



DIGITAL INCLUSION BUILDING A CONNECTED AND EMPOWERED NATION

n the rapidly evolving digital era, the concept of digital inclusion has become a pivotal lens through which we examine the equitable distribution of technological benefits. Beyond mere access to digital tools, digital inclusion emphasizes the importance of fostering digital literacy, skills, and a supportive environment. India too has achieved remarkable strides in its digital inclusion landscape and now has the second-largest telecom market in the world in terms of telecom subscribers. However, challenges persist, ranging from geographical disparities to socio-economic factors that hinder universal access. Looking ahead, India needs collaborative efforts to ensure that the digital revolution extends its benefits comprehensively.

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I. What does digital inclusion mean?

Digital inclusion is defined by the **United Nations** (UN) as "*equitable, meaningful, and safe access to use, lead, and design of digital technologies, services, and associated opportunities for everyone, everywhere*".

- Digital inclusion is enabled by human rightsbased, intersectional, whole-of-society and multistakeholder approaches and actions. In that, it takes into account various barriers that individuals face when accessing and experiencing digital technologies.
 - For e.g. rural populations face geographical and physical barriers in connecting online and lack of

In sum, critical dimensions of digital inclusion are recognised as Digital Accessibility, Digital Literacy, and Digital Acceptance.

- Digital accessibility is the extent to which digital devices and infrastructure are available and navigable to everyone in order to provide a level playing ground for all.
- Digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies.
- Digital acceptance is the understanding of and attitudes regarding the usage of digital technology.

Box 1.1. Digital Equality v/s Digital Equity

relevant skills create barrier for older persons to access technologies.

Digital inclusion therefore aims to dismantle existing structural social inequalities and enhance wellbeing for all.



Digital equality means treating everyone the same. For example, handing out the same model of tech device to each student in a class, that's digital equality.

Digital equity, however, allows and sometimes promotes fairness through treating people differently depending on need, or prioritising one group of people over another such as in positive discrimination (for example, subsidies for persons with disabilities).











2. What are the positive outcomes of achieving digital inclusion?

Achieving digital inclusion brings several positive outcomes for individuals, communities, and society as a whole. Some of these include:

- Economic Empowerment: Digital Inclusion fosters economic empowerment by expanding access to online job markets, promoting digital entrepreneurship, and enhancing livelihoods.
 - For instance, platforms such as National career service and Naukri.cnd various E-Commerce Platforms contributes to economic growth and reduce disparities.
- Accessibility to Education: Massive Open Online Courses, educational YouTube channels facilitate

e-learning, access to educational resources, and develop skills necessary for the job market. It also connects students to global educational platforms, broadening their perspectives.

Community Building and Cross-Cultural Communication: Social Media Platforms, Online Gaming Communities and other content sharing platforms enhance social interactions and enables crosscultural connections by breaking down geographical boundaries and promoting diverse perspectives.





- Healthcare Access: It supports remote healthcare services, allowing individuals to access medical consultations and information through telemedicine. At the same time, wearable technology and health monitoring apps empower individuals to proactively manage their health.
- Government Efficiency and Civic Engagement: It ensures access to governmental information, fostering informed citizenry, and streamlining civic engagement thereby increasing efficiency.
 - ► For example, **MyGov platform** in India promote citizen participation in governance.
- Financial inclusion: UPI, Mobile Wallets, Digital Lending Platforms enhances financial empowerment of unbanked and underserved populations. It promotes

economic stability and resilience among individuals and communities.

- Continuous Learning and Digital Literacy: Digital inclusion promotes continuous learning by providing access to online courses and resources. It encourages the development of digital literacy skills crucial for navigating the evolving digital landscape.
- Entrepreneurial Innovation: Digital inclusion has been a catalyst for entrepreneurial innovation providing individuals and businesses with the tools and resources to create, innovate, and scale their operations.
 - Various Agri-Tech Startups, EdTech Platforms and Fintech Innovations mushrooming in recent times are testament to this.

Box 2.1. MSMEs and Digital Inclusion

In India, **prior to COVID pandemic, majority of MSMEs were in the offline tier** i.e. had no internet connectivity, may or may not have a computer and do not use social media for business purposes. However, it is seen that the number of businesses engaging with digital technologies have increased after the pandemic(CRISIL survey). The survey reports that **over 47% micro-enterprises and 53% small enterprises have adopted online platforms for digital selling.**

Benefits of Digitalisation for MSMEs:

- Reduce manual effort, errors, and improve overall efficiency of MSMEs operations.
- Increased reach of MSMEs through online platforms like ecommerce websites etc. to expand their customer base and increase sales.
- ▶ **Cost savings** by reducing the need for physical infrastructure such as office space and storage facilities.
- Easy access to finance through digital lending platforms like online marketplaces and peer-to-peer lending platforms.
- Efficient storing of customer data and its management.
- Emerging technologies such as AI and robotics can enhance their manufacturing capabilities, productivity, and quality of products/services.

Major Challenges faced by MSMEs in digitalising:

- Poor affordability of internet
- Lack of availability of reliable fibre connectivity in rural and remote areas
- Unaffordability of the smart devices such as 5G enabled smart phones
- Building trust with online consumers and managing logistics
- Lack of budgetary resources to invest in online promotional campaigns
- Lack of digital skills to use professional software and online platforms.





3. What n inclusiv	neasures has the government implemented to foster digital vity, and what successes have been realized as a result?					
Table 3.1. Government initiatives to foster digital inclusion						
	 National Digital Communication Policy (NDCP) 2018 and National Broadband Mission 2019 aims to provide 'Broadband for All' in the country. It aims to achieve availability of broadband connections and create digital fibre map of Digital Communications network and infrastructure. 					
	Universal Service Obligation Fund (USOF): Established under Indian Telegraph Act 1885 to provide support for affordable access to a reliable and ubiquitous telecom network to remote and rural areas.					
For Digital Connectivity	BharatNet Project to connect all Gram Panchayats and villages in India through high-speed broadband using Optical Fibre Cable.					
	Common Service Centres (CSCs) set up across the nation through the Ministry of Electronics and IT (MeitY) help citizens to access various citizen centric services like banking services, Aadhaar enrolment and updation, telemedicine etc.					
	Digital Public Infrastructure (DPI) is a set of technology building blocks that drive innovation, inclusion, and competition at scale, operating under open, transparent and participatory governance.					
	India, through India Stack, became the first country to develop all three foundational DPIs: digital identity (Aadhar), real-time fast payment (UPI) and Account Aggregator built on the Data Empowerment Protection Architecture (DEPA).					
	National Policy on Electronics 2019: It promotes domestic manufacturing and export of electronic devices including smartphones, laptops, and tablets; and producing I billion mobile handsets by 2025.					
For Digital Affordability	Make in India initiative: It aims to promote local manufacturing of electronic goods to facilitate the availability of affordable computing devices including computers and smartphones.					
	The Production Linked Incentive (PLI) scheme and Design Linked Incentive (DLI) Scheme offer incentives for manufacturing mobile phones, electronic components, and other devices, as well as support in the form of additional incentive for semiconductor design development in India.					
	Digital Skilling Programme: It focuses on skilling, reskilling and upskilling students via internships, apprenticeships, and employment to I crore students in emerging technologies.					
	NASSCOM FutureSkills is an online B2B skilling platform intended as an industry driven learning ecosystem.					
	National Digital Literacy Mission (NDLM) and Digital Saksharta Abhiyan (DISHA) to impart IT training to more than 50 lakh persons, including Anganwadi and ASHA workers and authorized ration dealers across the country.					
For Digital Literacy	Pradhan Mantri Gramin Digital Saksharta Abhiyan to digitally literate 60 million people from rural areas by training them to operate computer or digital access devices.					
	Toolkits developed by GSMA: Mobile Technical Literacy Toolkit and Adaptation Framework and Mobile Internet Skills Training Toolkit (MISTT) offer comprehensive and user-friendly resources that cover various aspects of digital literacy, such as internet usage, online safety, and digital payments.					
	Digital India is a flagship programme of Government of India with a vision to transform India into a digitally empowered society and knowledge economy.					





	▶ UPI (unified payment interface) brought to ease the digital transactions.
	▶ BHIM app brought to initiate payments made workable even on simple mobiles.
For Digital	▶ Eliminating merchant discount rate to facilitate digital transaction.
Financial	Removing charges on NEFT and RTGS by RBI to give impetus to digital retail payments.
merusion	Rupay card launched to ensure functioning of JanDhan accounts.
	Government incentives such as Jandhan-Aadhaar-Mobile (JAM) Trinity that has played a pivotal role in transparent direct benefit transfers of welfare subsidies.
	Udyam Registration Portal: To register MSMEs businesses and access various government schemes, financial support, and resources.
	MSME Sampark: Digital platform connecting job seekers with recruiters in the MSME sector.
Digital Initiatives for MSMEs	CHAMPIONS (Creation and Harmonious Application of Modern Processes for Increasing Output and National Strength) scheme: To promote use of modern technologies in MSMEs and provide them with necessary support.
	MSME Global Mart platform: Business-to-Business (B2B) web portal, which helps MSMEs in Market access through online presence by showcasing their products and services.
	Open Network for Digital Commerce (ONDC): To create new opportunities to curb digital monopolies and support MSMEs by enabling them to use digital commerce.

Achievements

As a result of above initiatives, India has made considerable progress over the years:

Figure 3.1. Achievements of Digital Inclusion initiatives







4. What are the current barriers to digital inclusion in India?

At macro level, the performance of the country is very impressive. However, at micro and disaggregated levels there appear to be variations in the usage of the internet and broadband services across different sections of society and geographies. This has been highlighted through the following gaps that exist in the country:

Figure 4.1. Critical gaps in India					
 Digital divide : It refers to "the gap between individuals, households, businesses and geographic areas at different socio-economic levels" with regard to both their opportunities to access ICTs and to their use of the internet. ➢ It exists between the old and the young and also based upon education, gender, social class, ethnicity and disability. 	 Rural-Urban Gap: It exists in terms of Internet Tele-density and Digital Literacy. ▶ Internet Teledensity is the number of Internet Subscribers per 100 population. ▶ The internet teledensity in rural area is less than half of that in the urban areas. ▶ In terms of the digital literacy, 37.1% of the urban population are able to use the internet as compared to only 13% in the rural areas. 		 Usage Gap: It is the fraction of people living in areas connected to the mobile internet without access to the internet. ➢ Usage gap in India is high at 61%. 		
Gender Gap		Interstate disparities			
 51% Indian men used mobile internet in 2021, compared to only 30% women. 61% of men owned mobile phones in 2021, compared to just 31% women. 		The internet usage and den one state to another. The in in Delhi, lowest in Bihar.	sity differ significantly from nternet density is highest		

Major factors responsible for above gaps are:

- Infrastructure and Access: In many regions, especially in rural or economically disadvantaged areas, there is a lack of basic ICT infrastructure such as reliable internet connectivity, electricity, and affordable devices. Without these foundations, people cannot access digital tools and resources.
 - Lack of **fiberization** (the process of connecting radio towers with each other via optical fibre cables) of mobile towers hampers the quality of internet access.
- Affordability: Even if infrastructure is available, the cost of devices and internet services can be prohibitive for many individuals and families. Affordability is a significant barrier to digital inclusion, particularly in low-income communities.

- In India in 2022, the cost of the cheapest internetenabled smartphone was 35.91% of the average monthly income.
- Language and Content Relevance: Digital content is often not available in local languages or may not be culturally relevant. This can limit the accessibility and usefulness of digital resources for certain populations.
- Privacy and Security Concerns: Digital spaces can be misused and can act as a tool for online genderbased violence, stalking and bullying, spread of misinformation, phishing and hate speech. This creates barriers to connecting, engaging, and adopting emerging technologies.





Box 4.1. Digital Inclusion in the Era of Emerging Technologies: Opportunities and Challenges

The explosive growth of emerging digital technologies in recent years have created new possibilities and opportunities for the people and act as a catalyst for social inclusion. For example-

- Educational advancement: Technologies like Augmented reality (AR) /Virtual Reality (VR) have enabled students to visualize events and experiments, thus making the learning process more active and effective.
- Empowerment through Connectivity: 5G technology has the potential to greatly improve connectivity, enhancing digital access for individuals and communities.
- AgriTech: Internet of Things (IoT) and data analytics are being used to inform farmers about weather patterns, crop prices, and best farming practices, directly contributing to agricultural productivity and sustainability.
- Improving Accessibility for all: Innovations such as voice-assisted devices, screen readers, and language translation services are helping to include people with disabilities and non-native speakers in the digital world.
- Professional Upskilling: Virtual and Augmented Reality offer immersive training experiences in industries like healthcare, aerospace, and manufacturing.

However the opportunities come with major challenges such as:

- Risk of Increased Disparities: Emerging technologies, if not made accessible to those still struggling with current technologies, may lead to increased disparities and digital exclusion.
- Infrastructure and Investment: The availability of 5G infrastructure and the huge investment in the development of networks are crucial. If not addressed, these could widen the digital gap.
- Training: The imparting of necessary skills for the use of new technologies are essential to prevent a widening digital divide.
- Rural-Urban Gap: Service providers may prioritize commercial viability, potentially exacerbating the existing ruralurban gap by delaying the deployment of emerging technologies in remote areas (often termed as Digital Redlining).
- Financial Constraints: The cost of accessing 5G networks and purchasing compatible devices may be prohibitive for some, hindering the full benefits of faster speeds and enhanced capabilities.
- ▶ AI and Ethical Concerns: Biased AI systems can perpetuate inequalities, and ethical considerations, such as privacy and trust, are paramount, especially for communities historically subjected to surveillance.

Leveraging technology to its fullest potential is a positive step toward the successful integration of various diversities to achieve inclusion. However, it's vital to ensure that the deployment of emerging technologies does not exacerbate existing inequalities or create new ones.







5. What strategies should India adopt to achieve complete digital inclusion?

Policy intervention: To ensure comprehensive Digital Inclusion, it is imperative to implement targeted policies to address gaps arising due to emerging technologies focusing on digital literacy programs and affordable access to all sections of society. UNESCO Guidelines for inclusive digital solutions provide a framework for the same.

PLAN DESIGN DEVELOP IMPLEMENT MONITOR Design with all the users, focusing on their needs and context Focus on users' digital skills and competences Ensure the clarity and relevance of content for low-skilled and low-literate users Use appropriate media and tailor user interface for low-skilled and low-literate users
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Provide initial and ongoing training and support
Constantly monitor, measure and improve

- Investment: Public and private funding for highspeed internet infrastructure development is crucial for ensuring digital inclusion in un-served and underserved.
 - World Bank has estimated that a 10% increase in fixed broadband penetration would increase GDP growth by 1.21% and 1.38% in developed and developing economies respectively.

Improving affordability

- Tax rebates: It is essential to reduce mobile sector-specific taxes (like import duties) and fees discouraging internet usage and adoption of mobile devices (import duties).
- Smartphone financing: It is the process of converting the upfront cost of smartphones into instalment payments.
- Development of a market for second-hand smartphones: The concept of circular economy can be applied by emphasizing the repair and reuse of existing mobile phones.
- Stakeholders Collaboration: Government, telecom industry, multinational corporations, and nongovernmental organizations must collaborate to address bureaucratic hurdles, and develop strategies to facilitate Digital Inclusion and adoption of digital technologies by businesses.
 - World Economic Forum's EDISON Alliance aims to accelerate collaboration between the public and private sectors and civil society to focus on digital inclusion in health, education, and finance.

- India Inequality Report' Recommendations to bridge digital divide:
 - Community networks and public Wi-Fi/ internet access points to improve internet availability in rural and hard-to reach areas.
 - Greater accessibility to smartphones
 - Conduct Digital Literacy camps especially in rural India. Eg: Bharti Foundation free use of technology in education programmes throughout India
 - Low- or no-tech solutions: Acknowledge that techbased solutions are not always the right answers. People need to have multiple ways to access public services and their entitlements.
 - Establish a responsive and accountable grievance redressal mechanism to handle EdTech and Healthtech related complaints by parents, children and other consumers.
- Strategies for Digital Literacy:
 - Mass Literacy through Digital Technologies: Digital literacy and education can be provided to large groups of people through the usage of emerging technologies via online courses and tutorials and Mobile learning.
 - Upskilling and Reskilling Strategies : The G20 countries recently developed a Toolkit for Introducing Upskilling and Reskilling Programs. This include strategies like:
 - » Identify key relevant emerging technologies to build a future-readywork force.
 - » Assessment, classification and mapping of job roles and required digital skill sets.



- » Assess gaps in existing digital skilling programmes.
- » **Leverage short-term training** in addition to school and education curricula.
- » **Invest in trainers and faculty** to enable the use of innovative technologies in pedagogy.
- > Combination of existing and emerging technologies:
 - Explore innovative non-terrestrial technologies to reach areas that terrestrial technologies cannot reach like high altitude and deep forest regions. Eg: Project Loon by Google, Internet.org by Facebook.
 - Provide broadband connectivity through satellite networks that transmit data to and from space

- Bridging Gender Divide:
 - Regulatory policy frameworks that enable all women and girls to actively participate in the formulation and implementation of national digital strategies.
 - Identify and eliminate all potential risks that women and girls encounter from increased digitalization by encouraging the adoption of safetyby-design approaches.
 - Promote and implement gender-responsive policies to create an enabling, inclusive, and nondiscriminatory digital economy for women led and -owned businesses.

Table 5.1. International Best Practices for Digital Inclusion							
Digital Affordability	Affordable Connectivity Program, USA: It ensures that households can afford the broadband they need for work, school, healthcare and more.						
Digital Connectivity	Better Connectivity Plan for Regional and Rural Australia Project: to improve mobile coverage on regional roads, on-farm connectivity to support farmers in utilizing connected machinery and sensor technology.						
Digital Literacy	Digital Sprout Camp in the Republic of Korea: It provides elementary, middle, and high school students with opportunities to experience software and artificial intelligence and foster digital capabilities.						

Conclusion

By overcoming the challenges and embracing the opportunities presented by the digital era, India can harness the full potential of its Demographic Dividend through Digital Inclusion, fostering a more inclusive and equitable society where the benefits of technology reach every corner and every citizen. In doing so, India can pave the way for a future where digital inclusion is not just a goal but a reality that enhances the quality of life for all.







TOPIC AT A GLANCE

Digital Inclusion in India

Digital inclusion is defined by the United Nations (UN) as "*equitable, meaningful, and safe access to use, lead, and design of digital technologies, services, and associated opportunities for everyone, everywhere*". Critical dimensions of digital inclusion are **Digital Accessibility, Digital Literacy, and Digital Acceptance.**







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