

A Study on Consumer's Intention to Adopt Technology for UPI Payments

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ABSTRACT

Our research was conducted to examine the consumer's intention towards adopting technology for UPI payments and to identify the factors affecting the consumer's intention. UPI is a digital payment system that facilitates instant fund transfers between bank accounts through a mobile application that is available 24*7.

The research methodology involves a survey of a representative sample of consumers who are using and have used UPI or have the potential to use it in the future. The survey was conducted with data collected from 124 respondents.

This study helps to understand the importance of perceived ease of use, perceived usefulness and perceived security in driving consumer's intention to adopt technology for UPI payments. The results suggests that it is important for the UPI technology providers to focus on enhancing the perceived usefulness, perceived ease of use and perceived security of their technology to encourage adoption and usage among customers.

Keywords-- UPI Payments, Perceived Usefulness, Perceived Ease of Use, Perceived Security, Adoption of Technology

interference was handled by India's central bank. It works by moving cash between two bank accounts along with a mobile platform.

The system is said to be a safe and secure way to send money between two people without having to use real money or go through a bank. The pilot framework was sent off in India on April 11, 2016. In August 2016, banks all over the country began uploading their interfaces. Immediate Payment Service (IMPS) and Aadhaar Enabled Payment System (AEPS) are two examples of pre-existing systems that are utilized by UPI to guarantee consistent account settlement. It works with push (pay) and pull (receive) transactions, as well as with over-the-counter or barcode payments and multiple recurring payments like school fees, utility bills, and subscriptions. The system makes it possible to deliver mobile payments without the use of credit or debit cards, net banking, or entering account information once a single identifier has been established. This wouldn't simply guarantee more prominent security of delicate data, yet associate individuals who have bank accounts through cell phones to complete problem free exchanges. Along with the ability to send and receive money, users have access to balances and transaction histories. Users need an account number, the Indian Financial System Code (or IFSC, an alphanumeric code that makes it easier to send money electronically), the recipient's mobile number, and a virtual ID or Aadhaar number to send money. In October 2022, the Unified Payments Interface, or UPI, was the catalyst for nearly 7.3 billion transactions. UPI was presented by the Public Installments Company of India (NPCI) in 2016. INR 12.11 trillion is the total value of UPI transactions. The total number of UPI transactions has increased by 73%. PhonePe, Paytm BHIM app, MobiKwik,

I. INTRODUCTION

About the Industry

A smartphone application called the Unified Payment Interface (UPI) lets users transfer money between bank accounts. The National Payments Corporation of India (NPCI) developed this one-stop mobile payment solution. Every time a customer starts a transaction, they don't have to enter sensitive information or bank information. It is designed to make it possible for peer-to-peer transfers between banks with just two-click factor authentication process. The

Airtel Payments Bank, Google Tez, Uber, Yono SBI Pay, iMobile, Axis Pay, and BOB UPI.

II. NEED FOR THE STUDY

The study focuses on identifying consumer's intention to adopt technology for UPI payments. It aims at assessing the factors influencing the consumer's intention to adopt technology for UPI payments. The study examines if perceived ease of use, perceived security, and perceived usefulness influence the intention of consumers to adopt technology for UPI payments. This paper aims to clarify and know in parts, the link between dependent and independent. The demographic variables of the respondents have been analyzed to identify if there's any significant relationship between the demographic variables of the respondents. This paper has shown the different types of variables, the relationship between dependent and independent variables and their importance in research.

World-wide Scenario

The National Payments Corporation of India (NPCI) developed the real-time payment system known as the Unified Payments Interface (UPI). This system makes it easier to conduct interbank transactions by quickly transferring funds between two bank accounts on a mobile platform. According to Forbes, about 330 banks and 25 apps use UPI, including all of the major third-party payment providers like Google Pay, PhonePe, and Paytm.

Non-Resident Indians (NRIs) with NRE or NRO accounts with Indian banks can also use UPI. India's UPI is primarily motivated by this to expand globally. Soon, NRIs will be able to use UPI with international mobile numbers. Numerous nations have adopted UPI for payments. In July 2021, Bhutan became the first nation to implement UPI standards. Oman officially adopted UPI in October 2022, joining a number of other nations in doing so.

Indian Scenario

The National Payments Corporation of India (NPCI) developed the instant, real-time payment system known as the Unified Payments Interface (UPI). By May 2022, it had 260 million users and 50 million merchants in India, with transactions totaling 10.41 trillion rupees. In India, UPI has changed the way people pay. It made it simple for individuals to move cash to one another without entering convoluted bank subtleties or trust that the exchange will be handled.

Additionally, UPI has made it simpler for businesses to accept payments. Merchants no longer need to worry about handling cash or invest in expensive vending machines with UPI. All they need is an UPI ID and they can acknowledge installments from any individual who has a UPI account. UPI has supported the Indian government's efforts to implement a cashless economy. The government

has been successful in reducing the amount of cash in circulation and facilitating online tax and bill payment with UPI. It is evident that UPI will continue to play a significant role in India's push toward a cashless economy given its growing popularity.

Research Gap

Though consumer's intention to adopt technology for UPI payments have been widely studied, studies focusing on perceived security as an independent variable are scarce. This is the research gap this study desires to close.

III. SCOPE OF THE STUDY

The study can be replicated among the rural population to assess the consumer's intention towards usage of UPI.

IV. REVIEW OF LITERATURE

Fahad et al. (2022) aims at achieving a specific result on usage and recommendation intentions by focusing on determinants of adoption of UPI by Indian customers based on the Diffusion of Innovation (DOI) theory. Out of 750 questionnaires distributed in these cities, 395 responses were found valid for the study. The findings revealed that relative advantage, complexity, and observability have a significant positive association with the User's intention to use.

Anand Prakash et al. (2022) focuses on impact of the corona pandemic on the adoption of mobile payments among Indian internal migrant workers. Approximately one-third of the workforce are Indian internal migrant workers. 400z migrant workers in India filled the responses during the pandemic period. Findings shows that the migrant workers' behavioural intention are significantly influenced by social influence, effort expectancy, facilitating conditions, perceived severity, self-efficacy, and response efficacy.

Neena Sinha et al. (2022) aims to determine the factors which are influencing the merchant's behavioural intention to use mobile payment services. 215 responses were collected from the Indian merchants. To measure the merchant's intention with mobile payment service perceived ease of use, perceived usefulness, perceived experience, perceived cost, perceived trust, and word of mouth learning. The results show that the perceived experience influences the most, followed by word-of-mouth learning.

Haritha P.H. (2022) aims to discuss Mobile payment service adoption. It mainly includes ease of use, perceived usefulness, facilitating conditions, adoption readiness, social influences and intention to use FinTech in India. 349 responses were collected by conducting survey. The study reveals the significance of perceived usefulness, ease of use and facilitating the service condition,

which means that vendors prefer to use devices that are compatible and easy to use.

Elanchezhian et al. (2021) examines the factors influencing people to adopt mobile banking. Data was collected from 116 respondents. Social influence, perceived financial cost, performance expectancy, and perceived credibility influences individual intention to adopt mobile banking. According to the findings of this study, age significantly moderated the effects of facilitating conditions and perceived self-efficacy on actual adoption behavior, while gender significantly moderated the effects of performance expectancy and perceived financial cost on behavioral intention.

Piyush Kumar Mallik et al. (2020) aims to comprehend the behavioral intention of customers regarding UPI-based Payment Apps. A nationwide survey with 224 valid responses was used to test this. It was found that Price value, Perceived Security, Performance Expectancy and Trust were significantly and positively related to behavioural intention.

Carlos Flavián et al. (2020) aims to understand Mobile payments. Data for the study were collected from 414 users in the United States and 380 in Spain through an online survey. It was found that mindfulness, perceived ease of use, perceived usefulness, subjective norms and attitude have significant influence on intention to use mobile payment.

Kanishk Gupta et al. (2020) examines the impact of attitude towards mobile payment systems on intention to adopt mobile payment systems through the application of technology acceptance model. All of the observed variables used in the study are found to have a positive relationship, according to the study. Adoption of mobile payment systems is influenced positively by perceived ease of use and usefulness.

Sahil Gupta et al. (2019) aims to determine the factors that influence consumers' adoption of UPI-based online payment services as a payment alternative. Data was collected from 415 respondents. The survey was conducted on a selected age group, youth and smartphone users, but it could be expanded to include other ages. The study's findings will help mobile app developers and mobile service providers come up with better strategies, especially in the context of a new market.

Kiran J. Patel et al. (2019) aims to predict the most important factors influencing Indian customers' adoption of electronic payment systems. The sample of this study comprises of 208 respondents with a legitimate reaction pace of 75.64 percent. Overall, this study's findings support an extended TAM and confirm its robustness in predicting Indian customers' adoption of electronic payment systems. Perceived security, usefulness, and ease of use all appear to have a significant positive impact on customers' intentions to

adopt electronic payment systems, while perceived risk appears to have a significant negative impact.

V. OBJECTIVE OF THE STUDY

- To assess the perceived usefulness, perceived ease of use and perceived security with regard to UPI payments.
- To examine the influence of perceived usefulness, perceived ease of use and perceived security on the intention of consumers to adopt technology for UPI payments.

VI. RESEARCH METHODOLOGY

Research Purpose

The study is basically conducted to know about the consumer intention to adopt technology for UPI (Unified Payments Interface) payments. From this study, we can have a better understanding on how perceived usefulness, perceived security and perceived ease of use will determine consumer's influences towards using UPI payments. Therefore, these findings will be useful for the customer to know that the perceived ease of use makes the largest contribution in influencing consumers' UPI payments. In this research, survey method was adopted where questionnaires were distributed to respondents and the collected data was analyzed using the PSPP. A descriptive research design has been used in the present study. The study was conducted among people who use UPI payments. Stratified random sampling was adopted and 124 responses were collected.

VII. DATA COLLECTION

Primary data: Primary data was collected from respondents with the help of a structured questionnaire

Secondary data: It was collected from online journals, books and magazines.

VIII. MEASURING INSTRUMENTS

A structured questionnaire was used to acquire the responses for the study. The questionnaire used for the study was adopted from studies Gupta P et al. (2022). The questionnaire had two sections. The primary section had questions related to the demographic profile of the respondents and second section had items to measure the various constructs. The objects in segment two were measured on a 5-point Likert scale wherein 5 intended to be 'Strongly Agree' and 1 supposed to be 'Strongly Disagree'

The perceived ease of use scale was developed by Melih Coskun et al. The scale consists of 5 items each rated on a 5-point Likert scale ranging from "Strongly Disagree"

to “Strongly Agree”. The scale is used to measure how easily the users can use the UPI platform.

The perceived usefulness scale was developed by Melih Coskun et al. The scale consists of 5 items each rated on a 5- point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”. The scale is used to measure the usefulness of UPI platform.

The perceived security scale was developed by Bindu K. Nambiar et al. The scale consists of 5 items each rated on a 5- point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”. The scale is used to measure security of UPI platforms.

The Intention to use scale was developed by Fahad et al. The scale consists of 5 items each rated on a 5- point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”. The scale is used to measure the consumer’s intention to adopt technology for UPI payments.

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rated on a 5- point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”. The scale is used to measure security of UPI platforms.

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IX. RELIABILITY

Table 1 given below shows the reliability scores (Cronbach’s Alpha) of the various constructs. All constructs reported a good reliability with Cronbach’s Alpha more than 0.7.

Table 1: Reliability Analysis

Constructs	No. of items	Cronbach’s alpha
Consumer intention	5	.89
Perceived security	5	.84
Perceived ease of use	5	.84
Perceived usefulness	5	.85

X. ANALYSIS AND DISCUSSION

Percentage Analysis

Table 2: Demographic profile of the respondents

Demographic Variable	Description	Frequency	Percentage (in %)
Age	18-25 years	71	57.3
	26-35 years	9	7.3
	36-45 years	22	17.7
	46 and above	22	17.7
Gender	Male	42	33.9
	Female	82	66.1
Occupation	Government employee	8	6.5
	Private employee	33	26.6

	Self-employed	24	19.4
	Student	26	21
	Other	33	26.6
Monthly income	Less than Rs.25000	52	41.9
	Rs.25000 – Rs.50000	30	24.2
	Rs.50000 – Rs.75000	16	12.9
	Rs.75000 – Rs.100000	11	8.9
	Above Rs.100000	15	12.1
Frequency of usage	Multiple times a day	49	39.5
	Once a day	11	8.9
	Few times a week	34	27.4
	Few times a month	20	16.1
	Rarely or never	10	8.1

As per the table shown above, it can be inferred that the majority of the respondents belong to the age group 18-25 years (71%), 17.7% belong to 36-45 years, 17.7% belong to 46 and above and the least number of respondents belong to 26-35 years (7.3%). Table 2 shows that the majority of the responses are female (66.1%) and only 33.9% are male. It is observed that the majority of the respondents are private employees (26.6%) and others category (26.6%), 19.4% are self-employed, 21% are students and the least responses are

from government employees (6.5%). It can be inferred that the respondents having an income level of less than Rs.25,000 (41.9%) contributes to the majority when compared to the other income levels of Rs.25000 – Rs.50000 (24.2%), Rs.50000 – Rs.75000 (12.9%), Rs.75000 – Rs.100000 (8.9%) and Above Rs.100000 (12.1%). It is observed from the table that the majority of the respondents use UPI payments multiple times a day (39.5%).

Descriptive Statistics

Table 3: Descriptive Statistics

	Mean
Consumer Intention	4.20
Perceived security	3.98
Perceived ease of use	4.22
Perceived usefulness	4.25

It can be inferred from the Table 3 that the mean value of the variables such as consumer’s intention towards adopting technology for UPI payments is 4.20 measured on a scale of 1 through 5, perceived security is 3.98, perceived ease of use is 4.22 and perceived usefulness is 4.25. In this the

value of perceived usefulness is high which indicates that consumer’s intentions to adopt technology for UPI payments is high.

Correlation

Table 4: Correlation

		Perceived Usefulness	Perceived Ease of Use	Perceived Security
Consumer Intention	Pearson Correlation	*.782	*.669	*.622
*Significant at .05 level				

Results in Table 4 shows correlation coefficients of 0.782 for perceived usefulness, 0.669 for perceived ease of use and 0.622 for perceived security, thus proving that the correlation between consumer intention to adopt technology for UPI payments and independent variables (Perceived usefulness, Perceived ease of use and Perceived security) are significant at 0.05 level. This confirms the hypothesis H₁ that there exists a significant relationship between Consumer intention and perceived usefulness, Consumer intention and

perceived ease of use and consumer intention and perceived security.

The highest correlation exists between perceived usefulness (0.782) and consumer’s intention to adopt technology for UPI payments. With increase in perceived usefulness, perceived ease of use and perceived security, the consumer’s intentions to adopt technology for UPI payments also increases.

Regression Analysis

Table 5: Regression Analysis

R	R Square	Adjusted R Square
.82	.68	.67
Predictors: Perceived usefulness, Perceived ease of use and Perceived security		

As per the result displayed in Table 5, adjusted R square value is 0.67. This implies that 67.0% variability in the dependent variable i.e consumer’s intention to adopt technology for UPI payments is being predicted by the

independent variables, perceived usefulness, perceived ease of use and perceived security.

Table 6: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.16	.28	.00	-.56	.579
Perceived Usefulness	.59	.09	.52	6.77	.000
Perceived Ease of Use	.20	.09	.18	2.37	.020
Perceived Security	.25	.07	.24	3.71	.000
Dependent variable: Consumer’s intention to adopt technology for UPI payments					

From Table 6, it is evident that perceived usefulness (0.000), perceived ease of use (0.020) and perceived security (0.000) has a significant influence on the consumer’s intention to adopt technology for UPI payments. Consumer’s intention to adopt technology may increase with the

usefulness, ease of use and security provided by the UPI payment apps.

Consumer intention to adopt technology for UPI payments = - .16 + .59 perceived usefulness +.20 perceived ease of use +.25 perceived security.

XI. LIMITATIONS OF THE STUDY

Our sample had a greater number of respondents from people belonging to age group 18-25 years, it is likely that the perspective of most of them regarding intention to adopt technology for UPI payments will be similar.

The data was collected during January-April 2023, hence the results cannot be generalized across the specified time period.

XII. SUGGESTIONS

To increase the adoption of UPI payments, businesses and policymakers should focus on highlighting the benefits of this technology to consumers. They should promote the advantages of UPI payments, such as convenience, speed, and security, to improve the perceived usefulness of this technology. Businesses and policymakers should ensure that the UPI payment system is easy to use, and the interface is user-friendly. They should provide clear instructions and guidance on how to use the system and offer customer support to address any issues that may arise. Consumers' trust in the security of the UPI payment system is critical for its adoption. Businesses and policymakers should take measures to enhance the security of the system, such as implementing strong authentication protocols, using encryption technology, and providing information on security measures.

XIII. IMPLICATIONS FOR FURTHER RESEARCH

A descriptive research design has been used in the present study. Stratified random sampling was adopted and 124 responses were collected. This study was conducted for a short period of time and a longitudinal study can help gain more insights. This study helps to understand the importance of perceived ease of use, perceived usefulness and perceived security in driving consumer's intention to adopt technology for UPI payments. This study can help the payment service providers in understanding the features that consumers value the most.

XIV. CONCLUSION

This study on consumer's intention to adopt technology for UPI payments helps us to know about consumer's intention towards adopting technology for UPI payments which is almost used by everyone in today's world. Many UPI apps like paytm, phonepe, google pay and amazon pay were introduced and got widely accepted. Everyone uses it for transaction and majority of them are satisfied with those services. The main objective was to know how independent variables like perceived usefulness, perceived ease of use and perceived security influences consumer's intention to adopt technology for UPI payments. This study focused on perception of people from different age group, different occupation and different income level. The data used in the analysis was collected from 124 respondents. PSPP software was used to analyze the data collected. The majority of the respondents use UPI payments multiple times a day (39.5%). Male consumers used technology for UPI payments than the female. The results suggest that it is important for the UPI technology providers to focus on enhancing the perceived usefulness, perceived ease of use and perceived security of their technology to encourage adoption and usage among customers.

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