

# Financial Inclusion and the Digital Economy in India

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## ABSTRACT

This paper consists of the examination of the important concepts and policy frameworks relating to inclusion of financial services in the digital economy like India. Financial inclusion refers to the measures taken in order to make financial services such as savings, facility of credit etc. and products available at a reasonable rate to all individuals and business houses in India. It particularly targets marginalized and low-income groups with an objective of financial self sufficiency and reduction of poverty.

The expansion of Digital Financial Services (DFS) along with Digital Public Infrastructure (DPI) such as Aadhaar, Unified Payments Interface (UPI), and Direct Benefit Transfer (DBT) within the digital economy like India helps to overcome potential traditional barriers in providing access of these services, especially in low-income groups and rural populations with the help of government regulatory frameworks and digital literacy, which emerge as an important tool for converting access of financial services into meaningful financial inclusion in the society.

However, the challenges, including the digital divide, non-universal access to bank accounts, consumer protection against digital frauds and financial illiteracy, still exist. The study concludes that sustained policy focus on scope and technology, regulatory safeguards, and digital up skilling are essential for deepening inclusion of financial services in the digital economy like India.

**Keywords:** Financial inclusion, digital economy, digital public infrastructure, UPI, Aadhaar, financial inclusion index, digital financial services, marginalized, reduction of poverty, financial self sufficiency.

## INTRODUCTION

Financial inclusion means availability and sustained adoption of economical financial services like savings of individuals, credit facility, payments, insurance, pensions etc., by individuals particularly disadvantaged, marginalized or excluded, and low-income populations and business enterprises. The World Bank (2022) states that financial inclusion is an aim as well as a means of inclusive growth by facilitating the households and the firms to contribute productively in the economic development of the country.

Digital technologies consisting of mobile phones and internet services help to create opportunities to expand financial reach of these services among the economically weaker section of the society and reduce transaction costs.

The digital economy covers economic activities fuelled by digital technologies along with the inclusion of financial services like digital payments platforms, and financial data systems which helps the individuals to access and use financial products effectively and efficiently. According to official data, India's financial inclusion score measured by the Financial Inclusion Index (FI-Index) improved from approximately 64.2 to 67 in March 2025, reflecting wider availability, increase in usage of digital transactions, and increased financial literacy and infrastructure, promoted by government initiatives like Pradhan Mantri Jan Dhan Yojana and UPI.

## LITERATURE REVIEW

### Government Framing of Financial Inclusion

According to Digital India portal “it lists financial inclusion as a core thematic focus under its programmatic components. It emphasizes digital public platforms such as UPI, Aadhaar Enabled Payment System as important measures for broader access to financial services.”

The Government’s strategy states “that such digital infrastructure reduces transaction costs, simplifies verification and onboarding, and enhances transparency, thereby bridging gaps between formal financial systems and underserved communities.”

### Financial Inclusion Index (FI-Index)

“The Reserve Bank of India (RBI) publishes a composite Financial Inclusion Index (FI-Index) that quantitatively measures the extent of inclusion across three dimensions such as access to financial services, usage of those services, and quality of financial services”

### Digital Payments and Inclusion

Data from the RBI and related government releases highlight the massive growth of digital payments as a core component of India’s digital economy. In early 2025, “digital payments accounted for 99.8% of total transaction volume and 97.7% of transaction value in the formal payment system. This underscores the extent to which digital payment infrastructure, particularly UPI, dominates the transaction landscape”.

According to authoritative sources, “approximately 85% of digital payment transactions in India are carried out through UPI, which acts as a digital public platform driving financial inclusion for individuals and micro, small, and medium enterprises (MSMEs).”

### Research Gap

The fast expansion of digital economy infrastructures like digital payments system, digital public infrastructure and online financial platforms has been a major force behind inclusion of financial services. Despite major advances at global and national level, large segments of marginalized population particularly in developing countries like India remain exempted from organized financial systems. This suggests that inclusion is not homogeneous and that structural, infrastructural, and socio-economic barriers continue to impede universal financial integration.

The Government of India and many institutions have linked inclusion of financial services with digital economic expansion as an important national priorities and global development goals. In India, national schemes aim to integrate marginalized segments into the organized financial system through digital public platforms and digital economy instruments such as UPI and Direct Benefit Transfers (DBT).

### Objective of the research

The objective of this study is to examine the relationship between financial inclusion and the digital economy using evidence from authentic and reliable government sources. In pursuing this aim, the study sets out the following specific objectives:

1. To examine the role of digital public infrastructure (such as UPI, Aadhaar-enabled systems, and Direct Benefit Transfer platforms) in increasing the availability of organized financial services.
2. To assess the extent to which digital financial services contribute to meaningful financial inclusion.
3. To analyze trends in financial inclusion indicators using government-published indices and administrative data in the context of rapid digitalization.

4. To identify structural and socio-economic barriers that limits the effectiveness of digital financial inclusion initiatives, particularly among rural and marginalized populations.
5. To evaluate policy implications of integrating financial inclusion strategies within the broader digital economy framework.

### **Theoretical Framework**

The investigation of financial inclusion and the digital economy is supported by a combination of well-known theories such as social science and economic theories. These theoretical frameworks explain why digital economic tools affect the financial inclusion in India, and how government policies and digital public infrastructure (DPI) helps in the process of improving availability of these financial services for the upliftment of marginalized populations. The primary theories applied in this study include:

1. Diffusion of Innovation Theory
2. Financial Intermediation Theory
3. Technology Acceptance and Adoption Models
4. Capability Approach
5. Network Effects and Public Goods Theory

These theories collectively explain the mechanisms by which digital economic technologies expand financial inclusion and how government systems shape those processes.

### **Diffusion of Innovation Theory**

#### **Core Idea:**

Originally formulated by Everett Rogers in 1962, *Diffusion of Innovation Theory* (2003) states why, how, and at what rate new ideas and technologies can be spread through cultures and populations.

#### **Application to Study:**

The innovation and adoption of digital financial technologies such as Unified Payments Interface (UPI), Aadhaar-enabled authentication, and mobile banking helps in providing affordable financial services to the people. According to this theory, those who adopted these technologies gain wider market share along with the presence of supportive structures including government policy, simplified adoption by the people and integration helps to accelerate the diffusion process.

#### **Government Linkages:**

The Government of India's Digital India initiative promotes widespread usage of digital financial services by marginalized people or other backward low income groups as part of national digitization goals.

Digital public platforms such as UPI, Aadhaar, and Direct Benefit Transfer systems are examined through public policy and infrastructure, which enables faster diffusion of innovation and wider financial participation among different segments of the population.

Policy measures like the *JAM Trinity* (Jan Dhan, Aadhaar, and Mobile) create an environment that reduces barriers to adopt and accelerates diffusion of financial services, particularly among rural and marginalized sections of the society.

## Financial Intermediation Theory

### Core Idea:

*Financial Intermediation Theory* (1998) states that financial intermediaries such as banks, non-banking financial companies etc. reduces transaction cost and unequal distribution of information between savers and borrowers which helps in the economic development of the country.

### Application to Study:

In terms of digital economy transformation, digital financial services and digital public infrastructure facilities act as new forms of financial intermediation which uses platforms such as UPI and interoperable APIs to reduce the cost and complexity of financial transactions, promoting effective and standardized role of traditional intermediaries and expanding market reach among backward section of the society.

### Government Linkages:

The Government of India and The Reserve Bank of India have supported financial payment system innovations that improve the efficiency of financial intermediation by facilitating economic growth by efficiently allocating capital.

The fast expanding share of digital transactions through UPI (approximately 85% of digital payment volume) shows how modern digital intermediation promotes inclusion of financial services and lowers barriers to formal financial participation by different sections of the society.

## Technology Acceptance and Adoption Models

### Core Idea:

Models such as the *Technology Acceptance Model (TAM)* and *Unified Theory of Acceptance and Use of Technology (UTAUT)* explain how an individual adopt a technology thinking that it will increase their productivity efficiently and how easily they will use that technology.

### Application to Study:

An Individual's involvement with digital financial services (e.g. mobile wallets, UPI apps) depends on ease of convenience, trust, and security of the concerned technology.

Government initiatives that provide simplified processes such as Aadhaar-linked e-KYC and technology compatible financial platforms that reduce cognitive and practical costs of usage and increases adoption of financial services.

### Government Linkages:

The government's emphasis on Aadhaar-enabled services and interconnected payment networks directly aligns with the technology thereby reducing complexity in initial acceptance and ongoing usage of digital financial tools by different sections of the society.

## Capability Approach

### Core Idea:

*Capability Approach* given by Amartya Sen asserts that development should be evaluated by what individuals are *capable of doing and exist in a certain state*, rather than merely what they possess. Capabilities include access to essential services that enable people to lead lives they value or desire.

**Application to Study:**

Financial inclusion is not just using a bank account but includes the ability to use financial services efficiently and effectively to manage risks, future savings, and engaging in economic activities for their well being. Digital financial tools help in improving individual’s capabilities by reducing obstacles in adopting financial services.

**Government Linkages:**

India’s Financial Inclusion Index (FI-Index) states the *usage* and *quality* dimensions of inclusion of financial services. This multidimensional measurement combines with the capability approach, emphasizes that inclusion has significant consequences not just formal account ownership by the individuals.

**Network Effects and Public Goods Theory**

**Core Idea:**

*Network effects* describe a situation where the value of a service increases as more and more people use it for their benefit. *Public goods theory* highlights that some infrastructure provides broad societal value both non-competitive and universal and it often requires government provision or facilitation for the betterment of the society.

**Application to Study:**

Digital public infrastructure such as UPI, Aadhaar creates stronger network effects when adoption of financial services increases, making the systems more affordable for users and service providers. These systems represent public goods that increase overall utility without excluding marginalized population.

**Government Linkages:**

India’s strategy of building Digital Public Infrastructure (DPI) for financial services combines with public goods theory states that by creating interoperable, open, and scalable platforms, the government increases the utility of these financial systems for all sections of the society. Enhancing DPI encourages digital economic activity and reduces entry barriers for financial services in the digital economy.

**Synthesis of Theoretical Framework**

Theory	Relevance to Research	Mechanism
Diffusion of Innovation	Explains adoption patterns of digital financial services	Government scaling of public platforms increases uptake
Financial Intermediation	Describes reduction of transaction costs and market inefficiencies	Digital infrastructure builds new intermediated channels
Technology Adoption Models	Shows individual user engagement with digital systems	User perceptions of usefulness and ease drive usage
Capability Approach	Frames inclusion beyond access	Usage and quality of financial services improve capabilities
Network Effects & Public Goods	Evaluates government role in digital infrastructure	Value increases with increase in user base; infrastructure benefits all

## **Mechanisms of Digital Financial Inclusion**

India's financial inclusion strategy which comprises of Digital India initiative combines multiple digital platforms such as:

- Aadhaar means using biometric digital identity for e-KYC
- Unified Payments Interface (UPI) refers to interoperable real-time payments
- Jan Dhan Accounts refers to universal banking access
- Direct Benefit Transfer (DBT) refers to targeted welfare delivery
- Aadhaar Enabled Payment System (AePS) refers to banking via micro-ATMs

These systems reduce integrating costs, remove financial intermediaries, and promote transparency in the financial system of the digital economy (MeitY, 2024).

## **Digital Payments and Interoperability**

Digital payment systems act as a primary point into financial ecosystems that allow consumers to use reliable payment system with low transactions cost.

For example, India's Unified Payments Interface (UPI) which is a government interoperable payment network facilitates 85 percent of digital transactions in the country thereby reduces barriers of basic financial inclusion activity.

## **Digital Identity and E-KYC**

Digital identity systems such as Aadhaar provide secure platform to verify user identities, helps in easier account opening, digital integration, and credit assessments of all sections of the society.

These technologies helps to reduce operational costs for financial institutions and intermediaries by improving access of financial services for previously excluded groups.

## **Digital Public Infrastructure (DPI)**

The G20's Global Partnership for Financial Inclusion (GPIFI) highlights that interconnected DPIs are open, inclusive, and complex and interconnected systems which can accelerate inclusive financial transformation.

DPI reduces fragmentation, trigger innovation, and builds ecosystems in which public and private financial services can operate effectively and efficiently.

## **Empirical Indicators of Financial Inclusion**

### **RBI Financial Inclusion Index (FI-Index)**

The Financial Inclusion Index, published by the Reserve Bank of India (RBI), aggregates functions based on access, usage, and quality of financial services.

Growth in the FI-Index shows expansion in financial inclusion through digital adoption.

Table 1: RBI Financial Inclusion Index (India)

Year	FI-Index Score
2021	53.9
2023	60.1
2025	67.0

Source: Reserve Bank of India (2025).

### Digital Payments and UPI Growth

UPI has emerged as the backbone of India’s digital payment system. According to PIB (2025), “UPI recorded 1,867 crore transactions worth ₹24.77 lakh crore in April 2025, accounting for nearly 85% of all digital retail transactions”.

Table 2: UPI Transaction Growth

Indicator (2025)	Value
Monthly transactions	1,867 crore
Transaction value	₹24.77 lakh crore
Share of digital payments	~85%

Source: Press Information Bureau (2025).

### Jan Dhan Yojana and Account Penetration

The Pradhan Mantri Jan Dhan Yojana (PMJDY) has played an important role in expanding access of banking services among all the sections of the society. As of 2025, “over 50 crore Jan Dhan accounts have been opened, many of which are linked with Aadhaar and mobile numbers, which shows transparency in digital transactions (DD News, 2025)”.

### Integration of Financial Inclusion and Digital Economy

#### Aadhaar and e-KYC

The Aadhaar digital identity helped in rapid account opening and verification which significantly reduces the barriers in the availability of financial services. As of April 2025, “over 141.88 crore Aadhaar IDs had been issued that formed a nearly universal identity base that supports efficient digital financial inclusion and welfare transfer mechanisms among all the people of the country”.

#### Direct Benefit Transfer (DBT)

Direct Benefit Transfer (DBT) helps to deliver government subsidies and welfare schemes payments directly into beneficiaries’ bank accounts by using Aadhaar authentication thereby reducing leakages and ensuring that financial services should reach underprivileged populations. As of May 2025, “cumulative transfers exceeded ₹44 lakh crore, demonstrating efficient financial integration in the country”.

## Policy Implications

### 1. Strengthening Usage-Oriented Financial Inclusion Policies

Policymakers should take measures that incentivize sustained usage of digital financial services, particularly among low-income and rural populations.

### 2. Targeted Digital Literacy Intervention

Government programs must prioritize digital and financial literacy to address behavioral and capability barriers that limit effective participation in the digital financial ecosystem.

### 3. Balanced Regulatory Frameworks

Regulatory authorities should ensure that innovation in digital finance is accompanied by robust consumer protection, cybersecurity measures, and grievance redressal mechanisms.

## Opportunities and Challenges

### Digital divide

Despite progress in digital financial inclusion, there is limit of full impact of financial services in remote and socioeconomically disadvantaged regions impacting economic development due to gaps in internet access, digital illiteracy etc. Bridging this digital divide is essential to ensure equitable financial inclusion among all sections of the population.

### Consumer protection against cyber crimes

The rapid increment of digital transactions also raises the concerns for cyber security. Official data show a major increase in cybercrime cases, which arises a concern for stronger digital safeguards against these cybercrimes and promoting consumer awareness mechanisms to protect populations who are financially independent.

### Building trust of consumers and promoting financial literacy

Digital finance helps people to understand risks (fraud, data privacy) against financial payments and other financial products. Steps should be taken to enhance digital financial literacy for sustainable financial inclusion.

### Non availability of banking services

Till 2024,” approximately 22% (means around 19 crore) of adult population in India are restricted to use financial services, despite the major measures are taken under the government schemes like Pradhan Mantri Jan Dhan Yojana (PMJDY)”.

### Gender inequality

Women’s financial inclusion is limited by social and cultural barriers in India.” Only 33% of women use the internet services as compared to 57% of men which shows lower digital availability of financial services”.

### Dominance of cash transactions

The dominance of cash transactions with less availability of credit facility further reduces the usage of digital payment systems and financial services among the people.

According to an RBI, “till March 2024, 60% of consumer expenditure in cash accounts is rapidly decreasing, increased by the post-Covid-19 shift to digital payment”.

### Lack of availability of credit facility

In country like India providing reasonable credit to marginalized groups and unorganized businesses still remains a problem. Lenders also face difficulties in assessing creditworthiness, due to the non availability of structured credit history and accurate data. This results in high costs of borrowing and limited availability of credit for marginalized segments of the society.

### Non implementation of government schemes

Government schemes like the Pradhan Mantri Jan Dhan Yojana (PMJDY) have achieved fruitful results in opening bank accounts among different sections of society but still most of these accounts remain inactive. Lack of effective utilization by the marginalized people due to financial illiteracy, less faith in organized banking systems have made the implementation of financial inclusion difficult.

### Cyber security concerns

The rapid expansion of digital financial services has heightened cyber security risks. “Cybercrime reporting rose by 24.4% in 2022, with 65,893 cases reported compared to 52,974 in 2021 (NCRB). Increasing digital crimes and people’s limited awareness of cyber security remain major challenges to secure financial inclusion.”

### Suggestions

- **DPI should be strengthened:** Continuous building of digital infrastructure like providing 4G connectivity in rural areas and developing secure digital identity systems will help in expanding reach and inclusion especially in backward areas.
- **Digital literacy:** To transform availability of financial services into meaningful usage, national programs should be implemented to enhance financial and digital literacy.
- **Consumer protection:** Stronger cyber security, grievance redressal, and fraud prevention measures can help to boost trust in digital financial services by the people.
- **Conducting of workshops and people awareness campaigns:** The government should conduct workshops and people awareness campaigns for different sections of populations in rural and urban population areas to improve outreach of financial services.
- **Increase digital platforms for financial literacy:** Digital platforms like mobile apps can be used to provide financial knowledge to large number of population through apps which are interactive, providing online courses, and conducting campaigns through social media etc.
- **Increasing financial inclusion efforts:** Initiatives such as Pradhan Mantri Jan Dhan Yojana (PMJDY) provide underserved sections of people with important banking services, increasing inclusion of financial services and financial as well as digital literacy simultaneously.

Recent government commitments aim to enable 4G connectivity in every village by June 2026, further enhancing the backbone of the society which is necessary for promoting digital financial services.

## CONCLUSION

When supported by strong public infrastructure and inclusive policies, India can significantly promote financial inclusion in the backward or marginalized section of the society. While substantial progress has been achieved through expansion of financial services with the help of digital public infrastructures like Aadhaar, UPI, Jan Dhan, and DBT, helps to sustains and deepens inclusion which requires addressing digital divides, literacy gaps, and security risks. A balanced approach consisting of technology, regulatory structure, and human capability

development are essential for financial inclusive growth by strengthening DPI, digital literacy, consumer protection against cybercrimes among all the sections of the society.

### Future Research Directions

#### 1. Micro-Level Household or Enterprise Studies

Future research could integrate primary survey data with official statistics to capture behavioral aspects of digital financial inclusion.

#### 2. Longitudinal and Panel Data Analysis

Extended time-series or panel datasets can strengthen causal analysis and assess long-term impacts of digital financial reforms.

#### 3. Comparative Cross-Country Studies

Applying a similar framework across multiple economies using government and multilateral datasets can enhance external validity.

#### 4. Impact of Emerging Digital Risks

Further research may focus on cybersecurity, data privacy, and trust as moderating factors in digital financial inclusion.

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