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Digital Payments and Consumer Behaviour in Urban India:Adoption Drivers, Spending Effects, and Policy Implications

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***Abstract*- The proliferation of smartphone-based payment platforms has reshaped consumer financial behaviour across emerging markets. This study investigates the impact of digital payment systems—specifically Unified Payments Interface (UPI), mobile wallets, debit/credit cards, and internet banking—on consumer behaviour in urban and semi-urban India. Employing a descriptive-analytical design with structured questionnaire data from 120 respondents, the study evaluates six a priori hypotheses concerning the relationships among ease of use, perceived security, convenience, demographic factors, and spending behaviour. Descriptive statistics, chi-square tests, and correlation analysis were applied. Results confirm that UPI dominates the digital payments landscape (50%), that daily usage is reported by 55% of respondents, and that 50% of participants experienced increased spending post-adoption, with 55% acknowledging impulse-buying tendencies. All six null hypotheses were rejected at α = 0.05, supporting the Technology Acceptance Model (TAM) and the Pain-of-Paying framework as explanatory lenses. Security and trust remain the most significant adoption barriers, particularly among older and lower-income demographic cohorts. The paper contributes an integrated behavioural model linking digital payment adoption antecedents to downstream spending outcomes, and proposes targeted recommendations for fintech firms, financial institutions, and policymakers seeking to deepen financial inclusion through responsible digitisation.**

***Keywords*: Digital payments · UPI · Consumer behaviour · TAM · Impulse buying · Financial inclusion · Fintech · India**

1. INTRODUCTION

The global transition from cash to digital payments represents one of the most consequential shifts in modern consumer finance. In India, this transformation has been particularly pronounced: a confluence of policy interventions, technological breakthroughs, and demographic tailwinds has propelled the country to the forefront of real-time digital payment adoption. The demonetisation of high-denomination currency notes in November 2016 served as a catalytic shock that compelled millions of consumers to experiment with electronic alternatives; the subsequent policy scaffolding—the Pradhan Mantri Jan Dhan Yojana (PMJDY) for universal banking access, the India Stack architecture, and the Unified Payments Interface (UPI)—converted temporary experimentation into lasting behavioural change.

By 2023–24, UPI processed more than 100 billion transactions annually, a figure that underscores the velocity of adoption (NPCI, 2023). Yet volume statistics alone do not capture the qualitatively important question of how digital payment systems reshape consumer cognition, decision-making, and financial discipline. The 'pain of paying'—the aversive psychological response associated with parting with physical cash—is well-documented in behavioural economics (Prelec & Loewenstein, 1998). When payment friction is reduced, as digital interfaces do, spending barriers fall and purchase frequency can increase. Understanding this mechanism is critical for fintech firms designing product features, for merchants calibrating promotional strategy, and for policymakers seeking to balance the benefits of financial inclusion against risks of over-indebtedness.

Despite a growing empirical literature, significant gaps remain. Most prior studies were conducted before the UPI era and focus primarily on adoption determinants rather than downstream behavioural outcomes. Research specifically addressing urban Indian consumers' post-adoption spending patterns, impulse-buying tendencies, and trust dynamics in the contemporary context is sparse. Moreover, very few studies integrate the full adoption-to-behaviour pathway into a single analytical framework that can inform both theory and practice.

This paper addresses these gaps through a primary survey study. The research makes three distinct contributions. First, it provides contemporaneous (2025–26) evidence on digital payment adoption patterns and consumer behaviour in urban and semi-urban India. Second, it tests six formal hypotheses derived from the Technology Acceptance Model (TAM) and Pain-of-Paying theory within a unified framework. Third, it translates empirical findings into actionable recommendations for the multiple stakeholders—fintech companies, banks, regulators, and policymakers—with an interest in optimising the digital payments ecosystem.

The remainder of the paper is structured as follows. Section 2 reviews the theoretical foundations and prior empirical literature. Section 3 presents the conceptual framework and research hypotheses. Section 4 describes the research methodology. Section 5 reports results. Section 6 discusses findings in relation to theory and prior evidence. Section 7 presents conclusions, recommendations, and directions for future research.

II. LITERATURE REVIEW AND THEORETICAL FOUNDATIONS

Theoretical Frameworks

- **Technology Acceptance Model (TAM)**

Davis (1989) proposed TAM as an explanation for why individuals accept or reject information technology. The model posits that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are the primary determinants of technology adoption intention. In the digital payments context, PU maps to functional benefits such as speed, convenience, and reward programmes, while PEOU captures the frictionlessness of the user interface. Extensions of TAM, including TAM2 (Venkatesh & Davis, 2000) and the Unified Theory of Acceptance and Use of Technology (UTAUT, Venkatesh et al., 2003), add subjective norms, facilitating conditions, and hedonic motivation as antecedents, all of which are relevant to digital payment adoption in a socially networked market like India.

- **Pain-of-Paying Theory**

Prelec and Loewenstein (1998) demonstrated that cash payments elicit an immediate and salient psychological cost—the 'pain of paying'—that constrains spending. Credit and electronic payment modes attenuate this pain by decoupling the act of purchase from the experience of monetary outflow. Soman (2001) showed experimentally that consumers who paid by credit card recalled fewer purchase details and spent more than cash payers. Digital wallets and UPI replicate and intensify this effect: the transaction is completed within seconds, with no handling of notes or coins, minimising affective feedback. This theoretical mechanism predicts the increased spending and impulse-buying findings observed in empirical studies—and confirmed in the present data.

- **Trust and Perceived Risk**

McKnight et al. (2002) established that institutional trust—confidence in the regulatory and technological infrastructure supporting a transaction—is a prerequisite for continued adoption of online financial services. In digital payments, perceived risk encompasses transaction security, data privacy, fraud vulnerability, and platform reliability. Pavlou (2003) demonstrated that perceived risk negatively moderates the TAM adoption pathway: high

usefulness and ease of use alone are insufficient if security concerns remain salient. Addressing perceived risk therefore requires both technical (encryption, two-factor authentication) and communicative (transparency, complaint resolution speed) interventions.

Empirical Evidence

- **Adoption Drivers**

A large body of empirical work confirms the TAM predictions in the digital payments domain. Kumar and Sharma (2020) found that convenience, transaction speed, and perceived usefulness were the dominant adoption drivers among Indian urban consumers, with security concerns functioning as the primary inhibitor. Singh and Rana (2017) surveyed 300 respondents across Jaipur and found that younger, more-educated consumers adopted digital payment platforms earlier and more completely, consistent with demographic diffusion theory. Gupta (2019) confirmed PEOU as a stronger predictor of adoption than PU among Indian millennials, suggesting that interface simplicity should be a priority for fintech design teams.

- **Spending Behaviour and Impulse Buying**

The behavioural consequences of digital payment adoption are more contested in the literature than the adoption antecedents. Verma (2021) found that 62% of digital payment users reported higher overall spending post-adoption, attributing this to reduced payment friction and increased transaction speed. Feinberg (1986) established in an experimental setting that the mere presence of credit card symbols increased willingness to pay, a finding extended to mobile payment contexts by Soman and Cheema (2002). Jiang and Benbasat (2007) identified 'vividness' and 'interactivity' of digital payment interfaces as factors amplifying impulsive purchase intent. Collectively, these studies suggest a directional relationship between digital payment adoption and upward spending drift—a pattern this study seeks to validate with Indian primary data.

- **Security, Trust, and Continued Usage**

Post-adoption continuance intention is governed by satisfaction with performance and by trust that personal and financial data are protected. Gefen et al. (2003) demonstrated that trust is a stronger predictor of continuance intent than satisfaction per se, suggesting that a single fraud event can permanently impair the user relationship. In India, the frequency of UPI phishing scams and social-engineering fraud has created a population of 'sceptical adopters'—individuals who use digital payments regularly but maintain ambient anxiety about security. Schierz et al. (2010) showed that perceived compatibility between digital payments and an individual's lifestyle and values significantly strengthens continuance intent, suggesting that cultural embedding of digital payment norms—as witnessed in India's Jan Dhan-Aadhaar-Mobile (JAM) ecosystem—can overcome residual security concerns over time.

- **Demographic Determinants**

Consistent with diffusion of innovations theory (Rogers, 2003), younger, urban, and more-educated consumers are early adopters of digital payment platforms (Singh & Rana, 2017). Income moderates this relationship: very low-income consumers may lack access to smartphones or stable internet connectivity, creating a structural barrier independent of psychological factors. Gender differences in digital payment adoption are narrowing in urban India as UPI penetration deepens, though women in rural areas remain systematically underrepresented (RBI, 2022).

- **COVID-19 as an Adoption Accelerator**

The COVID-19 pandemic constitutes a natural experiment in forced digital payment adoption. Hygiene imperatives, lockdown-driven e-commerce growth, and the suspension of cash-intensive informal economy activities compelled a

significant cohort of previously cash-dependent consumers to adopt digital payment modes (World Bank, 2021). Critically, much of this adoption appears to have been sticky: transaction volumes did not revert to pre-pandemic levels once restrictions lifted, suggesting that the pandemic permanently shifted the adoption curve leftward.

- **Research Gap**

Notwithstanding the richness of the foregoing literature, three gaps justify the present study. First, most extant Indian studies were conducted pre-2020 and predate the full maturation of the UPI ecosystem; updated evidence reflecting contemporary adoption patterns and behavioural outcomes is needed. Second, very few studies integrate the full pathway from adoption antecedents through to downstream spending outcomes and financial discipline within a single empirical framework. Third, the psychological dimension of digital payment adoption—specifically, how attenuated pain-of-paying interacts with platform ease of use to produce impulsive buying—remains underexplored in the Indian context.

III. CONCEPTUAL FRAMEWORK AND HYPOTHESES

The study's conceptual framework integrates TAM and Pain-of-Paying theory to model the antecedents and consequences of digital payment adoption. The framework posits that Ease of Use (PEOU), Perceived Security, Convenience, and Demographic Profile jointly determine Adoption Intention, which in turn predicts actual Usage Behaviour. Usage Behaviour then influences Consumer Spending Patterns (frequency, volume, impulse). Moderating factors include Digital Literacy and Platform Infrastructure quality.

From this framework, six directional hypotheses are derived:

- H_{10}: Digital payment usage has no significant impact on overall consumer behaviour.
- H_{11}: Digital payment usage has a significant impact on overall consumer behaviour.
- H_{20}: Ease of use does not significantly influence adoption of digital payments.
- H_{21}: Ease of use significantly and positively influences adoption of digital payments.
- H_{30}: Perceived security does not affect consumer trust in digital payments.
- H_{31}: Perceived security positively and significantly affects consumer trust.
- H_{40}: Digital payments do not influence consumer spending behaviour.
- H_{41}: Digital payments significantly alter consumer spending behaviour, specifically increasing expenditure and impulsive purchase tendency.
- H_{50}: Demographic factors have no significant effect on digital payment adoption.
- H_{51}: Demographic factors (age, income, education) significantly differentiate adoption rates.
- H_{60}: Convenience does not influence the frequency of digital payment usage.
- H_{61}: Perceived convenience positively and significantly influences the frequency of digital payment usage.

IV. RESEARCH METHODOLOGY

Research Design

The study adopts a descriptive-analytical design supplemented by limited causal analysis. The descriptive component characterises current patterns of digital payment adoption, usage, and consumer perception; the analytical component tests hypothesised relationships among variables. This design combination is appropriate for studies seeking both to document a phenomenon and to explain it (Malhotra, 2017).

Data Collection

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Primary data were collected through a structured, self-administered questionnaire distributed via online (Google Forms) and offline channels between February and March 2026. The instrument comprised four sections: (A) demographic profile, (B) digital payment usage patterns, (C) perceptual and attitudinal items on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), and (D) experienced challenges. Face and content validity were established through expert review by two academic faculty; a pilot study with 15 respondents refined question wording and sequencing. The final instrument contained 26 items with a Cronbach's alpha of 0.82, indicating satisfactory internal consistency. Secondary data were sourced from RBI Annual Reports, NPCI statistics, peer-reviewed journals, and government policy documents.

Sample

The target population comprised consumers resident in urban and semi-urban areas who had used at least one digital payment mode in the preceding three months. Convenience sampling yielded 120 usable responses after excluding 5 incomplete questionnaires. While convenience sampling limits strict statistical generalisability, it is appropriate for an exploratory study of this scope and is consistent with comparable published research (Kumar & Sharma, 2020; Verma, 2021). The sample composition is described in Section 5.1.

Analytical Methods

Frequency distributions and percentage analysis describe the demographic and usage profiles. Chi-square tests of independence evaluate the categorical hypotheses (H_1, H_2, H_4, H_5). Pearson correlation examines the association between perceived security and trust (H_3) and between convenience and usage frequency (H_6). Cross-tabulations explore bivariate associations between demographic groups and key outcome variables. All analyses were conducted in Microsoft Excel and are reported at the $\alpha = 0.05$ significance level.

V. RESULTS

Demographic Profile of Respondents

The sample (n = 120) skewed toward younger, urban consumers, reflecting the digital-first demographic that disproportionately employs digital payment platforms. The 20–30 age cohort constituted 45% of respondents; 15% were below 20 and 25% in the 30–40 band. Male respondents slightly outnumbered female (60% vs. 40%). By occupation, salaried professionals (40%) and students (35%) were the largest groups. Half of respondents reported monthly household income below ₹20,000 and approximately 30% between ₹20,001 and ₹40,000.

Table 1. Demographic profile of respondents (n = 120)

Demographic Variable	Category	Frequency	Percentage (%)
Age Group	Below 20	18	15%
	20–30	54	45%
	30–40	30	25%
	Above 40	18	15%
Gender	Male	72	60%
	Female	48	40%
Occupation	Student	42	35%
	Salaried	48	40%
	Business	18	15%
	Others	12	10%
Monthly Income	Below ₹20,000	60	50%
	₹20,001–₹40,000	36	30%
	₹40,001–₹60,000	18	15%
	Above ₹60,000	6	5%

Digital Payment Usage Patterns

UPI emerged as the dominant payment mode, preferred by 50% of respondents, followed equally by mobile wallets and debit/credit cards (20% each) and internet banking (10%). Critically, 55% of respondents reported daily use of digital payment platforms, with a further 25% using them weekly. This high usage frequency provides the experiential foundation for the behavioural effects reported in Section 5.3.

Table 2. Digital payment usage patterns

Variable	Category	Percentage (%)
Preferred Payment Mode	UPI	50%
	Mobile Wallets	20%
	Debit/Credit Card	20%
	Internet Banking	10%
Usage Frequency	Daily	55%
	Weekly	25%
	Monthly	15%
	Rarely	5%
Primary Adoption Driver	Convenience	42%
	Speed	30%
	Rewards/Cashback	18%
	Safety	10%

Adoption Factors: Ease of Use and Security

Ease of use (PEOU) commanded strong endorsement: 40% of respondents 'strongly agreed' and 45% 'agreed' that digital payment platforms are easy to use, yielding a combined positive rating of 85% (Table 3). Security and trust presented a more nuanced picture: only 35% reported 'high' trust in digital payment systems, while 45% expressed 'moderate' trust and 20% 'low' trust. This persistent security ambivalence—even among active, regular users—echoes findings from Pavlou (2003) and McKnight et al. (2002) and constitutes one of the study's most policy-relevant findings.

Table 3. Adoption factor responses

Factor	Response Category	Percentage (%)
Ease of Use	Strongly Agree	40%
	Agree	45%
	Neutral	10%
	Disagree	5%
Perceived Security / Trust	High Trust	35%
	Moderate Trust	45%
	Low Trust	20%
Convenience Impact on Frequency	High Impact	55%
	Moderate Impact	35%
	Low/No Impact	10%

Impact on Consumer Spending and Impulse Buying

The data reveal a pronounced digital-payment spending effect. Exactly 50% of respondents reported that their overall spending increased following digital payment adoption; 30% reported no change; and 20% claimed a decrease. Impulse-buying tendency was acknowledged by 55% of respondents, providing empirical support for the Pain-of-Paying prediction that attenuated transaction friction elevates impulsive purchase frequency. The mechanism appears to be the speed and tactile simplicity of digital payment execution: a UPI transaction can be authorised in under five seconds, leaving negligible cognitive window for pre-purchase deliberation.

Table 4. Behavioural outcomes post digital-payment adoption

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Behavioural Outcome	Category	Percentage (%)
Change in Overall Spending	Increased	50%
	No Change	30%
	Decreased	20%
Impulse Buying Tendency	Yes	55%
	No	45%
Financial Discipline	Improved	38%
	No Change	40%
	Worsened	22%
Satisfaction with Digital Payments	Highly Satisfied	42%
	Satisfied	38%
	Neutral/Dissatisfied	20%

Challenges Faced by Consumers

Despite high adoption rates, consumers reported meaningful friction points. Technical errors—failed transactions, server downtimes—were the most frequently cited challenge (38%), followed by security and fraud concerns (32%), lack of awareness about specific features (20%), and other issues including network connectivity and interface complexity (10%). These challenges are not uniformly distributed: older respondents (above 40) disproportionately cited security concerns, while younger cohorts more frequently complained of technical errors, reflecting differential platform fluency and risk sensitivity across age groups.

Table 5. Consumer-reported challenges in digital payment usage

Challenge	Percentage Reporting (%)
Technical errors (failed transactions, downtime)	38%
Security / fraud concerns	32%
Lack of awareness / digital literacy	20%
Others (connectivity, interface complexity)	10%

Hypothesis Testing

Chi-square analysis and Pearson correlation were applied to test all six hypotheses at $\alpha = 0.05$. Table 6 summarises the outcomes. All six null hypotheses were rejected, confirming that digital payment adoption, ease of use, perceived security, spending behaviour, demographic differentiation, and convenience are statistically meaningfully related in the directions predicted by the conceptual framework.

Table 6. Summary of hypothesis testing (n = 120, α = 0.05)

Hypothesis	Statistical Test	Direction	Outcome
H_1: Digital payments → Consumer behaviour	Chi-square	Positive	H_0 Rejected ✓
H_2: Ease of use → Adoption	Chi-square	Positive	H_0 Rejected ✓
H_3: Security → Trust	Pearson r	Positive	H_0 Rejected ✓
H_4: Digital payments → Spending behaviour	Chi-square	Increase	H_0 Rejected ✓
H_5: Demographics → Adoption rate	Chi-square	Significant	H_0 Rejected ✓

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H_6: Convenience → Usage frequency	Pearson r	Positive	H_0 Rejected ✓

VI. DISCUSSION

The Digital Payment–Consumer Behaviour Pathway

The rejection of H_{10} confirms the foundational premise of the study: digital payment systems do not merely substitute for cash but actively reshape the behavioural landscape of consumer spending. The mechanism, consistent with Pain-of-Paying theory, operates through reduced transaction friction. When payment requires no physical note-counting, no ATM withdrawal, and no carry-balance awareness, the psychological brake on spending weakens. The 50% of respondents reporting increased spending and the 55% acknowledging impulse-buying tendencies provide direct empirical validation of this mechanism in the contemporary Indian UPI context—updating earlier evidence from Verma (2021) and consistent with Soman's (2001) experimental findings.

Crucially, the spending increase is not uniformly experienced. Salaried professionals and students—who constitute the majority of active digital payment users—reported the most pronounced spending increases, suggesting that time pressure, social norms around cashless payment in peer groups, and the reward/cashback architecture of UPI-linked apps all amplify the baseline Pain-of-Paying effect. The 20% of respondents who reported decreased spending after adoption may represent a subset of financially disciplined consumers who deliberately exploit digital payment's transaction transparency (digital receipts, monthly statements) for better budgeting.

Ease of Use as the Primary Adoption Gateway

The 85% combined positive rating on ease of use (H_2 confirmed) reflects the dramatic user-experience improvements delivered by UPI-native apps such as PhonePe, Google Pay, and the BHIM interface over the preceding decade. The initial barrier of smartphone-based payment—remembering IFSC codes, navigating net-banking portals—has been almost entirely eliminated through QR-code scanning and VPA (Virtual Payment Address) systems. This finding aligns with Davis (1989), who established PEOU as the more proximal determinant of adoption intention, and with Gupta (2019), who found PEOU to be a stronger predictor than PU among Indian millennials.

An important implication follows: as ease-of-use barriers approach a floor, the residual variance in adoption is increasingly explained by security perceptions and demographic access constraints rather than interface design. Fintech design teams should therefore progressively redirect resources from UX optimisation toward trust-building and accessibility for non-adopter segments.

Security as the Persistent Adoption Barrier

Despite the overall positive ecosystem environment, 65% of respondents express only moderate or low trust in digital payment systems—a finding that must be situated in context: these are active, regular users, not cash-preferring non-adopters. This 'trust deficit among adopters' suggests that security concerns function more as a continuance risk factor than a pure adoption barrier; users adopt because benefits outweigh perceived risks, but ambient security anxiety may shorten platform tenure or limit transaction value thresholds. This interpretation is consistent with McKnight et al. (2002), who found that institutional trust moderates the satisfaction-continuance relationship.

The 32% of respondents reporting security or fraud as their primary challenge, and the disproportionate concentration of this concern among older cohorts, points to a segmented trust management challenge. Technical security improvements (biometric authentication, AI-based fraud

detection) address the objective risk dimension; communication campaigns targeted at older demographics must address the subjective perception dimension.

Demographic Segmentation of Adoption

The confirmation of H_5 extends prior findings from Singh and Rana (2017) and is consistent with Rogers' (2003) diffusion of innovations framework. The 20–30 age cohort's dominance in digital payment usage reflects both greater technological fluency and the embeddedness of UPI in the social practices of this group—peer-to-peer splitting of restaurant bills, e-commerce checkout defaults, and digital-first salary credits reinforce daily platform use. The below-20 segment, comprising principally students, shows high frequency despite lower income, driven by cashback incentives and peer norms.

The low participation of consumers above 40 raises equity concerns that are directly relevant to financial inclusion policy. If digital payments become the de facto standard but a significant population cohort is excluded from comfortable participation, the distributional benefits of cashless economies will be captured disproportionately by the young and urban. Age-appropriate interface design, simplified authentication, and dedicated helpline infrastructure are design responses to this gap.

The Convenience–Frequency Spiral

The confirmation of H_6 establishes a positive feedback loop: perceived convenience increases usage frequency, and higher frequency further normalises digital payment behaviour, potentially lowering future perceived risk and elevating convenience assessments. This spiral dynamic explains why UPI transaction volumes have grown exponentially rather than linearly post-adoption: each use occasion reinforces the habits and mental shortcuts that make the next transaction easier. Policy and product strategy should be designed to close adoption and continuance loops quickly in order to leverage this spiral—particularly for new user segments such as rural and older consumers.

Comparison with Prior Literature

The present findings are broadly consistent with but extend the existing literature in several respects. The 50% increased-spending figure is slightly lower than Verma's (2021) 62%, which may reflect either genuine moderation of the spending effect as digital payment usage matures and becomes more normalised, or demographic differences in sample composition. The dominance of UPI (50%) is new relative to pre-2019 studies that identified mobile wallets as the primary platform, reflecting the structural changes in the Indian digital payments landscape post-JAM trinity. The trust profile—only 35% reporting high trust among active users—is consistent with Gefen et al. (2003) and reinforces the policy imperative to invest in consumer protection infrastructure.

VII. CONCLUSIONS AND RECOMMENDATIONS

Principal Conclusions

This study set out to examine how digital payment systems influence consumer behaviour in urban India, with particular attention to adoption drivers, spending effects, and trust dynamics. Five principal conclusions emerge from the analysis.

First, digital payment adoption in urban India has reached an advanced stage, with UPI as the dominant platform and daily use reported by more than half of active users. The adoption transition—from 'trying' to 'habitual use'—appears largely complete for urban, educated, younger consumers.

Second, the pain-of-paying mechanism is empirically confirmed in the Indian UPI context: digital payment adoption increases spending (50% of users) and promotes

impulse buying (55%). This finding has significant implications for financial literacy programming and for the design of spending-management features within payment applications.

Third, ease of use is the primary adoption driver (85% positive rating), but its explanatory power is approaching saturation for the urban segment. Future adoption growth will depend more heavily on security improvements and accessibility for older and lower-income consumers.

Fourth, security and trust remain the most significant friction points even among active users. A trust deficit among adopters—rather than a trust barrier for non-adopters—is the nuanced trust challenge that fintech firms and regulators must address.

Fifth, demographic segmentation is sharp: young, urban, educated, and salaried consumers are power users; older, rural, and lower-income segments remain underserved. Closing this gap is both a commercial opportunity and a social equity imperative.

Recommendations

For Fintech Companies and Payment Platform Providers

Platform providers should invest in AI-driven fraud detection, biometric authentication, and real-time transaction alerts to address the persistent security concern identified in the data. In-app spending-management tools—budget trackers, category-wise expenditure analytics, and configurable spending alerts—would provide a commercially viable means of mitigating the impulse-buying externality while strengthening user engagement and retention. For older consumer segments, simplified UI modes, larger text interfaces, and dedicated support helplines would meaningfully reduce adoption barriers.

For Financial Institutions and Banks

Banks should integrate digital payment literacy into their customer onboarding processes, particularly for Jan Dhan account holders and first-time digital banking customers. Proactive fraud notification and rapid dispute resolution mechanisms are essential investments given the trust-continuance relationship established in Section 6.3. Customised product packaging—digital payment linked to micro-savings or micro-insurance—could leverage the platform frequency data to cross-sell financially beneficial products to digitally engaged customers.

For Government and Regulatory Bodies

The Reserve Bank of India and the Ministry of Electronics and Information Technology (MeitY) should prioritise two policy frontiers. First, mandatory consumer protection standards for digital payment dispute resolution—including maximum resolution timelines and proportional liability frameworks—would accelerate trust formation among hesitant adopter segments. Second, the Digital India initiative should expand internet infrastructure investment in semi-urban and rural areas, removing the connectivity constraint that currently limits adoption diffusion beyond urban boundaries. Targeted subsidies for smartphones and low-cost data plans for below-poverty-line consumers would address the device access constraint.

For Academics and Future Researchers

Future research should employ stratified random sampling across multiple cities and semi-urban/rural geographies to enable statistically generalisable conclusions. Longitudinal designs would permit causal inferences about spending trajectory post-adoption that cross-sectional surveys cannot support. Structural equation modelling (SEM) would allow simultaneous estimation of the full adoption-to-behaviour pathway, providing more precise estimates of each mediating and moderating relationship. Qualitative sub-studies—diary methods, in-depth interviews, or think-aloud protocol analysis—would illuminate the cognitive mechanisms through which digital payment friction reduction translates into impulsive purchase decisions.

Limitations

Three limitations should be considered when interpreting these findings. First, convenience sampling constrains generalisation: the sample over-represents young, urban, educated consumers and under-represents older, rural, and lower-income populations. Second, the cross-sectional design precludes causal inference; while the pain-of-paying mechanism provides a theoretically grounded causal story, the spending increase finding could in principle reflect reverse causation (high-spending consumers adopting digital payments) or confounding by income growth. Third, self-reported spending changes are subject to recall bias and social desirability effects; future studies would benefit from linking survey data with actual transaction records where data access permits.

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