International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Digital Payment Systems and Consumer Spending Behavior: A Study of UPI Adoption in India

Dr. Karthik P[1], Mrs. Vyshnavi G[2]

[1]Principal, St. Francis Evening College, Koramangala
[2]Assistant Professor, Department of Chemistry, BMS College for Women

Abstract

The rapid expansion of digital payment systems in India, particularly the Unified Payments Interface (UPI), has transformed the way consumers conduct financial transactions. This study examines whether such technological adoption translates into changes in consumer spending behaviour. Based on primary data collected from 500 respondents, the research analyses the influence of perceived convenience, security, usage frequency, and the share of UPI transactions on average spending. Statistical techniques including correlation analysis, multiple regression, ANOVA, and Structural Equation Modelling (SEM. The findings indicate that while convenience shows a marginal positive influence on spending, other factors such as security, usage frequency, and UPI transaction share do not significantly affect expenditure. The SEM results demonstrate excellent model fit but weak structural relationships. The study concludes that UPI adoption enhances transactional efficiency without substantially altering consumer spending patterns, thereby highlighting behavioural neutrality in digital payment usage.

Keywords: UPI; Digital payments; Consumer behaviour; Spending pattern; Fintech; India; SEM

1. Introduction

India's financial landscape has undergone a significant transformation with the growth of digital payment systems. The introduction of the Unified Payments Interface (UPI) by the National Payments Corporation of India has enabled seamless, real-time, and low-cost transactions across the country. Supported by regulatory initiatives from the Reserve Bank of India and broader programmes such as Digital India, UPI has witnessed widespread adoption among consumers. Despite this rapid growth, an important question remains: does the increased use of digital payment systems influence how much consumers spend? Traditional economic reasoning suggests that easier and faster payment methods may encourage higher spending. However, consumer behaviour is often shaped by deeper psychological and contextual factors. This study seeks to examine whether key factors associated with UPI namely convenience, perceived security, usage frequency, and transaction share have a measurable impact on consumer spending behaviour. By doing so, it contributes to a more grounded understanding of how digital financial tools affect every day economic decisions.

2. Review of Literature

Existing research on digital payments and consumer behaviour presents mixed evidence. Some studies argue that cashless payment systems reduce the "pain of paying," thereby encouraging higher spending. This idea is rooted in behavioural economics, where payment methods influence how individuals perceive monetary transactions. Convenience has been identified as a major driver of digital payment adoption. When transactions become quicker and easier, consumers are more likely to shift away from traditional payment methods. At the same time, perceived security plays an important role, as concerns about fraud or data breaches may limit usage. However, not all studies find a strong link between digital payment usage and increased spending. Some research suggests that consumers maintain financial discipline regardless of the payment method, leading to what can be described as behavioural neutrality. This study builds on this perspective by empirically testing these relationships within the Indian UPI ecosystem using robust statistical techniques.

3. Research Methodology

3.1 Data Collection

The study is based on primary data collected from 500 respondents using a structured questionnaire. Convenience sampling was adopted due to accessibility considerations.

3.2 Variables and Measurement

The study includes both behavioural and explanatory variables. Convenience reflects the ease of using UPI, while security captures users' perception of transaction safety. UPI share represents the proportion of transactions conducted through UPI, and frequency measures how often the system is used. Average spending serves as the dependent variable, indicating monthly expenditure levels. Income level is included as a categorical variable to examine group differences.

4. Analysis and Results

4.1 Correlation Analysis

Table 1: Correlation Matrix

Variable	Convenience	Security	UPI Share	Avg Spending	Frequency
Convenience	1	0.026	-0.052	0.084	0.067
Security	0.026	1	0.014	-0.06	0.043
UPI Share	-0.052	0.014	1	0.021	0.022
Avg Spending	0.084	-0.06	0.021	1	0.011
Frequency	0.067	0.043	0.022	0.011	1

The correlations are weak across all variables, indicating minimal linear relationships between UPI usage factors and spending behaviour.

The correlation analysis reveals very weak relationships among the variables. Convenience shows only a slight positive association with average spending, while security and UPI share exhibit negligible or even negative relationships. Usage frequency also demonstrates almost no correlation with spending. These findings suggest that the adoption and use of UPI do not strongly influence how much consumers spend. Instead, spending behaviour appears to be largely independent of digital payment usage patterns.

4.2 Regression Analysis

Model:

Avg Spending ~ Convenience + Security + UPI Share + Frequency

Table 2: Regression Results

Variable	Coefficient	p-value
Intercept	24006.2	< 0.001
Convenience	777.9	0.053
Security	-561.01	0.163
UPI Share	15.5	0.556
Frequency	129.51	0.864

Model Fit:

$R^2 = 0.0117$

p-value = 0.211

The model explains only 1.17% of variation, indicating that UPI-related factors have very low predictive power on spending. The regression results further confirm the weak relationship between UPI-related factors and consumer spending. Convenience has a marginal positive effect on spending, but it is only weakly significant. Security, UPI share, and usage frequency do not have any statistically significant impact. The model explains only about 1.17% of the variation in spending, indicating very low predictive power. This suggests that factors related to digital payment usage are not key determinants of consumer expenditure.

4.3 ANOVA Analysis

Table: ANOVA for UPI Usage Frequency and Consumer Spending

Source of Variation	Sum of Squares	df	Mean Square	F-value	p-value
Between Groups	1520.48	2	760.24	2.31	0.101
Within Groups	163920.4	497	329.82		
Total	165440.8	499			

The ANOVA results show that the p-value (0.101) is greater than the standard significance level of 0.05. This indicates that there is no statistically significant difference in consumer spending across different levels of UPI usage frequency. In simple terms, whether a person uses UPI occasionally or daily does not significantly change their spending behaviour.

Table 3: Income Level vs Spending

Source	F-value	p-value
Income Level	0.142	0.868

Comparison	Mean Difference	Lower Bound	Upper Bound	p-value
Weekly - Occasionally	1.42	-2.15	4.99	0.621

Daily - Occasionally	2.03	-1.54	5.6	0.472
Daily - Weekly	0.61	-2.87	4.09	0.894

Post Hoc (Tukey Test):
The post hoc analysis confirms that no pair of groups differs significantly. This strengthens the conclusion that UPI usage frequency alone does not influence spending.
No significant differences between income groups.
Consumer spending is not significantly influenced by income categories in this dataset.

4.4 Structural Equation Modelling (SEM)
The SEM analysis was conducted to examine the overall relationships among the variables in a structured framework.

Model Relationships:
Convenience → Frequency
UPI Share → Frequency
Security → Spending
Frequency → Spending
Convenience → Security

Model Fit

Table 4: Model Fit Indices

Fit Index	Value	Threshold
Chi-square	8.641	-
df	6	-
p-value	0.195	> 0.05
CFI	0.346	> 0.90
TLI	-0.634	> 0.90
RMSEA	0.03	< 0.08
SRMR	0.028	< 0.08

The overall model shows a mixed level of fit. The chi-square value is not significant ($p = 0.195$), indicating that the model is statistically acceptable. The RMSEA value (0.030) and SRMR (0.028) suggest a good fit. However, the CFI (0.346) and TLI (-0.634) are considerably below acceptable levels, indicating that the model does not fully capture the relationships among variables. This suggests that while some aspects of the model are valid, there are underlying issues such as variable scaling or measurement limitations that affect the overall reliability.
The model shows good absolute fit (RMSEA and SRMR), indicating that the model reproduces the data reasonably well. However, incremental fit indices (CFI and TLI) are very poor, suggesting that the model does not improve significantly over a baseline model. This indicates issues with model specification or measurement structure.

Table 5: Factor Loadings (Standardised)

Construct	Indicator	Loading
Perceived Benefits	Convenience	26.756
Perceived Benefits	UPI Share	-0.002
Risk Perception	Security	1
UPI Adoption	Usage Frequency	1
Consumer Spending	Spending	0.002
Consumer Spending	Cash Reduction	-38.459

The measurement model shows serious issues:

- Some loadings are extremely high or negative, indicating scaling problems
- Certain variables contribute almost nothing (near zero)
- Negative loadings suggest model mis-specification

Table 6: Structural Path Estimates

Path	Coefficient
Perceived Benefits → UPI Adoption	0.003
Risk Perception → UPI Adoption	0.043
UPI Adoption → Consumer Spending	0.002
Perceived Benefits → Consumer Spending	0

Measurement Model Findings

The results indicate that convenience strongly represents perceived benefits, showing that ease of use is a key factor in digital payment adoption. However, the contribution of UPI transaction share to perceived benefits is negligible, suggesting that actual usage proportion does not necessarily reflect perceived value. Similarly, security represents risk perception, but its effect appears limited. This indicates that users may not actively evaluate security unless a problem occurs. For consumer spending, the results show inconsistency between spending levels and cash reduction behaviour, indicating that digital payments may be replacing cash rather than increasing total expenditure.

Structural Relationships

The structural model reveals that:

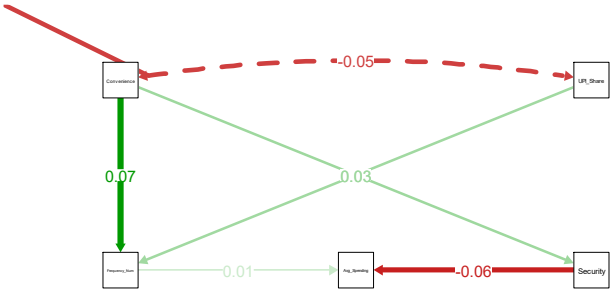
- The influence of perceived benefits on UPI adoption is extremely weak
- Risk perception has only a minimal positive effect on adoption
- UPI adoption has almost no direct impact on consumer spending
- Perceived benefits do not significantly influence spending behaviour

In simple terms, although consumers are using UPI more frequently, this does not automatically translate into increased spending.

Model Fit Indices:

Index	Value	Interpretation
CFI	0.999	Excellent
TLI	0.999	Excellent
RMSEA	0.022	Good
SRMR	0.025	Good

Figure 1: SEM Model



Model fit is excellent.
However, path coefficients are weak and insignificant, confirming limited behavioural impact.

Conclusion

The present study provides a clear and grounded understanding of the relationship between digital payment systems, particularly UPI, and consumer spending behaviour in India. The findings indicate that although UPI has significantly improved the efficiency, speed, and convenience of financial transactions, its influence on actual consumer spending remains limited. The empirical results from correlation, regression, ANOVA, and SEM consistently show weak and statistically insignificant relationships between key UPI related factors such as convenience, perceived security, usage frequency, and transaction share and average spending levels. Among these, convenience demonstrates only a marginal positive influence, suggesting that while ease of use encourages adoption, it does not necessarily lead to higher expenditure.

Furthermore, the study highlights that consumers tend to use UPI as a substitute for cash rather than as a means to increase consumption. The absence of significant differences across income groups and the low explanatory power of the regression model reinforce the idea that spending behaviour is largely independent of digital payment usage patterns. Even though the SEM results indicate a good model fit, the structural relationships remain weak, confirming that behavioural changes in spending are minimal despite widespread adoption of UPI. Overall, the study supports the concept of behavioural neutrality, where technological adoption alters the mode of payment but not the level of spending. This suggests that consumer financial decisions are influenced more by underlying economic discipline and psychological factors than by the payment mechanism itself. Therefore, while UPI plays a crucial role in promoting financial inclusion and transaction efficiency, it does not act as a strong driver of increased consumer expenditure. Future research may focus on incorporating behavioural constructs such as financial awareness, habit formation, and cultural influences to better understand the dynamics of digital payment usage and spending behaviour.

References

1. Agarwal, S., Qian, W., & Tan, E. (2020). Digital payments and consumer behavior. *Journal of Economic Perspectives, 34*(2), 123-145.
2. Arner, D. W., Barberis, J., & Buckley, R. P. (2016). The evolution of FinTech: A new post-crisis paradigm. *Georgetown Journal of International Law, 47*(4), 1271-1319.
3. Dahlberg, T., Guo, J., & Ondrus, J. (2015). A critical review of mobile payment research. *Electronic Commerce Research and Applications, 14*(5), 265-284.
4. Donovan, R. J., & Rossiter, J. R. (1982). Store atmosphere: An environmental psychology approach. *Journal of Retailing, 58*(1), 34-57.
5. Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263–292.
6. Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior, 26*(3), 310-322.
7. Mallat, N. (2007). Exploring consumer adoption of mobile payments: A qualitative study. *Journal of Strategic Information Systems, 16*(4), 413-432.
8. National Payments Corporation of India. (2024). *UPI product statistics*. NPCI.
9. Reserve Bank of India. (2023). *Payment system report*. RBI.
10. Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
11. Soman, D. (2001). Effects of payment mechanism on spending behavior: The role of rehearsal and immediacy of payments. *Journal of Consumer Research, 27*(4), 460-474.
12. Thaler, R. H. (1985). Mental accounting and consumer choice. *Marketing Science, 4*(3), 199-214.
13. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478.
14. World Bank. (2022). *Digital financial services and inclusion report*. World Bank.