



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## The Rise Of Digital Payments: Has UPI Reduced Cash Dependence?

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### Abstract:

This study examines whether the rapid adoption of Unified Payments Interface (UPI) has reduced India's dependence on cash transactions. Using primary survey data collected from respondents aged 15–70 across varied occupational groups, the paper analyses patterns in payment behaviour and the socio-economic factors influencing them. Descriptive statistics and chi-square tests are employed to examine the relationship between demographic variables specifically age and occupation and mode of payment (digital or cash). The findings indicate a strong and statistically significant association between these variables and payment choices, highlighting UPI's growing dominance in everyday transactions. While digital payments have clearly expanded financial inclusion and convenience, the persistence of cash usage among certain groups suggests that India is transitioning rather than fully moving away from cash. The paper concludes that UPI has substantially reduced reliance on cash, though structural and behavioural factors continue to shape payment preferences.

**Key words:** Digital Payment, UPI-Unified Payments, Payment Behaviour

### Introduction:

India's payment ecosystem has undergone a profound structural shift over the last decade. For much of its economic history, cash functioned as the backbone of everyday transactions, from informal street markets to formal commercial exchanges. This reliance on physical currency was shaped by uneven access to banking infrastructure, limited digital literacy, and a deep cultural trust in tangible money as a secure medium of exchange. As a result, cash was not merely a payment instrument but a social norm embedded in daily economic life.

The rapid expansion of digital infrastructure has begun to challenge this long-standing dominance of cash. Increased smartphone penetration, affordable internet access, and targeted government initiatives aimed at financial inclusion have collectively accelerated India's transition toward digital payments. Within this broader transformation, the launch of the Unified Payments Interface (UPI) in 2016 marked a decisive turning point. Designed as a real-time and interoperable payment system, UPI enabled

seamless bank-to-bank transfers using mobile devices. By eliminating the need for complex banking details and reducing procedural barriers, UPI significantly lowered the entry cost for digital payments, particularly for first-time and non-urban users. Its simplicity and reliability allowed digital transactions to extend beyond urban, formal spaces into informal and small-scale economic settings.

Over time, UPI has evolved from a supplementary payment option into a central component of India's financial architecture. It is now widely used across a diverse range of transactions, from high-value commercial payments to small, everyday purchases. In this sense, India presents a unique global case. While many advanced economies transitioned to digital payments through credit cards and point-of-sale systems, India has leapfrogged directly to mobile-based, account-to-account transfers. This distinguishes India's digital payment journey from that of countries in North America and Europe and aligns it more closely with emerging digital payment models in parts of East Asia and Africa.

The growing dominance of digital payments carries significant economic and social implications. Digital transactions enhance transparency, reduce transaction costs, and support the formalisation of economic activity. They also generate data trails that can improve financial planning, credit access, and policy design. However, the benefits of this transformation may not be evenly distributed. India's population is highly diverse, with sharp variations in age, occupation, income stability, and access to digital resources. These differences raise a critical question about the nature of India's payment transition. Rather than a uniform move away from cash, the shift may reflect uneven adoption shaped by demographic and socio-economic factors.

This study seeks to examine whether the rise of UPI has reduced India's dependence on cash across all sections of society or whether cash continues to play a significant role for specific groups. Using primary survey data, the paper analyses how age and occupation influence payment behaviour and preferences. By situating these findings within both a national and global context, the study aims to assess whether India's journey toward a cash-light economy is inclusive and balanced or characterised by persistent structural disparities.

## Literature review

Kulangi, S. S. and Khan, A. (2025), *The Rise of UPI: A Technological Shift Towards a Cashless Economy in India* examine how UPI has reduced cash dependence by increasing the speed, convenience, and accessibility of digital payments. Using data from RBI and NPCI, the study shows rapid growth in UPI transactions while also noting that adoption varies across socio-economic groups due to differences in digital literacy and infrastructure. This paper is relevant as it highlights demographic factors influencing payment behaviour, which aligns with the focus of the present study.

Hire, K. A. (2025), *Impact of UPI and Digital Payments on E-Commerce Adoption in India* analyses how UPI has facilitated digital transactions by lowering costs and reducing friction for consumers and

businesses. The study finds that although UPI has expanded digital payment usage, cash-based practices persist in certain segments due to trust and habit. This research supports the argument that digital payments coexist with cash, making it important to study factors such as age and occupation.

Rai, A. K. (2025), *From Cash to Clicks: UPI's Role in Shaping Digital Payments in India* explores India's shift from cash to digital payments through the growth of UPI. The study highlights a transition from person-to-person to person-to-merchant transactions and emphasises UPI's role in financial inclusion. However, it also notes uneven adoption due to differences in access and digital readiness, directly supporting the present study's examination of demographic influences on payment choices.

### Objectives:

- To examine the extent to which the adoption of Unified Payments Interface (UPI) has reduced dependence on cash transactions in India.
- To analyse the influence of demographic factors, specifically age and occupation, on payment behaviour and preferences between digital payments and cash.
- To assess whether the shift towards digital payments via UPI is inclusive across different socio-economic groups.
- To identify patterns and relationships between mode of payment and demographic variables using descriptive statistics and chi-square tests.
- To provide insights into the persistence of cash usage among certain groups despite the rise of digital payment systems.
- To suggest measures for enhancing digital payment adoption and financial inclusion among cash-dependent populations.

### Research methodology:

The research methodology employed in this study is primary research, focusing on a diverse sample of respondents aged 15 to 70 years. The participant pool includes various occupational categories such as students, working professionals, self-employed individuals, homemakers, retirees, and others, ensuring a broad representation of socio-economic backgrounds.

Data collection was conducted through structured surveys designed to capture respondents' payment preferences between digital modes, primarily Unified Payments Interface (UPI), and cash transactions. The survey instrument included questions targeting demographic information alongside payment behaviour patterns.

For data analysis, descriptive statistics were utilized to summarize and present the distribution of payment preferences across different demographic groups. To examine the relationships between demographic variables—specifically age and occupation—and mode of payment, chi-square tests of independence were applied. This inferential statistical method allowed for testing the significance of associations between categorical variables, with results interpreted based on p-values and measures of association strength such as Cramér's V.

This methodological approach enables a quantitative assessment of payment behaviour trends and the influence of key demographic factors, providing insights into the inclusivity and extent of digital payment adoption in India.

## Results and Data Visualization

The following section presents graphical representations of the survey data collected to illustrate patterns in payment preferences among different demographic groups. These visualizations provide a clear overview of the dominance of UPI-based digital payments, the continued role of cash, and respondents' perceptions related to spending behaviour.

### 1. Mode of Payment Preference among Respondents:

Figure 1, illustrates the distribution of payment preferences within the surveyed population. A majority of 61% of respondents prefer UPI-based digital payments such as Google Pay and PhonePe, demonstrating UPI's dominant role in India's payment ecosystem. The preference for digital payments is driven by factors such as convenience, speed, zero transaction costs, and broad vendor acceptance. Cash remains the second most preferred mode at 25%, indicating its continued relevance due to habit, trust, ease of use for small transactions, and accessibility for specific groups. Credit/Debit cards have moderate usage, indicating acceptance but less convenience or accessibility compared to UPI. Net banking is the least preferred mode, possibly due to its relatively time-consuming process and limited suitability for day-to-day transactions. Overall, the data reflects a shift toward quick, user-friendly digital payment methods, with UPI emerging as the dominant choice while traditional modes like cash and net banking play a secondary role.

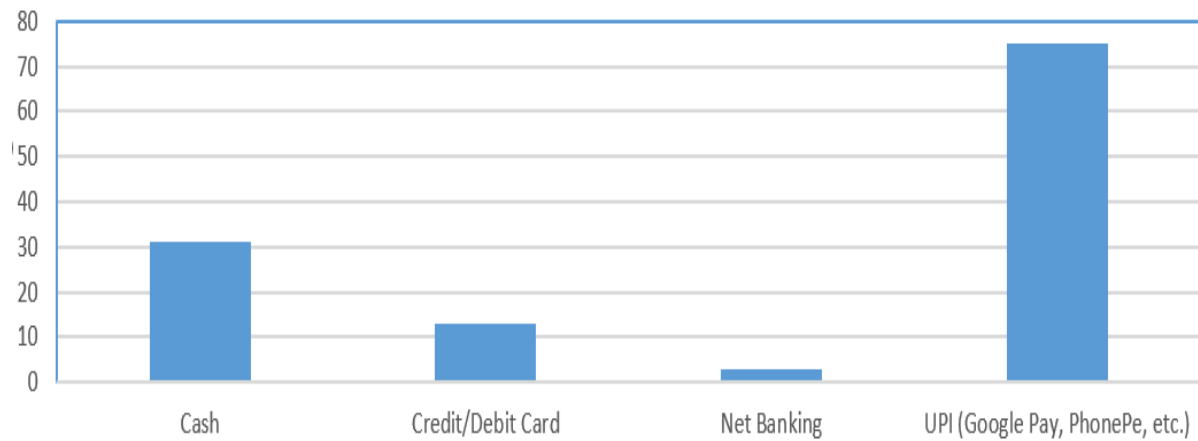


Fig. 1: Mode of Payment Preference among Respondents

## 2. Dependence on Cash Across Respondents

Figure 2 illustrates dependence on cash among the surveyed participants. The largest group uses both cash and digital modes equally, showing a balanced approach rather than complete reliance on one system. A substantial proportion rarely uses cash, reinforcing the trend toward digital transactions in daily life. Results emphasize the significant adoption of UPI-based digital payments, with 34% respondents saying they rarely use cash, while also reflecting the continued presence of cash as a preferred mode for a substantial minority. This distribution underscores the coexistence of digital and cash payment systems within the current economic environment. The data indicate a mixed but predominantly digital payment behaviour among respondents. Only a small segment is completely cashless, suggesting that while digital payments are popular, total elimination of cash is still uncommon. Very few respondents are fully dependent on cash, indicating declining reliance on cash-only transactions. Overall, the findings suggest a gradual transition toward digital payments, with most respondents maintaining flexibility by using both cash and cashless options rather than fully abandoning cash.

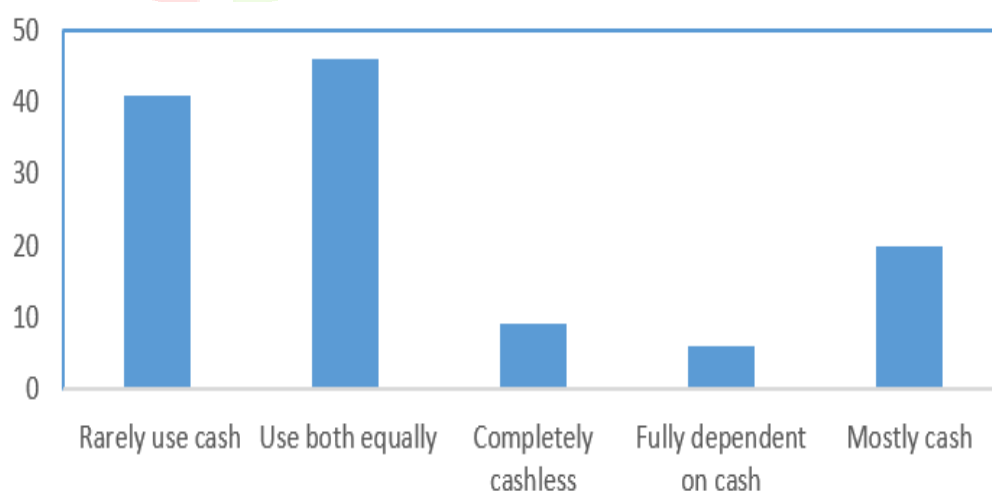


Fig.2: Dependence on Cash Across Respondents

### 3. Respondents' Perception of Spending Consciousness Using UPI vs. Cash

Figure 3 presents respondents' perceptions regarding their spending awareness when using UPI compared to cash. A large majority (57%) report feeling less conscious or restrained when spending via UPI, suggesting that digital payments reduce the psychological "pain of paying." The absence of physical money exchange may lead to reduced spending restraint, which has implications for financial behaviour and budgeting among digital payment users. A smaller group disagrees, stating they do not feel less conscious while using UPI, which implies they maintain spending awareness regardless of the payment mode. The "not sure" segment is relatively limited, indicating that most respondents have a clear perception of their spending behaviour. Overall, the data highlights that UPI usage is associated with a higher tendency toward impulsive or less mindful spending when compared to cash, an important insight for understanding consumer behaviour in digital payment ecosystems.

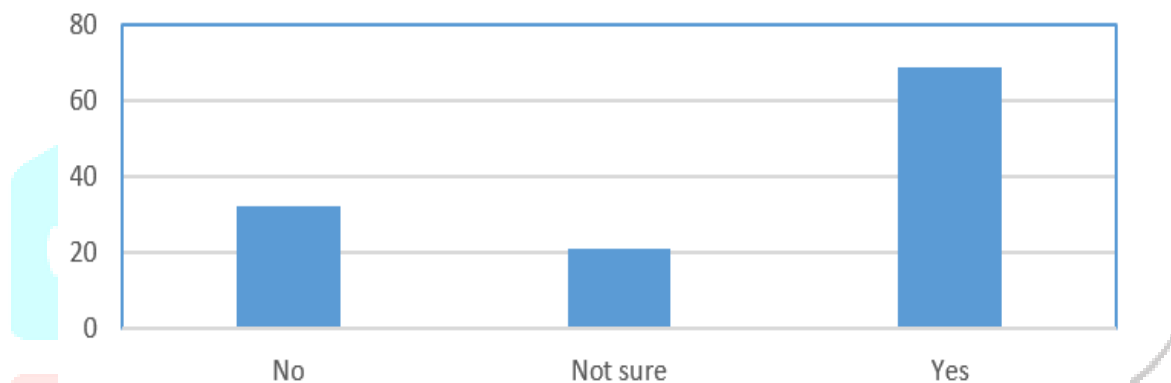


Fig 3: Respondents' Perception of Spending Consciousness Using UPI vs. Cash

### Hypothesis testing

#### Hypothesis 1: Relationship between Age and Mode of Payment

The chi-square ( $\chi^2$ ) test was conducted to check the relationship between age group and mode of payment. Results are as follows:

Null hypo ( $H_0$ ): *There is no significant relationship between age group and mode of payment*

Alternative hypo ( $H_a$ ): *There is a significant relationship between age group and mode of payment*

Table 1

|                            | Chi <sup>2</sup> | p    | Cramér's V |
|----------------------------|------------------|------|------------|
| Mode of Payment- Age Group | 13.78            | .001 | 0.34       |

As is can be seen in Table 1, the p-value (0.001) is less than the significance level of 5% (0.05), the result is statistically significant. Therefore, the null hypothesis is rejected. This implies that age influences payment behaviour, with older respondents showing a stronger preference for digital payments, while younger respondents exhibit a more balanced use of digital and cash modes. The moderate value of Cramér's V (0.34) indicates a moderate strength of association between the two variables.

Older respondents tend to prefer digital payments due to greater financial stability, higher transaction values, and increased trust in formal banking systems. Over time, repeated use reduces apprehension towards technology. Younger respondents, despite being digitally savvy, often continue using cash due to lower income levels, peer-to-peer cash exchanges, and limited need for formal financial records.

#### Hypothesis 2: Relationship between Occupation and Mode of Payment

The chi-square ( $\chi^2$ ) test was conducted to examine the relationship between occupation and mode of payment (digital or cash).

Null Hypothesis ( $H_0$ ): There is no significant relationship between occupation and mode of payment.

Alternative Hypothesis ( $H_1$ ): There is a significant relationship between occupation and mode of payment.

Table 2:

|                            | Chi <sup>2</sup> | p-value | Cramér's V |
|----------------------------|------------------|---------|------------|
| Mode of Payment-Occupation | 15.72            | < .001  | 0.36       |

As shown in Table 2, the p-value (< .001) is lower than the significance level of 5% (0.05). Therefore, the result is statistically significant and the null hypothesis is rejected. This indicates that occupation has a significant influence on payment behaviour.

The value of Cramér's V (0.36) suggests a moderate strength of association between occupation and mode of payment, implying that employment status meaningfully affects how individuals choose between cash and digital payments.

The analysis indicates clear differences in payment preferences across occupational groups. Salaried individuals show a higher preference for digital payments, which can be attributed to regular income flows, salary-linked bank accounts, and greater exposure to formal financial systems. Self-employed individuals exhibit a mixed preference between cash and digital modes, reflecting the informal nature of many of their transactions where cash continues to play an important role. In contrast, non-working respondents demonstrate a relatively higher dependence on cash, possibly due to limited independent access to digital payment platforms and lower transaction frequency. Overall, these variations suggest

that occupation significantly influences payment behaviour, reinforcing the idea that digital payment adoption in India is shaped by socio-economic factors rather than being uniform across all groups.

### **Suggestions:**

#### **1. Deepen digital financial capability**

UPI literacy efforts should move beyond “how to use the app” and focus on “how to manage money digitally.” Studies show that digital payment adoption often outpaces users’ understanding of budgeting, tracking expenses, and identifying overspending risks, especially in low-literacy segments.

Programmes should therefore teach users to read transaction histories, set simple digital budgets, and recognise impulsive spending that comes with frictionless payments, so that UPI convenience translates into long-term financial discipline rather than hidden vulnerability.

#### **2. Build behavioural nudges into UPI**

Behavioural design can be embedded directly into UPI apps to promote mindful spending without curbing choice.

Useful features include:

- Real-time alerts for crossing weekly or monthly spend thresholds
- Auto-generated category-wise summaries (food, travel, online shopping)
- Optional “cool-off” prompts for unusually large or late-night payments

Evidence from fintech apps shows that smart, well-timed nudges significantly improve budgeting and saving behaviour while keeping the user experience seamless.

#### **3. Address structural barriers to cash-dependent users**

Even with UPI’s rapid scale-up, older adults, low-income women, and rural users still face digital and financial literacy gaps, along with connectivity and fraud concerns.

Policy and product design should prioritise:

- Simplified, icon-driven interfaces in local languages
- Assisted digital services via bank mitras, SHGs, and community centres
- Hybrid models that allow partial cash use while gradually building comfort with UPI

This reduces exclusion and hesitation without forcing a complete and sudden break from cash.

#### 4. Deepen digital adoption among small and informal businesses

Micro and small vendors often remain cautious about UPI because of compliance fears, tax scrutiny via digital trails, and doubts about cost and dispute resolution, even though they recognise its convenience.

To build durable trust, policymakers should combine:

- Stable, low or zero merchant charges for small-ticket payments
- Simple, one-stop onboarding with handholding on GST and record-keeping
- Fast, accessible grievance redressal and technical support in local markets

Such measures can reduce cash dependence while ensuring that formalisation via UPI feels beneficial, not punitive, for India's informal enterprises.

#### Limitations

##### 1. Limited Sample Size

The findings are based on a relatively small sample, which may limit the generalisability of results to the entire Indian population.

##### 2. Reliance on Self-Reported Data

Responses are based on personal perception and self-reporting, which may involve bias or inaccuracies, particularly in questions related to spending behaviour.

##### 3. Restricted Variables

The study focuses primarily on age and occupation. Other important factors such as income level, education, urban–rural divide, and digital literacy were not analysed.

##### 4. Cross-Sectional Nature of the Study

The data was collected at a single point in time, making it difficult to capture changes in payment behaviour over a longer period.

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