The Status of Digital Divide and Education in India

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ABSTRACT

Despite the sharp rise in telecommunication access in the developing nations, the global digital divide is getting wider. This frustrating situation creates a "digital divide", which refers to the gap between people with effective access to digital and information technology and those with very limited or no access at all. 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. This paper attempts to look in to the status of education and digital penetration in India based on the NSS Survey. It is found that the level of digital penetration at the household level is low in rural areas but relatively high in urban areas. In North India, the level of digital penetration is highest both for rural and urban areas while it is lowest in Eastern India for rural India and Central India for urban India. At the individual level, both level of education and internet usability is low in rural and urban areas of the country. This indication of digital divide ensures that a collaborative effort from all stakeholders is needed to bridge the gap.

Introduction

Despite the sharp rise in telecommunication access in the developing nations, the global digital divide is getting wider[1]. The education system across the globe has undergone major transformation with the exceptionally fast paced change in technological domain of knowledge. As a result, ICT in its own way has managed to make a permanent place for itself in education sector – specifically in school education in Indian context also[2]. In a developing country like India, advances in ICTs have brought a lot of opportunities and perhaps a whole lot of challenges as well. One of the main challenges is the considerable gap between the information have-s and information have-nots -what we call the digital divide. And, this digital gap starts right from school[3]. Our schools, mainly govt. schools are ill-equipped in terms of infrastructure and basic facilities, our teachers are not trained adequately to infuse ICT in education, and execution of many enthusiastic policies are done half-heartedly, thus leaving the less privileged segment of children, who come from lower socio-economic class of society and are largely dependent on govt. school system for their education, with very little or no access to digital learning[2]. This frustrating situation creates a "digital divide", which refers to the gap between people with effective access to digital and information technology and those with very limited or no access at all. 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. This paper attempts to look in to the status of education, digital penetration in India based on the NSS Survey, an attempt first of its kind as far as known.

Digital Divide

Digital divide, arguably the most intriguing phrase of the present day seems to have its origin in the United States of America. Many considered Andy Grove one of the creators of digital divide network coined the term. Few others say the credit goes to Larry Irvin. According to Benton Foundation, former President Bill Clinton first used the term in the discussions of the National Information Infrastructure in 1993. Though there are controversies existing as to who coined the term, there is a wider acceptance on the increasing gap between information have-s and Information have-nots -what we call the digital divide. Recent report of UN appeared in New York Times lamented the growing digital divide in developing countries. The Indian subcontinent is struggling to stay alive with the growing digital divide, leaving

the poor illiterates poorer and the rich people richer[3].

Digital Divide in Education

Schools across the country have been closed for six months due to COVID-19, but this means vastly different things for different people. For the child in urban Himachal Pradesh, where Internet penetration is higher than 70 percent, it likely means online schooling, Zoom classes and digital textbooks. For the child in rural Odisha, where less than 6 percent of households have Internet facilities, such options are out of the question. The national capital has the highest Internet access, Himachal Pradesh and Kerala are the only other States where more than half of all households have Internet. At the other end of the spectrum is Odisha, where only one in ten homes have Internet. There are ten other States with less than 20 percent Internet penetration, including States with software hubs such as Karnataka and Tamil Nadu[4].

Review of Literature

Thakur[3] observes that even though computer education was introduced twenty to twenty-five years back in some urban schools in the country, most schools in rural and sub-urban India, especially govt. schools still do not have adequate teachers, let alone a computer laboratory. There is a growing discrepancy between those who have access to information and those who do not. The second groups are the majority and most of them live in rural areas of developing countries. There is a gap into those who are able to take advantage of new ICT opportunities and those who are not. So, digital divide affects many nations of the developing world (Bera[5]; Bansode and Patil[6]) Singh[7] views that in India all people do not have access to the Internet and ICT, and an amazingly large number of people especially from the rural areas does not have abilities to use the ICTs in a proper way and, therefore cannot draw the advantages from its usage. The issues of digital divide is posing a herculean task before the Government of India to provide the maximum benefits to the stake holders. The paper also 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.

Panda et al. [8] observes that the phenomenon of digital discrimination prevailing among various social, political and working groups has led to the emergence of digital information rich and digital information poor groups within societies and perhaps in the global environment. Libraries have long been essential agents in fostering peace and human values. Libraries are now operating digitally, and their digital services open up a new channel to the universe of knowledge and information connecting cultures across geographical and social boundaries, Similar conclusions were reflected in the studies by Kaur and Singh [9], Mohanti [10], Bridges[11], Chopra[12], Cullen[13], Kumar[14] etc.

Objectives of the Study

As there is no study on examining the status of education, digital penetration in India based on the NSS Survey, the study frames the following objective:
(i) To study the level of digital penetration in India.
(ii) To study the status of education and digital penetration across various regions in India.

Methodology

The Data is collected from NSS 75th round data on Key Indicators of Household Social consumption on Education in India. The statistical tools of average is used for analysis**.** Subdivided and multiple bar diagram is used for graphical illustration. Also, a disparity index is constructed using the formula:

Gender Disparity Index in Digital Penetration= $\log(x1/x2) + \log((100-x2)/(100-x1))$
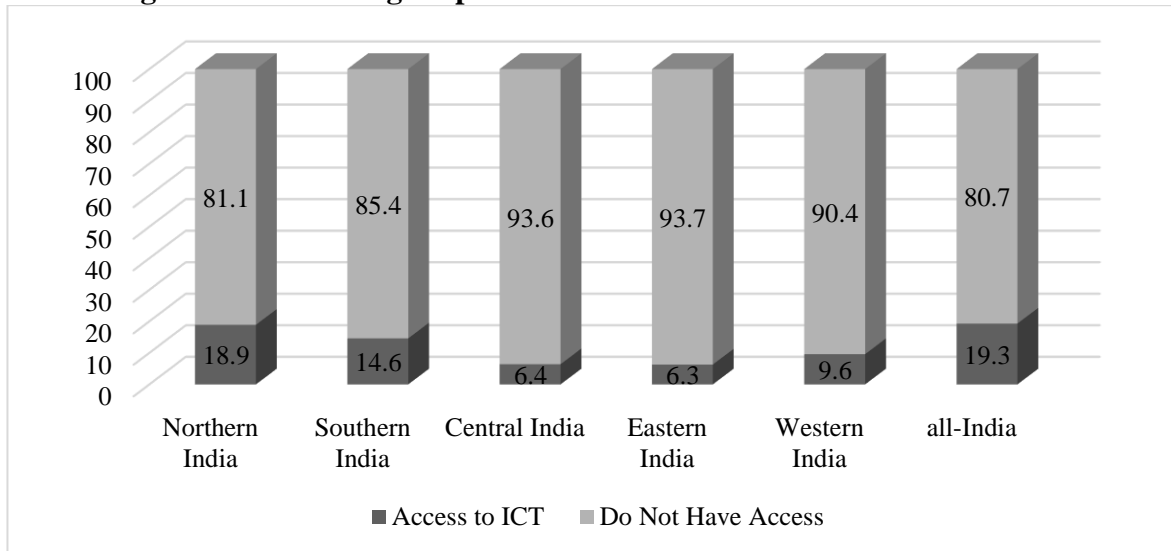
Digital Penetration in India

The level of digital penetration is gauged firstly from the household level digital penetration rates both for rural and urban areas. The level of digital penetration at all India level is low(19 percent) in rural areas. In North India the level of digital penetration is highest(18.9 percent) followed by South India(14.6). It is lowest in Eastern India (Figure 1). The level of digital penetration at all India level is high (65 percent) in urban areas. In

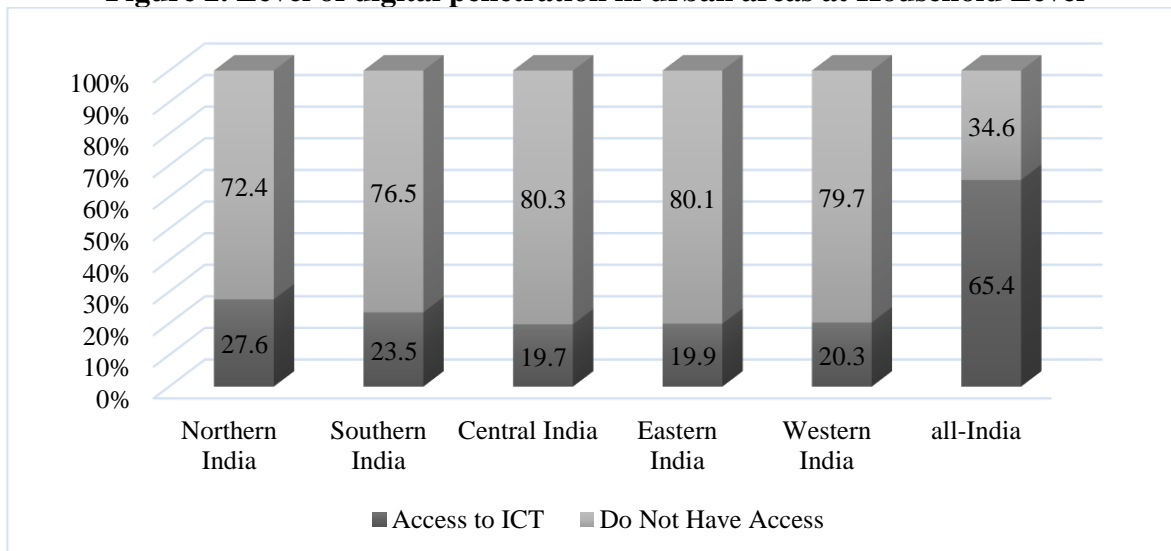North India the level of digital penetration is highest(27.6 percent) followed by South India(23.5). It is lowest in Central India (Figure **2**).

Figure 1. Level of digital penetration in rural areas at Household Level

Source: Authors Calculation based on NSS 75th round data on Key Indicators of Household Social consumption on Education in India.

Figure 2. Level of digital penetration in urban areas at Household Level

Source: Authors Calculation based on NSS 75th round data on Key Indicators of Household Social consumption on Education in India.

An additional detailed analysis is undertaken for gauging the level of digital penetration at individual level by gender positions. As far as ability to operate computer is concerned both males and females have more ability in Southern India and have lowest in Eastern India, but the gap is more in Central India and less in Southern India. While in terms of ability to operate internet is concerned both males and females have more ability in Southern India and have lowest in Eastern India. Also, in terms of using internet is concerned both males and females have more ability in Northern India and have lowest in Eastern India. In case of overall disparity in gender, it is more in parts of Central India, followed by Eastern India and less in Southern India(Table **1**).

Table 1. Digital penetration across regions in India by Gender

Religion	Ability to Operate Computer			Ability to Operate Internet			Used Internet			Overall Male-Female Disparity Index
	Male	Female	Disparity Index	Male	Female	Disparity Index	Male	Female	Disparity Index	
Northern India	26.4	18.1	0.21033	35.7	23.1	0.26677	33.4	20.9	0.27830	0.25180
Southern India	29.8	21.7	0.18518	33.8	22.8	0.23774	29.8	20.8	0.20854	0.21048
Central India	13.1	7	0.30163	17.5	8.6	0.35303	16.3	7.4	0.38684	0.34717
Eastern India	12.1	6.7	0.28260	17.4	9	0.32836	14.7	8.9	0.24649	0.28582
Western India	26.4	17.1	0.24028	30.9	18.8	0.28587	27.7	15.9	0.30674	0.27763

Source: Authors Calculation based on NSS 75th round data on Key Indicators of Household Social consumption on Education in India.

8.0 Education and Digital Divide in India

In this section we look at the levels of education and digital divide across regions both for rural and urban India and also try to figure the rural urban gap in this regard.

Table 2. Levels of education and digital divide across regions in rural India

Regions	Educated Persons	Internet Accessibility	Utilising Internet
Northern India	39.3	21.5	19.3
Southern India	37.6	21.3	17.5
Central India	32.2	14.9	12.2
Eastern India	26.4	9.6	7.6
Western India	23.7	8.5	7.4
all-India	30.8	13.0	10.8

Source: Authors Calculation based on NSS 75th round data on Key Indicators of Household Social consumption on Education in India.

Notes: 1. Figures represent the percentage of persons.

2. For Educated persons, highest level is taken as Secondary level and above.

In all India level, both level of education and internet usability is low as far as rural areas is concern. The percentage of educated persons is merely 30 percent. More surprisingly, the internet accessibility is merely 13 percent, while only 11 percent uses internet. In Northern India, nearly 40 percent persons are educated, 21 percent have internet accessibility while merely 19 percent uses it. The figure for southern India stand at 37 percent educated, 21 percent have internet accessibility and 17 percent utilise internet. In Central India, nearly 32 percent persons are educated, 15 percent have internet accessibility while merely 12 percent uses it. The figure for eastern India stand at 26 percent educated, 9 percent have internet accessibility and 7 percent utilise internet. The figure for western India stand at 26 percent educated, 9 percent have internet accessibility and 7 percent utilise internet (Table 2).

Table 3. Levels of education and digital divide across regions in urban India

Regions	Educated Persons	Internet Accessibility	Utilising Internet
Northern India	61.6	44.3	41.9
Southern India	57.9	37.7	33.1
Central India	61.4	40.6	36.9
Eastern India	55.9	31.44	28.1
Western India	53.5	30.45	28.9
all-India	57.5	37.1	33.8

Source: Authors Calculation based on NSS 75th round data on Key Indicators of Household Social consumption on Education in India.

Notes: 1. Figures represent the percentage of persons.

2. For Educated persons, highest level is taken as Secondary level and above.

In all India level, both level of education and internet usability is low as far as urban areas is concern. The percentage of educated persons is merely 57 percent. More surprisingly, the internet accessibility is merely 37 percent, while only 33 percent uses internet. In Northern India, nearly 61 percent persons are educated, 44 percent have internet accessibility while merely 41percent uses it. The figure for southern India stand at 58 percent educated, 37 percent have internet accessibility and 33 percent utilise internet. In Central India, nearly 61 percent persons are educated, 40 percent have internet accessibility while merely 37 percent uses it. The figure for eastern India stand at 56 percent educated, 31 percent have internet accessibility and 28 percent utilise internet. The figure for western India stand at 53 percent educated, 30 percent have internet accessibility and 29 percent utilise internet(Table **3**).

Figure 3. Urban-Rural gap in Education, Digital Divide across regions in India
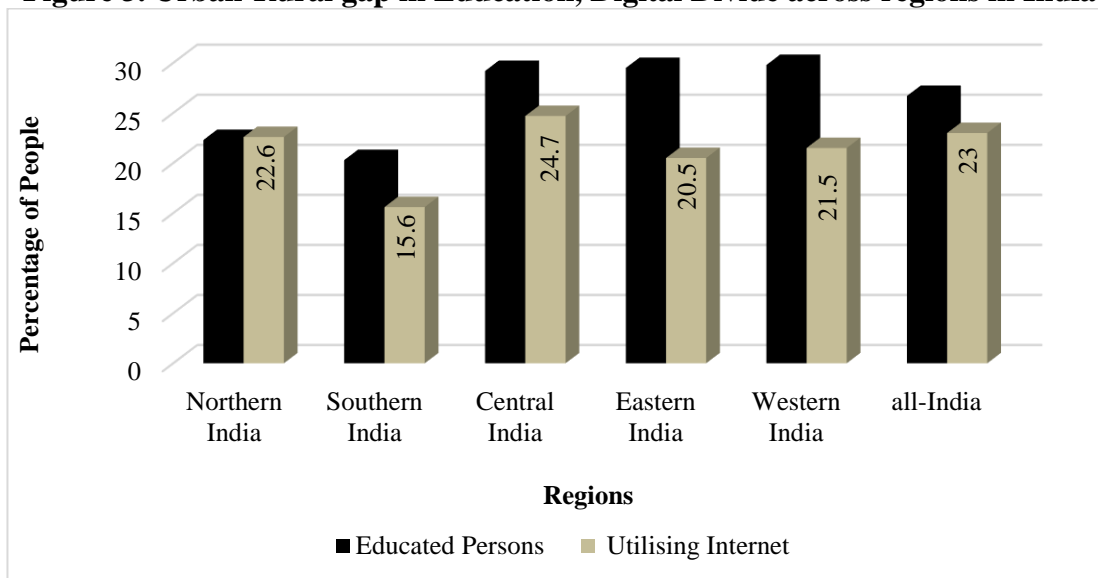
Source: Authors Calculation based on NSS 75th round data on Key Indicators of Household Social consumption on Education in India.

Urban-rural gap in educational attainment is more in Western India(29.8 percent) followed by Eastern India(29.5 percent). It is lowest in Southern India (20.3 percent). Rural- urban gap in utilising internet is more in Central India(24.7 percent) followed by Northern India(22.6 percent). It is lowest in Southern India (15.6 percent)(Figure **3**).

Conclusion

Even though computer education was introduced twenty to twenty-five years back, an enormous digital divide prevails in India especially in rural areas. In order to bridge the digital divide, we need to provide cheaper IT facilities to the commons, train teachers, provide schools and students with the right IT tools so that a solid digital user base can be created in the country.

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