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From Digital Governance to Digital Empowerment: Analyzing India's Path to 2047

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Abstract The digital transformation process in India is one of the most widespread technological transformations in the modern history of government. The paper is an analysis of how India is changing the old governance systems to an ecosystem that is digitally enabled and an overview of how it is going to achieve the Viksit Bharat 2047 vision. The research methodology is mixed methods in nature, involving the use of secondary data in the form of government portals, policy documents, and empirical research to determine the effect of Digital Public Infrastructure (DPI) on financial inclusion, service delivery, and citizen empowerment. It has been found that India has reached some incredible milestones, such as more than 141.88 crore Aadhaar identifications, 16.73 billion monthly UPI transactions, and Direct Benefit Transfers of more than 43.36 lakh crore. For 2022-23, the contribution of the digital economy to the GDP has increased to 11.74% and as per the forecasts, it will increase to 13.42% in 2024-25. Nevertheless, ongoing problems such as the rural-urban digital gap, where rural internet adoption is only 35 percent as opposed to 70 percent in urban regions, and cybersecurity threats require strategic interventions. The paper ends by concluding that the DPI model that is known globally under the G20 presidency in India can be replicated in developing countries, but the model requires inclusive policies in ensuring a comprehensive digital empowerment of the population by 2047.

Keywords: Digital India, Digital Public Infrastructure, Viksit Bharat 2047, UPI, Aadhaar, e-Governance, Financial Inclusion, Digital Empowerment, India Stack, G20.

Introduction

The twenty-first century has seen a change of paradigm in global governance, where digital technologies have emerged as core facilitators of administrative effectiveness, transparency, and service delivery to citizens. India, with its huge demographic diversities and sophisticated socio-economic context, has embarked on a daunting task of using digital infrastructure to enhance national growth. This transformative vision is the Digital India programme that was launched on July 1, 2015, to make the society and knowledge economy digitally empowered (Ministry of Electronics and Information Technology [MEIT], 2024).

Digital governance is a concept that has greatly developed since its inception of computerization of government operations to broader conceptualization of digital empowerment. This development indicates paradigm shift in technology being a convenience to administration to being an instrument of citizens' agency and participatory democracy. This change is codified in the Viksit Bharat 2047 vision that envisions India becoming a developed country with digital infrastructure becoming the foundation of economic growth, social inclusion, and democracy (India Foundation, 2024).

The Digital Public Infrastructure (DPI) in India has received a global reputation, especially when India was the president of the G20 group in 2023. The India Stack, which includes Aadhaar, UPI, and consent-based data sharing infrastructure, has shown how technology could be used to make socio-economic changes at a mass scale. In its Digital Economy Report 2024, the State of India released the report by the Indian Council of Research on International Economic Relations (ICRIER), according to which India is ranked third in the world in terms of economic digitalization (ICRIER, 2024).

In this paper, the paper will be on the journey through which India reached digital governance to digital empowerment and discussed the successes, challenges, and opportunities of the journey that India undergoes in its digital transformation process to the year 2047. The paper will answer three research questions: First, what are the major components as well as accomplishments of Digital Public Infrastructure in India? Second, what are some barriers to digital governance for all-inclusive digital empowerment? Third, what are the strategic interventions that must be applied to make Viksit Bharat 2047 digital vision a digital reality?

Review of Literature:

Digital governance in India has made several steps towards its development. According to Narsimulu (2024), the process started with the National e-Governance Plan (NeGP) introduced in 2006, which created the base of digitalization of government services. Nevertheless, the phase of transformation started with the Digital India Mission in 2015, which redefined e-governance as an overall ecosystem that involves infrastructure, service delivery, and citizen empowerment.

Digital India programme was designed with nine pillars, which included Broadband Highways, Universal Access to Mobile Connectivity, Public Internet Access Programme, e-Governance, e-Kranti, Information for All, Electronics Manufacturing, IT for Jobs, and Early Harvest Programmes (Observer Research Foundation [ORF], 2025). These pillars were aimed to cover the various dimensions of the digital transformation, including the development of infrastructure and the improvement of skills.

Digital Public Infrastructure (DPI) is a term describing the social-wide digital capabilities that facilitate involvement in social and economic life in the digital age. The New Delhi Think Tank became the target set of shared digital systems that are secure and interoperable, and they were built around open technologies to deliver equitable portions of access to public and/or private services in society, which was defined in the G20 New Delhi Leaders (2023) (Carnegie Endowment for International Peace, 2023).

According to Institut Montaigne (2024), the DPI of India includes three main layers, namely: digital identity (Aadhaar), digital payments (UPI), and data exchange (Account Aggregator). It is estimated that the economic value added by DPIs to the GDP of India will come to 2.9-4.2 percent in 2030, with the figure

already reaching 0.9 percent in 2022. Indian DPI has been identified by the World Economic Forum (2023) as one that can diversify the consumer choice, encourage entrepreneurship, and avoid reliance on individual service providers.

The JAM (Jan Dhan-Aadhaar-Mobile) trinity has been an important factor in transforming the delivery of welfare in India. This digital infrastructure has been used to initiate the Direct Benefit Transfer (DBT) system, which was launched in 2013 and transferred benefits directly into the bank accounts of beneficiaries. The DBT Mission Portal (2024) informs about the individual transfers being more than 43.36 lakh crore, and projected savings being 3.48 lakh crore through the eradication of fraudulent beneficiaries and anti-beneficiary leakages (dbtbharat.gov.in, 2024).

India has earned accolades in the DBT scheme; the International Monetary Fund (IMF) has commended the program as a logistical miracle, which has focused on distributing cash payments to 85 percent of rural and 69 percent of urban households (Vision IAS, 2025). The effectiveness of the scheme has also been recognized by the World Bank President in terms of financial inclusion and better service delivery by the government (Institute Montaigne, 2024).

Research Methodology

The research design used in this study is a mixed-method research design, which involves quantitative data analysis and qualitative policy evaluation. The study is based on the secondary data sources such as government statistics of the Ministry of Electronics and Information Technology (MeitY), National Payments Corporation of India (NPCI), DBT Mission Portal, and Telecom Regulatory Authority of India (TRAI). Policy analysis is informed by such policy documents as the G20 Task Force Report on Digital Public Infrastructure and Viksit Bharat 2047 vision document.

The time frame of the study is between 2015 (Introduction of Digital India) and 2024, and forecasted till 2047. Triangulation of data has been used to guarantee reliability where the statistics of various government sources are cross-compared with independent research reports by various organizations like ICRIER, ORF, and international organizations, like the World Bank and the IMF. The analytical framework will analyze three dimensions of infrastructure development, transformation in service delivery, as well as the outcomes of citizen empowerment.

Digital India: The Major Achievements and Analysis

Increase in Digital Infrastructure

The 10 years after the introduction of Digital India have seen unprecedented growth in digital infrastructure. The number of internet connections increased by 25 crore in 2014 to 96.96 crore in 2024, which is a compound annual growth of 14.26% (PIB, 2024). BharatNet has interconnected more than 2.18 lakh Gram Panchayats with high-speed optical fibre resulting in massive last-mile connectivity in rural areas. In 6,44,131 villages of the country, there is 3G/4G mobile connectivity (6,12,952 villages or 95.15) (PIB, 2024).

Mobile data providers are now available at significantly lower prices, with ₹287 per GB in March 2014 allowing users to pay 9 per GB in March 2024, due to which India has become one of the most affordable markets in the world to access the internet. The annual increase in average data consumption per user has increased from 0.26 GB in 2014 to 20.27 GB in 2024 (ForumIAS, 2025). Table 1 shows the major pointers of digital infrastructure development.

Table 1: Growth of Digital Infrastructure in India (2014-2024)

Indicator	2014	2024	Growth
Internet Subscribers (crore)	25.15	96.96	285%
Data Cost (₹/GB)	287	9	-97%
Average Data Usage (GB/user)	0.26	20.27	7,696%
GPs with OFC (lakh)	0	2.18	New
Villages with Mobile (%)	—	95.15	—

Source: PIB (2024); ForumIAS (2025); MeitY (2024)

Digital Payments Revolution

The Unified Payments Interface (UPI), which was introduced in April 2016, has revolutionized digital payments in India. The UPI transactions have increased to over 131 billion in FY 2023-24, and this is an increase of 92 crore in FY 2017-18, with a CAGR of 129% (GrabOn, 2025). In December 2024, UPI recorded the highest number of transactions of 16.73 billion deals with the transaction value of 23.25 lakh crore (Business Standard, 2025). The volume of UPI in the total retail payment transactions increased to 83.7% in FY25 compared with 79.7 in FY24 (DD News, 2025).

Several platforms have been introduced in the digital payments ecosystem, with PhonePe holding 48.4 market share, Google Pay with 36.9, and Paytm with 6.9 (NPCI, 2024). RBI has been determined to increase the global presence of UPI with the aim of providing UPI services in 20 countries by 2028-29. At this point, UPI has gained acceptance in seven countries, such as Bhutan, France, Mauritius, Nepal, Singapore, Sri Lanka, and the UAE. Table 2 shows the trend of the UPI transactions.

Table 2: UPI Transaction Growth (FY 2017-18 to FY 2024-25)

Financial Year	Volume (Billion)	Value (₹ Lakh Crore)
2017-18	0.92	1.10
2019-20	12.50	21.31
2021-22	45.96	84.17
2023-24	131.00	200.00
2024-25 (till Dec)	172.00	247.00

Source: NPCI (2024); Business Standard (2025); GrabOn (2025)

Digital Identity and Service Delivery

The Aadhaar system is the largest biometric identity programme in the world, which was introduced in 2009. By April 2025, more than 141.88 crore Aadhaar IDs will be created, which allows reaching 85 percent financial inclusion compared to 20 percent a decade earlier (Vision IAS, 2025). The authentication system based on Aadhaar has made it easy to eliminate duplicates and fraudulent beneficiaries in government welfare schemes, and Aadhaar-seeding has removed more than 90 million fake beneficiaries and saved the government around $40 billion (Vision IAS, 2025).

The interaction between citizens and governments has been transformed through digital platforms of service delivery. DigiLocker has secured more than 54 crore users and 775+ crore documents and has done away with the physical paperwork (Vision IAS, 2025). The UMANG application is a platform that offers more than 1200 central government and state government services in different Indian languages. The Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) is an initiative that has already enrolled about 48.3 million rural citizens and made them digitally literate, becoming the largest digital literacy program in the world (ORF, 2025).

The difficulty with Digital Empowerment.

The Digital Divide Nevertheless, there is a huge digital gap between urban and rural India. As the latest report by TRAI has indicated, the internet penetration rate is only around 35 in rural areas, which is way behind the urban areas, where the internet penetration rate is above 70 (Business Standard, 2025). According to the report by Kantar and IAMAI, only 59% of the Indian population, or about 630 million people, are online, and the major obstacles are the lack of awareness, affordability, and local-language content (YourStory, 2025).

Another aspect of the digital divide is gender disparity. There are also extra impediments to women, especially in rural settings, because a society and culture demand it, which leads to reduced access to education and technological assets (Muft Internet, 2024). In the rural regions, the digital literacy level is at a very low 27, which poses a massive obstacle to the effective use of the internet (Inc42, 2024). The essential dimensions of India's digital divide are shown in Table 3.

Table 3: Digital Divide Indicators in India (2024)

Indicator	Urban	Rural
Internet Penetration (%)	70%	35%
Internet Users (Million)	397	488
Digital Literacy Rate (%)	59%	27%
Household Internet Access (%)	66%	24%

Source: TRAI (2024); ICUBE 2024; NSSO Data; Inc42 (2024)

Cyber security Concerns

Cybersecurity threats have been on the rise as a result of the rapid growth of digital services. The number of cybercrimes has increased to more than 20.41 lakh in 2024, which compares with 11.58 lakh in 2020, revealing the vulnerability of the Indian digital ecosystem (Vision IAS, 2025). In FY 2024-25, the number of losses related to UPI payment frauds was ₹485 crore, which emphasizes the necessity to implement additional security measures (GrabOn, 2025). The Digital India Act, as the replacement of the current Information Technology Act of 2000, is challenged by the necessity to include the regulations of AI, blockchain, and IoT, and consider the extensive implementation of the suggested law among a heterogeneous population that is not equally digitally literate.

Infrastructure gaps and Implementation gaps

Although there has been an improvement in the implementation of BharatNet, difficulties in infrastructure still exist in remote and hilly areas. The project is supposed to bring all Gram Panchayats under optical fibre connectivity, yet issues of terrain, supply of electricity, and last-mile connection still hinder universal connectivity. Poor communication between the bank and government agencies, absence of grievance redressal, and poor training of the field personnel are some of the implementation challenges that impact the effectiveness of the digital service delivery (Vision IAS, 2025).

Viksit Bharat 2047 Strategic Roadmap

Bridging the Digital Divide

To have all citizens digitally empowered by the year 2047, a multi-pronged approach would be necessary. To start with, BharatNet should be expedited and, particularly, the ring topology completed to all Gram Panchayats, and fiber-to-the-home (FTTH) connections should be extended. The Amended BharatNet Programme (approved August 2023) targets the improvement of connection to 2.64 lakh GPs with optical fibre connections (ForumIAS, 2025). Second, the use of 5G technology to offer last-mile connectivity using Fixed Wireless Access (FWA) services can offer high-speed broadband in regions where fibre is difficult to deploy. Third, the introduction of satellite broadband (LEO satellites) and microwave systems in tough topography, such as hilly areas, islands, and forested areas, will guarantee ubiquitous connectivity.

Enhancing Digital Literacy

The announcement of the creation of a Centre of Excellence in Artificial Intelligence as a place of education with an outlay of 500 crore in the Union Budget 2025-26 and the intention of having 50,000 Atal Tinkering Labs in government schools by 2031 can be seen as an indication of investment in a digitally skilled workforce (IBEF, 2025). It is important to expand digital literacy programmes by providing a specific focus on the marginalized population, especially women and the elderly. It can be done by cooperating with local NGOs and community organizations that will help to conduct specific awareness campaigns and access digital services more easily with the help of well-trained Common Service Centres (CSCs).

Critical Infrastructure Framework.

The much-needed reforms regarding cybersecurity are necessary to gain trust in digital systems. The suggested Digital India Act should introduce the proper working structures of data protection, AI regulation, and cybercrime. Software infrastructure and training to enforce laws and educate the masses on internet security are some of the key elements of a safe digital environment. IndiaAI Mission valued at 10,371.92 crore in five years is a step in the creation of AI capabilities, but in a responsible manner (Vision IAS, 2025).

Export and global leadership and DPI

The G20 presidency made India a digital leader in Infrastructure Publics. This leadership position can be seen in the establishment of the Global Digital Public Infrastructure Repository (GDPIR) and the Social Impact Fund (the first contribution made by India of 25 million dollars) (PIB, 2023). Agreements to use

India Stack have been signed by such countries as Armenia, Sierra Leone, Suriname, and Antigua & Barbuda, and developed countries such as France, Germany, and Japan are considering UPI integration (Vajirao and Ravi, 2025). This upward trend should be carried forward by proactive involvement with countries around the world to augment the soft power of India, and also in the development agenda of the world.

Conclusion

The transition of India into digital governance and then to digital empowerment is a paradigm change in the connection between technology, government, and people. The last ten years since the initiation of Digital India had received ground breaking success: the number of internet users has increased by almost four times, UPI became the fastest-growing payment infrastructure in the world, processing more than 16 billion payments a month and saving the exchequer more than 40 billion in terms of the leakages it eliminates, Aadhaar has reached 85 percent financial inclusion and empowered more than 500 million transactions.

The contribution of the digital economy to GDP has increased to 11.74 per cent in 2022-23 and is expected to increase further to possibly close to a fifth of GDP by 2029-30. The Digital Public Infrastructure of India has gained international attention throughout the G20 presidency, and the DPI framework is used as a model to emulate in developing countries across the world. The India Stack illustrates how the tech can be employed to drive socio-economic change on a large scale in the case where inclusion, interoperability, and governance are considered as the central ideas.

To achieve the Viksit Bharat 2047 vision, it is essential to invest in digital infrastructure, especially in under-serviced areas; full-fledged digital literacy initiatives aimed at the marginalized population; effective cybersecurity systems to ensure that the data of citizens remains safe, but at the same time, promotes innovation; and maintain global leadership in popularizing DPI as a tool of inclusive development. It took India nine years to reach what DPI could gain access to in fifty years, and this is as Amitabh Kant, G20 Sherpa of India, put it. This is the direction that needs to be continued, and every citizen of the country would not be left behind, so that the digital transformation in India can be translated into the real power of its citizens as 1.4 billion people by 2047.

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