

Bridging the Digital Divide: A Study on the Growth of Digitalization through Digital Transformation in the Indian Economy

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Abstract: In today's interconnected world, digitalization has emerged as a driving force behind economic growth, innovation, and societal development. rapid advancement of digital technologies has transformed various aspects of our lives, reshaping industries, governance models, and social interactions. However, despite the tremendous potential of digitalization, there exists a significant digital divide characterized by disparities in accessing and use of digital technologies across different segments of society.

This study seeks to examine the growth of digitalization in the Indian economy through the lens of bridging the digital divide via digital transformation. Digital transformation is integration of digital technologies into all aspects of business and society, fundamentally altering how organizations operate and deliver value. By leveraging digital transformation strategies, countries like India can bridge the digital gap, empower citizens, and unlock new avenues for economic prosperity.

In conclusion, bridging the digital divide through digital transformation is essential for unleashing the full potential of the Indian economy and ensuring benefits of digitalization reach all segments of society. This study endeavors to contribute to digital inclusion and pave the way for a more equitable, inclusive, and digitally empowered India.

Keywords: Digitalization, Digital transformation, digital divide, digital technologies

INTRODUCTION

In today's interconnected world, digitalization has emerged as a driving force behind economic growth, innovation, and societal development. Rapid advancement of digital technologies has transformed various aspects of our lives, reshaping industries, governance models, and social interactions. However, despite the tremendous potential of digitalization, there exists a significant digital divide, characterized by disparities in access & use of digital technologies across different segments of society.

This study seeks to examine the growth of digitalization in the Indian economy through the lens of bridging the digital divide via digital transformation. Digital transformation is use of digital technologies in aspects of business and society, fundamentally altering how organizations operate and deliver

value. The efficient way to communicate with the citizens of the world's largest democracy with a population of 1.2 billion is only possible by communicating with everyone on a digital platform. The Digital India aims to remodel India into a knowledgeable economy and digitally empowered society, ensuring good governance for citizens and co-ordination in public accountability. By leveraging digital transformation strategies, countries like India can bridge the digital gap, empower citizens, and unlock new avenues for economic prosperity.

LITERATURE REVIEW

India, a population of over a billion (1,027,015,247 as of March 1st, 2001), having 35% of illiteracy, (Indian Census Bureau, 2001) & 88% of the total population has access to improved drinking water sources. 31% of the total population in

India has adequate sanitation facilities. (Population Reference Bureau, [PRB], 1999). President Clinton made a statement in Hyderabad during his March 2000 visit to India: "Millions of Indians are connected to the Internet. But millions more aren't yet connected to fresh water. The work related to the study may support or conflict with present results.

Digital technology has enabled the freedom to articulate and share one's experiences, concerns and knowledge, broadening the scope of activities and helping rural women address issues previously beyond their capacity. Digital fluency has a major role to play in achieving gender equality, enabling catalyzed communication and networking on a global scale. With the ubiquitous nature of digital technology, bridging gaps and access to resources as well as know-how especially to rural women is easily ensured.¹ The IT sector, making use of the proliferation of digital network connectivity to the most remote rural locations in India, has hence helped create large scale employment opportunities for rural Indian, more specifically the post-COVID scenario. Bridging the digital divide through digital transformation is important in Indian economy. Studies have examined progress, challenges, and implications for economic growth and societal development. This literature review synthesizes key findings from existing research to provide insights into the growth of digitalization and its impact on bridging the digital divide in India.

Digital Infrastructure Development: Studies such as those by Choudhary et al. (2019) and Kumar et al. (2020) have highlighted the importance of digital infrastructure development in bridging the digital divide. These studies emphasize the role of initiatives like BharatNet and the National Optical Fiber Network in expanding broadband connectivity to rural areas. They also point out the need for continued investment in infrastructure to ensure last-mile connectivity and address disparities in access to digital services.

E-Governance and Digital Service Delivery: Research by Singh and Pandey (2018) and Sharma et al. (2021) has examined the impact of e-governance initiatives on digital inclusion and service delivery in India. The importance of digital platforms is highlighted such as e-Governance portals, Aadhaar, and Digital India initiatives in improving government efficiency, transparency, and citizen engagement. They also highlight the need for user-friendly interfaces, digital literacy

programs, and localized content to enhance accessibility and usability of digital services.

Digital Literacy and Skill Development: Studies by Sharma and Kundra (2017) and Sood et al. (2020) have focused on digital literacy and skill development as critical factors in bridging the digital divide. These studies emphasize the importance of initiatives like Digital Saksharta Abhiyan (DISHA) and Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) in imparting digital skills to marginalized communities. They also highlight the need for continuous training, capacity building, and awareness programs to empower individuals to participate in the digital economy.

Digital Inclusion and Financial Empowerment: Research by Gupta and Chand (2019) and Mishra et al. (2021) has examined the role of digital inclusion in promoting financial empowerment and reducing poverty in India. These studies highlight the impact of initiatives like Jan Dhan Yojana, Aadhaar-enabled payment systems, and digital banking services in expanding access to financial services and promoting digital payments. They also discuss challenges related to cybersecurity, data privacy, and digital exclusion faced by marginalized communities.

Digital Entrepreneurship and Innovation: Studies by Sharma and Dixit (2018) and Saxena et al. (2021) have explored the role of digital entrepreneurship and innovation ecosystems in driving economic growth and job creation in India. These studies emphasize the importance of supportive policies, incubation centers, and access to funding and mentorship for innovation and entrepreneurship. They also discuss the potential of digital platforms, e-commerce, and digital marketplaces in enabling small and medium-sized enterprises (SMEs) to scale and compete in the global market.

In conclusion, the literature reviewed underscores the multifaceted nature of bridging the digital divide through digital transformation in the Indian economy. While significant progress has been made in expanding digital infrastructure, promoting e-governance, enhancing digital literacy, and fostering digital entrepreneurship, challenges remain in ensuring equitable access, addressing digital exclusion, and maximizing the socio-economic benefits of digitalization.

Digital India was an initiative by Government of India to provide high-speed internet networks to rural areas. Digital

¹ <https://timesofindia.indiatimes.com/blogs/voices/digital-learning-paradox-and-women-empowerment/>

India Mission was launched along with Make in India, Sagarmala, Startup India, BharatNet, Bharatmala and Standup India. The following initiatives of this mission are available to everyone which will cater to the development of rural areas.²

1. **DigiLockers.**
2. **E-Hospitals**
3. **E-Pathshala and**
4. **BHIM**

The success depends on the effectiveness of policy interventions, identifying innovative solutions, and fostering collaboration between government, industry, academia, and civil society to accelerate digital inclusion and drive sustainable development in India.

OBJECTIVES OF THE STUDY

1. To provide a comprehensive understanding of the growth of digitalization in the Indian economy
2. To assess its impact on bridging the digital divide and offer actionable insights and recommendations to foster digital inclusion and sustainable development.

RESEARCH METHODOLOGY

The research methodology is descriptive cum analytical in nature.

DATA COLLECTION METHOD

This present study is entirely based on secondary data source which has been collected from government official websites, journals, newspapers and related studies.

DATA ANALYSIS AND INTERPRETATION

The analysis of economic data points in the study, researcher has presented comprehensive understanding of the growth of digitalization and its implications for bridging the digital divide in the Indian economy.

GDP Growth Rate: The GDP growth rate over time provides insights into the overall economic performance and the extent to which digitalization has contributed to economic growth.

The approximate GDP growth rates for India from 2015 to 2023:

2015: Around 7.6%

2016: Around 8.3%

2017: Around 7.0%

2018: Around 6.1%

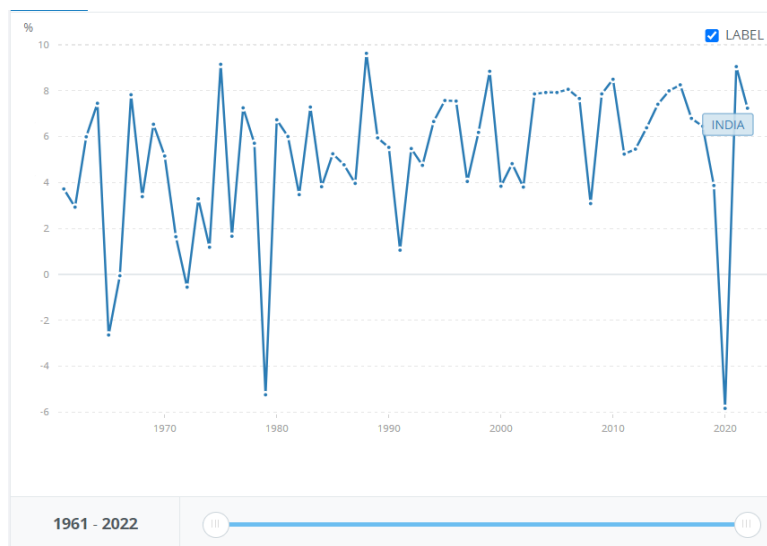
2019: Around 4.2%

2020: Approximately -7.3% (due to the impact of the COVID-19 pandemic)

2021: Approximately 8.5% (expected rebound after the pandemic)

2022: Approximately 9.5% (projected recovery and growth)

2023: Approximately 7.8% (projected continuation of growth trajectory)



Source:

<https://data.worldbank.org/share/widget?end=2022&indicators=NY.GDP.MKTP.KD.ZG&locations=IN&start=1961&view=chart>

² <https://digitalindiainsight.com/9-pillars-of-digital-india/>

Digital Infrastructure Investment: The general overview of trends and developments in data on investment in digital infrastructure, such as broadband networks, mobile connectivity, and internet penetration rates, can help assess the progress in expanding digital access across different regions of the country. Based on historical data, following are the projections:

Broadband Networks: Investment in broadband networks has been significant in India, driven by initiatives such as BharatNet, which aims to connect all gram panchayats (village councils) with high-speed broadband. Investment in expanding fiber optic networks, upgrading existing infrastructure, and promoting last-mile connectivity has been a priority to improve internet access across the country.

Mobile Connectivity: Investment in mobile connectivity has also been substantial, particularly with the rollout of 4G networks by telecom operators. The government's Digital India initiative has focused on expanding mobile network coverage to underserved areas and enhancing the quality of mobile services. The upcoming deployment of 5G networks is expected to further drive investment in mobile connectivity infrastructure.

Fiber Optics: Investment in fiber optic networks has increased to support the growing demand for high-speed internet services. Fiber-to-the-home (FTTH) deployments by telecom operators and internet service providers (ISPs) have expanded access to high-speed broadband in urban areas. In rural areas, initiatives like BharatNet have accelerated the deployment of fiber optic cables to connect remote regions with high-speed internet.

Data Centers: Investment in data centers has seen steady growth as demand for cloud services, digital content, and data storage continues to rise. National and International companies have invested in building data center infrastructure to support the digital economy. Policy initiatives such as the government's Data Center Policy aim to attract investment and promote the establishment of world-class data center facilities in India.

Other Forms of Digital Infrastructure: Investment in other forms of digital infrastructure, such as satellite communication, internet exchange points, and submarine cable systems, has also been significant. These infrastructure components play a crucial role in enhancing connectivity, resilience, and redundancy in the digital ecosystem.

While investment in digital infrastructure has been substantial, challenges remain, including funding constraints, regulatory hurdles, and geographical disparities. Bridging digital divide & ensuring inclusive growth will require continued investment, innovative financing models, and collaborative efforts between the public and private sectors. Additionally, ongoing technological advancements and the emergence of new digital infrastructure paradigms such as edge computing and 5G networks will shape future investment trends in the digital infrastructure.

E-commerce Growth: Studying trends in e-commerce growth, including online retail sales, e-commerce platforms, and digital payments in India from 2015 to 2023 provides insights into the evolution of digital commerce in the country indicates the increasing adoption of digital technologies for commercial activities.

Online Retail Sales Growth: From 2015 onwards, online retail sales in India have experienced robust growth driven by smartphone adoption, increasing internet penetration, and changing consumer preferences. Major e-commerce players have expanded their product offerings, invested in logistics infrastructure, and launched innovative marketing campaigns to attract customers. The penetration of e-commerce into Tier 2 and Tier 3 cities has been a significant driver of growth, fueled by rising disposable incomes and aspirations among urban and semi-urban consumers.

E-Commerce Platforms: have witnessed a proliferation of categories and sellers, catering to diverse consumer needs and preferences. Categories such as electronics, fashion, groceries, and home furnishings have seen significant traction. The emergence of niche e-commerce platforms focusing on specific categories or target demographics has contributed to market fragmentation and increased competition. Omnichannel retailing strategies, including partnerships with offline retailers and adoption of click-and-mortar models, have gained prominence as e-commerce players seek to enhance customer experience and improve last-mile delivery.

Digital Payments Growth: have undergone a transformational journey, spurred by government initiatives such as demonetization and the promotion of digital payment platforms like Unified Payments Interface (UPI), Bharat Bill Payment System (BBPS), and Aadhaar-enabled Payment System (AePS). The use of digital payment methods such as mobile

wallets, UPI, and contactless payments has surged, driven by convenience, security, and incentives offered by service providers. The integration of digital payment solutions into e-commerce platforms has facilitated seamless transactions and enhanced the overall shopping experience for consumers.

The regulatory environment governing e-commerce and digital payments in India has evolved over the years, with the introduction of guidelines and regulations aimed at promoting fair competition, consumer protection, and data privacy. Initiatives such as the Draft National E-Commerce Policy and Reserve Bank of India's guidelines on interoperability and security standards for digital payments have sought to create a conducive ecosystem for the growth of digital commerce.

The e-commerce sector will experience continued growth, due to increasing internet penetration, smartphone adoption, urbanization, and the digitization of small businesses. Innovations such as augmented reality (AR), virtual reality (VR), and artificial intelligence (AI), are expected to redefine the e-commerce experience and drive further growth in the coming years. The continued focus on enhancing digital infrastructure, improving logistics and supply chain efficiency, and addressing regulatory challenges will be critical for sustaining the momentum of e-commerce growth in India.

Digital Payments Volume: Assessment of the volume and value of digital payments, including transactions through platforms like Unified Payments Interface (UPI), digital wallets, and mobile banking, highlight the shift towards a cashless economy and financial inclusion.

Digital Skills Development: Data on digital literacy programs, skill development initiatives, and the number of individuals trained in digital skills shows the progress in enhancing digital literacy and empowering individuals to participate in the digital economy.

Start-up Ecosystem: Analyzing data on the growth of start-ups, venture capital investments, and innovation hubs in the digital sector indicates the vibrancy of the digital

entrepreneurship ecosystem and its contribution to job creation and economic innovation.

Government Expenditure on Digital Initiatives: Studying government expenditure on digital transformation initiatives, such as Digital India, Smart Cities Mission, and Skill India, provides insights into policy priorities and resource allocation for bridging the digital divide.

Digital Inclusion Index: Referring to indices measuring digital inclusion, such as the Digital Accessibility Index (DAI) or the Inclusive Internet Index, benchmarks India's progress in ensuring equitable access to digital technologies and services.

Income Disparities: Data on income disparities and access to digital technologies across different income groups, urban-rural divides, and demographic segments highlights socio-economic barriers to digital inclusion and opportunities for targeted interventions.

Impact on Key Sectors: Assessing the impact of digitalization on key sectors of the economy, such as agriculture, healthcare, education, and financial services, through indicators like productivity gains, efficiency improvements, and service delivery outcomes, demonstrates the transformative potential of digital technologies.

CONCLUSION

With the imminent "Digital India" campaign, India has a heavy and powerful digital. Infrastructure. Digital India has been successful in providing Wi-Fi to people, creating job, universal phone connection, high speed internet, Digital Inclusion, eservices, e Governance, digitally motivated people, National Scholarships Portal, Digital Lockers System, e-education and e-health making India to be pioneer in IT use solution. Although, digital India Programme is facing some barriers, yet it has a great impact on India to make the best future of every citizen. We Indians should work together to shape the knowledge economy making India more equitable, inclusive, and digitally empowered India.

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