International Journal of
Social Impact

A Peer Reviewed Journal

Impact of Digital Payment Adoption on Consumer Spending Behavior in Urban vs Rural Households in India

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ABSTRACT

This study investigates the impact of digital payment adoption on household spending behavior in urban and rural India. Using primary data from 400 households and employing chi-square tests, t-tests, and regression analysis, the study finds significant differences in adoption rates, monthly expenditure, and discretionary spending patterns between adopters and non-adopters. Urban households and higher spenders are more likely to adopt digital payments, which are also associated with increased discretionary spending. The findings highlight the need for targeted financial literacy and inclusive digital infrastructure policies to ensure responsible and equitable digital payment usage.

Keywords: Digital payments, consumer behavior, discretionary spending, rural–urban divide, financial inclusion, regression analysis

India's digital payments landscape has undergone a dramatic transformation in recent years, with platforms like UPI making cashless transactions mainstream. This shift has not only improved financial accessibility but also changed how people engage with money on a day-to-day basis. While much attention has been given to the scale and speed of adoption, especially in urban areas, there remains a critical gap in understanding how this digital transition influences actual household spending behaviour.

Digital payments reduce the friction associated with cash handling and offer convenience, transparency, and instant access to financial services. However, they may also encourage higher spending, impulsive buying, and shifts in budget allocation—especially in a context where financial literacy levels and digital familiarity vary significantly across regions. In rural India, where adoption is growing but still lags behind urban centres, the economic consequences of going digital may differ widely.

Understanding these behavioural shifts is essential, not just from a financial inclusion standpoint but also for informing policy decisions around consumer protection, savings promotion, and sustainable spending habits. This study seeks to explore these emerging dynamics, offering insights into how India's digital revolution is influencing household economic choices across diverse socio-economic and geographic settings.

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LITERATURE REVIEW

India's digital payments ecosystem has expanded rapidly over the past decade, yet the micro-level behavioural effects of this transformation remain underexplored, particularly in rural areas. This section reviews existing literature on digital payment adoption, its influence on consumer behaviour, and urban–rural disparities.

The **Reserve Bank of India (2024)** conducted a comprehensive assessment of the digital payment landscape, highlighting the surge in UPI transactions and a growing penetration of digital services in semi-urban and rural regions. However, the report also acknowledges the persistent digital divide, citing lower smartphone ownership, inconsistent connectivity, and limited financial literacy as barriers to adoption in rural households. While informative on infrastructural progress, the study does not evaluate behavioural outcomes such as spending shifts.

Suri and Jack (2016), in their study on mobile money in Kenya, provided compelling evidence that access to digital finance improves household financial resilience and significantly alters consumption patterns. The authors found increased spending capacity and reduced reliance on informal borrowing, particularly among women. Though international in scope, their behavioural framework offers useful parallels for examining Indian digital payment platforms.

Kaur and Singh (2022) investigated the influence of digital payments on consumer behaviour in urban India. Their empirical analysis revealed that digital transactions encouraged more frequent discretionary spending and impulsive purchases due to lower transaction friction. However, the study was limited to urban samples and lacked comparative insights across geographical settings.

In a post-pandemic context, **Gulati and Arora (2021)** analysed how digital transaction habits evolved following COVID-19. They found that increased reliance on online payments led to subtle behavioural shifts in budgeting, with households underestimating expenditures due to the "cashless" nature of digital transactions. The study supported a behavioural-economics interpretation but remained largely descriptive.

Bansal and Yadav (2023) examined the integration of Jan Dhan accounts with UPI access in influencing consumption patterns. Their study, based on semi-urban households, showed a moderate shift towards formal spending channels but found limited evidence of improved financial discipline or savings. The research provides important groundwork but does not distinguish between essential and discretionary spending behaviours.

In summary, while prior studies establish important links between digital finance and consumer behaviour, few provide a statistically rigorous, urban–rural comparative analysis of how digital payment adoption influences both overall expenditure and spending composition. This study aims to bridge that gap by examining behavioural outcomes using a structured inferential approach.

Objectives of the Study

The primary aim of this study is to explore the behavioural and economic implications of digital payment adoption among households in India, with a specific focus on comparing urban and rural contexts. As digital transactions increasingly replace cash-based interactions, it becomes

essential to assess how this shift influences consumer spending patterns across different socio-economic environments.

The specific objectives of the study are as follows:

1. **To examine the difference in digital payment adoption rates between urban and rural households.**

   This objective aims to identify whether geographical location significantly influences the likelihood of households adopting digital payment platforms such as UPI, mobile wallets, and net banking.

2. **To assess the impact of digital payment adoption on total monthly household expenditure.**

   This involves evaluating whether households that adopt digital payments tend to spend more, less, or the same compared to non-adopters, controlling for income and demographic variables.

3. **To evaluate the influence of digital payment adoption on the proportion of discretionary spending within household budgets.**

   The objective is to determine whether adopters allocate a larger share of their monthly expenditure to non-essential (discretionary) items such as entertainment, dining out, and online shopping, compared to non-adopters.

4. Hypotheses of the Study

Based on the research objectives, the following null hypotheses have been formulated to test the statistical relationships between digital payment adoption and household spending behaviour:

1. **H_{01}**: There is no significant difference in digital payment adoption rates between urban and rural households.

   (This hypothesis tests whether geographic location affects the likelihood of digital payment usage.)

2. **H_{02}**: There is no significant difference in monthly household expenditure between adopters and non-adopters of digital payments.

   (This test whether digital payment usage influences the overall spending levels of households.)

3. **H_{03}**: There is no significant difference in the proportion of discretionary spending between adopters and non-adopters of digital payments.

   (This examines whether digital payment adoption affects how much of the household budget is spent on non-essential goods and services.)

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A stratified, urban–rural design ensured balanced coverage: A total of 440 households were initially approached—220 from urban areas and 220 from rural regions. Of these, 408 complete responses were received, resulting in a 92.72% response rate. For consistency and comparability, a final sample of 400 households was selected for analysis, comprising an equal split of 200 urban and 200 rural respondents, chosen at random from the valid responses.

Data were gathered via a structured questionnaire (in-person and online) recording (i) adoption of digital payments (yes / no), (ii) monthly household expenditure (₹), (iii) the share spent on discretionary items, plus controls for income, education, dependents and age. Variables were pre-tested, coded uniformly, and expenditure figures were inflation-adjusted to FY 2024-25 rupees.

Descriptive statistics preceded inference. Normality (Shapiro–Wilk) and homoscedasticity (Levene) diagnostics guided test choice, while VIF scores confirmed low multicollinearity. Hypothesis 1—whether adoption rates differ by location—was evaluated with a χ^2 test of independence. Hypotheses 2 and 3—whether adoption affects total spend and discretionary share—were first probed with Welch's unequal-variance t-tests, then modelled via OLS regressions that controlled for socio-economic covariates; heteroskedasticity-robust (HC3) errors safeguarded significance levels. Robustness was checked three ways: Mann-Whitney U tests for non-normal variables, 1 000-draw bootstrap confidence intervals for regressions, and sensitivity re-runs excluding expenditure outliers. Together, this mixed parametric–non-parametric strategy delivers reliable, policy-relevant estimates within a tight empirical framework.

DATA ANALYSIS

H_{01}: There is no significant difference in digital payment adoption rates between urban and rural households.

			Adoption		Total
			No	Yes	
location	Rural	Count	113	87	200
		% within location	56.5%	43.5%	100.0%
	Urban	Count	60	140	200
		% within location	30.0%	70.0%	100.0%
Total		Count	173	227	400
		% within location	43.3%	56.8%	100.0%

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digital payment adoption rates
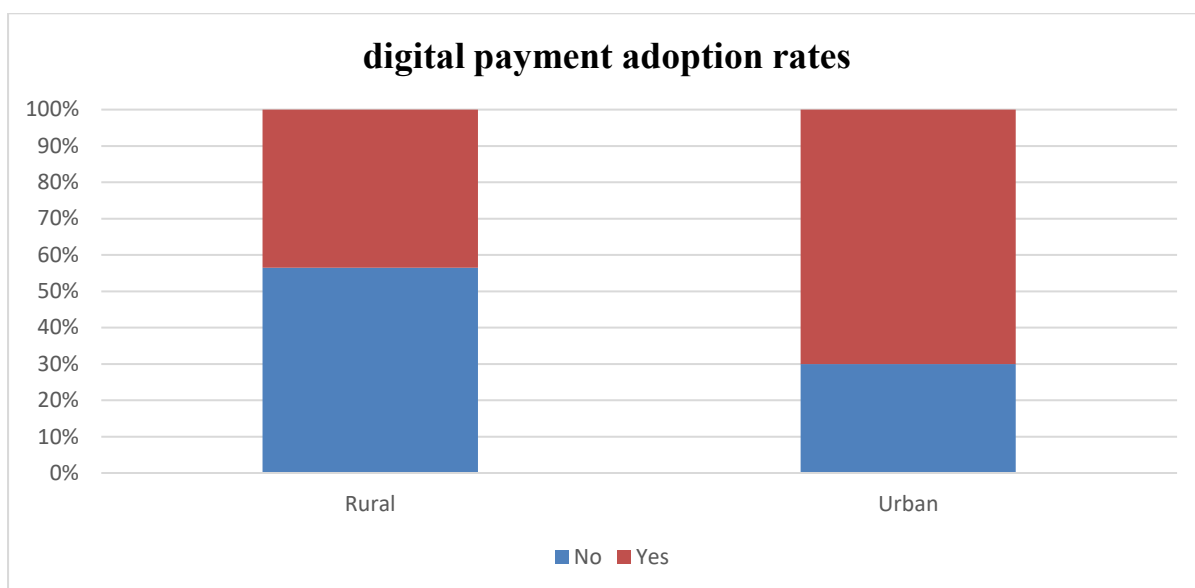
Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	28.611[a]	1	.000		
Continuity Correction[b]	27.542	1	.000		
Likelihood Ratio	28.990	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	28.540	1	.000		
N of Valid Cases	400				

Source: SPSS Output

The results of the chi-square test provide strong evidence against the null hypothesis (H_{01}), which stated that "there is no significant difference in digital payment adoption rates between urban and rural households". The cross-tabulation shows that 70% of urban households reported using digital payments, compared to only 43.5% of rural households. This indicates a clear disparity in adoption levels across geographic settings.

The Pearson chi-square value was 28.611, with 1 degree of freedom, and an associated p-value of 0.000. Since the p-value is well below the conventional significance threshold of 0.05, we reject the null hypothesis. The result is statistically significant, suggesting that the likelihood of digital payment adoption is strongly associated with the household's location. The Fisher's Exact Test and Likelihood Ratio Test also support this conclusion with exact significance values of 0.000.

This finding implies that urban households are substantially more likely to adopt digital payment systems than rural households. Factors such as better infrastructure, greater smartphone penetration, higher digital literacy, and wider merchant acceptance in urban areas

may be contributing to this divide. These results underscore the need for targeted interventions to promote digital financial inclusion in rural regions, where adoption still lags behind.

H_{02}: There is no significant difference in monthly household expenditure between adopters and non-adopters of digital payments.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.421[a]	.177	.175	.450
a. Predictors: (Constant), expenditure				

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.394	1	17.394	85.716	.000[b]
	Residual	80.970	399	.203		
	Total	98.364	400			
a. Dependent Variable: Adoption						
b. Predictors: (Constant), expenditure						

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.788	.148		-5.316	.000
	expend	4.923E-5	.000	.421	9.258	.000
a. Dependent Variable: Adoption						

Source: SPSS Output

To test H_{02}—which states that "there is no significant difference in monthly household expenditure between adopters and non-adopters of digital payments" a simple linear regression was conducted with digital payment adoption as the dependent variable (coded as 1 = adopter, 0 = non-adopter) and monthly expenditure as the predictor.

The model summary shows an R^2 value of 0.177, indicating that about 17.7% of the variation in adoption status can be explained by household expenditure alone. The model is statistically significant as evidenced by the ANOVA F-statistic of 85.716 (p = 0.000), suggesting that monthly expenditure is a significant predictor of digital payment adoption.

Looking at the coefficients table, the unstandardized beta coefficient for expenditure is 4.923×10^{-5}, with a t-value of 9.258 and a p-value < 0.001. This means that for every additional ₹1 increase in monthly expenditure, the likelihood of digital payment adoption increases marginally but significantly.

In practical terms, households with higher monthly spending are more likely to adopt digital payment methods. As the result is statistically significant, we reject H_{02} and conclude that monthly household expenditure is positively associated with digital payment adoption, implying that higher-spending households tend to be early adopters of digital platforms.

H₀₃: There is no significant difference in the proportion of discretionary spending between adopters and non-adopters of digital payments

Independent t-test

Adoption	N	Mean	Std. Dev.	t	Sig.	Cohen's d
No	173	.2508643	.04735405	19.77	.000	1.99
Yes	228	.3512807	.05254122			

Source: SPSS Output

To evaluate H₀₃, which posits that "there is no significant difference in the proportion of discretionary spending between digital payment adopters and non-adopters", an independent samples t-test was conducted. The analysis reveals a clear and statistically significant difference in the mean discretionary spending share between the two groups.

The mean proportion of discretionary spending among non-adopters is 0.2509, while for adopters it is 0.3513. The t-statistic is 19.77, with an associated p-value of 0.000, well below the 0.05 threshold. This indicates a highly significant difference in discretionary budget allocation between the two groups. Furthermore, the Cohen's d value of 1.99 suggests a very large effect size, meaning that the difference is not only statistically significant but also practically meaningful.

Based on these results, we reject the null hypothesis (H₀₃) and conclude that households using digital payments allocate a significantly larger share of their budget to non-essential (discretionary) spending. This supports behavioral theories that suggest digital payment systems reduce the "pain of paying" and may encourage impulse spending or consumption beyond necessities. The finding has important implications for financial literacy initiatives and responsible digital finance use, particularly in lower-income or newly-digitized households.

KEY FINDINGS

1. **Digital payment adoption is significantly higher among urban households** compared to rural households. While 70% of urban respondents reported using digital payments, only 43.5% of rural households did so, indicating a persistent urban–rural digital divide.

2. **Monthly household expenditure is a significant predictor of digital payment adoption.** Higher-spending households are more likely to adopt digital payment platforms, suggesting that economic capacity influences digital behaviour.

3. **Adopters of digital payments allocate a greater proportion of their budget to discretionary spending.** The difference is not only statistically significant but also large in effect size, indicating that digital payment systems may encourage higher non-essential consumption.

4. **All three null hypotheses were rejected**, providing strong evidence that digital payment adoption is associated with measurable differences in household economic behaviour—both in terms of adoption patterns and spending composition.

5. **The behavioural impact of digitisation varies by geography and spending level**, highlighting the need for targeted financial literacy and inclusion initiatives, particularly in rural areas and among low-spending households.

SUGGESTIONS

Based on the empirical findings of this study, several key suggestions can be made to enhance digital payment adoption and mitigate potential behavioral risks associated with it:

1. **Targeted digital literacy campaigns in rural areas** should be prioritized. The significant gap in adoption between urban and rural households indicates the need for awareness programs tailored to rural users, focusing on basic digital skills, transaction safety, and mobile banking confidence.

2. **Incentivizing low-income and low-spending households to adopt digital platforms** may help close the inclusion gap. Subsidized internet access, simplified UPI onboarding, and reward schemes for small-value digital transactions could increase adoption among economically weaker sections.

3. **Integrate financial behaviour training into digital inclusion efforts.** Since adopters show significantly higher discretionary spending, there is a risk of overspending or impulse buying. Digital financial literacy programs should include modules on budgeting, spending discipline, and saving habits.

4. **Strengthen consumer protection frameworks**, particularly for rural users who may be less familiar with fraud risks or redressal mechanisms. Simplified complaint processes and awareness drives on secure digital practices are crucial.

5. **Leverage local institutions and self-help groups** as intermediaries to build trust in digital transactions. Community-based outreach, especially in rural regions, can act as a bridge between technology and traditionally cautious users.

These measures, when strategically implemented, can ensure that the benefits of India's digital payment revolution are equitably distributed, behaviorally sustainable, and economically empowering.

CONCLUSION

India's rapid digital transformation has redefined how households interact with money, yet its behavioral consequences are still unfolding. This study examined the impact of digital payment adoption on consumer spending behavior, using a stratified sample of urban and rural households. The findings reveal significant differences in adoption patterns, with urban households adopting digital payments at much higher rates than rural counterparts. Additionally, higher monthly expenditure is positively associated with the likelihood of adoption, indicating that digital finance is more prevalent among economically stronger households.

Crucially, the study found that digital payment adopters tend to allocate a larger share of their budgets to discretionary spending. This suggests that while digital tools enhance convenience and access, they may also encourage impulsive or non-essential consumption. These behavioral shifts carry both opportunities and risks—from boosting consumption to potentially undermining savings discipline.

In rejecting all three null hypotheses, the study contributes empirical evidence to ongoing debates around financial inclusion, behavioral economics, and digital policy. It underscores the

need for nuanced, location-specific strategies that not only expand access but also guide responsible usage. As India continues its journey toward a less-cash economy, ensuring that digital adoption leads to sustainable and informed financial behavior remains a critical policy challenge.

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Conflict of Interest
The author declared no conflict of interest.

How to cite this article: Saxena R B (2025). Impact of Digital Payment Adoption on Consumer Spending Behavior in Urban vs Rural Households in India. *International Journal of Social Impact, 10*(2), 524-532. DIP: 18.02.050/20251002, DOI: 10.25215/2455/1002050