Analysing the Digital Divide Factors: Evidence of a Rural-Urban Comparison from an Indian district

ABSTRACT

Aims: An attempt has been made in this study to identify the different factors leading to Digital Divide in the rural and urban areas of Alipurduar district, India

Study design: The study has been carried out on the basis of quantitative technique. For the purpose of the study, a total of 120 samples have been collected both from rural and urban areas of the study district

Place and Duration of study: This has been conducted from February, 2023 to July, 2023 rural and urban areas of Alipurduar district.

Methodology: Stratified Random sampling has been performed for selecting the samples to be surveyed. Questions related to the access and usage of Internet, computer and android phones have been included in the Questionnaire.

Result: The study results show that the network connectivity has a significant relation with Digital divide (p=0.00), followed by English language deficiency (p=0.00) and Gender (p=0.00) respectively. The study also reveals that there is a significant relationship between area of residence and digital divide (p=0.003). The digital divide increases away from the urban area towards the rural area. The network connectivity issue, techno-scepticism, English language deficiency, gender and place of residence are revealed as leading factors of digital divide in the area under study.

Conclusion:

The paper proposes to enhance network connectivity and suggests a special drive for capacity building in terms of digital literacy and usage of ICT devices, particularly in the rural area.

Keywords: Digital divide, Network connectivity, ICT, Rural and Urban

1. INTRODUCTION

The world has witnessed significant changes in information dissemination, particularly during the information revolution. The spatial distribution of benefits across rural and urban areas is highly debatable because of its varied and complex impact. Technology can simplify life, solve increasing challenges, and minimise gaps existing between rural and urban areas, but evidences suggest that information and communication technology (ICT) has led to increased disparity and hardship. Governments around the world, including India have been trying to explore ways to integrate digital technology into various aspects of daily life. Many countries are now considering ICT to be an essential tool for students, alongside reading, writing, and numeracy. It contributes a significant role in modern society enabling global flow of data, services, and people, defining the global knowledge

economy. ICTs, including the internet and global telecommunications are therefore playing a crucial role in the modern society, from e-commerce to e-learning. It has caused fundamental changes in the community by facilitating the transition from the industrial age to the networked age. Global information networks play a critical role in today's knowledge-driven economy. Thus, the rapid advancement of ICT has led to widespread recognition of its potential to boost economic activity, improve governance, empower society, and drive significant socio-economic transformations worldwide (Bist, 2007).

The digital divide refers to the gap between those who can effectively get benefit from information and communication technologies (ICTs) and those who cannot. The Organization for Economic Co-operation and Development (OECD) (2001) defined the digital divide as the gap between individuals, households, businesses and geographic areas at different socio-economic levels regarding their opportunities to access information and communication technologies and their use of the Internet for a wide variety of activities (UNDERSTANDING DIGITAL DIVIDE, 2001). Norris (2001) (Noris, 2001)explained the digital divide on three levels. The digital divide between countries or the so-called global dividethat has become strikingly evident in the chasm between developed and developing countries. The social dividerefers to the gap in access to and use of ICTs between different sections of society. It is apparent in the different levels of access to ICTs for groups with other socio-economic characteristics within a country. The third level is the democratic divide that refers to the difference between those who do and do not use ICTs to engage in public life. The concept *'digital divide'* has started to draw attention from the public ever since the publication of a report by the National Telecommunications and Information Administration (NTIA) in 1995. The NTIA's report surveyed 'have-nots' of Internet access in rural and urban areas of United States(David Baxter, 1995).

Globally, there is a large disparity in the distribution of installed bandwidth for telecommunications. Just three nations—China, the United States, and Japan—hosted 50% of the installed bandwidth potential worldwide in 2014. This concentration is not new; historically, 70–75% of the world's telecommunication capacity has been hosted by just ten countries. China, which in 2014 hosted more than twice as much national bandwidth potential as the US, displaced the US as the world leader in installed bandwidth in 2011. The focus of the global digital divide, which is a specific instance of the digital divide, is on how the Internet has grown differently around the globe, leaving some nations behind in terms of technology, education, labour, democracy, and tourism. The idea of the "digital divide" was first made popular in reference to this difference.The idea of the "digital divide" was first made popular in reference to the difference in Internet access that exists between rural and urban areas of the United States of America; but, the global digital divide replicates this difference on a global level.(Hilbert, 2016)

After China, India is the second-largest country in Asia. The nation's achievements in science and technology have made it one of the most advanced economies in the world. ICTs have had a big impact on Indian society by spreading knowledge. To guarantee long-term advantages, knowledge-based digital divide strategies can be employed. Though there have been variations, IT-enabled services have revolutionized the global business environment, leading to notable growth and development in a number of industries worldwide. Growth has resulted from improved infrastructure in

developed nations and has extended to emerging nations with lower income levels. India developed a clear road map and saw growth in IT-enabled services during the post-liberalization era.E-learning, e-library, e-health, e-government, and other information society pillars are essential to the expansion and advancement of the information society. The goal of the 2003 Geneva summit was to develop a comprehensive strategy to realize the information society's vision within the framework of adaptation efforts, as well as a common understanding of it.(Singh, 2007)

In India, IT and computerization were first introduced in 1978. In 1985, the Indian government decided to increase the use of IT in districts. The National Information Centre (NIC), a central government organization, launched a national program named the District Information System of National Informatics Centre (DISSNIC) to computerize all district offices. Commissioning almost 500 computer centres and linking them to a nationwide network was a significant accomplishment(Dutta, 2003). Significant societal shifts have been observed nationwide as a result of the fast advancement of the IT sector. However, there are drawbacks to this growth as well. People's fears that it would result in a loss of employment were unfounded; instead, in recent years, attitudes have drastically changed. The IT sector has been encouraged by numerous state governments(Singh, 2007). Despite such advancement, the digital divide in India is not only limited to less developed states with traditionally weak infrastructures but also in developed states(Rao, 2005). The 150th anniversary of Indian telecommunication was commemorated by the Indian government in 2003. The nation has made significant progress in developing its telecommunications industry. At the time of independence, there were only 80,000 phone users, the majority of whom were affiliated with government agencies.(Gosh, 2004)

In 2018, the Government approved the National Digital Communications Policy to create a digital communications infrastructure and services that is widely available, resilient, secure, affordable, and accessible in order to meet the information and communication needs of both citizens and businesses. As per the Telecom Regulatory Authority of India's (TRAI) monthly report, the number of wireless subscribers in the country increased from 1,010 million in February 2016 to over 866.19 million in December 2023(Highlights of Telecom Subscription Data , 2023). According to the 75th round of the National Sample Survey conducted between July 2017 and June 2018, just 4.4 percent rural households have a computer, against 14.4 per cent in urban areas, with just 14.9 per cent rural households having access to the internet against 42 percent households in urban areas. Similarly, only 13 per cent of people over five years of age in rural areas can use the internet, against 37 per cent in urban areas. About 67.8 percent of people of age 18 years and above in rural areas and about 83.7 percent of people of age 18 years and above in urban areas use mobile telephones with active SIM cards during the three months preceding the date of the survey according to the Multiple Indicator Survey of India reports March 2023, conducted by National Sample Survey Organisation, Ministry of statistics and programme Implementation.

During COVID-19 pandemic period, Indian people, particularly who have been living in the study district has witnessed the problems of digital divide. In the age of ICT, the digital divide and associated digital literacy have been making people lag behind at daily life, The “haven’t” of such facility and unawareness have pushed them in more backward position, resulting in spatial variation in

terms of digital divide across the district. It is fact that, there may have some legal obligation in the minimisation of digital divide in the study area because of presence of reserve forest or protected area, since people living very adjacent to those areas, they have been facing the mentioned problem, which need to be resolved.Under this backdrop, this study has been carried out in such a district of India which is endowed with geographical diversities comprising of hills, forest, tea garden and presence of majority of tribal populations both in rural and urban areas to understand the factors of digital divide. Alipurduar district (26.40°N to 26.83°N and 89.00°E to 89.90°E), a newly created district on June 25, 2014, carved out from Jalpaiguri district of West Bengal, India.The district is characterised by forest, hill, tea garden and plain land and a significant share of its population belongs to tribal communities. A lot of its places are still inaccessible and do not have any motorable route. A large part of the district is covered with thick forests. The district consists of 66-gram panchayats, 6 Community Development (CD) blocks and two municipalities covering 3136 area with 15,01,983 (Census 2011) with majority of Scheduled Caste (SC) and Scheduled Tribe (ST) population.

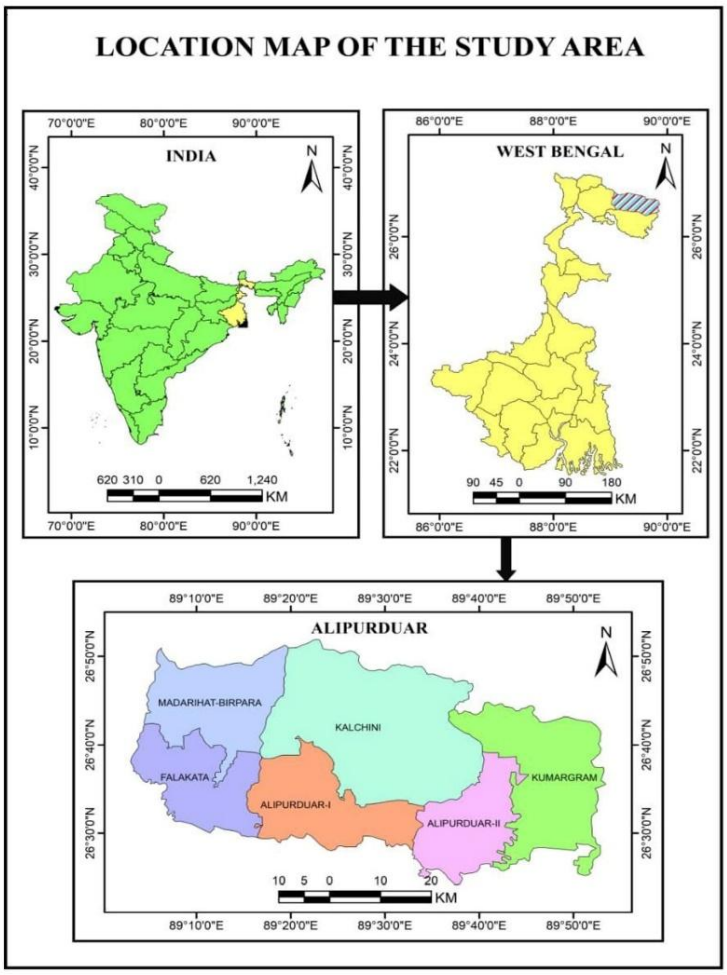

Fig.1. Location of the Study Area

2. METHODOLOGY

The study was conducted using a self-designed validated questionnaire, formed by consulting different relevant literatures. The questionnaire consisted of 30 questions out of which 11 were related to demographic profile, the rest were based on availability of ICT resources at home and work place, awareness of e-services, problems while using e-services. The study was carried out on 120 samples. The samples were chosen on the basis of stratified random sampling on the basis of demographic variables i.e. gender and place of residence. ArcMap was used to show the location of the study area; Chi-square and Cross tabulation were used to show the association between the variables and compare the variables respectively to understand the factors responsible for digital divide in the study district.

3. DATA ANALYSIS AND RESULTS

3.1 **Availability of Internet facilities**:

Among the respondents, most of them did not have internet facilities at workplace. Out of 120 samples, more than 75% did not have internet facilities at their workplaces and only 25% had it. Most of the respondents who did not have internet facilities at workplace used internet facilities at home. Among all the samples, 80 used internets while the remaining 40 did not use internet facilities. Those who did not use the internet facilities are of the opinion that they do not feel the need of internet in their daily life.

The chi-square test revealed that the internet connectivity and use of ICT tools have a significant association (p=0.00). Thus, places with higher network connectivity show higher usage of ICT tools, which proves that digital divide depends on higher network connectivity.

Table 1. Chi- Square Test Results

Chi-Square Test			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	43.893[a]	2	.000
Likelihood Ratio	47.816	2	.000
Linear-by-Linear Association	17.917	1	.000
N of Valid Cases	120		

Source: Calculated by Author

1.2 **Place of Residence**:

Use of ICT tools increases towards the urban area from the rural areas. The respondents residing in the urban area have a higher usage of ICT tools whereas moving towards the rural area ICT tools usage decreases. More than 80 percent of the respondents in the urban area

have shown usage of ICT tools and more than 40 percent of the respondents of the rural area have denied usage of ICT tools. The chi-square analysis shows an association between the usage of ICT tools and the place of residence of the respondents (p=0.003).

1.3 **Gender**:

Gender plays an important role in the digital divide. Many of the respondents were of the opinion that they don't feel the need to own a digital device as the male members of their family have digital devices. Out of 120 respondents, more than 70 percent of the male respondents agreed the usage of ICT tools whereas approximately 70 percent of the female respondents denied the usage of ICT tools showing a very big gap between the genders in terms of ICT tools usage. The chi-square value also shows a significant association between gender and ICT tools usage (p=0.00).

Table 2. Cross-Tabulation Table of ICT usage and Gender

Gender * use of ICT tools crosstabulation

			Use of ICT tools		
			Yes	No	Total
Gender	Male	Count	53	13	66
		% within Gender	80.3%	19.7%	100.0%
		% within Use of ICT tools	67.9%	31.0%	55.0%
	Female	Count	25	29	54
		% within Gender	46.3%	53.7%	100.0%
		% within Use of ICT tools	32.1%	69.0%	45.0%
Total		Count	78	42	120
		% within Gender	65.0%	35.0%	100.0%
		% within Use of ICT tools	100.0%	100.0%	100.0%

Source: Calculated by Author

1.4 **Language:**

Language plays an important role in digital divide as most of the websites and applications use English. India ranks 60 out of 113 in English proficiency (EP EPI report 2023), making it a moderate proficiency in English language country, although most of the English language proficiency remains confined within the small and rich minority leaving out the majority making them 'computer fear'. The above study reveals that most of the respondents who have denied the usage of ICT tools also lack proficiency in English language whereas those who have confirmed the usage of ICT tools have also confirmed their proficiency in English language. Chi-square value(p=0.00) also portrays a significant association between usage of ICT tools and English language proficiency, which in turn leads to the acceptance that linguistic diversity effects digital divide.

4.**CONCLUSION:**

The various facets of India's digital divide have been examined here and the analysis shows that although Internet use has increased dramatically in India over the years, there is still a digital divide in ICT use. It has been explored that male use the Internet at a higher rate than female. In terms of Internet use, there is a notable disparity between residents of rural and urban areas. Additionally, users encounter issues related to connectivity. India's citizens' general growth and development can be benefited from being connected to the internet. This digital inclusion may be achieved by promoting and improving components like basic infrastructure and digital literacy.

The expansion of the telecommunications network and the provision of terminals for users are the main goals of the digital divide initiative. Yet, in addition to initiatives to broaden the physical network, efforts to address illiteracy, lack of communication and IT skills are critical elements of the digital divide that need to be taken into account. In order to make ICTs affordable, numerous steps have been taken to provide internet access, and expenses have also been reduced. Efforts have been made to ensure that web languages are free, but the digital divide still exists. To ensure that a technological innovation satisfies local needs, there is a need to create models of collaboration between researchers, social scientists, technologists and other stakeholders. The Digital India initiative marks the start of a digital revolution, and with careful implementation, it has the potential to truly make India digitally inclusive and propel the nation forward in terms of growth and development. India's youthful population, which has been booming and has appropriate access to technology, has the potential to drive the nation's development forward.

CONSENT

Informed consent has been taken from the study participants.

ETHICAL APPROVAL

Does not required

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