through this paper to discuss the determinants of digital divide in India and to analyze the scenario of digital divide. Existing literatures on digital divide have been taken into consideration along with different publications of government and international organizations to debunk India's digitalization scenario.

4. Aspects of Digital Divide in India

The term "digital divide" was introduced by Larry Irving, Jr., former US Assistant Secretary of Commerce for Telecommunication and Communication in the mid-1990s in order to focus public attention on the existing gap in access to information services between those who can afford to purchase the computer hardware and software necessary to participate in the global information network, and low income families and communities who cannot (Cohen, 2011). The global digital divide refers to differences between countries in terms of access to ICTs. ICT access inequality is called as the first order digital divide and ICT use inequality is called as the second order digital divide (Jin & Cheong, 2008). Wilson (2004) defines the digital divide as "an inequality in access, distribution, and use of information and communication technologies between two or more populations." The digital divide problem has geographic, demographic, and socio-economic dimensions (Yuguchi, 2008). There are also philosophical and sociological sides of the digital divide because of a potential missed opportunity on the part of millions of people to obtain desirable jobs and enhance their lives by using computers and the Internet (Friedman, 2001). The digital divide refers to unequal patterns of material access to, usage capabilities of, and benefits from computer-based information- and communication technologies that are caused by certain stratification processes that produce classes of winners and losers of the information society, and participation in institutions governing ICTs and society (Fuchs & Horak 2007).

The digital divide is such a division which is evident not only in under developed and developing countries but even the developed nations are not free from its impact. Developed countries also face inequalities between the "have" and "have-

nots" of ICTs. For example, even though the United States is accepted as one of the leading knowledge economies and network societies, it faces the digital divide (Acilar, 2011). Chakraborty & Bosman (2005) found that there is clear evidence of income-related distributional inequalities regarding home PC ownership across the nation. Today, there are many types of the digital divide at local, national, regional or world levels, such as the gender divide, the age divide, the income divide, each such divide having its specific background, phenomena, evolution trends, perspectives as well as its specific bridging solutions and initiatives (Boje & Dragulanescu, 2003). Because of the continuous development of information technologies and the emergence of new technologies, the digital divide is a dynamic problem. Ahmed (2007) states that digital divide is a complex, and dynamic problem which has political, cultural, and ethical dimensions.

From the above discussions it can be said that digital divide is a very complex phenomena and a common issue throughout the world but depending on the country and conditions, its causes varies. In this section different determinants of digital divide in India are explored and since India is still working out on its ICTs, technology here is used in terms of internet usage and penetration.

i. Age

Table 1: Age wise distribution of India's internet users in 2014

Age groups	%age of internet users
15-24	37
25-34	38
35-44	16
45-54	6
55 and above	3

Source: Deloitte Report, 2015

Table 2: Age wise distribution of India's internet users in 2016

Age groups	%age of internet users
Up to 35 years	74
35 years and above	26

Source: India Statistics

Age is one of the demographic factors affecting digital divide in India. Vicente and Lopez (2008) analysed Internet adoption in the new member states and candidate countries of the European Union and concluded that younger individuals are the most likely to use the Internet in all the countries. Friedman (2001) finds that the Internet penetration rate among young residents is substantially higher than that among elderly residents in both developed and developing countries. Loges and Jung (2001) in their study reported significant differences between old and young Americans in Internet access.

From the above two tables it is evident that there is a growing digital divide in the country between young and old population. In 2014 and even in 2016, the divide is not reducing as can be seen that internet users are more in age groups of 15-24 and 25-34 years age groups in 2014 in comparison to internet users in age groups of 35-44 and above. The divide is prevalent even in 2016 as it is seen that 74% of users are in the age group of up to 35 years and

remaining only 26% are in the age group of 35 years and above.

ii. Gender

Table 3: Gender wise distribution of India's internet users in 2015

Gender	%age of internet users
Male	71
Female	29

Source: India Statistics

UNESCO accepts the gender divide as "one of the most significant inequalities to be amplified by the digital revolution" (Primo, 2003). Chen and Wellman (2004) found that gender is one of the important factors affecting access to and use of the Internet; males are more likely than females both to access and to use the Internet. Bimber (2000) found that there is a significant gap between genders in terms of accessing and using the Internet and it exists because of differences between men and women in socioeconomic status, which affects Internet access and use. Carveth and Kretchmer (2002) found that gender is one of the significant predictors of the digital divide in Western Europe. Broos and Roe (2006) found also gender is one of the major factors structuring the digital divide. The rate of Internet use of males is higher than that of females. While the rates of Internet use among males are 71%, it is only 29% among females.

iii. Connectivity and Understanding Issues

Table IV: Rural-Urban Teledensity in %age

Year	Rural	Urban
2013	41.02%	146.96%
2014	43.96%	145.78%
2015	48.37%	148.61%
2016	51.37%	154.01%
2017	57.45%	173.21%

Source: Annual Reports of TRAI

Table V: Internet penetration in India

Year	Total Population of India	Total Internet Users	%age of Internet Users in Total Population
2013	1279498874	193204330	15.1%
2014	1295291543	233152478	18 %
2015	1311050527	354114747	27%
2016	1326801576	462124989	34.8%

Source: Various Reports of UN Population Division and International Telecommunication Union

Around one in three are using smart phones in Urban India with the percentage of smart phone penetration being 34% (Ericsson ConsumerLab, 2015). 63 percent of urban mobile internet users face quality and reliability issues, such as lost connections and inconsistent network speeds, when using mobile networks indoors (ibid). App-related issues while outdoors or commuting affects 68 percent of urban mobile internet users. These include not being able to play online games due to a lengthy lag time, apps taking a long time to refresh, maps failing to load, and session failures. When choosing a data plan, it is important that consumers select the tariff that best suits their needs; however, 55 percent of urban mobile internet users say they do not understand their data

plan options, and that they are confused by the details and only 12 percent of urban mobile internet users visit their operator's website to recharge, pay bills or use other services (ibid).

iv. Education

Table VI: Literacy Rate

Residence	Sex	Literacy %age
Urban	Male	89.67
	Female	79.92
Rural	Male	78.57
	Female	58.75

Source: Census 2011

Vicente and Lopez (2008) found that educational attainment is one of the main determinants of Internet use; education positively affects the likelihood of an individual using the Internet and according to the results of their study, university education has a stronger effect than high school education in terms of Internet usage. Goldfarb and Prince (2008) found that high-income, educated people were more likely to have adopted the Internet by December 2001 in the United States. From the above table it is seen that there is a difference in literacy rates in urban and rural areas and even in both areas, the rate of literacy is lesser for female population.

v. Rural-Urban Digital Divide

Table VII: %age of internet users in urban and rural areas

Year	Urban	Rural
2013	85	25
2014	153	32
2015	171	68
2016	262	109

Source: IAMAI, Feb 2016

Geographic location is one of the affecting factors for individuals to access ICTs. Hindman (2000) finds that even though ICTs provide distinct advantages to geographically isolate rural residents, rural citizens are expected to lag behind urban residents, because of limited telecommunication infrastructure, and culture. Chen and Wellman (2004) find that geographic location is one of the significant factors affecting people's access to and use of the Internet, with more prosperous regions having higher Internet penetration rates than poorer regions. Carveth and Kretchmer (2002) find southern Europe countries have less computer and Internet penetration than Northern Europe countries. Demoussis and Giannakopoulos (2006) found similar result; differences in Internet use between Southern and Northern European states exist; people in the south of Europe show lower probabilities of Internet use than those living in the north of Europe. Similar is the case with India and it is evident from the table above. Though the %age of internet users is showing an increasing trend but the gap each year is increasing.

5. Digital India Program

Digital India is a dream project of the government for the citizens and Industries of India which could help in connecting the various past and present projects to bring India to a global platform and through this project government services are available for urban and rural citizens digitally or electronically

(<http://www.digitalindia.gov.in/>). It will help to achieve digital innovation and create positive impact in the people living in rural and urban areas and will attract investment in all product manufacturing industries (ibid). The Digital India project aims to transform our country into a digital economy with participation from rural or urban citizens and businesses (ibid). This will ensure that all government services and information are available anywhere, anytime, on any device that is easy-to-use, highly available and secured and will be crucial in removing digital gap between the rural and urban India (ibid). Nine projects have been commenced under Digital India programme, these are explained below:

- Universal Access to Mobile Connectivity
- Ensure mobile connectivity in all parts of the country by 2018. Main objective is to provide each citizen with access to mobile networks and associated services.
- Broadband Highways
- The aim is to cover 250000 village Panchayats under National Optical Fibre Network (NOFN) by December 2016. Nationwide internet infrastructure (NII) would integrate the network and cloud infrastructure in the country to provide high speed connectivity and cloud platform to various government departments up to the panchayat level.
- Public Internet Access Programme
- One Common Service Centre (CSC) would be provided to each gram panchayat and 150,000 Post Offices are proposed to be converted into multi service centers.
- e Governance
- IT would be used to make the delivery of government services more effectively. There would be integration of services and platform – UIDAI, Payment Gateway, Mobile Seva platform, Public redressal etc., through IT. All information would be available in electronic form.
- eKranti
- The aim is electronic delivery of services to people be it education, health, financial inclusion or justice.
- Information for All
- MyGov.in is a website launched by the government to facilitate a 2-way communication between citizens and the government. It is a medium to exchange ideas or suggestion with government. The citizen would have open access to information through open data platform.
- Electronics Manufacturing
- The government is focusing on zero imports of electronics by 2020 through local manufacturing of items such as smart energy meters, micro ATMs,

mobile, consumer and medical electronics. Government is also taking several steps to promote manufacturing and investment in electronics sector by providing clarity on taxation, incentives skill development etc.

- IT for Jobs
- The aim is to train 10 million people in towns and villages for IT sector jobs in five years. It also aims to provide training to three lakh service delivery agents as part of skill development to run viable businesses delivering IT services. It also focuses on training of five lakh Rural Workforce on Telecom and Telecom related services and setting up of BPOs in each North-eastern state.
- Early Harvesting Programmes
- Government plans to install Wi-Fi facilities in all universities across the country. All books will be converted into e books. Email will be made the primary mode of communication within government. Biometric Attendance System will be installed in all central government offices where recording of attendance will be made online.

6. Conclusion

This paper has explored the aspects of the digital divide in India. According to the analysis, Internet use has significantly increased in India over time, but, there is still a digital divide in ICT use. It is found that the rate of Internet use of males is higher than that of females. Also there is a significant gap between rural and urban residents regarding Internet use along with the users facing problem in regard to connectivity problems. A digitally connected India can help in the overall growth and development of its citizens and this digital inclusion can be realized through supporting and enhancing elements such as basic infrastructure and digital literacy. Initiatives are already taken by the government but the fact is as to what extent it has penetrated and whether people are getting benefit or not. Since most of the digital innovations and initiatives are taken post 2014 it will take some further time to measure the progress and achievements of the various developments under Digital India initiative. Digital India program is the beginning of a digital revolution and if it is properly implemented then it can really make India digitally inclusive and can lead the country towards growth and development. A blooming young population in India equipped with and having proper access to technology can lead the country towards higher stairs of development.

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