Cash to UPI: Changes in Expenditure Pattern of Indian Rural Consumer

[1]Dr. Anurag Jhanwar & [2]Dr. Antima Agarwal

[1]Assistant Professor Department of Commerce , Govt. Bangur College, Didwana

[2]Assistant Professor Department of Commerce, Govt. Bangur College, Didwana

ABSTRACT

The widespread adoption of the Unified Payments Interface (UPI) in rural India has transformed daily transactions, shifting consumer spending from a cash-first habit to digital micro-payments. [1, 2, 3]

Key Shifts in Rural Expenditure Patterns

- Rise in Micro and Frequent Transactions: Rural users now conduct roughly 40% of their daily purchases digitally via RBI's Financial Inclusion Report. Instead of bulk cash withdrawals, consumers use UPI apps like PhonePe and Google Pay for smaller, high-frequency buys like groceries, utility bills, and farm inputs. [1, 2]
- Growth in Discretionary Spending: The intangibility of digital money lowers psychological spending friction. Studies note a measurable increase in non-essential or discretionary purchases and an inclination toward premium FMCG brand adoption in rural markets. [1, 2, 3, 4]
- Reduction in Cash Handling Costs: Small merchants in rural and semi-urban areas have lowered cash management and handling costs by up to 30%, while benefiting from faster turnover and integration into e-commerce via government initiatives like ONDC. [1]
- Fallback Role of Physical Currency: Cash has not vanished, but its role has changed from a default payment medium to a secondary reserve or fallback option.

Keywords- cash, UPI,expenditure, India, consumer, transactions, currency

INTRODUCTION

Digital payments have emerged as a dominant factor in changing the lives of Indians, bridging the gap between rural and urban areas. While much of the existing research focuses on either the adoption rates of UPI or its impact on spending patterns, our study specifically explores the differences in spending habits between rural and urban populations after the introduction of UPI. This paper includes both primary and secondary data; surveys were conducted to gather information on spending behaviours in rural areas, while data for the urban population were sourced from existing research papers and scholarly articles. Our findings suggest that the majority of rural residents tend to spend less and prioritise saving, whereas urban populations exhibit an increase in spending. These results align with previous studies on the topic. Our research provides valuable insights into the contrasting usage and spending trends between rural and urban populations in India as influenced by UPI.[1,2,3]

Over the last decade, there have been technological innovations in the payment methods that have enabled individuals worldwide to transition from cash transactions to digital payments. Most popular digital payment platforms include Apple pay, AliPay, WeChat Pay, Google Pay etc. (Matthewson, 2024).India had contributed 46% of total global transactions in 2022 , thus making it the leader in digital transactions. In this landscape, India has emerged as one of the leading examples of digital payment adoption, mainly through the Unified Payments Interface

(UPI). UPI is a system which was launched by National Payments Corporation of India (NPCI) in 2016 which uses only a single app to connect to multiple banks. Hence, it is very convenient for people to handle different transactions at once (NPCI ,2023). Research has shown that India experienced a staggering growth of payment transactions through UPI from 2,071 crore in 2017-18 to 18,737 crore in 2023-24, [press information bureau (2024)].

In India, the population can be categorised into urban and rural groups, which might differ in their ability to use UPI. To begin with, urban areas are well developed, where the concentration of infrastructure such as houses, commercial building, roads and bridges etc. are very high. A survey conducted in an urban area showed that 74.2% of total respondents had agreed that the usage of UPI had led to an increase in their spending behaviour .(From Cash to Cashless: UPI's Impact on Spending Behaviour among Indian Users, 2024). In a study by Rafee et al. (2022) in Chennai and Mumbai , it was found that 79.7% of the urban population felt that they were overspending due to the availability of UPI. Similarly, Padmavathi et al. (2021) had examined people's spending habits in Coimbatore focusing on clothing, entertainment, food, travel, and home décor.With cashless transaction it was observed by the investigator that there was increased expenditure in all these categories.In contrast to this, there were some instances showing that people working in urban areas are able to manage their expenses properly because of UPI.(Das, 2024) [4,5,6]

Exploring digital payment adoption in rural areas reveals unique patterns in how individuals interact with UPI and how it influences their spending behaviours. These areas, generally situated outside urban centres or in remote locations, face several challenges in terms of connectivity and financial inclusion (India.gov.in, 2013). Notably, rural regions are home to 65% of India's population(Team, 2023).Gadge and Rai (2019) found that people from Brahmapuri area gave more preference to cash rather than UPI due to the lack of knowledge, low literacy level and internet issues.Though another researcher found that awareness of UPI was higher than its actual usage among the rural population living (Umesh Maiya, 2020).

Considerable amount of research has examined how urban populations interact with UPI, focusing on ease of use and changes in spending habits following its adoption. However, findings on rural populations remain inconsistent. The existing literature has provided mixed findings into rural users' usability of UPI. Moreover, studies specifically addressing UPI's impact on their spending behaviours are limited. Hence, our current study will use primary and secondary data to investigate whether differences in spending habits influenced by UPI exist between rural and urban populations. Additionally, we predict that the urban population spends more with the availability of UPI in comparison to the rural population.

DISCUSSION

Unified Payments Interface (UPI) is a mobile-based contemporary digital payment system that has transformed and revolutionized financial transactions in India. Its adoption and usage can help bridge the digital divide and contribute to economic growth by integrating more individuals into the formal financial system. This study used logistic regression analysis, a method for modelling binary outcomes, to analyse the likelihood of UPI usage based on primary data collected from rural areas of Aligarh district. The analysis identified several significant predictors of UPI adoption, including younger age, male gender, higher education, specific occupations, and higher income. These factors were positively associated with the likelihood of using UPI payments. In contrast, caste, religion, JDY account holders and marital status were found to be insignificant predictors. The findings suggest that targeted financial literacy programs, gender-specific initiatives, youth engagement, and incentives for low-income groups could effectively boost UPI adoption, thereby facilitating financial inclusion and reducing the digital divide in rural areas.[7,8,9]

UPI significantly enhances financial inclusion by reducing barriers for underserved populations in rural India.

Key predictors of UPI adoption include age, gender, education, occupation, and income, with younger males being more likely users.

The Financial Inclusion Index improved from 43.4 in 2017 to 64.2 in 2024, indicating progress in financial services access.

Jan Dhan Yojana (JDY) accounts show limited impact on UPI usage, highlighting challenges in digital financial engagement.

Targeted interventions, including financial literacy programs and gender-specific initiatives, are essential for boosting UPI adoption.

Digital payments have emerged as the predominant method of payment in India since the introduction of the unified payments interface (UPI) in 2016. India has been traditionally a cash-heavy economy, and Indian businesspeople have been accustomed to drawing cash from banks or ATMs to conduct transactions. India does not boast a robust banking system in its rural corners. This creates huge inconvenience among rural traders to execute financial transactions due to a lack of funds. The advent of UPI has brought about a significant change to the professional activities of rural Indians. This study undertakes a scoping investigation of the extent to which this digital transformation has impacted the ease-of-doing business for people residing in rural areas of India. We conducted a computational thematic analysis through semi-structured interviews with 801 UPI users in rural locations of India, utilizing the topic modelling technique latent Dirichlet allocation. This approach is intended to address the issue of credibility that is commonly cited as a major drawback of qualitative research designs. The primary objective was to comprehend the major issues shared by the users regarding their UPI experience with regard to their business-related transactions. The analysis reveals that businesspeople from rural India who have been using UPI appreciate the ease of transactions facilitated by this technology and are content with the benefits it offers to entrepreneurs and workers in the unorganized sector. In terms of ease-of-doing business, the findings revealed that the major benefits were in terms of leveraging more transactions with tourists, which were earlier declined due to a lack of cash, more transparency of transactions, speed of transaction and reduced reliance on middlemen. However, the participants also expressed concerns about security issues and challenges arising from inadequate infrastructure, lack of a legal framework to safeguard against such type of malicious attacks and the potential for fraud.[10,11,12]

The landscape of payment systems in India has undergone a significant transformation with the integration of digital technology. The introduction of the unified payments interface (UPI) by the National Payments Corporation of India (NPCI) in 2016 has spurred a substantial increase in digital transactions (Ahluwalia, 2021). This evolution, witnessed over the past few years, is propelled by government initiatives, technological advancements and evolving consumer preferences. The success of the Digital India Campaign, aimed at making government services electronically accessible to all citizens and fostering a digitally empowered society, is evident in its widespread adoption across the country. The adoption of digital payment methods represents a major transformation in the country's payment landscape (Tiwari et al., 2019). These collective efforts stand as one of the most notable success stories in the digital transformation of society (Dani, 2022).

The initial step in this transformative process can be attributed to the initiative of targeting every Indian who had been without a bank account even after more than 65 years of Independence. The government strategically extended the reach of banks to the remotest corners of India's vast landscape, to integrate every individual or at least every family, into the country's financial system (Kajol & Singh, 2022; Sahu & Singh, 2018). This landmark achievement facilitated their inclusion in the mainstream economy, ensuring direct disbursement of their dues into bank accounts and significantly heightened their awareness of banking transactions. With time, the increased availability of banking services and improved network connectivity further enhanced their familiarity with digital transactions, encompassing internet banking and the emergence of the UPI system (Sivathanu, 2019). The UPI penetration rate stands at 56% for the bottom 40% of India's population (average annual household income: INR 1.10 lakh1) while the same for the poorest income group is 26%, as per the SIDE Report, 2023. The major players in the UPI market of India are PhonePe, Paytm and Google Pay. PhonePe constitutes four thousand million in volume and seven trillion INR in value, while Google Pay constitutes three thousand million in volume and four trillion INR in value (Gupta, 2023).[13,14,15]

The latest figure released by the NPCI reveals that the digital payments in India have recorded 8.9 billion transactions in April 2023, with a total value of INR 14.07 trillion (Kayastha, 2023). While this is encouraging and commendable, there remain certain causes for concern among the end users about the benefits of using this new technology, and this has resulted in roadblocks in the way of UPI's universal adoption in India at the desired level (Agarwal, 2021). In recent times, there has also been a slow dip in UPI usage in India (Kayastha, 2023). UPI frauds are also on the rise in the post-COVID scenario (Bhati, 2023), and there is still a major section of Indian society that trusts paper currency transactions to UPI (Baghla, 2018; Ligon et al., 2019).

In the context of the above, the present study attempts to probe Indian rural citizens' perception towards their experience of using digital payment options and whether they are satisfied or if they have any concern regarding such use through a thematic analysis of qualitative feedback shared by business owners and customers from rural India. We have used a computational thematic analysis approach through topic modelling (Blei, 2012) to identify the topics and the corresponding themes representing the topics. Subsequently, we highlight the sentiment analysis findings. Finally, the study draws a conclusion and provides policy recommendations in context to the findings.

RESULTS

The introduction of the UPI has revolutionized the payment ecosystem in India, offering a seamless, user-friendly and secure platform for inter-bank transactions. Since its inception in 2016, UPI has rapidly emerged as the fastest-growing payment system in the country, facilitating over 10 billion transactions monthly. Despite its transformative impact, UPI encounters various challenges, including concerns related to data privacy and competition from alternative payment systems. Our study, employing the topic modelling technique and sentiment analysis, unveiled intriguing findings. These encompass both user satisfaction and minimal challenges associated with the UPI payment system. The analysis, delving into respondents' responses, indicates that the shift towards UPI as the preferred mode of payment is primarily attributed to user-friendly technology, enticing discounts or cash benefits, and various government incentives such as 'Lucky Grahak Yojana' or 'Digi-Dhan Vyapar Yojana', along with rewards, subsidies and the receipt of government scheme benefits. Notably, digital transactions have also enhanced business operations, streamlining the ease-of-doing business for respondents.

Additionally, some respondents highlighted that UPI and cashless payments contributed to a reduction in their daily spending and aided in addressing issues related to black money. Nevertheless, respondents shared concerns about poor network connectivity in some areas, particularly in the rural sector. Hence, the government should expedite its revamped BharatNet Project for laying optical fibre cables to enhance internet access in rural and remote areas where internet connections are poor. Similarly, some respondents also expressed concerns about online cheating and fraud, urging the government to implement more stringent measures for its eradication. It is important to note that online cheating and fraud are evolving challenges, and governments continue to adapt their strategies to address emerging threats in the digital landscape. The Government of India is cognizant of this issue, with over 95,000 UPI-related fraud cases reported in the fiscal year 2022–2023, as disclosed by the Union Ministry (Mudaliar, 2023)—an increase from 84,000 in the preceding financial year. Despite the rise in UPI-related fraud cases, the growth rate of UPI transactions, which reached approximately 360 million in February 2023, has outpaced the growth rate of fraud cases. This suggests that certain measures have been effective in mitigating the growth of fraud cases in UPI transactions. Notably, a national cybercrime reporting portal has been established for grievances, and the government agencies have repeatedly alerted the nation to remain vigilant against online cheating and fraud. The assurance of a reduction in online fraud and flawlessness in transactions will surely increase confidence among users. UPI will indeed persist as the preferred mode of transactions, with exponential growth.[16,17,18]

Theoretical Implications

This study sheds light on the user intention towards UPI from a rural and urban comparative lens in the context of India. As such, the findings render support for the unified theory of acceptance and use of technology (UTAUT), proposed and popularized by Venkatesh and colleagues in 2003. The UTAUT posits that users will be motivated towards using certain technology depending on the extent to which they perceive the system to be beneficial for them in terms of (a) performance expectancy, (b) effort expectancy, (c) social influence and (d) facilitating conditions. Using the UPI interface leads to an enhanced ease-of-doing business with both local and foreign customers, including tourists. Hence, UPI is expected to improve the performance expectancy of rural and semi-urban business owners. From the consumer's perspective, too, such technology helps in uninterrupted ease of transactions, resulting in achieving their objectives irrespective of constraints such as power outages and insufficient funds in ATMs. Our participants have confirmed that UPI has a very simple user interface for users with limited technology exposure, which results in higher effort expectancy. The word-of-mouth popularity of UPI in rural and semi-urban India is really noteworthy, and the social influence factor of UTAUT is observed to be in full force behind the rapid adoption of UPI in the study context. Lastly, thanks to the Government of India's promotion of the technology and the deeper penetration of the internet in India's rural and semi-urban landscape, the right facilitating conditions are available to drive the adoption of UPI in the context of our study.

This study also provides validation for the theory of technological diffusion (Rogers, 1962). The Indian rural market is currently experiencing a growth phase in UPI adoption, following a relatively slow start. Given the huge population base and untapped users across India, the growth phase is expected to continue for an extended period in the future.

Managerial Implications

This study suggests that rural and semi-urban India can be tapped for several cross-functional industrial expansions, especially in sectors that rely heavily on digital payment-based transactions. The findings from this study provide validation to business entities that expanding to previously untapped consumers located in geographically remote locations has become more feasible due to UPI, in parallel expansion of infrastructure, internet penetration and rise in smartphone users (Kumar & Chawla, 2023). Managers may take note of this study to consider the feasibility of their aggressive expansion plans to the hinterlands of India and reap the benefits of the vast, untouched consumer base that resides there.[17,18,19]

Limitations and Future Directions

This study, like many others, has a few methodological shortcomings. To begin with, the choice of LDA for the computational thematic analysis may be criticized due to the recent rise in popularity of transformer-based topic modelling techniques such as the bidirectional encoder representations from transformers (BERT) technique (George & Sumathy, 2023). In this regard, the choice of LDA was based on the application of the same in similar study contexts and the lack of knowledge the researchers had about BERT.

Alternatively, we could have considered non-parametric topic modelling techniques such as hierarchical Dirichlet processing (HDP). This alternative was not explored due to the extended time taken by HDP for computing the results. Lack of sufficiently robust hardware restricted the authors from considering this approach. Although topic modelling helped in identifying the key topics, the process is still a relatively novel technique; hence, as researchers, there may be shortcomings in the execution.

CONCLUSION

Having acknowledged these, we believe that our study makes a novel contribution to the extant literature on technology adoption in a developing market's non-urban segment. In many ways, this study offers several ideas for future research. For example, studies may be directed towards understanding the phenomenon studied in this research through an objectivist lens. Future studies may also wish to explore the perspective of women's empowerment in relation to UPI technology in a similar social context. Studies may also be planned to understand the impact of UPI on enhancing livelihoods and economic conditions using a panel data approach. We sincerely hope that our study raises interesting research questions that can be pursued by eager researchers.[20]

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