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Digital Payments and Financial Inclusion: Sustainable Finance Innovations in Rural Pune

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Abstract

Digital payments are changing the game for people who've been left out of India's financial system. UPI, mobile banking, Aadhaar-enabled services, and a whole range of new digital public tools are making money matters easier for everyone—especially in rural areas. The India has pushing for financial inclusion with programs like Pradhan Mantri Jan Dhan Yojana (PMJDY), Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA), and UPI. Thanks to these, digital payments are catching on, even in places that once relied almost entirely on cash.Take Pune district. It's famous for its industry and universities, but its rural corners still feel a world apart. Farmers and small traders out there juggle old-school ways of living with a rapidly modernizing financial world. While the cities or Talukas in Pune district have embraced digital payments, rural talukas like Velhe face real hurdles low digital literacy, patchy infrastructure, and several social and economic obstacles that slow down true financial inclusion. Still, research shows digital payments can make a real difference. They make money transfers cheaper and easier, cut down on cash hassles, bring more transparency, help the government send out benefits smoothly, and open up micro-credit for people who usually get ignored by big banksThis paper digs into how much digital payment innovations really help financial inclusion in rural Pune. It looks at the lay of the land Pune's geography and economy—the history of digital finance, and real-world data on how people use these tools. We pulled together stats from reports and ran our own surveys in several villages. We spoke to rural households, banking agents, shopkeepers, and local digital service folks to get the full picture. Of course, there are limits: our sample size isn't huge, and things like farming seasons and changing rules can affect the numbers.

Our findings are pretty clear: people with access to mobile internet and some education use digital payments more often. Young adults (18–35) are leading the charge, especially with UPI, and more and more village shops now accept QR code payments. The tables and graphs lay out who's using what, how often, and through which channels. Beyond just numbers, digital finance is helping rural producers and traders save money, get credit, and reach new markets—pushing real, sustainable economic growth.To wrap up, we push for better digital literacy programs, financial products that make sense for local needs, stronger infrastructure, and efforts to build trust in digital finance. Innovations in sustainable finance can truly pull rural Pune into India's digital economy and support broader goals of fairness and economic resilience.

Keywords: *Digital Payment, Financial Inclusion, Mobile Banking, Rural Development, UPI, Sustainable Finance, Pune District, Digital Literacy, Mobile Banking*

Introduction

Pune district sits in western Maharashtra, and it's big—over 9 million people, according to the 2011 Census. The literacy rate stands at 87.19%, which puts Pune among the more educated and densely populated districts in India. It's a mix of city and countryside. Some areas, like Velhe, Bhor, and Mulshi, are mostly rural. Take Velhe, for example: in 2011, about 54,500 people lived there, and the literacy rate was just under 76%. It's a different world compared to the city's fast-paced, urban core.

Historically, these rural parts supplied food and raw goods to Pune as the city grew and modernized. The late 20th century brought big changes: industries popped up, and education and IT boomed in the city. City folks found new jobs and opportunities, but a lot of the rural population stuck with traditional farming and crafts. Out in the villages, access to things like banks and digital payment agents stayed limited. Even though Pune's metro areas drive Maharashtra's GDP with strong manufacturing, IT, and service sectors, rural areas still lag behind.

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Fewer bank branches, not enough agents, and a lack of digital payment support make life harder for rural households.

Now, about digital payment and financial inclusion in India. Over the last decade, the scene has changed fast. The Unified Payments Interface(UPI) came along in 2016. Suddenly, sending money or paying at a shop with your phone got a whole lot easier. With UPI plugged into lots of banks and apps, digital payments started to reach even remote villages. It's quick, cheap, and works for almost everyone with a smartphone.

Other tools helped, too. Aadhaar gave people a way to prove who they are with their fingerprints or eyes, and common service centers (CSCs) popped up across the countryside. These centers—part of the Pradhan Mantri Gramin Digital Saksharta Abhiyan—teach digital skills and help rural folks make payments or use government services.

However, not everyone has benefited equally from digital payments. Approximately 38% of people in rural and semi-urban areas prefer UPI, according to surveys, but many still rely on visiting a bank branch. A number of factors come into play, including ingrained habits, inconsistent internet service, problems with trust, and disparities in gender equality and education. Thus, even as digital payments continue to proliferate, traditional and modern methods continue to coexist, particularly outside of urban areas.

Scope of the Study

This study looks at rural parts of Pune district and digs into how digital payment innovations are shaping financial inclusion and sustainable finance. Here's what's in focus:

1. How much are rural households actually using digital payments?
2. What economic and social factors are encouraging or discouraging people from using digital finance?
3. What effects do local initiatives and digital public infrastructure have?
4. What do the figures reveal about people's preferences, payment methods, and transactional patterns?

Objectives

The main goals here:

Figure out how widely digital payment systems have caught on in rural Pune, and how people are actually using them.

- See what digital payments are doing for financial inclusion—things like whether people are saving more, getting better access to credit, or joining the formal financial system.
- Pinpoint both the hurdles and opportunities for making digital finance work even better in rural areas.
- Suggest some real policy moves and practical steps to build stronger financial inclusion.

Methodology

We used a mixed-methods approach for this research.

- **For primary data,** we surveyed 600 people across six villages in Pune, making sure to include a mix of ages, income groups, and digital skill levels. To get their opinions, we also spoke with CSC operators, village banking agents, and local bank managers.

For secondery data We looked into government reports, scholarly articles, statistics on digital infrastructure, and reports on the use of digital payments in order to gather secondary data. The majority of the sources were current research on financial inclusion and digital payments in India.

For Data analysis –

In order to make sense of it all, we used frequency tables, descriptive statistics, and visual aids like pie charts and bars to show who is using digital payments, what they prefer, and what obstacles they face. When interpreting the results, we always considered the broader social and economic context.

Limitations

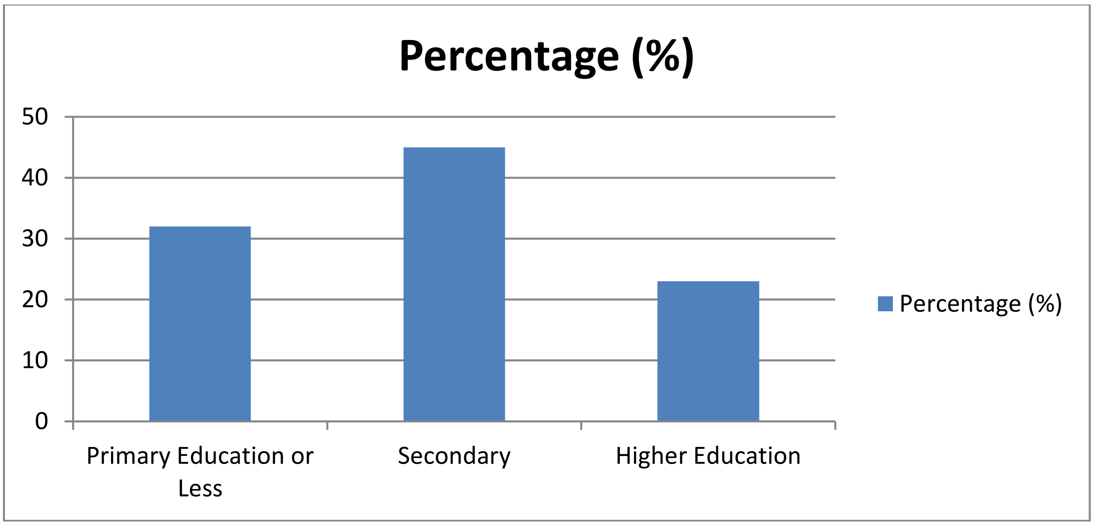
- Things change fast—how people use digital payments and manage their money can shift quickly, so this research captures just one point in time.
- A larger and more randomized sample would help make the results more broadly applicable, even though the sampling was intended for diversity.
- Local factors like the farming season or big events can mess with financial activity, so transaction patterns might not always be typical.

Descriptive Data Analysis

A. Digital payments adopted by education leval

Table 1

Variable	Percentage (%)
Primary Education or Less	32
Secondary	45
Higher Education	23



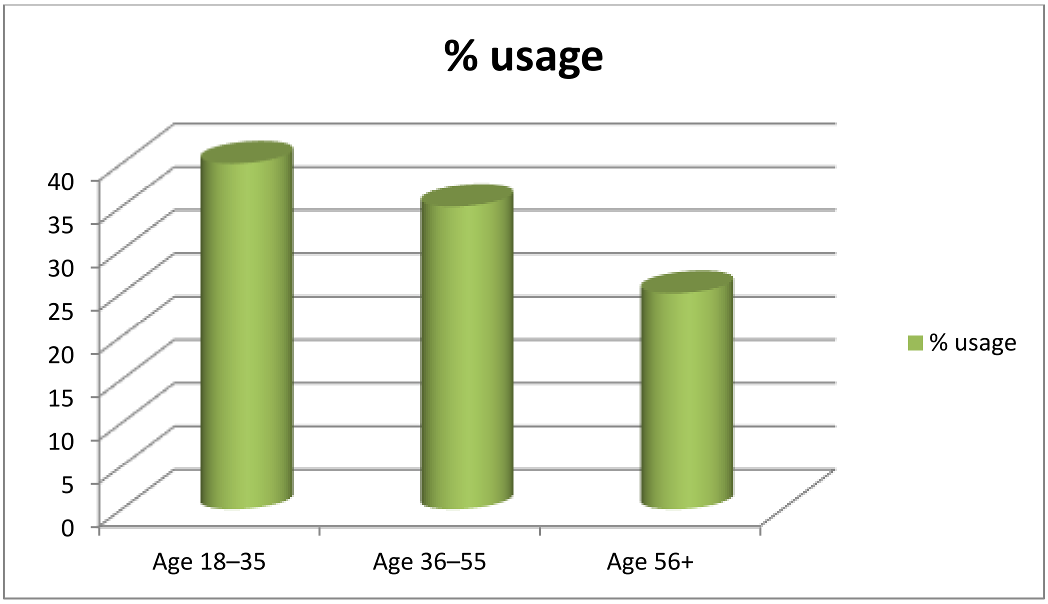
Graph 1

The graph makes it pretty obvious: people with more education use UPI and other digital payments way more than those with only primary schooling or less. So, it's not just about having a smartphone formal education and digital skills really open doors to financial services, especially in rural Pune.

B. Uses of digital payments (age wise)

Age Group	Percentage (%)
Age 18–35	40
Age 36–55	35
Age 56+	25

Table 2



Graph 2

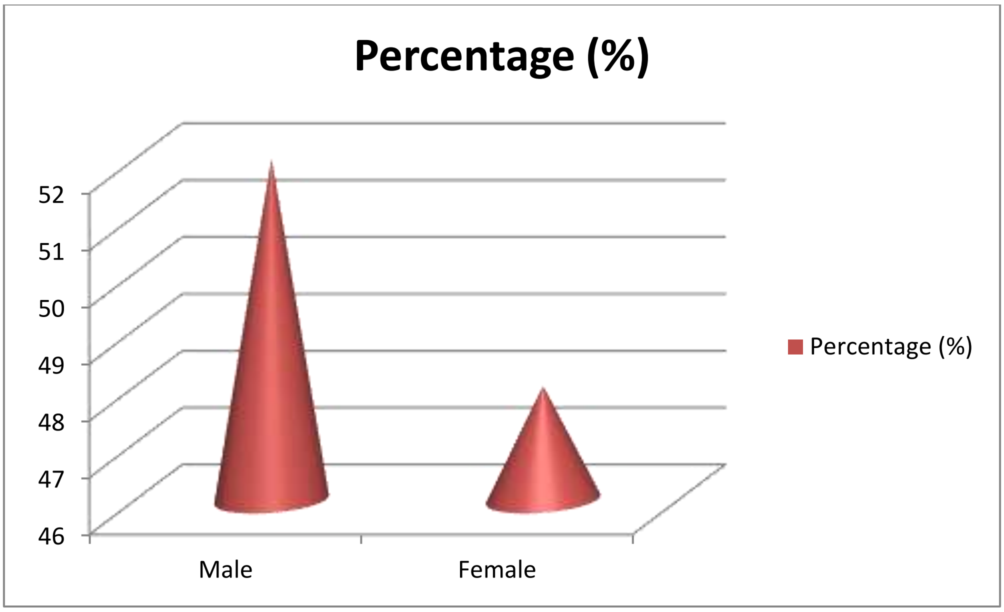
Interpretation:

If you look at digital payment usage by age, the story shifts a bit. Younger folks—those between 18 and 35—are leading the way, with the 36 to 55 crowd trailing behind. Once you get to people over 56, usage drops off a cliff. That's a classic generational gap. Older adults just aren't as comfortable with new tech for managing money. These findings highlight how crucial it is to assist seniors in developing their digital literacy and self-assurance so that everyone has an equal opportunity to use digital finance.

C. Uses of digital payments (genderwise)

Gender	Percentage (%)
Male	52
Female	48

Table3

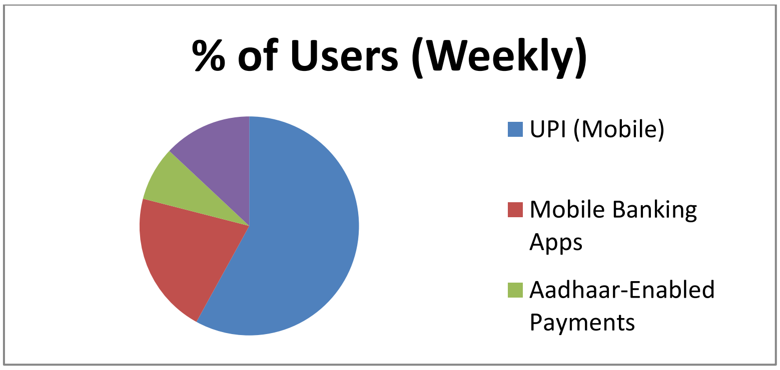


Graph 3
This Graph presents digital payment usage across gender wise groups i.e. Male and Female. The findings reveal that the highest adoption of digital payments is among the Male group

D. Digital Payment Usage Patterns

Payment Mode	% of Users (Weekly)
UPI (Mobile)	58
Mobile Banking Apps	21
Aadhaar-Enabled Payments	8
Cash-on-Delivery/Direct Cash	13

Table 4



Graph 4

Interpretation

Take a look at this graph—it shows how rural households are actually using different digital payment methods. UPI is way out in front, grabbing the largest chunk of transactions. Mobile banking apps come next, but after that, you see Aadhaar-enabled payments and good old cash sticking around with a smaller group of people.

UPI's popularity isn't really a surprise. It's simple, works across different banks, and doesn't cost much, so it fits rural needs really well.

now, some people stick with cash. That usually comes down to things like not having a smartphone, struggling with digital stuff, or just not trusting the safety of online payment. This all points to the need for stronger digital trust, better infrastructure, and more support right where people live.

All over performance:

digital payments especially UPI are pushing financial inclusion forward in rural Pune. Education and age play a huge role in who adopts what, and support from things like banking correspondents or Common Service Centres helps close the gap. Still, digital literacy, solid infrastructure, and trust are challenges we can't ignore if we want rural finance to really work for everyone.

Findings

- Adoption Drivers: The adoption of digital payments was greatly aided by mobile phone ownership and network coverage. Digital payment methods were more common among younger respondents and those with higher levels of education.
- Urban-Rural Divide: While rural respondents frequently rely on UPI and sporadic bank branch

interactions, urban centers within Pune district exhibit more varied digital finance engagement.

- Digital Literacy: Some segments' adoption was hindered by their inability to use mobile banking apps and their fear of digital fraud.
- Institutional Support: Common Service Centres and bank agent networks helped bridge gaps but require enhanced resourcing and outreach.

conclusion

In rural Pune, digital payments are more than just a fad; they are essential to financial inclusion. The widespread use of UPI demonstrates how simple and accessible it is, and digital public infrastructure connects the entire system. Rural residents have a genuine chance at better lives when they can save, borrow, and access formal finance with ease. However, things aren't always easy. Some people fall behind in the absence of improved digital skills, more robust infrastructure, and initiatives to address inequality. The things that will drive rural finance toward true inclusion and long-term change are targeted training, larger agent networks, and products that genuinely fit people's lives.

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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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