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Impact of UPI, AEPS and Fintech on Digital Financial Inclusion and Livelihoods in Rural India

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Abstract

This study looks at how UPI, AePS and FinTech are helping to increase digital financial inclusion and livelihood opportunities in rural India. It uses information from RBI, NPCI, NABARD, World Bank, Global Findex, PLFS and national government reports. This study checks the trends and indicators to see how digital transactions, access to banking services and livelihood related outcomes are changing. What the study found is that UPI and AePS are growing quickly with a lot of people in rural areas using them because the transactions are cheap and people can use their fingerprints to access them. This study shows that UPI and FinTech are really helping people in India by making it easier for them to use digital financial services. UPI is playing a role, in this by making transactions faster and cheaper. FinTech adoption improves account usage, business payments and income related activities among rural households. Livelihood indicators such as self-employment and non-farm income show upward movement alongside digital finance growth. Gaps persist in digital literacy, infrastructure and trust, leading to uneven outcomes across regions. This study contributes empirical evidence linking digital payment systems with rural livelihoods and offers policy relevant insights for inclusive digital finance strategies.

Keywords: Digital financial inclusion, UPI, AePS, FinTech, Rural livelihoods, Digital Payments.

Introduction

India experiences a change in the way people make payments online. The Reserve Bank of India is helping to make sure that people in areas have access to banking services. This is happening because of rules and plans made by the Reserve Bank of India.

The Reserve Bank of India is supporting ways for people to make payments like the Unified Payments Interface and the Aadhaar Enabled Payment System. These systems are making it easier for people in areas to use banks and not have to rely on cash all the time. New financial technology companies are also helping people in areas by giving them a way to save money get loans and make payments online. The Unified Payments Interface and the Aadhaar Enabled Payment System are really helping people in areas to get access to formal banking services. This is good, for businesses and people who work for themselves in rural areas. RBI reports indicate steady growth in low value digital transactions and account usage in rural and semi urban regions (RBI, 2022). Despite this progress, adoption remains uneven due to digital literacy gaps, infrastructure limitations and trust related concerns identified in rural finance studies (NABARD, 2022). Existing research largely focuses on access and usage indicators, while empirical evidence linking digital payments with income, employment and self-employment outcomes remains limited, highlighting the need for this study (World Bank, 2021).

Conceptualising Digital Financial Inclusion and its Significance

UPI, AePS, and FinTech are important online resources in the money system for rural areas. UPI lets families, farmers, and small businesses make cheap, fast payments. AePS allows people to use their biometric data to get into banking for money access and government payments, mostly in areas without many banks. FinTech tools give online loans, savings plans, insurance, and ways to pay to rural users who are often not included. These systems improve the ease and use of normal money services, which all together make up the idea of online money access (RBI, 2022). Greater money access helps with handling money better, taking part in markets, and different ways to earn money, which leads to better living like owning a business and jobs other than farming (World Bank, 2021). This thinking connects online payment options strongly to what happens in people's lives, not just if they can use money.

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It explains how money powered by tech helps to make income and grow money power in rural areas. The thinking helps in looking at facts by matching payment numbers with signs of how people live. Also, it helps in making plans that focus on open and results-based ways for online money in rural India

Literature Review

Recent literature highlights strong growth in digital payment adoption in rural India, with emphasis on UPI, AePS and FinTech driven inclusion. Kumar and Singh (2021) report rapid expansion of UPI and AePS after PMJDY and DBT rollout, showing improved access to basic banking services, while pointing to digital literacy and connectivity gaps. Mukherjee (2021) finds rising use of FinTech platforms among rural micro enterprises, linking digital payments with lower transaction costs and better cash flow, though livelihood outcomes remain under examined. Sharma (2020) shows AePS strengthens last mile banking and DBT access in rural areas, while operational issues such as biometric failures and trust concerns persist. Shukla and Bansal (2019) emphasise FinTech innovation and supportive regulation for micro entrepreneurs yet note limited empirical evidence on rural livelihood impact. Overall, existing studies focus on access and adoption, leaving outcome-oriented analysis as a clear research gap.

Statement of the Problem

Digital payment systems such as UPI, AePS and FinTech services are expanding fast in rural India. These systems aim to improve access to banking and reduce cash dependency. Many rural users still face issues related to digital literacy, infrastructure and trust. Usage remains uneven across regions and income groups. Evidence linking digital payments with livelihood improvement remains limited in

existing studies. Secondary data based clarity on how digital finance supports income, employment and self-reliance in rural India remains insufficient. This gap creates the need for a focused academic study.

Objectives of the study

1. To study the growth pattern of UPI and AePS transactions in rural India.
2. To analyse the role of UPI, AePS and FinTech services in enhancing digital financial inclusion in rural areas.
3. To examine the relationship between digital payment adoption and rural livelihood outcomes, and to suggest suitable policy measures based on findings.

Hypothesis of the Study

H₀: There is no significant relationship between UPI usage and rural financial inclusion.

H₁: There is a significant positive relationship between UPI usage and rural financial inclusion.

Investigation Study (Research Methodology)

This study utilizes a descriptive and analytical approach to investigate digital financial inclusion and livelihood results in rural India. This study utilizes secondary quantitative data to guarantee impartiality and nationwide representation. Data are gathered from RBI, NPCI, NABARD, World Bank Global Index, PLFS, NSSO, and pertinent government ministry publications. Indicators pertaining to UPI, AePS, FinTech adoption, financial inclusion, and rural livelihoods have been chosen for analysis. Time series data is utilized to analyze growth trends and patterns. Comparative analysis aids evaluation across different years and metrics. Tabular methods display information distinctly. Basic ratios and percentage evaluations aid in understanding.

Analysis and Interpretation

Table 1: Growth of UPI Transactions in India

Year	No. of UPI transactions (in billion)	Transaction value (in INR lakh crore)
2019	5.86	9.14
2020	12.52	21.31
2021	38.74	71.54
2022	74.05	125.95
2023	117.60	182.84

Source: RBI, NPCI, UPI Statistics, Settlement systems report.

The table 1 highlights the UPI transactions show sharp growth between 2019 and 2023. RBI reports indicate increasing participation from rural and semi urban users due to zero cost transactions and mobile

penetration. Rising transaction value reflects growing trust and routine usage for daily needs. This trend supports the objective related to expansion of digital payments in rural India (RBI, 2023; NPCI, 2023).

Table 2: AePS Transactions & Financial Access Indicators

Year	AePS Transactions (in crore)	Transaction value (in INR crore)	Share of Rural users %
2019	191	3,42,000	68
2020	266	5,12,000	71
2021	425	8,74,000	73
2022	512	10,21,000	74
2023	561	11,08,000	75

Source: NABARD, 2022; RBI, 2023

The figures in table 2 shows that Aadhaar Enabled Payment System (AePS) usage shows steady growth

with dominant rural participation. High rural share highlights reliance on biometric banking for cash

withdrawal and Direct Benefit Transfer (DBT) access. NABARD reports link AePS with financial access in low bank density regions. This finding supports the

role of AePS in strengthening basic financial inclusion.

Table 3: FinTech Adoption Indicators in Rural India

Indicator	2017 (in %)	2021 (in %)
Adults with bank accounts	63	78
Adults using digital payments	29	45
Mobile phone ownership	67	78
Digital payments for business use	18	32

Source: World Bank Global Findex Database

The table points out the FinTech and Digital Financial Inclusion indicators in Rural India. Various FinTech related indicators have improved with respect to account ownership and digital usage. Rise in

payment use for business shows livelihood link. The data shows improvement but also points to adoption gaps versus city levels. This answers the research question of irregular use.

Table 4: Rural Livelihood and Income Indicators

Indicator	2018	2022
Rural self-employment share (in %)	52	56
Average monthly rural household income (in INR)	8059	11782
Share of non-farm income (in %)	32	38
Rural workforce in non-agriculture (in %)	24	29

Source: PLFS and NSSO reports.

The table 4 indicates Rural self-employment and non-farm income rise. Research associates digital payments with smoother cash flows and access to markets for small producers. Although causality cannot be firmly established, synchronous expansion provides some evidence for the hypothesis that digital

finance could be related to livelihood outcomes. Rise in number of self-employed individuals and their non-farm income is also a reflection of large spread availability of digital transactions. Digital payments help rural workers and micro-enterprises to have smoother cash flows.

Table 5: Digital Agriculture and Market Access Indicators

Indicator	2019	2023
Farmers registered on eNAM (in lakh)	114	181
Value of eNAM trade (in INR crore)	36,000	88,000
No. of mandis integrated with eNAM	585	1,410
eNAM payments settled digitally (in %)	38	67
Farmers using digital payments for input purchases (in %)	22	41

Source: Ministry of Agriculture and eNAM dashboard

The table 5 shows the digital agriculture indicators and Market access in rural India portrayed a massive proliferation of digital farming infrastructure. Rise in number of mandis and digital transactions, settlement rate are reflective of increasing penetration of digital payments in Agri markets. High rates of digital payment used for input purchases may indicate increased financial access and transaction ease. These trends are consistent with the relationship between digital finance and livelihoods opportunities in rural India.

Results & Discussion

- Based on data analysis showing consistent growth in UPI transactions alongside improvement in inclusion indicators such as account usage and digital payments, the null hypothesis is rejected. The alternative hypothesis is accepted.
- FinTech related indicators from the Global Findex reveal improvement in bank account usage, digital payments for business purposes and mobile ownership in rural India.
- The parallel rise in livelihood indicators supports the argument that digital finance contributes to income diversification and self-employment,

though outcomes vary across regions and user groups.

- This study indicates a need for focused digital literacy programmes and improved rural digital infrastructure to reduce uneven adoption of UPI, AePS and FinTech services.
- Strengthening trust through better grievance redressal and awareness on digital security would support deeper usage.

Conclusion

The study examined digital payment growth, inclusion and livelihood linkages in rural India. Secondary quantitative methods supported objective analysis. Results indicate positive association between digital finance and rural livelihoods with persistent challenges. Hypotheses receive partial support due to mediating constraints. The study contributes to commerce research through integrated digital finance analysis. Policy implications include targeted literacy programmes and inclusive fintech design.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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