Impact of Digital Technology on Economic Life in India–A Special Reference to Digital Divide in Rural-Urban India

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Abstract— **Digital Technology has played a prominent role in the development of rural and urban life in India; it has changed the banking sector, changed education, changed the agricultural industry, changed the entertainment world, it has restructured many businesses in all over India. Digital India is a dream which is created by the Government of India to ensure that government services are made available to citizens electronically , even in remote areas , by improving online infrastructure and by increasing Internet connectivity. There are many constrains in the way of its implementation The digital divide exists between those living in rural areas and those living in urban areas, between the educated and uneducated, between economic classes, and on a global scale between more and less industrially developed nations. The main objective of this paper is to identify the impact of digital technology on Indian life. This paper also tries to find out the digital divide mainly in rural-urban India and also discusses initiatives for bridging the gap.**

Index Terms— **Digital technology, Digital India, Digital Divide, Initiatives**

1. INTRODUCTION

Digital Technology has played a prominent role in the development of rural and urban life in India; it has changed the banking sector, changed education, changed the agricultural industry, changed the entertainment world, it has restructured many businesses in all over India. Digital Technologies which include Cloud Computing and Mobile Applications have emerged as catalysts for rapid economic growth and citizen empowerment across the globe. Digital technologies are being increasingly used by us in everyday lives from retail stores to government offices. They help us to connect with each other and also to share information on issues and concerns faced by us. In some cases they also enable resolution of those issues in near real time. Digital technologies are growing steadily and rapidly. We have witnessed an evolution from the internet or the World Wide Web to the internet of things and virtual augmentation.

India is a breeding ground for the digital start-ups, with a conservative estimate showing 4,000 plus players. As PM Narendra Modi's government promotes actively the Digital India initiative for transforming India into a digitally invested economy and a knowledgeable society, growth, and investment in digital technology would surge ahead.

The digital economy is a new productivity platform which according to some experts is the third industrial revolution.

The digital revolution, also known as "IoE (Internet of Everything) or 'The Internet Economy', is projected to create new growth opportunities, jobs and become one of the biggest business opportunity in coming 30-40 years. The Indian Department of Electronics & Information Technology estimated that IoT industry in the country is likely to grow and become INR 940 billion, by the year 2020. The areas of focus include health, agriculture, natural disasters, water quality, security, transportation, supply chain management, automobile, automated metering, smart cities, monitoring of utilities, oil and gas and waste management. Goldman Sachs has predicted that India which comprises15 percent of the world population, with a growth rate of 7-8 percent could be the 2nd largest economy by the year 2030. Country's new leadership considers that digital economy would be the major growth enabler for India. When the Indian PM listed "Digital India" among other the top priorities, he gave a loud nod to the digital economy's opportunities.

2. OBJECTIVES OF THE STUDY

1. To identify the impact of digital technology on Indian life.
2. To find out the digital divide mainly in rural-urban India and also discusses initiatives for bridging the gap.

3. METHODOLOGY

The paper is based on the secondary data and the information is retrieved from the internet via journals, research papers and expert opinions on the same subject matter.

DIGITAL INDIA

India today is at the helm of digital transformation. Be it SMEs, enterprises, start-ups or the government, everyone has undergone or is thinking of digital transformation. Today, every business, irrespective of scale, size or industry, is adopting digital technologies to improve business efficiency, become competitive and provide a better experience to the tech-savvy end-consumer. The present government has also given significant impetus to businesses to invest in new technologies and harness the benefits of digital. The Union Budget 2018 was testament to the government's focus on emerging technologies such as Artificial Intelligence (AI), Blockchain and more.

The journey of e-Governance initiatives in India took a broader dimension in mid 90s for wider sectoral applications with emphasis on citizen-centric services. Later on, many States/UTs started various e-Governance projects. Though these e-Governance projects were citizen-centric, they could make lesser than the desired impact. Government of India launched National e-Governance Plan (NeGP) in 2006. 31 Mission Mode Projects covering various domains were initiated. Despite the successful implementation of many e-Governance projects across the country, e-Governance as a whole has not been able to make the desired impact and fulfil all its objectives.

In order to transform the entire ecosystem of public services through the use of information technology, the Government of India has launched the **Digital India programme** with the vision to transform India into a digitally empowered society and knowledge economy. The programme will be implemented in phases from the current year till 2018. The Digital India is transformational in nature and would ensure that Government services are available to citizens electronically. It would also bring in public accountability through mandated delivery of government's services electronically, a Unique ID and e-Pramaan based on authentic and standard based interoperable and integrated government applications and data basis.

The source of funding for most of the e-Governance projects at present is through budgetary provisions of respective Ministries/ Departments in the Central or State governments. Requirements of funds for individual project(s) for Digital India will be worked out by respective Nodal Ministries/ Departments.

As of 31 December 2018, India had a population of 130 crore people (1.3 billion), 123 crore (1.23 billion) Aadhaar digital biometric identity cards, 121 crore (1.21 billion) mobile phones, 44.6 crore (4460 million) smartphones, 56 crore (560 million) internet users up from 481 million people (35% of the country's total population) in December 2017, and 51 per cent growth in e-commerce. Digital India aims to provide the much needed thrust to the nine pillars of growth areas, namely

1. Broadband Highways,
2. Universal Access to Mobile Connectivity,
3. Public Internet Access Programme,
4. e-Governance: Reforming Government through Technology,
5. e-Kranti - Electronic Delivery of Services,
6. Information for All,
7. Electronics Manufacturing,
8. IT for Jobs
9. Early Harvest Programmes.

BENEFITS OF DIGITAL INDIA PROGRAMME

The digital India mission would make all the government services available to people of country through common service delivery outlets.

There would be more transparency as all the data would be made online and would be accessible to citizens of the country.

EGovernance will help in reducing corruption and getting things done quickly.

Digital locker facility will help citizen to digitally store their important documents like Pan card ,passport, mark sheets etc.

It will help in decreasing documentation and reducing paper work.

Digital India mission is away for cashless transactions.

It can help small businesses. People can use online tools to expand their business.

It can play a key role in GDP growth .

CHALLENGES

1. There is a wide digital divide between urban and rural India. Till now funds have not been deployed effectively to meet the cost of infrastructure creation in rural areas.
2. High level of digital illiteracy is the biggest challenge in the success of digital India programme. Low digital literacy is key hindrance in adaptation of technologies . According to ASSOCHAM-Deloitte report on Digital India,November,2016, around 950 million Indians are still not on internet.

3. A key component under this vision is high speed of internet as a core utility to facilitate online delivery of various services . India has low internet speed. According to third quarter 2016 Akamai report on internet speed ,India is at the 105th position in the world in average internet speed. This rank is the lowest in entire Asia Pacific region .

4. Connectivity to remote areas: It is a mammoth task to have connectivity with each and every village, town and city. The problem of connectivity is a complex issue because every state has different laws pertaining to its execution. Also it is challenging for the central authorities to make a database where such a huge information can be stored.

5. **Finance:** Though there are resources with India but there is a huge capital cost which is to be invested and the fruits of the investment will be received after few years.

DIGITAL DIVIDE

The term digital divide describes the discrepancy between people who have access to and the resources to use new information and communication tools, such as the Internet, and people who do not have the resources and access to the technology. The term also describes the discrepancy between those who have the skills, knowledge and abilities to use the technologies and those who do not. The digital divide can exist between those living in rural areas and those living in urban areas, between the educated and uneducated, between economic classes, and on a global scale between more and less industrially developed nation.

FACTORS TIED TO THE DIGITAL DIVIDE

Age: Age is one of the demographic factors affecting digital divide in India.. 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. According to a report by a Sri Lanka-based think tank LIRNEasia, the study also revealed that while 65 per cent Indians in the age group of 15 to 65 years were not aware about the Internet, nearly 81 per cent people claim that they have never used it.

Physical access: The main barriers under this point are lack of telecommunication infrastructure with sufficient reliable bandwidth for Internet connections and cost, the ability to purchase, rent without financial hardship and the necessary equipment.

ICT skills and support: Since gender, age, racial, income, and educational digital divides have lessened compared to

the past, some researchers suggest that the digital divide is shifting from a gap in access and connectivity to ICTs to a knowledge divide. People in many disadvantaged groups are often precluded from making use of ICTs because of low levels of computing and technology skills and also very importantly literacy skills. This is significant factor in preventing certain people from using the internet technologies.

Community type: If you live in a rural area (with limited broadband access) you're less likely to use the internet than an urban or suburban resident: 20% of rural residents are offline, compared with 14% of both urban and suburban residents. Urban India with an estimated population of 455 million already has 295 million using the internet. Rural India, with an estimated population of 918 million as per 2011 census, has only 186 million internet users leaving out potential 732 million users in rural India.

Gender
The population of India is 1.34 billion. Women constitute over 48.5 percent of it. It is important to note that less than 1/3rd of India's total interest users, i.e. 29%, are females. What is shocking is that despite the difference in population (in terms of percentage) between men and women being only three percent, over 71 percent of Indians who use the internet are male. While digital India tries to crawl its way into its remote rural villages, thousands of Indian girls in these far-flung areas are refused access to Information and Communications Technology (ICTs) solely based on gender, which is a primary cause of low female representation in the digital space. According to a survey conducted in semi-rural Madhya Pradesh, a majority of women – despite having cell phones – couldn't use them due to a lack of literacy. These women were dependent upon their literate kin to dial a number or even read messages

INDIAN SCENARIO

When we consider India , The following factors lead to digital divide

Low literacy rate- As per Population Census of India 2011, the Literacy rate of India has shown improvement of almost 9.2 percent. It has gone up to 74.04% in 2011 from 65.38% in 2001, thus registering an increase of over 9 percent in the last 10 years. It consists of male literacy rate 82.14% and female literacy rate is 65.46%. Kerala with 93.91% literacy rate is the top state in India. Even though it seems that the literacy rate is going upwards but when it comes to urban and rural areas there is a difference in the

literacy rate which in turn creates a hurdle for digital divide.

Language-For Indians who speak no (or little) English, the barriers to the Information Age are almost inseparable. All widely-used operating systems require some knowledge of English or one of the 'Northern' languages. Thus, in practice, unless Indians know English, which most Indians do not, no matter how wealthy, brilliant, educated, prosperous or motivated they may be, computer use and Internet access are effectively out of question

Connectivity divide – Teledensity

TRAI data recognises that while urban India has 61.9 Internet subscriptions per 100 people, rural India gets by with just 13.7.

There's also a yawning gap in connectivity between States depending on the state of their network infrastructure and relative affluence. While the city of Delhi alone boasts 2.2 crore Internet connections, the entire North East has just 4.3 lakh. Mumbai alone hogs almost half of the 3 crore connections in Maharashtra. In most States, urban areas account for two-thirds of the Internet users

The number of telephone subscribers in India increased from 1,194.58 million at the end of Mar-17 to 1,210.84 million at the end of Jun-17, registering a growth of 1.36% over the previous quarter. This reflects year-on-year (Y-O-Y) growth of 14.25% over the same quarter of last year. The overall Teledensity in India increased from 92.98 as on QE Mar-17 to 93.98 as on QE Jun-17.

Table: 1 Trends in Telephone subscribers and Teledensity in India

At the end of March	Total Telephones (in Million)	Tele-Density (%)
2015	996.13	79.36
2016	1059.33	83.40
2017	1194.99	92.98
2018	1210.84	

Source: Annual Reports of TRAI

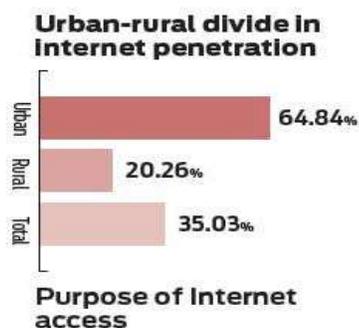**Table: 2. Telecommunications at a Glance(Rural – Urban India)**

		2014	2015	2016	2017
Telephone Subscribers in India (in Millions)	Rural	377.78	416.08	447.77	501.81
	Urban	555.23	580.05	611.56	693.18
Telephone Subscribers in India (%age share)	Rural	40.49	41.77	42.27	41.99
	Urban	59.51	58.23	57.73	58.01

Teledensity (Per 100 Inhabitants)	Rural	44.01	48.04	51.26	56.98
	Urban	145.46	149.04	154.18	171.52
Internet Subscribers in India (Millions)	Rural		111.76	111.94	136.52
	Urban		190.60	230.71	285.68

Subscription in Urban Areas increased from 611.56 million at the end of Mar-16 to 693.18million at the end of Mar-17, and Urban Teledensity also increased from 154.18 to 171.52 during the same period. Rural subscription increased from 447.77 million to 501.81 million and Rural Teledensity also increased from 51.26 to 56.98 during the same period. While Digital India is paving its way in rural India, the underlining digital gap still persists.

Internet devide & Mobile divide

Despite the government's push towards a Digital India, there is a wide gap in Internet usage in urban and rural India. According to a report titled Internet in India 2017 by the Internet and Mobile Association of India, while the internet penetration in urban India has grown from 60.6 per cent in December 2016 to 64.84 per cent in December 2017, the growth in connectivity in the rural parts of the country has been from 18 per cent in 2016 to 20.26 per cent in December 2017. And despite the government's Digital India scheme, the divide in internet penetration between the urban and rural regions in India stands at a whopping 44.58 per cent. Rural India, with an estimated population of 918 million as per the 2011 census, has only 186 million Internet users. Thus, there are 732 million potential users are still to be reached in villages. Out of an estimated 281 million daily Internet users, 182.9 million—or 62 per cent—are in urban areas, as compared to 98 million users or 53 per cent, in rural India. The Internet user market is still a male preserve, with just 143 million female users, or 30 per cent of total users.

Urban-rural divide in internet penetration

Urban	64.84%
Rural	20.26%
Total	35.03%

Purpose of Internet access

India has nearly one billion phone users and yet there is a wide gap between the ownership of mobiles in the country. According to a report by a Sri Lanka-based think tank

LIRNEasia, the gap between rural and urban mobile ownership in India is as high as 22 percent. This parity between the mobile ownership in India is more than the divide existing in the neighbouring developing nations including Pakistan and Bangladesh. While the parity in mobile ownership in Pakistan stands at mere five per cent, the gap in Bangladesh stands a little higher at seven per cent.

Building Roads- Steps to close rural-urban digital divide

The country has witnessed an exponential growth in the uptake of mobile services during the past few years. However, the growth has been confined to metro cities and large urban conglomerates, thus deepening the digital divide between urban and rural areas. At present, around 55,000 villages do not have telecom connectivity, while those that have access to telecom services have a teledensity of 53 per cent. This is extremely low in comparison to the urban teledensity of 170 per cent. Further, in the era of surging data consumption, internet penetration in rural areas stands at a meagre 13 per cent as compared to 69 per cent in urban areas. These statistics suggest that there is a dire need to extend telecom connectivity in rural areas.

Gyandoot Project: The Gyandoot Project: is the first ever project in India for a rural information network in the Dhar district of Madhya Pradesh which has the highest percentage of tribes and dense forest. Every village has a computer centre or "soochnalayas" at prominent market places or major roads. People can easily log in and complain or request information on crops, forest fields, water resources, etc. of the district.

Role of community information centres: The central and state governments of India, especially the Ministry of Information Technology, have taken a step known as rural electronic libraries. The project has been started in Sikkim and North Eastern states of India to provide IT facility in each and every block. Each CIC will have one server computer system and five client configuration computer systems linked in a local area network and connected to a V–SAT for Internet access.

Tata Council of Community Initiatives, are playing an important role in promoting adult education in the country. The council has extended several innovative computer–based literacy programs to improve India's adult education by preparing multimedia presentations. The unequal access to information and communication technologies has led to the digital divide though India has made encouraging efforts to bridge the gap by initiating a number of projects

and programmes for rural and remote locations, a strong determination among people, good policy–makers and policy–makers and political support is also required to bridge the digital divide. The country needs to improve the infrastructure of public libraries and link them with community information centres.

Role of academic and research institutions Academic institutes, particularly the Indian Institutes of Technology (IIT), have been making encouraging efforts to help rural and technologically disadvantaged people to access the Internet. IIT Kanpur initiated a project and developed a battery–powered facility, the "Infothela" (Information Box), which is equipped with an assortment of Internet and telecom facilities to impart the benefit of IT to people in remote areas. The characteristic of wireless Infothela includes spreading information about education, weather agriculture, and employment. The program is also laced with a "Digital Mandi" facility, which is an electronic platform for agro–commodity business. Under this project the farmer will be given warehouse certificate facility. To encourage active participation educated and unemployed village youth have been empowered to operate the project

Role of libraries and information centres :Libraries with their commitment to freedom of access to information and promotion of life–long learning are central to bridging the digital divide where all services are provided to all regardless of age, race or language. Libraries in India, like those in other developed world countries, have been changing their role from traditional storehouses of information to providing access to information from any part of the world.

Recommendations

All Indian rural areas should be considered when establishing the approaches to provide young people with repositories and skills of ICTs.

There should be adequate government interventions or donor to fund ICTs projects to accommodate disadvantaged communities; for computer repositories in schools and community libraries.

Literacy – Steps should be taken towards making people digitally literate. Example – 'One library per village' program.

Training – Making rural population familiar with the use of computer and basic functions. Example – National Science Digital Library: provides cheaper access to science and technology books.

Accessibility – Making internet accessible to all. Example – National Optical Fibre Network: to ensure broadband connectivity.

Affordability – Reducing phone prices and internet service prices.

Nudge and motivate citizenry to make use of the information and communication technology (ICT) mechanisms.

Reducing the trust deficit that people have with respect to IT enabled services – One come across individuals who would not use ATM but rather visit bank branch and withdraw money.

In conclusion, in order for the citizens living in the rural part of India to be able to keep up with the latest technology, technological workshops are organised to help the Indian workers and their families to make their lives easier. Electricity too, plays the most vital role. In addition, wireless mesh networks are also being implemented for tribal children to obtain education. The internet is becoming a necessity throughout the world, and no longer a privilege.

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