



Internal Barriers To Upi Adoption Among Small Business Owners: A Behavioral And Gender-Based Analysis

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Abstract: The rapid expansion of digital payment systems in India has positioned the Unified Payments Interface (UPI) as a key driver of financial inclusion. However, a considerable number of small street-side Nano business owners continue to rely on cash transactions. This study investigates the internal barriers that hinder UPI adoption among small business owners in Mysore, with specific emphasis on gender, awareness, perception, and attitude. Primary data were collected from 52 Nano vendors who had not adopted UPI, using structured questionnaires. Statistical tools such as descriptive analysis, chi-square tests, and regression analysis were employed to examine the relationships between selected variables. The findings reveal that awareness and attitude significantly influence the barriers to UPI adoption, indicating that limited knowledge and unfavorable mindsets play a decisive role in resistance toward digital payments. While gender does not significantly affect awareness levels, it shows a meaningful association with perception and attitude toward UPI usage. Practical challenges such as limited digital literacy, fear of fraud, lack of smart phones, and financial constraints further intensify non-adoption. The study highlights the need for targeted awareness programs, user-friendly technological solutions, and confidence-building initiatives to promote UPI usage among Nano vendors. Strengthening these areas can enhance digital payment adoption and contribute to inclusive economic participation.

Index Terms - Unified Payments Interface (UPI), Nano Vendors, Digital Payment Barriers, Awareness and Attitude, Financial Inclusion

I. INTRODUCTION

The Unified Payments Interface (UPI) has emerged as a transformative digital payment mechanism in India, enabling instant, secure, and cashless transactions across diverse economic segments. Backed by robust digital infrastructure, supportive government policies, and increasing consumer preference for electronic payments, UPI adoption has expanded rapidly among formal businesses. Street vendors and small-scale merchants, in particular, stand to gain from UPI through faster transactions, reduced dependence on cash, and enhanced customer convenience. Despite these advantages, UPI usage among street-side Nano vendors remains limited. Prior studies indicate that favorable external conditions alone do not guarantee adoption. Sharma and Gupta (2022) observe that concerns related to taxation and perceived low customer demand discourage small merchants from embracing digital payments, while NCBI (2019) highlights digital illiteracy, lack of trust, and resistance to technological change as persistent challenges. These findings suggest that adoption barriers extend beyond infrastructural or policy-related factors.

While efforts to strengthen digital ecosystems continue, internal psychological and behavioral barriers significantly influence vendors' reluctance to adopt UPI. Habitual dependence on cash-based transactions remains a dominant obstacle, as many vendors prefer familiar systems developed over years of practice. Mehta et al. (2021) emphasize that perceived financial risks, fear of transaction failures, and anxiety over fraud strongly affect digital payment decisions. Similarly, Bhattacharya et al. (2023) identify privacy concerns, operational complexity, and negative user perceptions as key deterrents. In addition, doubts regarding tangible financial benefits, delayed settlements, and disruption of informal credit relationships further weaken vendors' motivation to shift toward UPI. Recognizing the growing favorability of external conditions, this study focuses on understanding these internal barriers to explain persistent non-adoption and to support the design of targeted interventions that promote inclusive and sustainable digital payment adoption.

II. CONCEPTUAL BACKGROUND

The conceptual framework of the study is designed to explain how internal factors influence the adoption of Unified Payments Interface (UPI) among street-side Nano business owners. In this framework, gender and awareness are treated as foundational variables that shape vendors' understanding and exposure to UPI systems. Awareness influences how vendors perceive UPI in terms of usability, security, and convenience, which in turn affects their overall attitude toward digital payments. Perception and attitude function as mediating variables that translate knowledge into behavioral intent. When awareness is low or perceptions are unfavorable, vendors tend to develop negative attitudes, resulting in resistance to UPI adoption. The dependent variable in the framework is the barrier to UPI adoption, which reflects psychological hesitation, skill limitations, and behavioral resistance rather than infrastructural constraints.

The relevance of this framework lies in its focus on internal, non-technical barriers, which remain underexplored despite widespread digital infrastructure and policy support. In the current digital economy, where cashless transactions are actively promoted, understanding the cognitive and behavioral processes behind non-adoption is essential. This framework helps identify why certain vendors remain excluded from digital payment systems even when access is available. By linking demographic and psychological variables with adoption behavior, the framework provides a structured approach to analyze resistance patterns. It also assists policymakers and service providers in identifying leverage points—such as awareness building and attitude change—that can effectively reduce adoption barriers.

III. REVIEW OF LITERATURE

The adoption of digital payment systems like Unified Payments Interface (UPI) has revolutionized the financial landscape in India. However, small business owners face unique challenges that impede their adoption of these platforms. This section reviews existing literature on the factors influencing digital payment adoption, with a focus on gender, awareness, perception, and attitude.

Digital Payment Systems and Small Business Owners - The rapid digitization of payment systems has led to the proliferation of UPI platforms, enabling seamless peer-to-peer and business transactions (Reserve Bank of India [RBI], 2021). Studies highlight that UPI platforms enhance transaction efficiency, reduce costs, and promote financial inclusion (Kumar & Gupta, 2020). Despite these benefits, small business owners are often reluctant to adopt such platforms due to limited digital literacy, resource constraints, and mistrust in technology (Jain, Kumar, & Sharma, 2019).

Gender and Digital Payment Adoption - Gender plays a significant role in shaping technology adoption behaviors. Women entrepreneurs, especially in developing countries, face systemic barriers such as limited access to financial literacy, technological resources, and societal norms (Huyer, 2020). According to Singh and Kaur (2022), gender biases can influence trust in digital payment systems, with women being less likely to adopt due to concerns about security and usability. In contrast, men tend to exhibit higher confidence and willingness to experiment with new technologies (Venkatesh & Morris, 2000).

Awareness and its Impact - awareness is a key determinant of technology adoption. Small business owners often lack adequate knowledge about the benefits, functionalities, and security features of UPI platforms (Roy & Mishra, 2021). Awareness campaigns have been found to bridge the knowledge gap, improving both perception and adoption rates (Chakraborty & Banerjee, 2020). However, the effectiveness of these campaigns varies based on accessibility, educational background, and socio-economic factors (Das & Sahoo, 2022).

Perception and Trust in UPI Platforms - Perception, particularly regarding security and reliability, heavily influences adoption. Negative experiences such as failed transactions or fraud create skepticism among small business owners (Sharma & Jain, 2021). Furthermore, perceived complexity in using UPI platforms discourages those with low technical skills (Mehta, Patel, & Shah, 2020). Studies indicate that improving user-friendly designs and providing clear communication about security protocols can positively alter perceptions (Agarwal, Singh, & Kumar, 2021).

Attitude Toward Digital Payment Platforms- Attitude, defined as an individual's positive or negative evaluation of technology, significantly impacts adoption intentions (Ajzen, 1991). Favorable attitudes are often shaped by perceived ease of use and benefits such as time savings and convenience (Davis, 1989). However, cultural resistance and a preference for cash-based transactions among small business owners hinder the development of positive attitudes (Gupta & Arora, 2021). Attitudes are also influenced by peer recommendations and the perceived digital readiness of customers (Khandelwal & Singh, 2022).

Integrated Models of Technology Adoption - Several frameworks, including the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT), provide insights into the determinants of technology adoption. These models emphasize the interplay of perceived usefulness, ease of use, social influence, and facilitating conditions (Venkatesh, Morris, Davis, Davis, & Venkatesh, 2003). Studies incorporating these models in the Indian context suggest that cultural and demographic factors, such as gender and awareness, should be explicitly addressed when studying small business owners (Pandey & Joshi, 2021).

IV. PROBLEM STATEMENT

Despite the widespread promotion of digital payments in India, a significant number of small business owners continue to avoid using UPI platforms. Existing research offers limited insight into the specific internal barriers faced by non-users, particularly the combined influence of gender, awareness, perception, and attitude. The lack of focused empirical evidence on these interconnected factors creates a gap in understanding the reasons for continued non-adoption, thereby necessitating a detailed investigation into the underlying barriers affecting UPI usage among small business owners.

V. OBJECTIVES OF THE STUDY

- To create the profile of the street side Nano vendors not using UPI payment methods.
- To assess if internal factors such as gender, awareness, perception, attitude act as barriers to adapt UPI payment methods.
- To suggest suggestions to the UPI service providing companies.

VI. RESEARCH METHODOLOGY

6.1 Research Method -

The study adopts a descriptive and analytical research design to examine the barriers influencing the adoption of Unified Payments Interface (UPI) among street-side Nano business owners. The research focuses on identifying the role of internal factors such as gender, awareness, perception, and attitude in shaping resistance toward UPI usage. A quantitative approach is employed to analyze primary data using appropriate statistical tools to draw valid and objective conclusions.

6.2 Sampling Design

6.2.1 Population - The population of the study comprises street-side Nano business owners in Mysore city who have not adopted UPI payment methods for their business transactions.

6.2.2 Sample Size - A sample of 52 Nano vendors was selected for the study. The respondents were chosen specifically from vendors who were non-users of UPI to gain focused insights into the barriers affecting adoption.

6.2.3 Sample Distribution - The sample was distributed across different business types, age groups, and gender to ensure representativeness. The majority of respondents belonged to the retail sector, followed by limited representation from manufacturing and service sectors. The sample also included vendors from different age categories and both genders to capture demographic diversity.

6.3 Source of Data

6.3.1 Primary Data - Primary data were collected through a structured questionnaire administered directly to street-side Nano vendors. The questionnaire included items measured using a Likert scale to assess awareness, perception, attitude, and perceived barriers to UPI adoption.

6.3.2 Secondary Data - Secondary data were obtained from research journals, published articles, reports of the Reserve Bank of India (RBI), government publications, websites, and previous studies related to digital payments and UPI adoption.

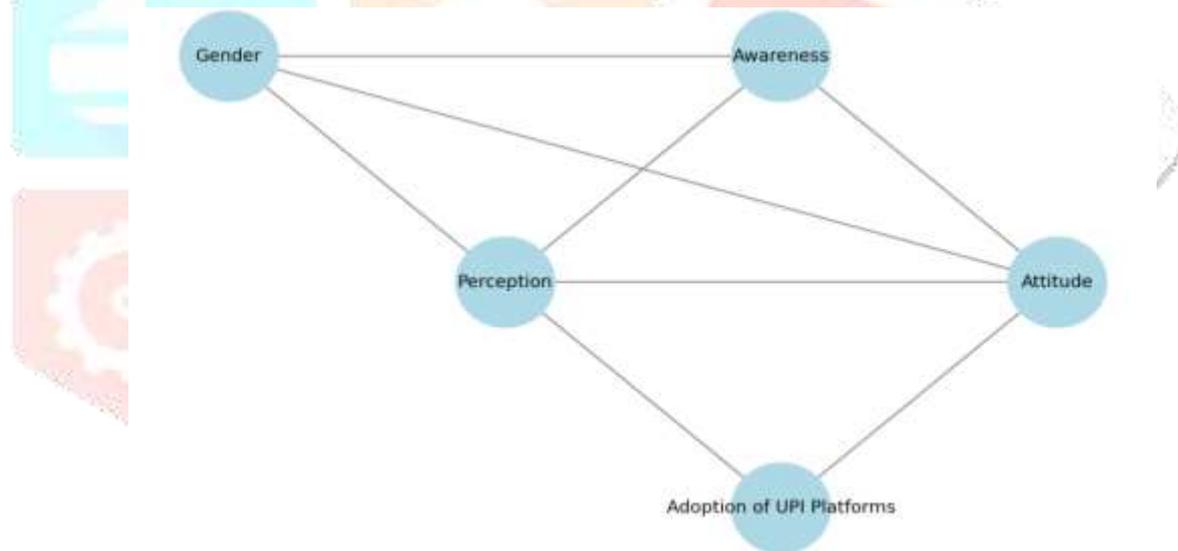
6.4 Hypotheses of the Study

The following null hypothesis was formulated to test the relationship between internal factors and barriers to UPI adoption

H₀: There is no significant relationship between gender, awareness, perception, and attitude and the barriers to adopting UPI payment methods among street-side Nano business owners.

6.5 Conceptual Model

Chart 1- Conceptual Model- Barriers to Adoption of UPI Platforms



6.5.1 Description of the Conceptual Model:

The conceptual model in the chart 1 illustrates the key barriers to the adoption of UPI platforms by small business owners. It highlights the relationships between the following factors:

1. **Gender:** Influences levels of awareness, perception, and attitude towards UPI platforms due to societal roles or access to resources.
2. **Awareness:** A critical factor that shapes how small business owners perceive and form attitudes toward UPI platforms. Higher awareness leads to better understanding and more positive attitudes.
3. **Perception:** Refers to how business owners view UPI platforms in terms of convenience, security, and usability. Perception is influenced by both gender and awareness.
4. **Attitude:** Represents the overall positive or negative mindset of business owners toward adopting UPI platforms. Attitude is shaped by perception and directly impacts adoption.
5. **Adoption of UPI Platforms:** The dependent variable, which is the decision by small business owners to adopt or not adopt UPI platforms.

6.5.2 Relationships

- Gender and Awareness are foundational factors that influence Perception and Attitude.
- Perception and Attitude act as mediators, directly driving the adoption of UPI platforms.

The model provides a structured way to understand how these barriers interact and impact the use of digital payment systems.

6.6 Statistical Tools for the Study

The following statistical tools were used to analyze and interpret the data collected for the study:

- Percentage and Frequency Analysis - Used to describe the demographic profile of respondents and the distribution of responses.
- Descriptive Statistics - Applied to summarize data using measures such as mean and standard deviation.
- Chi-Square Test - Employed to examine the association between gender and awareness, perception, and attitude toward UPI.
- Multiple Regression Analysis - Used to determine the impact of gender, awareness, perception, and attitude on barriers to UPI adoption.

VII. DATA ANALYSIS AND INTERPRETATION

The collected data were analyzed using appropriate statistical tools to examine relationships between variables and identify significant factors influencing UPI adoption. The results were systematically interpreted to derive meaningful insights and support objective-based conclusions.

7.1 Chi- Square Analysis of Gender

Table 1 Chi-Square Analysis of Gender

Variable	Value	df	Asymp. Sig. (2-sided)
Awareness of UPI	4.006	4	.327
Perception on UPT	9.354	4	.017
Attitude on UPI	13.861	1	.000

Source: Primary Data- SPSS Output

The table 1 carries the Chi-Square analysis examines the relationship between gender and three variables: awareness, perception, and attitude toward UPI (Unified Payments Interface). The results indicate that awareness of UPI ($\chi^2 = 4.006$, $p = 0.327$) is not significantly associated with gender, suggesting that both genders have similar levels of awareness. However, perception of UPI ($\chi^2 = 9.354$, $p = 0.017$) shows a statistically significant association with gender, implying that perceptions about UPI may differ based on gender. Attitude toward UPI ($\chi^2 = 13.861$, $p = 0.000$) is highly significant, meaning gender has a strong influence on attitudes toward UPI usage.

The findings suggest that while awareness of UPI is not significantly different between genders, perception and attitude toward UPI vary notably. The significant association between gender and perception ($p = 0.017$) indicates that one gender may have a more favorable or skeptical perception compared to the other. Furthermore, the strong significance in attitude ($p = 0.000$) highlights that gender plays a crucial role in shaping opinions and behaviors toward UPI adoption and usage. These results emphasize the need for gender-focused strategies in promoting digital payment systems.

7.2 Regression Analysis

Table 2 Regression Analysis on Barriers for using UPI

Variable	Beta	t-value	Sig.	Hypothesis Result
Gender	.217	1.011	.973	Accepted
Awareness of UPI	.899	51.815	.000	Rejected
Perception on UPT	.194	3.386	.662	Accepted
Attitude on UPI	.872	48.262	.000	Rejected

Source: Primary Data - SPSS Output

Dependent Variable: Barriers for using UPI

The table 2 presents the regression analysis examines the influence of gender, awareness, perception, and attitude toward UPI on the barriers to its usage. The results show that awareness of UPI ($\beta = 0.899$, $t = 51.815$, $p = 0.000$) and attitude toward UPI ($\beta = 0.872$, $t = 48.262$, $p = 0.000$) have significant impacts on barriers to UPI usage, indicating that individuals with higher awareness and a positive attitude face fewer barrier. Conversely, gender ($\beta = 0.217$, $t = 1.011$, $p = 0.973$) and perception of UPI ($\beta = 0.194$, $t = 3.386$, $p = 0.662$) are not significant predictors, suggesting that these factors do not substantially influence the barriers to UPI adoption.

The findings suggest that increasing awareness and fostering a positive attitude toward UPI can effectively reduce the barriers associated with its adoption. The strong significance of awareness and attitude indicates that users who are well-informed and have a favorable outlook on UPI face fewer obstacles in using the platform. However, gender and perception do not significantly contribute to these barriers, implying that efforts to improve UPI adoption should focus more on enhancing awareness and shaping positive attitudes rather than addressing gender-specific concerns or altering perceptions alone.

VIII. RESULTS & DISCUSSIONS

- Retail Nano vendors dominate non-adoption of UPI, accounting for 48 out of 52 respondents (92.3%), indicating that cash-intensive retail activities face the highest resistance to digital payments.
- Manufacturing and service vendors together represent only 7.7% (4 respondents), suggesting either lower prevalence in street-side settings or relatively better familiarity with digital payment mechanisms.
- Age is a critical determinant of non-adoption, with 28 vendors (53.8%) above 50 years, followed by 14 vendors (26.9%) in the 41–50 age group, confirming that resistance increases with age.
- Younger vendors (21–30 years) constitute only 3.8%, indicating higher adaptability or early acceptance of UPI among younger business owners.
- Female vendors form the majority of non-UPI users, with 28 respondents (53.8%), highlighting gender-linked challenges in digital access and financial inclusion.
- Chi-square analysis confirms no significant association between gender and UPI awareness ($\chi^2 = 4.006$, $p = 0.327$), implying equal exposure to basic information across genders.
- Gender significantly influences perception of UPI ($\chi^2 = 9.354$, $p = 0.017$), suggesting differences in perceived ease, security, and usability.
- Gender has a strong and significant association with attitude toward UPI ($\chi^2 = 13.861$, $p = 0.000$), indicating that willingness to adopt varies by gender.
- Regression results identify awareness as a major predictor of adoption barriers ($\beta = 0.899$, $t = 51.815$, $p = 0.000$), confirming that limited knowledge intensifies resistance.
- Attitude toward UPI also significantly affects barriers ($\beta = 0.872$, $t = 48.262$, $p = 0.000$), showing that negative mindsets increase non-adoption.
- Gender does not significantly predict adoption barriers in regression analysis ($p = 0.973$), indicating it acts indirectly rather than independently.
- Perception alone is not a significant predictor of barriers ($p = 0.662$), unless it translates into poor awareness or negative attitude, highlighting the mediating role of cognition.
- Since awareness significantly reduces adoption barriers, banks and UPI service providers should conduct localized awareness programs using regional languages and visual demonstrations.

- Hands-on training, peer demonstrations, and real-time transaction simulations can help reshape negative attitudes, especially among older vendors.
- Women vendors should be prioritized through exclusive digital literacy camps, self-help group partnerships, and assisted onboarding support.
- Subsidized smartphones and low-cost or rental-based UPI sound boxes should be introduced to address financial constraints among Nano vendors.
- Regular fraud-awareness drives, simplified safety guidelines, and dedicated helplines can reduce fear related to digital fraud and transaction failures.

IX. CONCLUSION

The study offers important insights into the barriers limiting Unified Payments Interface (UPI) adoption among small street-side Nano business owners in Mysore. Despite the rapid growth of digital payment infrastructure in India and strong institutional support for cashless transactions, UPI usage among Nano vendors remains relatively low. This limited adoption is largely influenced by demographic factors, personal beliefs, and behavioural habits rather than by infrastructure constraints. Non-adoption is particularly common among retail-based Nano vendors and older business owners who often lack digital literacy, confidence in using smartphones, and continue to rely on cash-based practices developed over many years. A slightly higher proportion of female vendors among non-UPI users also points to additional challenges faced by women-led Nano businesses, such as restricted access to digital tools and limited exposure to financial and technological training.

The study further highlights that awareness and attitude play a decisive role in shaping UPI adoption. Vendors with limited understanding of UPI features or negative perceptions toward digital payments experience greater resistance to adoption. While gender influences perceptions and attitudes toward UPI, it does not directly determine awareness levels or act as an independent barrier. Practical challenges such as the lack of smartphones, limited technical skills, fear of fraud, unfamiliarity with Android devices, and the inability to afford UPI sound boxes further restrict usage. Overall, the findings suggest that increasing UPI adoption requires focused efforts on awareness building, confidence enhancement, affordable digital solutions, and security education to support inclusive and sustainable digital participation.

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