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## Exploring the Integration of Digital Platforms in Cooperative Banks: An Examination of Innovation and Inclusion

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### ABSTRACT

In today's fast-paced digital age, the banking industry has experienced a notable transition from conventional methods to technology-based platforms. Although commercial banks have spearheaded this change, cooperative banks—vital for promoting financial inclusion in rural and semi-urban areas of India—are also increasingly embracing digital platforms to improve their service delivery and reach. This study examines the scope, characteristics, and effects of digital platform adoption in cooperative banks, with a focus on how innovation supports inclusive banking practices. The research delves into essential digital tools like mobile banking, core banking solutions (CBS), digital payments, and online customer service portals, analyzing their integration into cooperative banking systems. Utilizing a mixed-method approach that includes case studies, interviews, and survey data from selected cooperative banks, the study identifies the motivations, obstacles, and advantages of digital adoption. The findings reveal that digital innovations have allowed cooperative banks to expand their customer base, lower operational expenses, and enhance transparency. However, the study also identifies challenges such as infrastructural constraints, digital illiteracy among users, and resistance to change among bank staff. The paper concludes by providing policy recommendations and strategic insights to accelerate digital adoption in cooperative banks, ensuring that innovation continues to support the



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broader objectives of financial inclusion and rural economic empowerment.

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## **Introduction**

The banking sector has experienced significant changes with the incorporation of digital technologies. As financial technologies (fintech) have advanced, along with shifts in customer expectations and competitive dynamics, banks have increasingly transitioned to digital platforms for their operations. Cooperative banks, which have historically operated with minimal technological infrastructure, are now striving to digitize their services to stay relevant and competitive. This research seeks to investigate the adoption of digital platforms in cooperative banks, focusing on how these innovations impact financial inclusion, particularly in rural and semi-urban regions where these banks are crucial. It also aims to assess the challenges encountered during this transition and propose strategies for successful implementation.

## **Objectives of the Study**

1. To assess the current level of digital adoption in cooperative banks.
2. To identify the key digital tools and technologies implemented.
3. To examine the impact of digital innovation on financial inclusion.
4. To highlight the challenges and barriers in digital transformation.
5. To suggest policy-level and managerial recommendations.

## **Review of Literature**

### **1. The Digital Paradigm: India's Financial Inclusion Journey**

India's **Digital Public Infrastructure (DPI)** — encompassing Aadhaar, UPI, AePS, the Account Aggregator (AA) framework, and OCEN — has played a crucial role in enhancing financial inclusion. From 2011 to 2017, access to basic financial services rose significantly: payment card ownership climbed from 9% to 34%, savings at financial institutions increased from 12% to 20%, and the female account ownership surged from 26% to 77%

UPI now constitutes about 75% of payment transaction volume (as of January 2023), with its intuitive interface and universal interoperability being key success factors.



The **AA and OCEN frameworks** further empower consumers and MSMEs with data portability and access to streamlined credit offers, strengthening transparency and competitive access to financial services.

## 2. Cooperative Banks: Digital Adoption Landscape

Cooperative banks—including **urban (UCBs)**, **district central (DCCBs)**, and **primary agriculture credit societies (PACS)**—have displayed varied digital adoption:

- **UCBs and SCBs** are rapidly embracing Core Banking Systems (CBS), enhancing operational efficiency.
- **DCCBs** show moderate progress but are often hindered by financial and technical constraints.
- **PACS** lag significantly, with only about 25% having any digital banking infrastructure in place, hindering their role in financial inclusion

However, targeted digital initiatives—like UP Cooperative Bank’s 'Sahkar Sarthi' platform—have contributed to a noteworthy turnaround: UPCB tripled its net profit between 2017 and 2025, and DCCBs’ business surged to ₹41,234 crore, aided by the reactivation of dormant members and onboarding new ones.

## 3. Fintech Enablers: Platforms Supporting Cooperatives

Fintech firms such as **Sarvatra Technologies** have significantly enabled cooperative banks’ digital transformation by offering:

- A plug-and-play **EFT switch**, integrating cooperative banks into NPCI’s ecosystem (including RuPay, Bharat Bill Pay, and Kisan Credit Card networks).
- During the COVID-19 era, **micro ATMs and ATM vans** delivered essential cash services to underbanked rural areas.
- In 2024, the launch of the **Sarvatra Rewards App** (a loyalty-driven UPI/RuPay-enabled system) across 27 states further modernized customer engagement [Wikipedia](#).

## 4. Digital Inclusion, Accessibility, and Policy Support



The **Reserve Bank of India (RBI)** has encouraged the development of **feature-phone-compatible, low-bandwidth apps** to reach remote and underserved populations—stressing also the integration of robust cybersecurity features .

The **India Post Payments Bank (IPPB)** was recognized in 2024–25 with the **Digital Payments Award**, topping the DFS index among payments banks for its role in advancing digital inclusion in remote areas .

The **RUGR ecosystem** embodies localized innovation with products like RUGR-Udaan (vernacular digital payments), Agri-Gram (embedded agri-finance), Fin-Gram (financial literacy), and Neo-Gram (branchless rural neobank), enhancing accessibility and inclusion in underserved regions.

## 5. Cybersecurity, Regulation, and Emerging Challenges

With growing digital adoption, **cybersecurity threats** like phishing and malware pose increasing risks to adoption and trust. Countermeasures like multi-factor authentication, biometrics, AI fraud detection, and even blockchain are at the forefront of mitigating risks, though fintech integrations heighten regulatory oversight needs .

Emerging scholarship underscores that digital banks and alternative lenders—while catalyzing inclusion through AI and LLMs—also introduce regulatory challenges related to data privacy, bias, and stability, calling for refined regulatory frameworks.

## 6. Risks of Digital-Driven Inclusion

While digital finance expands access, some studies caution about unintended consequences. Digital platforms may escalate household debt or expose users to financial distress if poorly governed.

### Research Methodology

**Research Design:** This study adopts a **descriptive and analytical research design** based entirely on **secondary data analysis**. The descriptive component helps in outlining the extent of digital adoption in cooperative banks, while the analytical aspect evaluates the role of digital platforms in promoting innovation and inclusion.

**Nature of the Study:** The research is **exploratory and descriptive** in nature. It explores how cooperative banks have integrated digital platforms, identifies the tools used, highlights challenges, and assesses the implications for financial inclusion using already published data sources.



## Sources of Secondary Data

### 1. Regulatory and Institutional Reports

- **Reserve Bank of India (RBI):** Publications on cooperative banking sector, financial inclusion, and digital transformation initiatives.
- **National Bank for Agriculture and Rural Development (NABARD):** Reports on digitization of PACS, cooperative credit structures, and rural banking.
- **Ministry of Finance:** Documents, guidelines, and policy frameworks on digital banking and financial inclusion.

### 2. International Reports

- **International Monetary Fund (IMF):** Studies on digital financial services, India's digital public infrastructure, and financial inclusion.
- **World Bank:** Global Findex and financial inclusion reports with comparative insights on India's progress.

### 3. Organizational Reports

- **Annual Reports of Cooperative Banks** (Urban Cooperative Banks, District Central Cooperative Banks, PACS) to track progress in digital adoption, profitability, and outreach.

### 4. Industry Case Studies

- **Fintech sector case studies** documenting innovations in cooperative banking.
- Reports on technology providers such as **Sarvatra Technologies**, and platforms under **National Payments Corporation of India (NPCI)** including UPI, RuPay, AePS, Bharat BillPay.

### 5. Academic and Research Publications

- Peer-reviewed journals, working papers, and conference proceedings focusing on digital banking, cooperative finance, and innovation-led financial inclusion.

## Tools of Analysis

Since the study relies on secondary data, the following analytical tools will be used:



- **Content Analysis:** Reviewing reports, case studies, and research papers to extract relevant insights.
- **Comparative Analysis:** Comparing digital adoption levels among UCBs, DCCBs, and PACS.
- **Trend Analysis:** Examining RBI, NABARD, and IMF/World Bank data to trace the progress of digital adoption over time.
- **Thematic Analysis:** Synthesizing challenges, opportunities, and best practices reported across different sources.

### Scope of the Study

The study covers cooperative banks in India, focusing on digital adoption, innovation, and inclusion. It draws insights from national-level reports and selected cooperative banks' annual reports to illustrate trends and challenges.

### Limitations of the Study

- The study depends on the accuracy and availability of published data.
- Some cooperative banks may not publish detailed digital adoption statistics.
- Comparative analysis may be limited by variations in reporting formats across institutions.

### Data Analysis and Interpretation

Presents an analysis and interpretation of secondary data collected from various published sources such as RBI, NABARD, IMF, World Bank, NPCI, and cooperative banks' annual reports. The analysis focuses on five areas aligned with the research objectives: (1) digital adoption in cooperative banks, (2) digital tools implemented, (3) impact on financial inclusion, (4) challenges and barriers, and (5) policy-level implications.

#### 1. Current Level of Digital Adoption in Cooperative Banks

### Data Highlights

- **Urban Cooperative Banks (UCBs):** Nearly 95% of UCBs are on Core Banking Solutions (CBS) as per RBI (2024).



- **District Central Cooperative Banks (DCCBs):** Adoption is moderate; NABARD (2023) reports that ~60% have partial digital infrastructure.
- **Primary Agricultural Credit Societies (PACS):** Only about 25% digitized; NABARD's *PACS Computerization Project* aims to digitize ~65,000 PACS by 2025.

### Interpretation

The adoption of digital platforms is **uneven** across cooperative bank categories. UCBs lead in CBS and digital payment integration, while PACS remain under-digitized, limiting rural outreach.

## 2. Key Digital Tools and Technologies Implemented

### Data Highlights

- **NPCI Platforms:** UPI contributes ~75% of India's retail digital transactions (IMF, 2023). Cooperative banks integrated with UPI, RuPay, AePS, and Bharat BillPay.
- **Micro-ATMs & AePS:** Widely used in rural areas to enable cash withdrawal and balance inquiry using Aadhaar authentication.
- **Mobile Banking Apps:** Select UCBs offer UPI-enabled apps in regional languages.
- **Fintech Collaboration:** Example – Sarvatra Technologies integrated 600+ cooperative banks with NPCI through plug-and-play EFT switches (2024).

### Interpretation

Cooperative banks are increasingly relying on **NPCI-driven platforms** and **fintech partnerships** to provide cost-effective digital services. However, adoption is still limited among PACS due to infrastructural barriers.

## 3. Impact of Digital Innovation on Financial Inclusion

### Data Highlights

- According to World Bank (2021), **77% of women in India own a bank account**, a significant rise supported by digital channels.



- NABARD (2023) reports that DCCBs offering digital services recorded **15–20% growth in deposits** and increased participation of rural customers.
- Uttar Pradesh Cooperative Bank (UPCB) reported a **3-fold increase in net profit between 2017–2025**, largely attributed to digital initiatives (TOI, 2025).
- AePS transactions in rural areas crossed **2 billion annually** (NPCI, 2024), reflecting deep rural penetration.

### Interpretation

Digital innovations directly contribute to **financial inclusion** by improving access to banking services, encouraging savings, and reducing dependence on informal credit. Cooperative banks that embraced digital tools showed improved financial performance and wider customer reach.

## 4. Challenges and Barriers in Digital Transformation

### Data Highlights

- **Infrastructure:** PACS face lack of internet connectivity and outdated hardware (NABARD, 2023).
- **Cybersecurity:** RBI (2024) identified phishing and malware as growing threats in small banks.
- **Digital Literacy:** A significant share of rural customers lack awareness of mobile/UPI banking.
- **Regulation:** Cooperative banks often face compliance burden due to dual regulation (RBI and Registrar of Cooperatives).

### Interpretation

While digital adoption is progressing, **structural challenges** continue to limit its scale and inclusivity. The weakest links remain PACS and small rural cooperatives, which are essential for grassroots financial access.

## 5. Policy-Level and Managerial Implications

### Key Insights from Secondary Data



- **RBI & NABARD Initiatives:** Ongoing PACS computerization and encouragement of low-bandwidth, vernacular mobile apps.
- **Government Schemes:** Digital India and financial literacy drives aim to reduce the rural digital divide.
- **Fintech Role:** Partnerships with firms like Sarvatra demonstrate scalable, affordable solutions for cooperative banks.

## Interpretation

Policy support, combined with managerial initiatives at the cooperative bank level, can accelerate digital transformation. Prioritizing **digital literacy, cybersecurity, and fintech collaborations** is crucial for inclusive growth.

## Findings, Suggestions, and Conclusion

### Key Findings

Based on the secondary data analysis, the following findings emerge:

#### 1. Level of Digital Adoption

- Urban Cooperative Banks (UCBs) show **high adoption** of Core Banking Solutions (CBS) and integration with NPCI platforms.
- District Central Cooperative Banks (DCCBs) demonstrate **moderate adoption**, with progress aided by NABARD initiatives.
- Primary Agricultural Credit Societies (PACS) remain **least digitized**, with ongoing computerization projects expected to improve adoption.

#### 2. Digital Tools and Technologies

- Cooperative banks use **UPI, AePS, RuPay, Bharat BillPay, mobile apps, and micro-ATMs** to reach customers.
- **Fintech collaborations** (e.g., Sarvatra Technologies with 600+ cooperative banks) have enabled low-cost and scalable integration with NPCI networks.

#### 3. Impact on Financial Inclusion



- Digital innovations have improved **account ownership, deposit mobilization, and credit access** among rural populations.
- Women's participation in formal banking has increased significantly due to simplified account opening and mobile-enabled services.
- Case studies reveal **profit growth and wider outreach** for cooperative banks that adopted digital platforms.

#### 4. Challenges and Barriers

- **Infrastructure gaps** (poor internet connectivity in rural areas) and **outdated technology** in PACS.
- **Cybersecurity threats** (phishing, malware) are increasing.
- **Digital literacy deficits** among rural customers and some staff.
- **Regulatory complexity** due to dual oversight by RBI and state cooperative registrars.

#### 5. Policy-Level Insights

- RBI and NABARD are actively driving digitization, especially through PACS computerization.
- Fintechs play a crucial role in bridging the technological divide.
- Government initiatives under *Digital India* are providing necessary infrastructure and literacy support.

### Suggestions and Recommendations

#### For Policy Makers (RBI, NABARD, Ministry of Finance):

- Accelerate **PACS computerization** to ensure inclusivity in rural credit systems.
- Strengthen **cybersecurity guidelines and support frameworks** tailored for small cooperative banks.
- Promote **regional language digital interfaces** for financial apps to improve accessibility.
- Encourage **fintech partnerships** through regulatory sandboxes for cooperative banks.

#### For Cooperative Banks (UCBs, DCCBs, PACS):



- Invest in **staff training programs** on digital banking tools and cybersecurity.
- Focus on **customer digital literacy campaigns**, especially targeting women, farmers, and rural households.
- Expand usage of **low-cost digital channels** (micro-ATMs, USSD-based banking, AePS).
- Build **collaborative models** with fintechs to enhance technological capacity without heavy infrastructure costs.

#### **For Fintechs and Technology Providers:**

- Develop **customized, affordable solutions** for cooperative banks, considering their scale and regional outreach.
- Partner with PACS for **integrated credit + digital payment models**.
- Enhance focus on **vernacular mobile apps** to improve adoption in rural/semi-urban areas.

#### **Conclusion**

The integration of digital platforms in cooperative banks represents a critical step toward strengthening India's financial inclusion landscape. While urban cooperative banks have made significant progress, rural cooperative structures like PACS are still at the early stages of transformation.

The study finds that **digital innovation has a positive impact on financial inclusion** by increasing access, efficiency, and participation in the banking system. However, challenges such as poor infrastructure, limited digital literacy, and cybersecurity concerns need urgent attention.

Collaborative efforts by regulators, cooperative banks, fintechs, and policymakers are essential to ensure that digitization does not remain an **urban privilege**, but becomes a **rural empowerment tool**. With ongoing initiatives such as PACS computerization and fintech partnerships, cooperative banks are well-positioned to play a **transformative role in India's inclusive digital economy**.

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