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RESEARCH ARTICLE

DIGITAL PUBLIC INFRASTRUCTURE AND INCLUSIVE GROWTH IN INDIA: ASSESSING ADMINISTRATIVE CAPACITY FOR VIKSIT BHARAT 2047

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Abstract

India has placed a lot of hopes in the interoperable three-pronged support of digital identity, real-time payments and consent-based data exchange—popularly known as the India Stack—which can be considered as Digital Public Infrastructure (DPI). This paper questions whether India's administrative capability is sufficient to make this technological achievement good for inclusive growth as envisioned in Viksit Bharat 2047 with a USD 30 trillion economy and per capita income of USD 18,000. The paper is based on secondary data from the National Payments Corporation of India, Telecom Regulatory Authority of India, the DBT Mission and the recent scholarship in public administration and development economics, and proposes a four-dimensional framework of administrative capacity, which comprises infrastructural reach, bureaucratic competence, regulatory capacity and accountability embeddedness. While the analysis reveals India's DPI has reached scale and measurable fiscal impact, inclusiveness remains limited due to a persistent rural, gender and digital-literacy divide; documented instances of exclusion in authentication at the frontline and in the state; and uneven capacity at the frontline and within States. The paper brings three priorities to the forefront: capacity building in the last mile, enforcement of data protection regimes and cooperative federalism, all of which are seen as the key constraints on the path to 2047, having been supplanted by technology.

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Introduction:-

Viksit Bharat 2047 was one of the policy visions which could have been expressed with the most confidence in independent India. The vision paper presented by NITI Aayog has clearly laid out the target as per the following parameters (NITI Aayog, 2024): An economy of USD 30 trillion with a per capita income of USD 18,000 per year and growth of 7-10 per cent for more than 20 years. The vision is unique, however, because not only do they have to be large, but the instrument for achieving it is different. The approach is not based on the concept of heavy industry or export promotion, but on Digital Public Infrastructure (DPI) as the core of providing services and creating a market. The India Stack that is built on top of them—comprising identity-related Aadhaar, payment-related Unified Payments Interface (UPI) and data exchange-related DigiLocker and the Account Aggregator framework—and

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sectoral platforms, like the Open Network for Digital Commerce (ONDC) and the Goods and Services Tax Network (GSTN), form the basis of the India Stack.

By any international standard, the accomplishments of this architecture are remarkable. The approximate worth of the transactions processed by UPI was Rs. 24,162 crores. The tally of transactions is clearly rising as it was just 2 crores in the first full year of operation in FY 2025-26, whereas it would be 314 lakh crores in FY 2025-26 (Press Information Bureau [PIB], 2026a). The cumulative Direct Benefit Transfers (DBT) have touched Rs. The estimated savings were over Rs. 50 lakh crores. With the elimination of duplicate and ghost beneficiaries, 3.4 lakh crore has been recovered (DBT Mission, 2026; PIB, 2025a). As part of its G20 Presidency in 2023, India had persuaded the member countries to adopt a shared framework for DPI, and by early 2026 it had inked cooperation deals with approximately two dozen countries to export parts of the Stack (Ministry of External Affairs, 2026).

But an uneasy mystery lurks behind these figures, and the question this paper addresses. Administrative systems may not be able to scale as quickly as the technology platform. Thus, the efficacy of the software is not the key to inclusive growth: what is necessary is the capacity of the administration that implements the software, especially when 76.59 Internet subscribers are available per 100 Indians, but only 48.31 per 100 in rural areas (Telecom Regulatory Authority of India [TRAI], 2026) and field research continues to document how genuine beneficiaries lose their rations due to failures in biometric authentication (Dreze et al., 2017; Khera, 2019). The central research questions are thus threefold: what progress has India's DPI made in making it a truly inclusive nation by 2047; where are the frictions of exclusions; and, has the Indian state acquired the administrative capacity to make DPI truly inclusive by 2047, or is it developing it?

Objectives of the Study:-

- To examine the growth and present status of India's Digital Public Infrastructure
- To identify the gaps and exclusions in DPI-led service delivery
- To assess the administrative capacity of the Indian state to deliver inclusive growth through DPI
- To suggest policy measures for strengthening administrative capacity so that DPI can support the goals of Viksit Bharat 2047

Research Methodology:-

The study is conceptual and analytical in nature and is secondary data oriented. The information has been gathered from various official sources, including dashboards/reports of the NPCI, TRANSIQ, the DBT Mission, UIDAI, NITI Aayog, and the Parliamentary Replies and Audit Reports of the CAG. The materials are complemented by peer reviewed journal articles and working papers in public administration and development economics up to mid-2026. The material gathered has been grouped around a four-dimensional framework of administrative capacity derived from the state capacity literature, and the platforms and programmes have been evaluated qualitatively in each dimension. Some simple descriptive figures including transaction volumes, penetration rates and coverage ratios are presented in tabular form to facilitate discussion. No primary data are used in the paper, so there is no sampling or statistical testing involved, emphasis is on interpretation and synthesis of published evidence.

The Conceptual Framework defines the four dimensions of administrative capacity:-

Based on the literature reviewed above, this paper evaluates administrative capacity in four aspects. The first is infrastructural reach in Mann's sense: the place through which the state reaches people, physical and digital – as measured by connectivity, device access and service touchpoints. The second is bureaucratic competence – the capacity, deployment and training of the civil service required to run and maintain digital systems, all the way down to the panchayat data entry operator. The third is regulatory and institutional capacity, that is the capacity to draft and enforce the rules of the digital economy, most obviously around data protection, cyber security and competition oversight. The fourth is Evans's accountability embeddedness, which concerns feedback channels, grievance redressal and fallback mechanisms that allow citizens to challenge errors and give the administration feedback.

The four dimensions are purposefully challenging. A state can have amazing reach without embeddedness, as the UPI number in India shows, and it can have embeddedness without amazing reach, as the literature on exclusion from Aadhaar shows. Whereas inclusive growth of Viksit Bharat involves all four of them, as DPI is not just a standalone initiative, but each platform culminates at a ration shop, bank correspondent, common service centre or office of tehsil office where the human touch is crucial. The framework is used qualitatively in Section 6, once the evidence related to achievements and exclusions has been presented.

DPI Architecture in India: Scale and gains achieved:-**The Three-Layer Stack:-**

The DPI can be founded on three pillars in India. By March 2026, the identity layer Aadhaar had created approximately 144 crore unique numbers and had successfully authenticated more than 17,000 crore identities and processed over 2,300 crore e-KYC transactions (Unique Identification Authority of India [UIDAI], 2026). In April 2016 the payments layer UPI was introduced, with 691 banks being connected by early 2026 and 55.49 crore users onboarded by June 2026, as per a Ministry of Finance reply in Lok Sabha (PIB, 2026b). In addition to DigiLocker having 67.63 crore registered users with more than 950 crores digitally issued documents by March 2026, the data layer will also integrate with the consent-based Account Aggregator framework (PIB, 2026c). On top of these are application platforms like ONDC, which operates in over 630 cities and has more than a lakh seller; the Government e-Marketplace, for the procurement of goods and services; and the GSTN for indirect tax.

Fiscal and Inclusion Dividends:-

There are now reasonably well documented three kinds of gain. The first is a financial one. The Jan Dhan-Aadhaar-Mobile (JAM) trinity of basic bank accounts (57.71 crore), biometric identity and mobile connectivity has now funnelled Rs. over the DBT ecosystem. This total is 50 lakh crores, or Rs. That's a total of 50 lakh crore. 6.39 lakh crore in FY 2025-26 alone (DBT Mission, 2026). According to an official assessment, the savings of Rs. 500 crores over the period of 2009 to 2024 can be credited to this. By the removal of duplicate and ineligible beneficiaries, it must be noted that over half of this is done through the Public Distribution System, while also seeing a near threefold increase in its composite Welfare Efficiency Index, from 0.32 in 2014 to 0.91 in 2023 (PIB, 2025a). Even though this saving is reported, it is worth noting that it is subject to the same caution as Khera (2019) suggests, namely that some 'savings are in effect denied access to lawful rights, there is still a significant leakage reduction even at reduced savings estimates.

The second advantage is the deepening of transactions. In just a few years, UPI has grown from 2 crore transactions in FY 2016-17 to 24,162 crore in FY 2025-26 and the value of transactions has reached the peak scale of around Rs. 1 lakh per month. Digital payment has become a mass habit with the number of transactions below Rs. 30 lakh crores in May 2026, which is around 86 per cent. The small-ticket size is the very range in which cash was previously dominant, that is, 500 (National Payments Corporation of India [NPCI], 2026; PIB, 2026a). The third benefits are reputational and diplomatic. By early 2026, domestic plumbing has become a tool of soft power because of the support provided by the G20 endorsement, the Global DPI Repository, and the agreements that have been reached with approximately 24 countries. The scale indicators in Table 1 are summarized.

Table 1 Scale of India's Digital Public Infrastructure (as of 2026)

Platform / Programme	Key Indicator	Magnitude	As of
Aadhaar (identity)	Unique IDs generated; cumulative authentications	~144 crore; 17,080+ crore	Mar 2026
UPI (payments)	Annual transactions; annual value (FY 2025-26)	24,162 crore; Rs. 314.23 lakh crore	FY 2025-26
PM Jan Dhan Yojana	Basic savings bank accounts opened	57.71 crore	Mar 2026
Direct Benefit Transfer	Cumulative transfers; estimated savings	Rs. 50.04 lakh crore; Rs. 3.48 lakh crore	2026
DigiLocker (documents)	Registered users; documents issued	67.63 crore; 950+ crore	Mar 2026
ONDC (commerce)	Cities covered; sellers live on network	630+; ~1.16 lakh	Early 2026
iGOT Karmayogi (capacity)	Registered civil-service learners; course completions	1.5+ crore; 8+ crore	Apr 2026

Note. Compiled by the author from UIDAI (2026), PIB (2026a, 2026b, 2026c), DBT Mission (2026), NPCI (2026), and Capacity Building Commission (2026).

The Inclusion Paradox: Divides and Exclusions:-**The ICT Literacy Skills Gap:-**

Access does not always go hand in hand with population scale. As per the performance indicators of the TRAI, Internet subscribers as of January to March 2026 are 1,092.79 million, but there is a significant disparity between urban and rural India, with urban India having 126.80 subscribers per 100 population, which means plenty of customers with multiple connections, compared to 48.31 subscribers per 100 population in the rural India (TRAI, 2026). The same applies to the quality of fixed-line services: only 7.2 per cent of households had fibre connections, and only 3.2 per cent of rural households (MoSPI, 2025, National Sample Survey, 2025, telecom module).

The split is geographic as well as other. The same survey also revealed that the proportion of young men owning a mobile phone was higher than young women, 83.3 per cent to 63 per cent, and that the gap was even greater in the rural areas, 81.2 per cent compared with 56.9 per cent. Usage gaps also amplify ownership gaps, with 79.3 per cent of young men saying that they used online banking compared to 57.5 per cent of young women; and 19.8 per cent of youth having productive digital skills (such as creating a document or presentation), while 7.4 per cent did not (MoSPI, 2025). If access to the internet is done via a male relative's handset, technically, a woman on that handset could be said to be connected, but with little or no autonomy as that would be presumed by DPI. These differences are summarised in Table 2.

Table 2 Selected Indicators of India's Digital Divide

Indicator	Urban / Male	Rural / Female	Source (Year)
Internet subscribers per 100 population (urban vs. rural)	126.80	48.31	TRAI (2026)
Internet subscribers, absolute (urban vs. rural, in millions)	651.93	440.87	TRAI (2026)
Mobile phone ownership among youth (male vs. female)	83.3%	63.0%	MoSPI (2025)
Mobile ownership, rural youth (male vs. female)	81.2%	56.9%	MoSPI (2025)
Use of online banking among youth (male vs. female)	79.3%	57.5%	MoSPI (2025)
Households with fibre broadband (all-India vs. rural)	7.2%	3.2%	MoSPI (2025)

Note. Compiled by the author. Urban/Male and Rural/Female columns should be read according to the comparison named in each indicator row

The implementation of Welfare Delivery with authentication-linked exclusion:-

A second, more severe type of exclusion happens within the welfare system. The field studies in Jharkhand showed that the ration distribution system, which relied on biometric authentication of card holders instead of a ration card, resulted in exclusion of households where no member was registered on the system, disproportionate exclusion of elderly couples and widows, and that the point-of-sale devices connected by patchy connectivity often failed (Dreze et al., 2017). The quality of the fingerprint decreases over time and by manual labour; if authentication failure is not uniformly distributed, it will converge on exactly the most vulnerable claimants. A large number of individuals in Delhi were identified as having authentication issues in the survey, and they had to make multiple physical visits to very poorly equipped correction centres (Khera & Moharil as cited in Yadav, 2024), while the Comptroller and Auditor General (2022) had independently criticized the grievance redressal architecture of UIDAI. However, the experimental literature does not rule out these results, since those reforms that tightened identification standards did have a measurable effect of reducing leakage, but at the same time a measurable proportion of true beneficiaries paid the costs of transition (Muralidharan et al., 2020). The policy implication is not that biometric systems need to be scrapped; it's that exclusion is a design and operation variable and it is sensitive to fallback options, offline modes and appeals that work, which are not technological artefacts but administrative ones.

Emerging Risks: Fraud, Data Protection and Trust:-

The nature of risk changes from access to trust as DPI deepens. With the volume of transactions, digital payment fraud and social-engineering scams have also proliferated, and as a result, NPCI has plans to roll out a comprehensive framework for information-security in the UPI ecosystem in 2025 (PIB, 2026b). In terms of data, the Digital Personal Data Protection Act, 2023 came into force only in November 2025, with the notification of the DPDP Rules in November 2025, which will have a phased compliance schedule until May 2027, and a newly formed Data Protection Board (Ministry of Electronics and Information Technology [MeitY], 2025). India therefore braves the second half of the 2020s with a world-scale data flow, managed by an enforcement institution that for now is completely new. The question of whether this regulator can gain its independence, staff and technology to regulate private fiduciaries and even the state, is one of the most important ones to be addressed in the context of inclusive digital growth.

Assessing Administrative Capacity for 2047:-**Infrastructural Reach:-**

The record is good but incomplete on the first dimension. Bharat Net has laid optical fibre to more than two lakh gram panchayats, 4G coverage has reached more than 95 percent of the population and data-cost revolution, where the prices have dropped from about Rs. 269 per GB in 2014 to under Rs. 10, eliminated the affordability barrier to basic use. But the reach figures from Table 2 of the TRAI indicate that the reach at the tower is not the reach at the household, let alone at a particular woman's handset. The scope of the state's digital arm has grown to reach beyond its physical arm, but there are still the last few metres, ownership of devices, local bandwidth and vernacular usability!

Bureaucratic Competence:-

The second dimension is where intentional investments are most apparent. Established in 2020, Mission Karmayogi shifted from episodic training based on seniority to a competency framework based on roles and by April 2026, its iGOT platform had registered over 1.5 crore learners, completed over 8 crore courses, and offered more than 4,600 courses in various languages, and learning outcomes were mapped to appraisals (Capacity Building Commission, 2026). It is a real institutional innovation and the extension of this to frontline workers with Karmayogi 2.0 is exactly the layer on which Dasgupta and Kapur (2020) have identified the overload issue. There are two caveats to the optimism. The number of courses completed is a measure of exposure rather than capability; there is no independent validation of iGOT learning yet that connects to service-delivery outcomes. More basically, competence without staffing is arithmetic without numbers: block and panchayat offices have relatively small numbers of staff to handle the volume of schemes they report on, and online modules can't fill vacancies.

The main results of the study are presented in this section:-

The third dimension conveys a sense of speedy yet recent building. There is a possible regulatory scaffolding, which is the DPDP framework, the Data Protection Board and the security frameworks of NPCI and the Account Aggregator consent architecture. Scaffolding is not a building, though. The Board commenced its duties in late 2025 with four members managing over a billion users of data, and the substantive compliance provisions of the Act will come into effect only from 2027, in addition to the state being the biggest data fiduciary (through Aadhaar and DBT) benefits given under the Act. Enforcement—which is what Fukuyama means by capacity to regulate—can only be evaluated by the sheer number of penalty orders, audits and adjudications of breaches that are issued.

Accountability Embeddedness:-

The fourth dimension is the weakest. The omitted literature appraised in Section 5 is, fundamentally, a literature of missing feedback loops: authentication failures that cannot be overridden by any local official, correction centres that must be visited repeatedly, and claimed local experience of savings that is felt locally as denial. The observation of Evans (1995) is relevant in this case; sometimes a state is autonomous yet technically competent but not embedded enough to learn out of its own failure. There are positive incentives to counterexamples, like the introduction of alternative verification fallbacks in food distribution following judicial and civil-society pressure, although they came too late. A government that believed it would achieve Viksit Bharat would design exception-handling, human override and time-bound grievance redressal into platform design, not adding it afterwards, once it had been shown to cause harm. The issue is worsened by federal asymmetry: wealthier states operate full-fledged service-delivery portals and others are struggling with the challenge of staffing common service centres; hence the same national platform yields very different citizen experiences across state lines.

Policy Directions Towards 2047:-

The analysis leads to four priorities. The first one is to consider the last mile as the first one. To bridge the rural and gender divide in Table 2, women-focused device-access programmes, public platform requirements of vernacular and voice-first interfaces, and sustained investment in the utilisation and not just the laying of BharatNet fibre are needed. The digital literacy programmes are to be reformulated based on capability outcomes, i.e. to be able to complete a transaction or file a grievance on their own, as opposed to the number of certifications.

The second is to ensure that inclusion is an audited property of all the platforms. Similarly to the DBT Mission, where savings are published, every significant DPI platform must publish measures of exclusion: rate of authentication failure by district, age and gender; fallback usage; and time to dispose of grievances. Centrally measured things are likely to be managed locally. A legal mandate of functional offline or assisted modes of all welfare-related authentication would transform the lesson of the Jharkhand studies into design dogma.

The third one is to stock the regulatory state before it is demanded. The Data Protection Board requires technical expertise, financial independence and an enforceable track record prior to 2030, not following the initial large-scale breach of welfare data. Cybersecurity capacity should be built in parallel at state and district levels since the attack surface of DPI has now expanded to all panchayat terminals. The fourth is the cooperative federal capacity-building. As states provide most of the services to citizens, the second phase of Mission Karmayogi is right in focusing on them; this should be reinforced by equal central funding of state service-delivery cadres, common standards of state platforms, and peer-learning mechanisms that disperse the experience of successful states. All these are not technologically intensive measures. They are all administratively taxing, and that is the point.

Conclusion:-

The Digital Public Infrastructure of India is a true administrative success, arguably the biggest increase of the infrastructural strength of the state since the postal and railway systems of a previous century. The data collected here demonstrates population-scale identity, the biggest real-time payment system in the world, and welfare transfers of unparalleled magnitude and traceability. But scale and inclusion are distinct achievements, which the same evidence demonstrates. A rural internet penetration that is barely a third of the urban, a twenty-point gender gap in device ownership, recorded authentication-based exclusion among the poorest claimants, and a data-protection regulator still in its infancy all characterize the gap between Digital India and Viksit Bharat. The model created in this paper indicates that the tie of the next two decades will be administrative, not technological: reach should be fulfilled to the individual, competence should be staffed, regulation should grow into enforcement, accountability should be designed, not litigated. When these four gaps are bridged by the Indian state, then DPI can conceivably become the backbone of the delivery of a USD 30 trillion inclusive economy. Otherwise, the platforms will remain to operate perfectly well to those who are already in them, which is a definition of many things, but not of Viksit Bharat. The four-dimensional framework needs to be empirically tested by future research by inter-state comparisons, and India provides a natural laboratory of federal diversity.

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