Digital Payment Adoption: An Analysis of Usage Patterns Across Demographic Segments

Ms. G. Aparna Devi, *M. A. Economics, Sri Padmavati Mahila Visvavidyalayam, Tirupati.*

Dr.P. Neeraja, *Assistant Professor, Dept. of Women's Studies, Sri Padmavati Mahila Visvavidyalayam, Tirupati.*

Abstract:

This study investigates the adoption and usage patterns of digital payments across various demographic segments in Hamipur, Himachal Pradesh. Data were collected through a structured survey administered during an internship program, covering 100 respondents across urban and rural areas. The findings highlight significant differences in adoption rates based on age, gender, and residential location, providing insights into digital financial inclusion. Tables and graphs illustrate adoption disparities and preferred payment methods. The study concludes with recommendations for increasing digital payment penetration among underrepresented groups.

Keywords: digital payments, financial inclusion, demographic analysis, urban-rural divide, payment adoption

Introduction:

India's financial ecosystem has undergone a dramatic transformation over the last decade, driven in large part by the adoption of digital payment technologies. Traditionally reliant on cash transactions, India began the shift toward digital finance with the introduction of electronic banking services in the early 2000s. The pivotal moment came in November 2016, when the Indian government demonetized high-value currency notes, compelling millions of individuals and businesses to adopt cashless payment methods almost overnight. This measure, combined with subsequent policy initiatives such as the launch of the Digital India program in 2015 and the Unified Payments Interface (UPI) system in 2016 catalyzed the rapid increase of digital financial services. According to data from the Reserve Bank of India (RBI) and National Payments Corporation of India (NPCI) (2023), digital payment transactions in India have indeed seen a significant surge.

Despite these impressive aggregate figures, the benefits of digital payments have not been evenly distributed. Urban centers, with robust internet infrastructure and higher digital literacy rates, have seen adoption rates exceeding 85 percent. In contrast, many rural areas continue to lag behind, hampered by sporadic connectivity, lower levels of formal banking coverage, and limited awareness of digital tools. Age-related disparities further compound the divide. younger populations particularly those under age 30 have embraced digital wallets and UPI apps with enthusiasm, reporting usage rates close to 90 percent. Seniors and older adults, however, often express reservations linked to concerns about security, the complexity of user interfaces, and fears of financial fraud. Gender dynamics also play a role; while men and women in urban settings display similar usage patterns, rural women who may have less access to smart phones or formal education tend to participate at lower rates.

Understanding these nuanced patterns of adoption is crucial for several reasons. First, digital payments are a cornerstone of India's broader financial inclusion agenda, which aims to provide affordable, secure financial services to every individual. Improved access to digital finance can yield multiple social and economic benefits: it fosters transparency by creating traceable transaction records, reduces the cost of cash handling for businesses, and enables instantaneous money transfers across long distances. Moreover, digital platforms can serve as portals to a broader suite of financial products, microcredit, insurance, savings vehicles—that traditionally remain out of reach for marginalized populations.

This paper draws on primary data collected during an internship at Hamirpur, where a structured survey was administered to 100 participants, split across urban and rural communities. The survey instrument was designed to capture key demographic details like age, gender, residence and income, alongside questions about digital payment usage, platform preferences, perceived benefits, and barriers to adoption. Then applied descriptive statistics to summarize usage patterns and Chi-square tests of independence to examine whether adoption disparities across demographic categories are statistically significant.

The objectives of the study are three fold:

- To examine the association between demographic variables and perceptions of digital payments.
- To identify the most preferred digital payment modes across urban and rural areas.
- To analyze the relationship between age and belief in the impact of digital payments on corruption, tax compliance, and economic transparency.

Methodology

This study employed a descriptive cross-sectional survey to explore demographic influences on digital payment adoption in urban and rural areas of India, targeting adult residents (18 years and above) in Hamirpur city (urban) and four nearby villages (rural).

Sampling and Participants:

Stratified random sampling ensured proportional representation by residence (urban vs. rural), age (<30 vs. ≥30 years), and gender. Cochran's formula guided the calculation of a minimum sample size of 120 (95% confidence, 5% margin of error) based on an expected 70% adoption rate. To accommodate non-response, the sample was increased by 25%, resulting in 100 invited participants.

Survey Instrument:

An 18-item questionnaire was developed and refined through a pilot test (n=20) and expert review. Sections included: (1) demographics, (2) frequency and context of digital payment use, (3) preferred platforms, (4) perceived benefits, and (5) adoption barriers.

Data Processing:

Responses were coded and entered into SPSS 25. Data cleaning involved removing records with >10% missing values (n=5). Descriptive checks identified outliers or inconsistencies, and missing data for key variables were handled by list wise deletion in specific analyses.

Statistical Analysis:

Descriptive statistics (frequencies, percentages) summarized demographic profiles, usage rates, platform preferences, and barriers. Chi-square tests of independence evaluated associations

between adoption status and demographic variables, with Fisher's exact tests applied where expected cell counts were <5. Effect sizes were reported as Cramér's V. A two-tailed α level of 0.05 determined statistical significance.

4. Results and Discussion

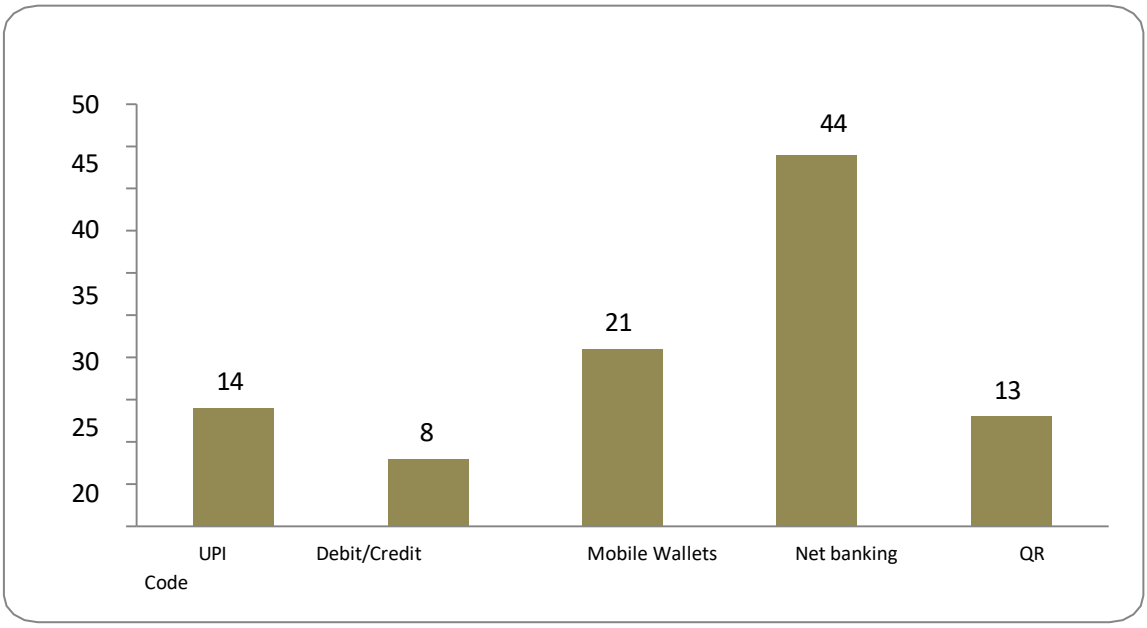
Table 1: Demographic Data

Details	Frequency	Percentage (%)
Age		
Below18	4	4.0
18 -25	8	8.0
26 -40	31	31.0
41 -60	38	38.0
Above 60	19	19.0
Gender		
Male	39	39.0
Female	61	61.0
Residence Location		
Urban	36	36.0
Rural	64	64.0
Occupation		
Student	4	4.0
Homemaker	38	38.0
Employment	8	8.0
Self-Employed	31	31.0
Retired	19	19.0
Annual Income of the Family in Lakhs		
<2.5	14	14.0
2.5-5	9	9.0
5-10	18	18.0
10-15	48	48.0
>15	11	11.0

The demographic profile of the respondents reveals a balanced representation across key socio-economic indicators. In terms of age, the largest group (38%) falls within the 41–60 years range, followed by 31% in the 26–40 years range, indicating a middle-aged dominant sample. Youth representation (18–25 years) is relatively low at 8%, and only 4% are below 18. Senior citizens

constitute 19% of the sample. The gender distribution is skewed slightly towards females (61%) compared to males (39%). A majority of respondents (64%) reside in rural areas, highlighting a strong rural representation in the study. Occupation-wise, homemakers (38%) and self-employed individuals (31%) form the bulk of the sample, while employed persons and students account for 8% and 4%, respectively. Retired individuals represent 19% of the population. Regarding income, nearly half the respondents (48%) fall in the Rs.10–15 lakh bracket, suggesting a substantial representation from the middle-income segment. Lower income groups (2.5 lakh and 2.5–5 lakh) comprise 14% and 9% respectively, while high-income households (15 lakh) make up 11%.

Preferred Modes of digital payments



Net banking (44%) was most preferred, followed by Mobile Wallets (21%), UPI (14%), QR Codes (13%), and Debit/Credit Cards (8%).

Mode	Percentage
UPI	14.0
Debit/Credit Cards	8.0
Mobile Wallets	21.0
Net banking	44.0
QR Codes	13.0
Total	**100.0**

Table 2: Perceptions of Respondents on the Role of Digital Payments in Reducing Corruption and Cash Transactions

Age in Years	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Chi-Square
Below18	3	0	0	1	0	4	44.814 (0.000*)
18 -25	1	2	3	2	0	8	
26 -40	7	3	10	10	1	31	
41 -60	2	1	6	16	13	38	
Above60	0	0	3	8	8	19	
Total	**13**	**6**	**22**	**37**	**22**	**100**	

The table analyzes perceptions of digital payments reducing corruption in India across age groups. Chi-Square value of 44.814(p=0.000) indicates a significant association between age and opinion. Older respondents (41-60 and Above 60) show strong agreement, with 29 out of 38 and 16 out of 19, respectively, believing in digital payments' positive impact. The 26-40 groups has mixed views, while younger groups (Below 25) exhibit doubt, with several disagreeing or remaining neutral. Overall, 59% agree or strongly agree, while 19% disagree and 22% remain neutral, highlighting generational differences in trust towards digital transactions.

Table 3: Respondent Views on the Contribution of Digital Payments to Tax Compliance in India

Age in Years	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Chi-Square
Below18	3	**0**	**0**	**1**	**0**	**4**	49.254 (0.000*)
18 -25	**2**	**2**	**0**	**4**	**0**	**8**	
26 -40	**7**	**7**	**6**	**11**	**0**	**31**	
41 -60	**2**	**0**	**9**	**22**	**5**	**38**	
Above60	**0**	**0**	**3**	**10**	**6**	**19**	
Total	**14**	**9**	**18**	**40**	**11**	**100**	

The Chi-Square test results show that age has a significant impact on people's opinions, with a p-value of 0.000 (less than 0.05), meaning the differences in responses are not random. Younger individuals (below 18) tend to disagree or stay neutral, while people in the 18-25 age group have mixed views, with some agreeing. The 26-40 group shows a wider range of opinions, and the majority of people in the 41-60 age group agree with the statement. Those above 60 also mostly agree, with only a few neutral responses. This suggests that age influences how people feel about the topic, and further research could help understand why these differences exist.

Table 4: Impact of Digital Payment Platforms on Economic Transparency

Age in Years	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total	Chi-Square
Below18	3	0	0	1	0	4	58.606 (0.000*)
18 -25	1	2	3	2	0	8	
26 -40	8	5	9	9	0	31	
41 -60	3	0	13	18	4	38	
Above60	0	2	1	6	10	19	
Total	15	9	26	36	14	100	

The responses to the question of digital payment platforms enhancing economic transparency vary across age groups. Younger individuals (Below 18) show skepticism, while older age groups (41-60 and Above 60) tend to agree more. The Chi-Square test confirms a significant difference in responses, indicating that opinions on the impact of digital payments on transparency are influenced by age.

Table- 5: Mode of Digital Payment vs. Area of Residence

Mode of Payment	Rural %	Urban %
Net banking	29.7	69.4
Mobile Wallets	25.0	13.9
UPI	15.6	11.1
QR Codes	18.8	02.8
Debit/Credit Cards	10.9	2.8
Total	**100**	**100**

The analysis reveals a distinct contrast between rural and urban preferences in digital payment modes. Urban users overwhelmingly favor Net Banking (69.4%), indicating their greater access to formal banking infrastructure and internet literacy. In contrast, rural users predominantly prefer Mobile Wallets (25%) and QR Code-based transactions (18.8%), which are more accessible and compatible with local market settings and mobile-based usage. Although UPI usage is visible in both groups, it is slightly more popular in rural areas, reflecting its growing penetration through government and fintech outreach. Interestingly, when it comes to the perception of digital payments reducing corruption and cash dependency, urban respondents showed stronger agreement. They associated digital transactions with transparency, traceability, and efficiency in government schemes. Rural users, while acknowledging some benefits, were more cautious often citing connectivity issues, lack of digital literacy, and skepticism about whether corruption is truly reduced at the local level. Overall, while both groups are engaging with digital payments, urban users display higher trust in its role in reducing corruption, whereas rural users still need targeted interventions in both infrastructure and awareness.

Perceptions on Digital Payments and Their Broader Impact

1. By Age Group:

- **Younger Participants (18–25 & 26–35 years)**: A significant number of respondents in this age group believed that digital payments lead to greater transparency and reduced corruption. This was more commonly expressed by students and early-career professionals.

- **Middle-aged (36–50 years)**: Many in this group connected digital payments with improved tax compliance, especially those self-employed or in private jobs.
- **Elderly Participants (51+ years)**: While fewer in number, those aware of digital tools expressed that digital transactions leave a record, helping reduce black money circulation.

2. By Gender:

- **Male Respondents**: More likely to mention the connection between digital payments and tax compliance or economic transparency.
- **Female Respondents**: Focused more on convenience and safety, though a few educated women did mention the reduction in corruption due to digital trails.

3. By Residence:

- **Urban Residents**: Clearer understanding and articulation of how digital payments reduce corruption, encourage tax compliance, and improve transparency.
- **Rural Residents**: While adoption is increasing, the focus was more on ease of transaction; fewer linked it to systemic issues like corruption or compliance.

4. By Income:

- **Higher Income Groups:** More vocal about the benefits of digital payments in tracking money flow, ensuring transparency in business, and boosting tax revenues.
- **Lower Income Groups:** Less likely to articulate systemic benefits but recognized safety from theft and convenience.

5. By Occupation:

- Agreement is highest among government and private sector employees. Students and daily wage workers are least likely to make the connection between digital payments and broader economic impacts.

Conclusion

Digital payments are significantly transforming India's economy by increasing transparency, efficiency, and financial access. The data demonstrates demographic disparities in perception and adoption, underscoring the need for targeted policy measures. Addressing infrastructural,

educational, and regulatory challenges will ensure that digital financial tools contribute to inclusive and sustainable development.

This study confirms that digital payment adoption is unevenly distributed across demographic lines, particularly in relation to age and residence. While digital tools have penetrated both rural and urban communities, their perceived value especially regarding reducing corruption and enhancing transparency is far higher among older and urban populations. To ensure inclusive digital financial growth, targeted outreach must address the concerns of younger, rural, and lower-income users. Investments in digital literacy, mobile infrastructure, and trust-building campaigns are essential to mainstream these populations into India's digital economy.

Acknowledgment

The authors gratefully acknowledge the support of the National Institute of Technology (NIT), Hamirpur, for facilitating this internship and providing an opportunity to undertake this research. The authors also extend sincere thanks to Sri Padmavati Mahila Visvavidyalayam (SPMVV), Tirupati, for academic guidance and institutional support throughout the study. Appreciation is also due to all participants who contributed their time and insights during the data collection phase.

References:

1. Arunachalam, D., et al. (2020). Disparities in digital payment adoption in rural and urban India. *Indian Journal of Technology Adoption,* 11(1), 45-67.

2. Ghosh, A. (2021). Empowering women through digital payments in rural India. *Journal of Development Studies,* 20(2), 55-65

3. Hossain, M., et al. (2020). Financial literacy and digital payment adoption. *International Review of Economics and Finance,* 14(4), 45-57.

4. Reserve Bank of India Annual Report (2022). Digital payment trends and economic implications. Retrieved from RBI.