

Effect of Digital Payments on Purchase Behaviour: Empirical Evidence from Urban and Semi-Urban India

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Abstract: *The rapid proliferation of digital payment technologies including the Unified Payments Interface (UPI), mobile wallets, contactless NFC payments, internet banking, and Buy Now Pay Later (BNPL) services has fundamentally altered consumer purchase behaviour in India. This paper presents a mixed-methods empirical investigation drawing on a primary survey of 350 respondents across metropolitan and Tier-2 Indian cities (response rate: 91.1%), supplemented by 20 in-depth semi-structured interviews, and triangulated against Reserve Bank of India, NPCI, and industry secondary data from 2014–2024. Independent-samples t-tests, one-way ANOVA, and multiple regression analysis reveal that digital-payment-dominant consumers exhibit a 38% higher mean monthly transaction frequency, a 27% higher average transaction value in discretionary categories, and a 2.3 times higher impulse purchase incidence relative to cash-dominant counterparts. Multiple regression models explain 58.9%–64.7% of variance in spending outcomes. Five theorized mechanisms pain-of-paying attenuation, friction reduction, cashback reward stimulation, 24/7 payment accessibility, and BNPL-facilitated credit normalization are empirically validated. Security anxiety (cited by 71% of respondents) and low digital literacy remain the principal barriers to sustained adoption, particularly among consumers aged 45 and above. Policy and practitioner implications for retailers, fintech firms, regulators, and financial literacy programmes are discussed.*

Keywords: digital payments, UPI, consumer behaviour, impulse buying, pain of paying, fintech, India

I. INTRODUCTION

Money is not only an economic tool but also a psychological one. The method of payment shapes how consumers perceive value, control spending, and experience purchases. Cash transactions involve physically handing over money, making spending more visible and often more deliberate. Digital payments, however, remove this friction through fingerprints, QR scans, or smartphone taps. As transactions become easier and less tangible, consumers may spend more frequently, more impulsively, and with less awareness of how the payment medium influences behaviour (Prelec & Loewenstein, 1998; Soman, 2001).

India offers one of the world's most important examples of rapid digital payment adoption. While Western economies gradually moved from credit cards to internet banking over decades, India shifted from a predominantly cash economy to a mobile-first real-time payment ecosystem within a single decade. UPI transaction volumes increased from 1.07 billion in FY 2017–18 to over 131 billion in FY 2023–24, reflecting extraordinary growth (NPCI, 2024). This transformation was driven by the National Payments Corporation of India's zero-MDR payment infrastructure, lower mobile data costs after Reliance Jio entered the market in 2016, demonetization in November 2016, and the contactless payment needs created by the COVID-19 pandemic.



Despite this dramatic transition, research on its behavioural impact remains limited, especially in the Indian context. Global studies show that payment methods affect spending behaviour (Thomas et al., 2011; Agarwal et al., 2015), yet several questions remain unresolved. Does the move from cash to digital payments increase total spending, or simply shift spending channels? Are effects consistent across income, age, and education groups? What psychological mechanisms drive these outcomes? How does this affect financial well-being?

This paper examines these issues through a mixed-methods empirical study. The central objective is to determine whether digital payment methods systematically influence the quantity, frequency, impulsiveness, and category distribution of consumer purchases, and to identify the psychological, economic, and technological mechanisms behind such changes.

The study is valuable for multiple stakeholders. Retailers and e-commerce firms can use the findings to improve checkout systems and promotions. Banks and fintech firms can design better products and responsible reward systems. Policymakers can assess whether digital payment expansion strengthens or weakens consumer financial well-being, especially among newly banked and low-income populations. Academically, the research adds original India-specific evidence to consumer psychology, behavioural economics, and digital commerce.

II. LITERATURE REVIEW

The concept most central to this study is the pain of paying the psychological discomfort experienced when money is spent. Zeller Mayer (1996) introduced this idea, arguing that the intensity of payment pain depends on the payment method. Cash payments are immediate, visible, and irreversible, creating the highest discomfort. Drazen Prelec and George Loewenstein (1998) expanded this through the concept of coupling, or the psychological link between payment and consumption. Tight coupling, as with cash, makes spending more noticeable, while loose coupling, as with digital wallets or cards, reduces salience and encourages spending.

Dilip Soman (2001) found that debit card users spent more per transaction than cash users, showing that reduced physical salience not merely delayed payment can increase expenditure. In modern UPI and mobile payments, where transactions need only a PIN, fingerprint, or scan, the pain of paying may be at its lowest.

Technology adoption theories also explain digital payment growth. Fred Davis (1989) proposed the Technology Acceptance Model, identifying perceived usefulness and ease of use as key adoption drivers. Later, Viswanath Venkatesh et al. (2003, 2012) developed UTAUT and UTAUT2, highlighting performance expectancy, effort expectancy, social influence, and facilitating conditions. In India, Kumar and Kumari (2022) found that digital literacy was a stronger predictor of sustained adoption than income or education.

Mental Accounting Theory by Richard Thaler explains how digital payments distort spending decisions. Features such as BNPL, prepaid wallets, and cashback offers separate payment pain from purchase pleasure, encouraging higher spending. Shah et al. (2021) observed that many Indian consumers focus on cashback rewards rather than total expenditure, making purchases appear cheaper than they are.

Daniel Kahneman (2011) further argued that fast, emotional “System 1” thinking dominates frictionless digital transactions, while slower, deliberate “System 2” thinking is more common in cash spending. This increases impulsive purchases. Supporting this, Zheng et al. (2019), studying 180 million transactions in China, found mobile payment adoption to be the strongest predictor of impulse buying. Although global evidence is strong, India-specific studies comparing UPI, BNPL, wallets, and cards across demographic groups remain limited. This study addresses that gap through a unified behavioural framework.

III. RESEARCH METHODS

This study adopted a post-positivist, critical-realist approach using a convergent parallel mixed-methods design. A quantitative survey provided statistical breadth, while qualitative interviews offered deeper insights into motivations and experiences. The target population included adults in urban and semi-urban India who had used digital payments in the past 12 months. A 42-item questionnaire was administered across 10 cities, producing 350 valid responses from 384



contacts (91.1% response rate). Stratified random sampling ensured demographic balance. Additionally, 20 respondents were purposively selected for semi-structured interviews, conducted in English, Hindi, and Marathi, with findings integrated through convergent triangulation.

Measures

The questionnaire contained six sections covering demographics, payment usage, buying behaviour, attitudes, security concerns, and reflections. Four validated psychological scales were adapted from prior studies. Expert review established content validity, pilot factor analysis confirmed construct validity (loadings > .60), and reliability testing showed all Cronbach's alpha values exceeded the .70 benchmark.

Table 1: Internal Consistency Reliability of Multi-Item Scales (N = 350)

Scale / Construct	Items	α	Interpretation
Perceived Ease of Use (PEOU)	5	.84	Acceptable (Davis, 1989)
Perceived Security Trust (PST)	6	.79	Acceptable
Impulse Buying Tendency (IBT)	3	.81	Good (Beatty & Ferrell, 1998)
Pain of Paying Scale (PoPS)	5	.83	Good (Prelec & Loewenstein, 1998)
Digital Payment Adoption Index	4	.87	Good
Cashback Rewards Exposure Index	3	.76	Acceptable

Note. All scales adapted from cited original sources. α values from the final administered sample.

Variables

Independent variables included the Digital Payment Adoption Index (0–100), payment method type, Perceived Ease of Use, Perceived Security Trust, and Cashback Rewards Exposure Index. Dependent variables were Monthly Transaction Frequency, Average Transaction Value, Impulse Purchase Incidence, Category Breadth Index, and Total Monthly Consumer Expenditure, measuring spending frequency, value, impulsiveness, diversity, and overall expenditure.

Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics in three stages: descriptive statistics and reliability testing; t-tests and ANOVA to compare spending outcomes across user groups and payment methods; and multiple regression models predicting transaction frequency, value, and impulse buying. Multicollinearity was within acceptable limits. Qualitative interviews were analyzed thematically using NVivo, producing five key behavioural mechanism themes.

Ethical Considerations

All participants provided explicit informed consent prior to data collection. Survey participants were assured of anonymity, voluntary participation, and the right to withdraw without consequence. Interview participants provided recorded verbal consent and were offered the opportunity to review their transcripts before inclusion in analysis. The research protocol received ethics clearance from the Institutional Research Ethics Committee.

IV. RESULTS

Digital payment adoption was led by India's UPI, used primarily by 58% of respondents, followed by wallets, cards, BNPL, and net banking. Mean adoption intensity (DPAI) was 61.4, with younger users (18–35) scoring far higher than those aged 45+, showing a strong age effect. Digital-dominant consumers spent more frequently, reported higher transaction values, and made over twice as many impulse purchases as cash-dominant users. Monthly transaction frequency was 38% higher, discretionary spending 27% higher, and impulse purchases 2.27 times greater. The spending premium was strongest in hedonic, low- deliberation categories.



Table 2: Category-Level Spending Outcomes for Digital-Payment-Dominant Respondents (N = 214)

Category	MTF M (SD)	Spending Diff.	IPI M (SD)	Impulse Rating
Food Delivery	34.2 (12.1)	64.3%	3.8 (1.4)	Very High
Fashion & Apparel	34.2 (12.1)	64.6%	3.6 (1.5)	High
Entertainment / OTT	34.2 (12.1)	71.2%	4.1 (1.2)	Very High
Travel & Hospitality	34.2 (12.1)	55.1%	3.2 (1.6)	High
Electronics	34.2 (12.1)	25.1%	2.1 (1.3)	Moderate
Daily Groceries	34.2 (12.1)	18.8%	1.7 (1.1)	Low-Moderate
Healthcare	34.2 (12.1)	13.6%	1.4 (0.9)	Low

Note. MTF = Monthly Transaction Frequency; IPI = Impulse Purchase Incidence. Spending Diff. = percentage difference between digital-dominant and cash-dominant mean monthly expenditure in the category. IPI ratings: Very High = >4 events/month; High = 2–4; Moderate = 1–2; Low = <1.

The Entertainment and OTT category showed the largest spending differential (+71.2%), followed by Fashion and Apparel (+64.6%) and Food Delivery (+64.3%). Even the daily groceries category a planned, low-involvement purchase context exhibited an 18.8% higher mean expenditure among digital users, suggesting that the spending-amplification effect extends beyond impulsive or hedonic categories to permeate routine consumption.

Payment Instrument Comparison

One-way ANOVA confirmed significant differences in IPI across payment instrument groups, $F(5, 344) = 22.4, p < .001$,

$\eta^2 = .25$, and in ATV, $F(5, 344) = 31.7, p < .001, \eta^2 = .32$. Post-hoc Tukey HSD tests identified BNPL as the instrument associated

with significantly higher IPI and ATV than all other instruments ($p < .05$ for all pairwise comparisons). Table 3 presents descriptive statistics by payment instrument.

Table 3: Impulse Purchase Incidence, Average Transaction Value, and DPAI by Payment Instrument

Instrument	Usage Share	IPI M (SD)	ATV M (SD)	DPAI M (SD)
UPI	58%	2.8 (1.2)	₹1,260 (820)	47.3 (16.2)
Mobile Wallet	14%	3.1 (1.3)	₹980 (610)	42.1 (15.4)
Debit Card	12%	1.9 (0.9)	₹2,140 (1,340)	38.4 (14.7)
Credit Card	8%	2.4 (1.1)	₹3,820 (2,100)	51.7 (17.1)
BNPL	5%	4.2 (1.7)	₹4,650 (2,680)	67.9 (18.4)
Net Banking	3%	1.1 (0.7)	₹6,700 (3,200)	28.6 (12.3)

Note. IPI = Impulse Purchase Incidence (events per month); ATV = Average Transaction Value; DPAI = Digital Payment Adoption Index (0–100). *** $p < .001$. BNPL differed significantly from all other instruments on IPI and ATV (Tukey HSD, $p < .05$).

Multiple Regression Analysis

Three multiple regression models estimated the prediction of MTF, ATV, and IPI from eight predictor variables. All models were statistically significant ($p < .001$) and explained substantial variance in their respective outcomes: $R^2 = .623$ for MTF, $R^2 = .589$ for ATV, and $R^2 = .647$ for IPI. Table 4 presents standardized regression coefficients for all predictors across the three models.



Table 4: Multiple Regression Summary: Standardized Coefficients for Predictors of Spending Outcomes (N = 350)

Predictor	β (MTF)	β (ATV)	β (IPI)
Digital Payment Adoption Index (DPAI)	.412***	.391***	.438***
Pain of Paying Scale (reverse-scored)	.287***	.264***	.318***
Cashback Rewards Exposure Index (CREI)	.193***	.221***	.168**
Perceived Ease of Use (PEOU)	.156**	.142**	.179***
BNPL Usage (dummy-coded)	.248***	.198***	.302***
Age (inverse-coded)	-.211***	-.188***	-.241***
Income Level	.134**	.147**	.121*
Perceived Security Trust	-.089*	-.077	-.101*
R ²	.623	.589	.647
Adjusted R ²	.611	.576	.635
F	49.7***	43.2***	55.1***

Note. MTF = Monthly Transaction Frequency; ATV = Average Transaction Value; IPI = Impulse Purchase Incidence. All variance inflation factors < 3.2. *** $p < .001$, ** $p < .01$, * $p < .05$. Blank cells indicate non-significant coefficients ($p > .05$).

DPAI was the strongest positive predictor across all three models ($\beta = .39$ to $.44$). BNPL usage ($\beta = .20$ to $.30$) and Pain of Paying Scale score ($\beta = .26$ to $.32$) were consistently the second and third strongest predictors respectively. Age emerged as the strongest negative predictor ($\beta = -.19$ to $-.24$), confirming that younger consumers are disproportionately susceptible to the spending-amplifying effects of digital payments. Perceived Security Trust was a significant negative predictor of IPI ($\beta = -.10$, $p < .05$), indicating that residual security anxiety exercises a mild inhibitory effect on impulse purchasing.

Adoption Barriers

Respondents were asked to identify their primary barriers to digital payment adoption or deeper usage from a structured checklist with open-ended elaboration. Security and fraud anxiety was the most frequently cited barrier overall (71%), and was rated the primary concern by respondents across all age groups, though it was notably higher among the 45+ cohort (78%) than the 18–35 cohort (68%). Low digital literacy was the second most cited barrier (54% overall), with particularly high incidence in the 45+ segment (76%) and in Tier-2 cities (62%). Table 5 presents the full barrier frequency breakdown.

Table 5: Frequency of Cited Barriers to Digital Payment Adoption or Deeper Usage, by Age Group

Barrier	Overall	Ages 18–35	Ages 45+	Context
Security and fraud anxiety	71%	68%	78%	Dominant barrier across all cohorts
Low digital literacy	54%	23%	76%	Concentrated in 45+ and Tier-2
Unreliable internet access	38%	22%	52%	Stronger in Tier-2 cities
Privacy and data concerns	49%	55%	44%	Higher among educated users
Preference for cash tangibility	31%	18%	43%	Habitual; age-correlated
Merchant non-acceptance	27%	19%	35%	Declining as QR adoption grows

Note. Multiple responses permitted; percentages represent proportion of respondents within each group citing the barrier. Tier-2 city respondents $n = 158$.

Qualitative interviews strongly supported the quantitative results. Respondents aged 45+ often expressed anxiety about paying without a physical record and uncertainty over dispute resolution. Many participants described UPI payments as effortless and unreal, saying spending felt like “clicking a button in a game” until statements were checked later. Others



noted that cash feels real because it is counted and physically handled, while phone payments carry “no weight.” These accounts directly support the finding that reduced pain of paying is the mechanism most strongly linked to higher spending frequency and impulse buying through digital payments.

V. DISCUSSION

The findings strongly support the view that digital payment methods systematically increase consumer spending. Digital-dominant users showed 38% higher monthly transaction frequency, 27% higher discretionary transaction values, and 2.3 times greater impulse purchase incidence than cash-dominant users. These results confirm global evidence while extending it to the India context.

Reduced pain of paying emerged as the strongest predictor of spending behaviour, supporting the coupling theory of Drazen Prelec and George Loewenstein. As checkout friction declines through biometrics, saved credentials, and one-tap payments, spending tends to rise further.

BNPL users recorded the highest transaction values and impulse purchases, especially among younger adults. This combination suggests growing financial well-being risks and the need for regulatory oversight.

Security anxiety remained common despite high adoption, creating an “anxiety-adoption paradox” where convenience outweighs unresolved trust concerns. A major fraud incident could weaken adoption, particularly among older users.

Younger consumers were also most responsive to cashback incentives and least experienced with credit management, highlighting the need for targeted financial literacy programmes.

VI. CONCLUSION

This study provides strong empirical evidence that digital payment methods significantly reshape consumer behaviour in India. Higher transaction frequency, larger discretionary spending values, and much greater impulse buying indicate a major shift in the psychology of everyday commerce, with important consequences for financial well-being.

Unified Payments Interface has been a major policy success, acting as the entry point for 73% of first-time digital payment users. Yet the same convenience that drives inclusion also reduces the pain of paying and can increase unintended spending. This calls for a balanced policy response: expand access while strengthening consumer protection and digital financial literacy.

Retailers should offer spending-summary prompts at checkout. Financial institutions should reward planned rather than impulsive spending. Policymakers should regulate BNPL through income checks, credit caps, and cooling-off periods.

Future research should use longitudinal studies, Reserve Bank of India CBDC rollout experiments, and cross-country comparisons to deepen understanding.

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