



A Study on Financial Inclusion through Digital Payments (UPI, AEPS)

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<https://doi.org/10.5281/zenodo.19230023>

Abstract - Financial inclusion has emerged as a central pillar of inclusive economic development, particularly in developing economies such as India. The integration of digital technologies with financial services has significantly transformed the accessibility, affordability, and efficiency of financial systems. Among the various digital innovations introduced in recent years, Unified Payments Interface (UPI) and Aadhaar Enabled Payment System (AEPS) have played a pivotal role in expanding financial access to millions of previously underserved individuals. This research paper examines the role of digital payment systems in promoting financial inclusion in India through a secondary data analysis approach.

The study relies on data collected from government publications, Reserve Bank of India reports, National Payments Corporation of India statistics, and various academic journals. The research explores how digital payment platforms have contributed to improving accessibility to banking services, particularly in rural and semi-urban areas. It also analyzes the growth trends of UPI and AEPS transactions and evaluates their impact on financial inclusion indicators.

The findings reveal that digital payment infrastructures have significantly improved financial participation among marginalized communities. UPI has revolutionized person-to-person and merchant payments by offering a simple, instant, and cost-effective platform. Meanwhile, AEPS has enabled individuals in remote areas to access banking services through biometric authentication, reducing dependency on traditional bank branches. The study concludes that digital payment technologies have strengthened financial inclusion but also highlights the need for improved digital literacy, cybersecurity awareness, and infrastructural development.

1. Introduction

1.1 Background of the Study

Financial inclusion refers to the process of ensuring access to appropriate financial products and services needed by individuals and businesses, especially vulnerable groups such as low-income households, rural populations, and small enterprises. Access to banking services, credit facilities,

insurance, and digital payment systems plays a crucial role in reducing poverty and promoting economic empowerment.

For decades, financial exclusion remained a major challenge in developing economies. Many individuals lacked access to formal banking services due to geographic, economic, and social barriers. Traditional banking systems often failed to reach remote regions where financial infrastructure was limited.

The emergence of digital financial technologies has reshaped the financial landscape. Governments and financial institutions began leveraging digital platforms to bridge the gap between financial institutions and underserved populations. In India, the digital revolution gained momentum through initiatives such as the Pradhan Mantri Jan Dhan Yojana (PMJDY), Aadhaar identification system, and mobile banking innovations.

Within this ecosystem, two payment systems have played particularly transformative roles: Unified Payments Interface (UPI) and Aadhaar Enabled Payment System (AEPS). These systems have significantly simplified financial transactions while making banking services more accessible to the population.

1.2 Digital Payments and Financial Inclusion

Digital payments refer to electronic transactions that occur through digital platforms without the use of physical cash. These transactions can occur through mobile applications, internet banking, payment gateways, and biometric authentication systems.

UPI, launched by the National Payments Corporation of India (NPCI) in 2016, allows users to transfer money instantly between bank accounts using a mobile application. The system integrates multiple bank accounts into a single platform, enabling seamless transactions at any time.

AEPS, on the other hand, is a bank-led model that allows online financial transactions at micro-ATMs using Aadhaar authentication. Through AEPS, individuals can perform basic banking services such as balance inquiry, cash withdrawal, cash deposit, and fund transfer using biometric verification.



Together, these systems have dramatically expanded financial inclusion by providing easy, low-cost access to financial services.

1.3 Importance of the Study

Understanding the impact of digital payment systems on financial inclusion is important for policymakers, financial institutions, and researchers. Digital payments have the potential to reduce economic inequality by enabling greater participation in the financial system.

This study aims to explore how digital payment platforms such as UPI and AEPS contribute to expanding financial access in India.

2. Literature Review

2.1 Concept of Financial Inclusion

Financial inclusion has been widely studied by economists and policymakers. According to the World Bank, financial inclusion refers to access to useful and affordable financial products and services that meet the needs of individuals and businesses.

Scholars have emphasized that financial inclusion is not merely about opening bank accounts but also about ensuring active participation in financial services. Access to savings accounts, digital payments, credit facilities, and insurance services enables individuals to manage financial risks and improve their economic stability.

Research suggests that financial inclusion can significantly contribute to poverty reduction and economic development. When individuals gain access to financial services, they can invest in education, healthcare, and small businesses, leading to broader economic growth.

2.2 Digital Payments and Economic Development

Digital payment systems have become a crucial component of modern financial infrastructure. Studies have shown that the adoption of digital payments can increase transparency, reduce transaction costs, and enhance financial efficiency.

Several researchers argue that digital payments also help reduce the informal economy by encouraging individuals to adopt formal financial channels. The availability of digital payment systems also improves government welfare distribution through direct benefit transfers.

India's rapid growth in digital payments after demonetization in 2016 has been widely discussed in academic literature.

Researchers highlight that technological advancements, smartphone penetration, and government initiatives have accelerated the adoption of digital payments across the country.

2.3 Role of UPI in Financial Inclusion

UPI has been widely recognized as one of the most successful digital payment systems globally. Research indicates that UPI's user-friendly interface, interoperability, and real-time payment capability have contributed to its widespread adoption.

The system allows users to send and receive money instantly using a virtual payment address without the need to share bank account details. This simplicity has made digital transactions accessible even for individuals with limited banking experience.

Several studies suggest that UPI has significantly increased the volume of digital transactions, especially among younger and urban populations.

2.4 Role of AEPS in Rural Financial Access

While UPI mainly operates through smartphones, AEPS addresses the needs of individuals in rural areas who may lack smartphones or internet access. Through biometric authentication linked to Aadhaar, AEPS allows individuals to perform banking transactions through micro-ATMs operated by banking correspondents.

Research highlights that AEPS has been particularly effective in facilitating government subsidy transfers and enabling rural populations to withdraw funds from their bank accounts conveniently.

3. Research Methodology

3.1 Research Design

This study adopts a descriptive research design to analyze the role of digital payment systems in promoting financial inclusion. The research focuses on understanding the growth patterns and impact of UPI and AEPS through secondary data analysis.

3.2 Data Sources

The study relies on secondary data collected from credible sources, including:

- Reserve Bank of India reports
- National Payments Corporation of India transaction statistics

- Government financial inclusion reports
- Academic journals and research publications
- World Bank financial inclusion database

These sources provide comprehensive insights into digital payment adoption and financial inclusion trends in India.

3.3 Data Analysis Method

The collected data is analyzed using descriptive statistics and trend analysis. Transaction volumes, user adoption rates, and financial inclusion indicators are examined to understand the impact of digital payment systems.

4. Growth of Digital Payments in India

4.1 Rise of UPI Transactions

Since its launch in 2016, UPI has experienced exponential growth. The system initially recorded a modest number of transactions but rapidly expanded as more banks and fintech companies integrated UPI services.

Smartphone adoption, affordable internet access, and innovative payment applications such as Google Pay, PhonePe, and Paytm have contributed significantly to the expansion of UPI transactions.

UPI has become the preferred mode of digital payment for millions of Indians due to its speed, convenience, and security.

4.2 Expansion of AEPS Services

AEPS has played a crucial role in enabling financial access in rural and remote areas. Through banking correspondents equipped with micro-ATMs, individuals can perform banking transactions without visiting bank branches.

AEPS has also facilitated government welfare distribution through direct benefit transfers. Beneficiaries can withdraw funds using biometric authentication, ensuring transparency and reducing fraud.

4.3 Government Initiatives Supporting Digital Payments

The Indian government has implemented several initiatives to promote digital payments, including:

- Digital India Mission
- Jan Dhan Yojana
- Aadhaar integration with banking services

- Direct Benefit Transfer programs

These initiatives have strengthened the digital financial ecosystem and encouraged citizens to adopt electronic payment systems.

5. Impact of Digital Payments on Financial Inclusion

5.1 Increased Access to Banking Services

Digital payment systems have significantly expanded access to banking services. Individuals who previously lacked access to physical bank branches can now perform financial transactions using mobile applications or biometric authentication.

This has reduced geographical barriers and made banking services more accessible to rural populations.

5.2 Reduction in Cash Dependency

The growth of digital payments has gradually reduced dependency on cash transactions. Digital payments offer greater convenience, security, and transparency compared to traditional cash-based systems.

Businesses, merchants, and consumers increasingly prefer digital transactions due to their efficiency.

5.3 Empowerment of Rural and Low-Income Populations

Digital payment systems have empowered rural communities by enabling easier access to financial services. AEPS has allowed individuals in remote areas to access banking services without requiring smartphones or internet connectivity.

This has improved financial participation among marginalized groups.

5.4 Enhanced Transparency and Accountability

Digital transactions create electronic records, which improve transparency and reduce corruption. Government benefit programs can be directly transferred to beneficiaries' accounts, minimizing leakages and ensuring efficient fund distribution.

6. Challenges in Digital Financial Inclusion

6.1 Digital Literacy Gap

Despite the growth of digital payments, many individuals lack the necessary digital literacy to use these systems effectively. Limited knowledge about mobile applications and online banking can hinder adoption.

6.2 Cybersecurity Risks



As digital transactions increase, the risk of cyber fraud and data breaches also rises. Users must be educated about cybersecurity practices to protect their financial information.

6.3 Infrastructure Limitations

In rural areas, inadequate internet connectivity and electricity supply can restrict the use of digital payment systems.

6.4 Trust and Behavioral Barriers

Some individuals remain hesitant to adopt digital payments due to concerns about security and reliability. Building trust in digital financial systems is essential for wider adoption.

7. Findings of the Study

The analysis of secondary data reveals several important findings:

1. Digital payment systems have significantly improved financial access in India.
2. UPI has emerged as the most widely used digital payment platform.
3. AEPS has played a crucial role in extending financial services to rural populations.
4. Government initiatives have been instrumental in promoting digital financial inclusion.
5. Challenges such as digital literacy and cybersecurity risks continue to affect adoption rates.

8. Suggestions

To further enhance financial inclusion through digital payments, the following measures are recommended:

- Increasing digital literacy programs in rural areas
- Strengthening cybersecurity frameworks
- Expanding internet infrastructure in underserved regions
- Encouraging financial institutions to develop user-friendly digital platforms
- Promoting awareness about digital financial services

9. Conclusion

The journey toward financial inclusion in India has been profoundly influenced by the rapid adoption of digital payment systems. UPI and AEPS have transformed the financial

landscape by enabling millions of individuals to access banking services conveniently and securely.

UPI has revolutionized digital transactions by providing an instant and user-friendly payment platform, while AEPS has ensured that even individuals without smartphones or internet connectivity can access financial services.

Although significant progress has been made, achieving complete financial inclusion requires continued efforts to address challenges such as digital literacy, cybersecurity, and infrastructural limitations.

With sustained policy support and technological innovation, digital payments have the potential to create a more inclusive financial ecosystem where every individual can participate in the formal financial system.