Impact of digital payment adoption on consumer spending behaviour in Urban and Semi-Urban India

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Abstract: Ever since UPI, mobile wallets, and card-based systems were widely used, the payment ecosystem in India has been greatly affected by the fast growth of digital financial technology. This research looks at the spending habits of people in urban and semi-urban areas of India after they've switched to digital payments. Eight hundred fifty participants, ranging in age from eighteen to sixty-five, were surveyed using a structured questionnaire in order to accrue primary data for a quantitative study. A DID regression model, descriptive statistics, and correlation analysis were used to compare changes in discretionary spending before and after the implementation of digital payment methods. Using digital payment methods causes consumers to spend more money, according to the results. After using digital payment services, people's discretionary spending went up by around 18.9% on a monthly average. People in the 18–24 age bracket showed the most significant increase in their buying habits, suggesting a greater sensitivity to convenience and promotional offers among this demographic. There are robust positive correlations between convenience, incentives, impulsive purchases, and total expenditure, according to the studies of correlation. Furthermore, regression findings show that using digital payment methods considerably increases spending behaviour, but financial literacy has the opposite effect, moderating impulsive expenditure. Improving financial literacy is crucial, and these results show how digital financial technology affect people's finances and their conduct.
Keywords: Expenditure, UPI, Digital Finance, Technologies, Cashless, Economy.

1. INTRODUCTION

The world's customers handle their finances and make transactions in a completely different manner due to the fast digital revolution of financial institutions. The transition away from cash has been expedited in India thanks to the rise of digital payment systems like UPI, mobile wallets, online banking, and contactless card payments. Consumers in urban and semi-urban areas have been greatly encouraged to participate in digital financial services because to government efforts such as Digital India, the proliferation of smartphones, and advances in internet access. Consequently, customers are able to make quick, safe, and easy transactions

using digital payment channels, which have become an intrinsic part of daily economic activity. [1] [2]

These payment systems expand upon the digital infrastructure already in place to considerably cut down on transaction times and streamline financial operations by doing away with physical currency altogether. Apps like Google Pay, PhonePe, and Paytm have made it possible for consumers to immediately complete purchases using mobile devices. [3] The third There has been a dramatic change in customer payment preferences, as seen by the exponential growth of digital transaction volume in recent years, according to studies from the Reserve Bank of India and the National Payments Corporation of India. Contactless payment alternatives were promoted and customer confidence in digital platforms was reinforced during the COVID-19 epidemic, which further hastened this shift. [4]

In addition to their operational advantages, digital payment systems exert a significant influence on consumer behaviour through psychological and behavioural mechanisms. Behavioural economics suggests that the method of payment can affect spending decisions. When consumers use digital payment modes, the psychological "pain of paying" tends to decrease compared to cash transactions, as digital payments create a sense of intangible money transfer rather than immediate physical loss. Consequently, consumers may become more willing to make frequent or impulsive purchases. Promotional incentives such as cashback offers, reward points, and discounts further reinforce this behaviour by encouraging consumers to complete additional transactions in order to gain benefits. [5]

These behavioural patterns, however, do not manifest uniformly across all consumer segments. The relationship between digital payments and spending behaviour is particularly important in emerging economies like India, where rapid technological adoption coexists with varying levels of financial literacy. Younger consumers who are more familiar with digital technology often show higher adoption rates of mobile payment platforms and are more responsive to online promotional campaigns. [6] On the other hand, older consumers may demonstrate more cautious spending patterns due to higher financial awareness or a preference for traditional payment methods. Therefore, demographic characteristics such as age, income level, education, and financial literacy play an important role in determining how digital payment systems influence spending behaviour. [7]

Consistent with these demographic observations, previous studies have indicated that digital payment adoption can increase transaction frequency and encourage discretionary consumption. Convenience, ease of use, and instant accessibility often reduce the perceived barriers associated with making payments. Additionally, digital platforms frequently integrate marketing features such as personalized offers and reward systems, which can stimulate impulse buying behaviour. While these features enhance consumer engagement and market activity, they may also lead to excessive spending if consumers lack proper financial discipline. [8]

Building on the role of impulse buying and reward mechanisms discussed above, financial literacy acts as a critical moderating factor that shapes the extent to which digital payments influence spending behaviour. Consumers with higher financial knowledge are generally more capable of monitoring their expenditure and managing digital transactions responsibly. They are more likely to track spending patterns, compare prices, and make informed purchasing decisions. Conversely, individuals with lower financial literacy may be more vulnerable to impulsive purchases triggered by the convenience and promotional incentives offered through digital platforms. [9]

Given the rapid proliferation of digital payment platforms across India, it becomes imperative to rigorously examine how these technologies influence consumer spending behaviour across diverse demographic and socioeconomic groups. Such understanding is particularly relevant for policymakers, financial institutions, and digital payment providers who aim to promote responsible financial behaviour while encouraging digital financial inclusion. Accordingly, the present study investigates the impact of digital payment adoption on consumer spending behaviour in urban and semi-urban India by analysing changes in discretionary expenditure before and after the adoption of digital payment systems, using a rigorous quasi-experimental design. [10]

2. OBJECTIVES OF THE STUDY

1. To determine how a shift to digital payment methods affects the regularity and amount of customer spending.
2. To determine whether psychological and behavioural elements impact spending patterns.
3. To investigate how socioeconomic factors and demographics moderate the relationship

between digital payment use.

4. To use quantitative techniques to compare expenditure patterns before and after adoption

3. HYPOTHESES OF THE STUDY

H1: There is a significant rise in consumer discretionary expenditure after the adoption of digital payment methods.

H2: The association between digital payment use and spending behaviour is strongly moderated by convenience and cashback/reward incentives.

H3: Adoption of digital payment methods reduces impulsive expenditure when people are financially literate, but otherwise the effect is moderated.

4. MATERIAL AND METHODS

- **Research Design**

Researchers in this study used a descriptive-analytical approach to look at the effects of digital payment uptake on spending habits of people with different ages, income levels, and levels of financial literacy. The analytical part allows for the investigation of causal and moderating interactions among important factors, while the descriptive part helps to identify prevalent patterns of behaviour. For this quantitative study, we drew on secondary data from sources such as the Reserve Bank of India, the National Payments Corporation of India (NPCI, 2023), & the Deloitte Consumer Survey (2023), with the main data source being a structured questionnaire.

While accounting for pertinent socioeconomic factors, this study uses a Difference-in-Differences (DID) analytical approach to compare customers' average monthly discretionary spending before and after they adopted digital payment methods. The internal validity of causal estimates is strengthened by including a non-adopter control group. By integrating descriptive pattern recognition tools with inferential causal analysis approaches, this hybrid methodology offers a thorough grasp of the behavioural factors driving shifts in consumer purchasing.

- **Methods of Sampling and Population**

The target population for this study comprised adult consumers aged 18 to 60 years residing in urban and semi-urban areas across India. The sample included respondents from diverse occupational backgrounds, namely students, salaried employees, self-employed individuals, and homemakers. To ensure adequate geographic representation, participants were selected from Tier-1 metropolitan cities (Bengaluru, Hyderabad, Pune, and Delhi), Tier-2 cities (Indore, Jabalpur, and Raipur), and surrounding semi-urban localities.

A stratified random sampling technique was adopted to ensure proportional representation across all age groups, income brackets, and occupational categories. The minimum required sample size was calculated using Cochran's formula, which at a 95% confidence level and a ±5% margin of error yields a minimum of 384 respondents. To enhance statistical power and facilitate meaningful sub-group analysis, a final sample of 850 valid responses was collected. Of these, 612 respondents (72%) were identified as regular users of digital payment platforms and constituted the treatment group, while the remaining 238 respondents (28%) primarily relied on cash-based transactions and served as the comparison group for the Difference-in-Differences (DID) analysis

Table 1: The Respondents' Socio-Demographic Profile (N = 850)

Variable	Category	Frequency	Percentage (%)
Gender	Male	480	56.47
	Female	370	43.53
Age Group	18–24	180	21.18
	25–39	430	50.59
	40–59	240	28.24
Monthly Income (INR)	Below 25,000	140	16.47
	25,000–50,000	370	43.53
	50,001–75,000	200	23.53
	Above 75,000	140	16.47
Occupation	Students	180	21.18
	Self-Employed	160	18.82
	Salaried Employees	410	48.24

	Homemakers	100	11.76

5. RESULTS

Results from a study of 850 genuine replies from Indian customers residing in urban and semi-urban areas are presented in this section. The findings provide light on the ways in which consumers' attitudes, behaviours, and shopping habits have changed in response to the widespread use of digital payment methods.

- **Analysis by Description**

The descriptive analysis provides a structured overview of the respondents' demographic profile and behavioural characteristics. The majority of the respondents (50.59%) were in the 25-39 age bracket, while the average age of the respondents was 33.3 years. There was a balanced gender makeup, with around 56.47% male and 43.53% female. In terms of monthly income, 43.53% earned between ₹25,000 and ₹50,000, while 23.53% earned between ₹50,001 and ₹75,000. The widespread adoption of mobile devices and the rapid expansion of internet connectivity have emerged as the primary enablers of digital payment adoption among respondents.

Table 2: Using Digital Payments How Often(N = 850)

Usage Frequency	Daily	2–4 times a week	Weekly	Occasionally
Respondents	392	190	128	144
Percentage (%)	46.1	22.4	15.1	16.9

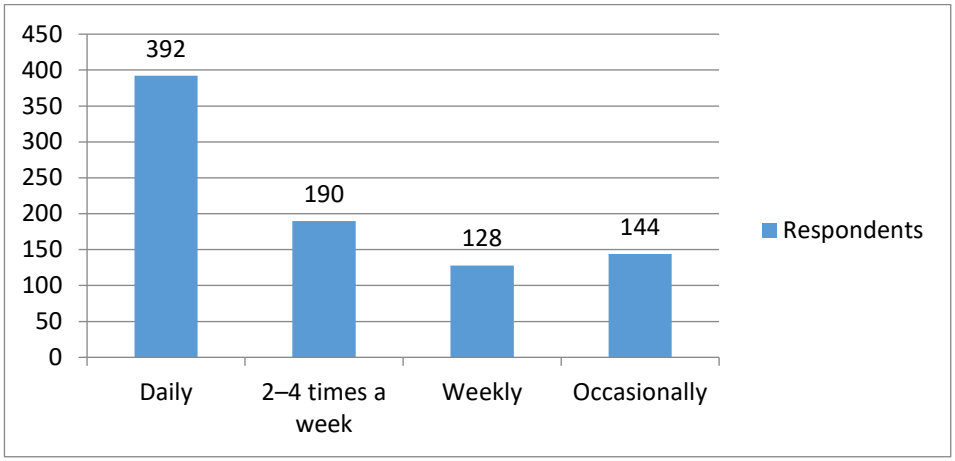

Figure 1: Using Digital Payments How Often

Approximately 68.5% of respondents reported using digital payment platforms at least twice a week, indicating strong habitual engagement. Among regular users, Google Pay (54%), PhonePe (27%), & Paytm (14%) were the most widely used platforms, while a smaller proportion (5%) relied on card-based or net-banking systems.

- **Comparison of Spending Habits**

Researchers found that consumers' spending habits changed significantly when they started using digital payment methods. This was true across a variety of discretionary expenditure categories, including food, entertainment, and online shopping.

Table 3: Routine Monthly Expenditures(₹)

Age Group	Before Adoption	After Adoption	% Increase
18–24 years	6,500	7,600	16.9
25–39 years	8,200	9,500	15.9
40–59 years	7,000	7,800	11.4
Overall Mean	**7,400**	**8,800**	**18.9**

Adoption of digital payment methods was associated with an increase of 18.9% in average monthly discretionary expenditure. Respondents in the 18–24 age bracket showed the most

dramatic growth (+16.9%), indicating that this demographic is more receptive to the allure of convenience and digital marketing. Supporting Hypothesis H1, which states that the use of digital payment methods leads to higher expenditure, a paired sample t-test validated the significance of this difference ($t = 4.73$, $p < 0.001$).

- **Indicators of Behaviour and Correlation Analysis**

The links among the behavioural dimensions (convenience, rewards, impulsive purchasing, and spending level) were assessed using a Pearson correlation matrix.

Table 4: Correlation Matrix (N = 604)

Variables	Convenience	Rewards	Impulsive Buying	Spending Level
Convenience	1	0.63**	0.59**	0.48**
Rewards		1	0.52**	0.55**
Impulsive Buying			1	0.61**
Spending Level				1

A high positive association between ease of use and impulsive purchases (r=0.59) is shown by the data, indicating that smooth and simple transactions enhance the probability of unanticipated purchases. The positive correlation between spending level and rewards and cashback offers ($r = 0.55$) supports Hypothesis H2, which states that reward incentives affect spending behaviour.

- **Analysing Differences in Differences (DID) with Regression**

The purpose of using a DID model was to measure how the introduction of digital payment methods affected consumer purchasing. Digital payment acceptance, ease, incentives, monitoring use, and financial literacy moderated the relationship between the dependent variable (log of discretionary expenditure) and the independent variables (other than spending itself).

Table 5: Findings from the Regression Analysis (Variable: Monthly Spending Log)

Variable	Adoption × Post Period	Convenience	Rewards Exposure	Tracking Usage	Financial Literacy × (Adoption × Post)	R^2
Coefficient (β)	0.135	0.042	0.057	-0.021	-0.031	0.27
Std. Error	0.028	0.015	0.017	0.012	0.013	
p-value	0.000***	0.006**	0.001***	0.082*	0.018**	

According to the regression findings, there is a positive and statistically significant relationship between the use of digital payment methods and spending behaviour ($\beta = 0.135$, $p < 0.001$). After accounting for other factors, the coefficient shows that digital payment adoption leads to a 13.5% rise in discretionary expenditure. The negative correlation for the financial literacy × adoption interaction lends credence to Hypothesis H3, suggesting that a better understanding of personal finance reduces the propensity to overspend.

- **Findings**

The findings highlight the importance of digital payment systems in encouraging consumer spending due to their efficiency, ease, and incentive-based characteristics. As a result of the powerful impact of digital marketing, promotional incentives, and peer-driven behaviour made possible by social media-linked payment apps, consumers under the age of 30 showed greater spending levels than older age groups. The priorities of customers between the ages of 40 and 59 shifted somewhat, with a higher priority placed on transaction security and transparency.

The numbers show that customers are more likely to make frequent, and sometimes pointless, purchases when they participate in incentive and cashback programs. It is worth mentioning that 61% of participants said they were more likely to buy non-essential items when cashback offers were available.

In addition, the results of the DID show that when people aren't financially savvy, they are more likely to spend money impulsively, especially when convenience is a driving factor. People feel less of a loss when they pay with digital currency since they don't see it as physically

present as when they pay with cash. This is in line with what behavioural economists mean when they talk about mental accounting. Consistent with results from similar earlier studies, this one finds that urban Indian consumers spend in a certain way. [11]

Three age groups are shown on the bar graph: 18–24, 25–39, and 40–59 years. The average monthly discretionary spending before and after digital payment adoption is also shown. The usage of digital payment methods is positively correlated with higher expenditure, as seen by the rising trend across all cohorts. Spending increased from 6,500 to 7,600 naira in the 18–24 age bracket, and from 8,200 to 9,500 naira in the 25–39 age bracket, the two groups with the largest percentage increases. There was also a small but noticeable rise, from ₹7,000 to ₹7,800, among consumers in the 40-59 age group. The results are in line with behavioural theories of decreased payment friction and show that younger customers are more receptive to the convenience and promotional incentives offered by digital platforms. [12]

For each age group, the line graph shows the percentage rise in discretionary spending after the implementation of digital payments. In terms of percentage increase, the 18–24 age group topped the charts with 16.9%, followed by the 25–39 age group at 15.9%, and finally the 40–59 age group at 11.4%. The younger generation is more affected by digital ads, cashless incentives, and user-friendliness, as seen by this downward trend across all age categories. According to the data, which support Hypothesis H1, using digital payment methods does, in fact, boost consumer spending, especially among demographics who are highly involved with digital technologies.

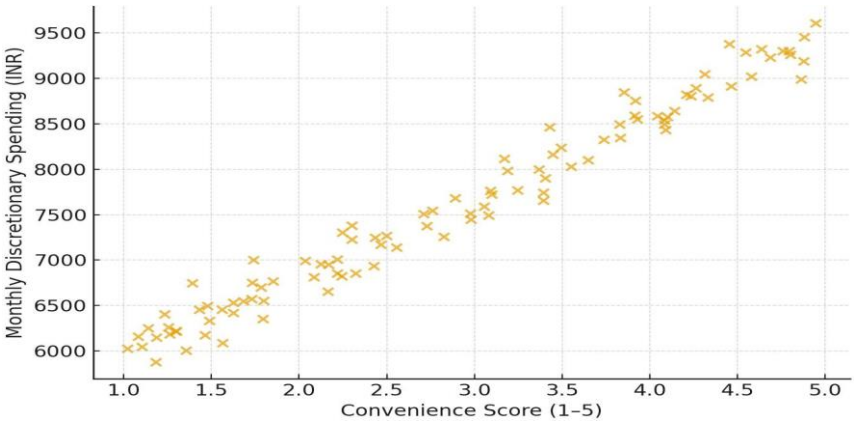

Figure 2: Relationship Between Convenience and Spending Level

Perceived ease of use (on a scale from 1 to 5) and discretionary expenditure (in Indian rupees) per month are shown in the scatter plot. An obvious and direct correlation is shown by the

positive slope of the data points: as the convenience score goes up, so does the average expenditure. The average monthly expenditure of respondents whose digital payment convenience ratings were over 4.0 was more than ₹8,500, whilst the average monthly spending of those whose ratings were below 2.5 was less than ₹6,000. According to this trend, the chance of increased expenditure is enhanced by perceived convenience, which functions as a significant behavioural mediator. Consumers are more likely to spend money when they perceive a less "pain of paying" and an increase in spontaneous spending when transactions are processed more quickly and easily. While ease of use is certainly an important consideration, the scatter pattern's modest dispersion implies that other variables, such as income and incentives, have a dual impact on final expenditure decisions. [13]

- **Discussion and Policy Implications**

In both quantitative and qualitative terms, this study's results provide credence to the claim that digital payment methods have drastically altered Indian consumers' buying habits. The data shows that customers' discretionary spending went up by almost 19% on a monthly basis when digital payment options like UPI, mobile wallets, and contactless cards were introduced. The simplicity, rapidity, and incentive-based systems built into digital payment platforms are the primary drivers of this upsurge. Behavioural economics postulates that lowering the mental barrier to spending—the "pain of paying"—through frictionless digital transactions will lead to more frequent and higher-value purchases. [14]

Furthermore, the 18–24 age cohort demonstrated the most pronounced shift in spending behaviour, with discretionary expenditure rising by an average of 16.9% following digital payment adoption. This finding reflects the heightened receptivity of digitally proficient younger consumers to technological innovation and targeted advertising stimuli. The widespread availability of smartphones, the integration of social media with payment platforms, and the gamification of reward systems — including cashback, discounts, and loyalty points — have collectively contributed to a culture of frequent purchasing among younger users. [15] In contrast, spending increases among older consumers were comparatively modest, suggesting a tendency toward greater financial caution and a continued preference for cash as a medium of exchange owing to its perceived sense of control and security. This generational disparity illustrates how variables such as income level, degree of financial

awareness, and duration of digital platform usage moderate the psychological and behavioural effects of digital payment adoption.

Beyond demographic differences, the regression analysis further identified specific behavioural drivers of increased expenditure. Convenience ($\beta = 0.042$, $p < 0.01$) and reward exposure ($\beta = 0.057$, $p < 0.001$) emerged as statistically significant predictors of spending levels. While digital payment systems streamline the transaction process, the findings suggest that they simultaneously encourage reward-seeking behaviour, which in turn promotes impulsive purchasing. This represents a key behavioural paradox of digital finance: the same features that simplify money management also stimulate more frequent and sometimes unnecessary consumption. Importantly, financial literacy functioned as a significant negative moderator ($\beta = -0.031$, $p < 0.05$), confirming that consumers with greater financial knowledge demonstrate stronger self-control and lower tendencies toward impulsive spending. This supports the conclusion that financial awareness serves as a protective factor against the risk of overspending in cashless economies. [16][17]

Taken together, the findings confirm all three research hypotheses of this study. Convenience and incentive mechanisms positively regulate the relationship between digital payment adoption and increased consumer spending, while financial literacy acts as a counterbalancing moderating force. Depending on the level of user awareness and financial discipline, the integration of digital payment technologies within India's financial ecosystem can simultaneously promote economic empowerment and expose consumers to the risk of overconsumption. These results underscore the broader behavioural transformation taking place within this rapidly evolving digital financial ecosystem, and highlight the need for targeted policy interventions that balance innovation with responsible financial conduct.

6. CONCLUSION

Digital payment technologies have a major impact on consumer buying behaviour in India's urban and semi-urban areas, according to this study's results. Because of their accessibility, ease of use, and incentive-based frameworks, digital payment systems promote more frequent transactions and more discretionary spending, according to the study. Confirming a favourable correlation between digital payment use and expenditure behaviour, the research found that customers' discretionary spending increased by an average of almost 18.9% every month after they started using digital payment systems. The findings further demonstrate how convenience

and financial incentives, among other behavioural aspects, influence consumers' buying habits. The convenience of digital payment methods has made shopping more easier and less intimidating for many people. Customers are more likely to make repeat purchases when they are offered incentives like rebates, reward points, and discounts. This may lead to higher consumption levels. Younger customers, especially those in the 18–24 age bracket, show the greatest rise in purchasing behaviour, the survey showed, because of their extensive exposure to online promotional activities and high level of familiarity with digital technologies.

Simultaneously, financial literacy has been identified as a significant moderator that aids in controlling one's impulse purchases. Even if digital payment methods are convenient, consumers who are financially savvy are more likely to keep track of their spending and be disciplined with their money. This suggests that while digital financial technologies have the potential to increase economic activity and broaden access to financial services, they also carry the risk of encouraging users to spend more than they have a sufficient understanding of their own financial situation. There is an opportunity and a behavioural challenge presented by digital payment methods in the changing financial environment, according to the research. Although new technologies make financial transactions more accessible and efficient, they also change how consumers think about and behave when making purchases. Building stronger financial literacy programs and encouraging safe digital finance practices should be the priority of policymakers and financial institutions. In India's rapidly becoming cashless economy, such measures may guarantee that the ongoing growth of digital payments promotes sustainable consumer behaviour and equitable economic development.

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