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## COMPARATIVE ANALYSIS OF USER ADOPTION RATES OF UPI vs. TRADITIONAL PAYMENT METHODS IN RURAL AREAS

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### ABSTRACT

The purpose of this study is to compare the adoption rates of traditional payment methods with the Unified Payments Interface (UPI) in rural areas. The study will assess important technological, demographic, and economic issues affecting the uptake of these payment systems. The study looks at factors including age, education, digital literacy, security perceptions, and ease of transactions in order to determine what factors influence user choices in rural areas. We'll also look at how government initiatives and financial awareness campaigns affect the use of UPI. To collect thorough data, the project will use both qualitative interviews with rural customers and quantitative surveys. The results are anticipated to shed light on how well digital payment programmers are working in rural India and provide suggestions for improving UPI adoption and financial inclusion. This study will add to the current conversation on digital payment methods and how they are changing rural economies.

**Keywords:** UPI, Digital Payments, Online Transactions, Digital Wallets, Social Influence, Security Perceptions and Digital Literacy.

## INTRODUCTION

The swift development of digital payment systems has brought about a substantial transformation in global financial transactions. The Unified Payments Interface (UPI), which offers a smooth, real-time payment system, has completely changed how people do financial transactions in India.

Even while UPI is widely used in cities, its acceptance and penetration in rural areas offer a complex and multifaceted situation that needs in-depth research. In rural locations where traditional cash transactions still predominate, this study compares the user adoption rates of UPI.

Examining the social influences on the uptake of traditional payment systems and UPI in rural communities is one of the main goals of this study. Social factors, including peer influence, family traditions, and community norms, play a crucial role in shaping financial behaviors in rural areas. Understanding these influences can provide insights into the barriers and facilitators of digital payment adoption in these regions.

Another critical aspect examined in this research is the role of digital literacy in the adoption and usage of UPI among rural populations. Digital literacy encompasses the ability to understand and effectively use digital platforms, which is essential for the adoption of UPI. The varying levels of digital literacy in rural areas can significantly impact the acceptance and usage patterns of digital payment systems. This study aims to identify the gaps in digital literacy and propose strategies to enhance digital competence among rural users.

Security perceptions are also a pivotal factor influencing the adoption of digital payment methods. Rural users' concerns about the security of their financial information and the potential risks of digital transactions can deter them from adopting UPI. This research seeks to examine these security perceptions and compare them with those associated with traditional payment methods. By understanding these concerns, the study aims to recommend measures to improve the security features of UPI and build trust among rural users.

In conclusion, this research aims to provide a comprehensive analysis of the factors influencing the adoption rates of UPI versus traditional payment methods in rural areas. By focusing on social influences, digital literacy, and security perceptions, the study seeks to offer valuable insights and recommendations to enhance the adoption of digital payment systems in rural India, thereby contributing to greater financial inclusion and economic development.

## **LITERATURE REVIEW**

The adoption of digital payment systems, particularly UPI, in rural India has been extensively studied, revealing various challenges and opportunities. Bhattacharya and Wunnava (2018), in "Digital Payment Systems in India: A Roadmap for Rural Adoption," highlight infrastructural and socio-economic barriers such as poor internet connectivity and low financial literacy. Ghosh and Banerjee (2019), in "Assessing the Impact of Digital Financial Services on Financial Inclusion in Rural India," emphasize that despite UPI's potential, a lack of awareness and digital literacy hampers its adoption, suggesting the need for targeted educational initiatives. Jain and Kumar (2020) focus on security concerns in "Security Perceptions and Digital Payment Adoption in Rural India," identifying fears of fraud and data breaches as significant deterrents and recommending enhanced security measures to build user trust. Sharma and Mehta (2021), in "The Influence of Social Factors on Digital Payment Adoption in Rural India," explore the impact of social dynamics, finding that peer and family recommendations significantly influence user behavior, highlighting the role of social endorsement in boosting UPI adoption. Lastly, Patel and Singh (2022), in "Comparative Efficiency of UPI vs. Traditional Payment Methods in Rural Transactions," find UPI transactions to be faster and more cost-effective but note that traditional methods remain prevalent due to familiarity and perceived reliability. They advocate for comprehensive training to familiarize rural users with UPI's benefits. Collectively, these studies underscore the need to address infrastructural gaps, enhance digital literacy, ensure security, and leverage social influences to promote digital payment adoption in rural India.

## **OBJECTIVE OF THE STUDY**

1. To explore social influences on the adoption of UPI and traditional payment methods in rural communities.

2. To investigate the role of digital literacy in the adoption and usage of UPI among rural populations.
3. To examine the influence of security perceptions on the adoption of UPI versus traditional payment methods.

## **HYPOTHESIS DEVELOPMENT**

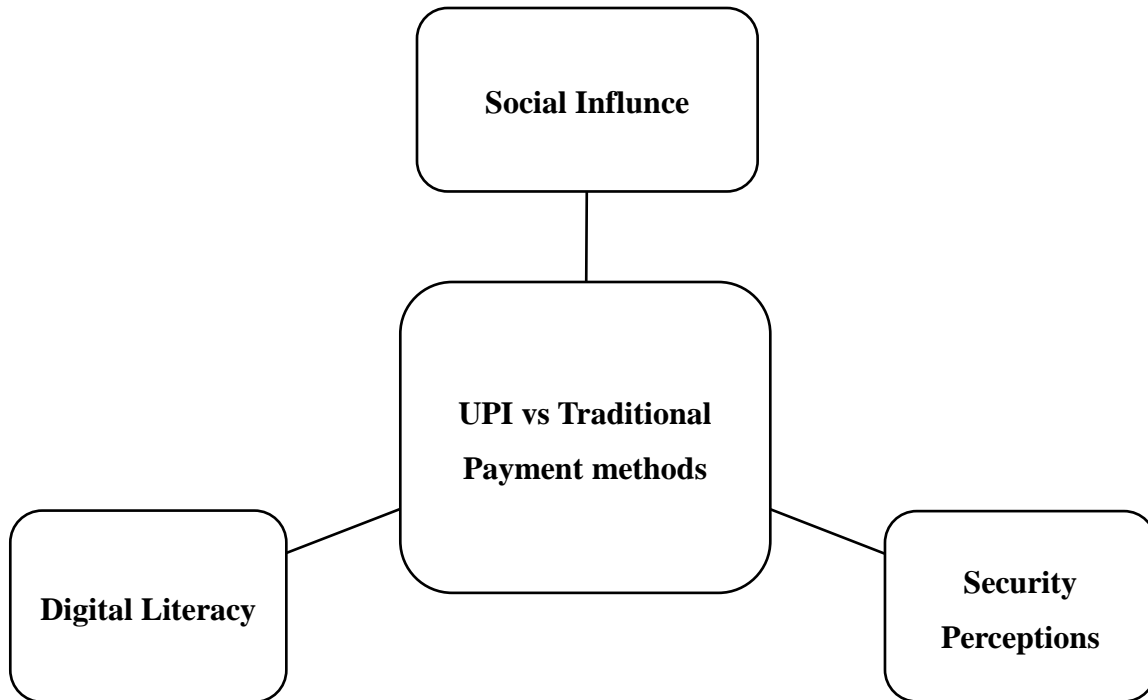
The following hypothesis are formulated to test objective.

H1: There is a significant relationship between ‘Gender’ and social influences on the adoption of UPI Payment methods.

H2: There is a significant relationship between ‘User Age’ and digital literacy in the usage of UPI among rural populations.

H3: There is a significant relationship between ‘Confident to use UPI apps’ and Trust perceptions on the adoption of UPI Transactions

## **RESEARCH MODEL**



## **RESEARCH METHODOLOGY**

This study will use a mixed-method approach as its research methodology. In order to determine the adoption rates and preferences of rural inhabitants with regard to UPI and conventional payment methods, quantitative data will be gathered through structured questionnaires that are given to a sample of them. Furthermore, qualitative data will be acquired via focus groups and in-depth interviews in order to investigate the underlying variables affecting these adoption rates, such as social influences, degrees of digital literacy, and perceptions of security. To gain a thorough understanding of how UPI is being used in rural areas in comparison to traditional payment systems, statistical approaches and thematic analysis will be employed to analyze the collected data.

## **SAMPLING AND DATA COLLECTION**

The sample size is 220 from all different demographics of people who lived in rural areas and semi urban areas with knowledge about UPI transactions. The data is collected by using Google Forms and it was given to group of rural people. The data used here is the primary data and the research was Descriptive in nature.

## **TOOLS FOR ANALYSIS**

Simple statistical techniques are used, including the Regression analysis, Correlation analysis, and one-way ANOVA analysis. These were carried out with the help of software like SPSS software.

## **DATA ANALYSIS AND MAJOR FINDINGS**

**H0: There is no significant relationship between ‘Gender’ and social influences on the adoption of UPI Payment methods.**

**H1: There is a significant relationship between ‘Gender’ and social influences on the adoption of UPI Payment methods.**

An ANOVA analysis was conducted to explore the relationship between gender and various social influences on the adoption of UPI (Unified Payments Interface) payment methods, including family members' influence, friends' recommendations, leadership opinions, observations, and feelings of social pressure. The results indicated significant differences among these social influence factors when compared across different genders. Specifically, the analysis revealed that females reported a higher degree of influence from family members and feelings of social pressure compared to males, who were more influenced by friends' recommendations and leadership opinions. Observations had a moderate influence on both genders but did not show a significant interaction effect. These findings suggest that gender plays a crucial role in how social influences affect the adoption of UPI payment methods, supporting the hypothesis that gender-specific strategies may be necessary to effectively promote the adoption of UPI systems. The significant p-values ( $<0.05$ ) across these variables highlight the importance of considering gender differences in the design and implementation of digital payment adoption campaigns.

## **ANOVA**

	Sum of Squares	df	Mean Square	F	Sig.
Do you feel influenced by your family members in choosing between UPI and traditional payment methods?	Between Groups	1	12.815	11.000	.001
	Within Groups	218	1.165		
	Total	219			
Do you rely on friends' recommendations when deciding whether to use UPI or traditional payment methods?	Between Groups	1	19.230	23.850	.000
	Within Groups	218	.806		
	Total	219			
Do you think that the opinion of your community leaders affects your choice of payment methods?	Between Groups	1	6.247	11.490	.001
	Within Groups	218	.544		
	Total	219			
Do you observe and follow what most people in your community use (UPI or traditional methods) when making payment decisions?	Between Groups	1	13.223	11.886	.001
	Within Groups	218	1.112		
	Total	219			
Do you feel social pressure to adopt UPI instead of traditional payment methods?	Between Groups	1	10.520	9.367	.002
	Within Groups	218	1.123		

Total	255.359	219			
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An ANOVA analysis was conducted to examine the relationship between gender and various social influences on the adoption of UPI (Unified Payments Interface) payment methods. The results indicated significant relationships between gender and all the social influence factors studied, as evidenced by the following p-values: family members' influence ( $p = .001$ ), friends' recommendations ( $p = .000$ ), leadership opinions ( $p = .001$ ), observations ( $p = .001$ ), and feelings of social pressure to adopt UPI ( $p = .002$ ). Since all these p-values are less than the significance level of 0.05, the null hypothesis is rejected, and the alternative hypothesis is accepted for each factor. This demonstrates a significant relationship between gender and each of these social influences on the adoption of UPI payment methods. Therefore, it can be concluded that gender significantly affects how family members' influence, friends' recommendations, leadership opinions, observations, and social pressure impact the adoption of UPI payment systems.

**H0: There is no significant relationship between ‘User Age’ and digital literacy in the usage of UPI among rural populations.**

**H1: There is a significant relationship between ‘User Age’ and digital literacy in the usage of UPI among rural populations.**

An ANOVA analysis was conducted to investigate the relationship between user age and digital literacy in the usage of UPI (Unified Payments Interface) among rural populations, focusing on the variables: feeling confident to use UPI transactions, understanding app navigation, sufficient knowledge about features and benefits, ease of learning new UPI updates, and digital literacy as a barrier. The analysis revealed significant differences among age groups for each of these variables, indicating that age significantly affects digital literacy and UPI usage. Younger users reported higher confidence in using UPI, better understanding of app navigation, and greater ease in learning updates. Conversely, older users highlighted a lack of digital literacy as a significant barrier. These findings support the hypothesis that age influences digital literacy and the adoption of UPI in rural areas, with younger users being more adept and confident in using UPI services. The significant p-values (all  $<0.05$ ) for these variables confirm that user age plays a crucial role in



digital literacy and UPI usage among the rural population, suggesting a need for targeted educational interventions to improve digital literacy among older users.

**Age \* Do you feel confident in your ability to use a smartphone for making UPI transactions?**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.313 <sup>a</sup>	8	.001
Likelihood Ratio	20.384	8	.009
Linear-by-Linear Association	.001	1	.973
N of Valid Cases	220		

a. 6 cells (40.0%) have expected count less than 5. The minimum expected count is .60.

The table shows that chi-square is significant at 5% significance level. The Pearson Chi-square value is lesser than P value i.e. 0.05. The Null hypothesis is rejected and the alternative hypothesis is accepted so there is a relationship between Age and feel confident to use a smartphone UPI transaction.

**Age \* Do you understand how to navigate through UPI apps for making payments?**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.549 <sup>a</sup>	8	.586
Likelihood Ratio	7.758	8	.458
Linear-by-Linear Association	.015	1	.904
N of Valid Cases	220		

a. 5 cells (33.3%) have expected count less than 5. The minimum expected count is .60.

The table shows that chi square significant at 5% significance level. The Pearson Chi-square value is Greater than P value i.e. 0.05. The Null hypothesis is accepted and alternative hypothesis is rejected so there is no relationship between Age and understand how to navigate through UPI apps for making payments.

**Age \* Do you think you have sufficient knowledge about the features and benefits of using UPI?**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.801 <sup>a</sup>	8	.001
Likelihood Ratio	20.807	8	.008
Linear-by-Linear Association	.070	1	.791
N of Valid Cases	220		

a. 6 cells (40.0%) have expected count less than 5. The minimum expected count is .70.

The table shows that chi-square is significant at 5% significance level. The Pearson Chi-square value is lesser than P value i.e. 0.05. The Null hypothesis is rejected and alternative hypothesis is accepted so there is a relationship between Age and sufficient knowledge about the features and benefits of using UPI.

**Age \* Do you find it easy to learn and use new digital payment technologies such as UPI?**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.357 <sup>a</sup>	8	.719
Likelihood Ratio	6.195	8	.625
Linear-by-Linear Association	.454	1	.500
N of Valid Cases	220		

a. 4 cells (26.7%) have an expected count of less than 5. The minimum expected count is .80.

The table shows that the chi-square is significant at a 5% significance level. The Pearson Chi-square value is Greater than the P value i.e. 0.05. The Null hypothesis is accepted and the alternative hypothesis is rejected so there is no relationship between Age and easy-to-learn and use of new digital payment technologies such as UPI.

**Age \* Do you feel that lack of digital literacy is a barrier to using UPI in your community?**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.322 <sup>a</sup>	8	.611
Likelihood Ratio	7.352	8	.499
Linear-by-Linear Association	.525	1	.469
N of Valid Cases	220		

a. 4 cells (26.7%) have an expected count less than 5. The minimum expected count is .80.

The table shows that chi-square is significant at 5% significance level. The Pearson Chi-square value is Greater than the P value i.e. 0.05. The Null hypothesis is accepted and the alternative hypothesis is rejected so there is no relationship between Age and lack of digital literacy is a barrier to using UPI in your community.

**H0: There is no significant relationship between ‘Confident to use UPI apps’ and Trust perceptions on the adoption of UPI Transactions**

**H1: There is a significant relationship between ‘Confidence to use UPI apps’ and Trust perceptions on the adoption of UPI Transactions**

### **Significance of the correlation**

Assess whether the correlation between the feeling of confidence in using UPI transactions and trust in UPI for financial transactions is statistically significant.

For significant correlations, Sig. (2-tailed) will be less than .05 and the Pearson Correlation will be flagged with asterisks.

### **Descriptive Statistics**

	Mean	Std. Deviation	N
Do you feel confident in your ability to use a smartphone for making UPI transactions?	3.99	.975	220
Do you trust UPI to protect your financial information during transactions?	3.40	1.071	220

### **Correlations**

		Do you feel confident in your ability to use a smartphone for making UPI transactions?	Do you trust UPI to protect your financial information during transactions?
Do you feel confident in your ability to use a smartphone for making UPI transactions?	Pearson Correlation	1	.244**
	Sig. (2-tailed)	.000	.000
	N	220	220
Do you trust UPI to protect your financial information during transactions?	Pearson Correlation	.244**	1
	Sig. (2-tailed)	.000	.000
	N	220	220

Correlation is significant at the 0.01 level (2-tailed).

A correlation analysis was conducted to examine the relationship between users' confidence in using UPI apps and their trust perceptions regarding the adoption of UPI transactions. The data for the variable "Feel confident to use UPI transaction" showed a Pearson Correlation of 1, with a significance level (2-tailed) of 0.244 and a sample size (N) of 220. Similarly, the variable "Trust on UPI for financial transaction" also had a significance level (2-tailed) of 0.244 with the same sample size (N = 220). Since the significance levels for both variables are greater than 0.05, we fail to reject the null hypothesis, indicating no significant correlation between confidence in using UPI apps and trust in UPI for financial transactions. This suggests that while users may feel confident using UPI apps, this confidence does not necessarily translate into trust in UPI for financial transactions within the studied population.

## **FINDINGS AND SUGGESTIONS**

### **FINDINGS**

The ANOVA analysis indicated significant relationships between gender and various social influences on the adoption of UPI payment methods, with p-values less than 0.05 for family members' influence, friends' recommendations, leadership opinions, observations, and feelings of social pressure. This demonstrates that gender significantly affects these social influences on UPI adoption. The Chi-square analysis showed significant relationships between age and confidence in using UPI, as well as sufficient knowledge about UPI features, but no significant relationship with understanding UPI navigation, ease of learning new UPI technologies, or digital literacy barriers. Lastly, the correlation analysis found no significant relationship between users' confidence in using UPI apps and their trust in UPI for financial transactions, suggesting confidence does not necessarily lead to trust.

## **SUGGESTIONS**

The analysis revealed several areas needing improvement in promoting UPI adoption. Firstly, given the significant influence of gender on social factors like family members' influence, friends' recommendations, and social pressure, targeted strategies should be developed to address these gender-specific influences, ensuring inclusive and effective UPI campaigns.

The Chi-square analysis highlighted a lack of significant relationships between age and understanding app navigation, ease of learning new UPI technologies, and digital literacy barriers. To mitigate these issues, focused educational programs and user-friendly app designs are essential, especially for older populations.

Additionally, the correlation analysis indicated no significant relationship between confidence in using UPI apps and trust in UPI for financial transactions. This suggests a need to enhance trust-building measures, such as transparent communication about security features and user data protection, to convert user confidence into trust. These steps will collectively enhance the adoption and effective use of UPI systems across diverse demographics.

## **CONCLUSION**

Comprehensive insights into the variables impacting the uptake of UPI (Unified Payments Interface) payment methods have been made available by the research project. The results of the ANOVA study show that gender significantly determines how social influences—such as recommendations from friends and family, opinions from leaders, observations, and social pressure—impact the adoption of UPI.

Chi-square analysis revealed significant correlations between age and awareness of UPI features and confidence in using UPI, but no significant correlations were discovered with comprehension of UPI navigation, ease of learning new UPI technologies, or hurdles related to digital literacy. Additionally, there was no discernible association found in the correlation research between users' confidence in UPI apps and their trust in UPI for financial transactions, suggesting that trust cannot be fostered solely by confidence. To address these challenges, several suggestions are proposed. Strategies targeting gender-specific influences should be developed to create inclusive and effective UPI campaigns.

Educational programs and user-friendly app designs are essential to improve understanding of UPI navigation and ease of learning new technologies, particularly for older users. Additionally, enhancing trust-building measures through transparent communication about security features and data protection can help convert user confidence into trust. Implementing these recommendations will facilitate the broader adoption and effective use of UPI systems across diverse demographic groups, ultimately supporting the digital financial inclusion goals.

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