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UPI ADOPTION IN MUMBAI ACROSS DIFFERENT AGE GROUPS: AN EMPIRICAL ANALYSIS OF KEY INFLUENCING FACTORS AND CONSUMER SATISFACTION

Dr. PALLAVI RALLAN[1], ARYA SHAH[2], DISHA KHERIA[3], KASHISH GANDHI[4], MEHZABEEN SHARMA[5], SHARVARI MULAY[6], SUKRUT DOSHI[7] and Dr. PRAKASH BHATIA[8]*

[1]Assistant Professor, Anil Surendra Modi School of Commerce, SVKM's Narsee Monjee Institute of Management Studies (NMIMS) Deemed-to-be-University, Mumbai, India.
[2,3,4,5,6,7]Student, B.SC. Finance, Anil Surendra Modi School of Commerce, SVKM's Narsee Monjee Institute of Management Studies (NMIMS) Deemed-to-be-University, Mumbai, India.
[8]Associate Professor, Anil Surendra Modi School of Commerce, SVKM's Narsee Monjee Institute of Management Studies (NMIMS) (Deemed-to-be-University), Mumbai, India.
*Corresponding Author ORCID: https://orcid.org/0000-0002-5480-7737

Abstract

This study examines the adoption of the Unified Payments Interface (UPI) across different age groups. As the use of digital payments has increased rapidly, it has become essential to understand the adoption behaviour among different age groups. The problem addressed is the gap in understanding how factors influencing UPI adoption and satisfaction vary across the age groups. A descriptive, cross-sectional research design using primary data collection through structured surveys and secondary data collection for literature review. Respondents from Mumbai were analysed using descriptive statistics, chi-square test, ANOVA and post-Hoc tests with JAMOVI software. The primary objective was to assess UPI adoption patterns, analyse important adoption factors and measure the satisfaction levels across the different age groups. The findings reveal high UPI usage across all demographics, with notable differences in usage patterns: 18–25-year-olds predominantly use UPI for peer-to-peer transfers and daily transport, whereas the 26–45 and 46+ age groups primarily use it for bill payments. Additionally, factors such as availability of payment options and user reviews are significantly more important for the 26–45 age group compared to others. The study concludes that while UPI is widely adopted, age-specific preferences and satisfaction levels must be considered by fintech companies and policymakers. Factors such as speed, security, and ease of use tend to be the most important in terms of satisfaction levels across all age groups. The recommendation includes that companies customise their strategies to address the varying needs of different age groups to further boost adoption and satisfaction.

Keywords: UPI adoption, Digital payments, Age groups, Importance of factors, User Satisfaction. Mumbai, India.

1. INTRODUCTION

The Unified Payments Interface (UPI) is a payment system that allows seamless digital payments by linking various bank accounts to a single mobile application. Various payments and banking features like peer-to-peer payments, merchant payments, and fund transfers can now be done decisively. UPI allows the user to plan and automate payments making it much easier for the user. UPI was first piloted on April 11, 2016, with 21 banks on board. This was the brainchild of Dr. Raghuram G. Rajan, then the Governor of India's Reserve bank. By August 25th, 2016, the UPI versions of various banks' applications started populating the Google Play Store. This set off a paradigm shift in how payments were made digitally in the country.

Binding multiple bank accounts to one mobile application and conducting transactions through a mobile device makes UPI truly remarkable. People no longer must worry about time or geographic limitations. Payment authentication is carried out via a dual-factor verification which directly enhances privacy and security. Rather than the traditional and outdated account

numbers and IFSC codes, UPI transactions use a virtual address adding another layer of security. This drastically improves cash on delivery payment options as users don't need to deal with ATM withdrawals or exact change. Besides, features like payments for utilities and merchant services, QR-code payments, and resolving complaints via mobile apps undoubtedly position UPI as a convenient and customer-friendly platform. UPI permits cash register payments and authorizes easy action on donations, collections, and payments which makes it extendable for various financial purposes.

The system is regulated by NPCI, which sets out the rules, policies, and the duties of the involved parties such as banks and payment service providers (PSPs) and Third-Party Application Providers (TPAPs). NPCI guarantees safety and effectiveness of the UPI system as well as efficiency of transaction process with regards to conflict resolution and settlement of claims. UPI has grown tremendously since it was first introduced regarding the number of transactions and their value. The number of banks that facilitate UPI transactions has increased, as has the monthly value of transactions over time. For example, the transaction value in the month of January 2025 was ₹23.48 lakh crore, which is higher than the ₹18.41 lakh crore in January 2024 and ₹12.99 lakh crore in January 2023. The same is true for average daily transaction value which had increased from ₹41,905 crore in January 2023 to ₹75,743 crore in January 2025. Along with all this, common issues with UPI payments are forgotten or wrongly typed UPI PINs, bugs in the system interface, and downtime of the bank server.

This exponential growth highlights UPI's increasing adoption and its role in transforming India's digital payment landscape. The widespread acceptance of UPI among consumers, merchants, and businesses demonstrates its effectiveness in enabling fast, secure, and efficient financial transactions. (National Payments Corporation of India (NPCI), n.d.)

2. LITERATURE REVIEW

2.1 Adoption of UPI

Thomas & Chatterjee (2017) highlighted that the 19.72 crore bank accounts that have been opened under Pradhan Mantri Jan Dhan Yojana (PMJDY) since 2016 have promoted financial inclusion, laying a robust base for UPI adoption and expansion. Iskandar & Alim (2023) observed that the adoption of fintech has increased since the COVID-19 pandemic with growing public awareness, improved security features, simple usage, and greater confidence in the fintech space, all due to higher levels of customer satisfaction. Philip (2019) says that consumers use UPI services primarily for online payment, purchase transactions, and funds transfer. It is evident that users are greatly interested in using UPI as it provides users with convenient and flexible financial facilities. However, Indoria & Devi (2021) claim that respondents face problems regarding the security of mobile payments, huge setup time, risk of losing money, transaction failure, and lack of security of bank information.

Bhatia & Shete (2024), through their study, understand the pattern of UPI usage by Gen Z and Millennials in Mumbai. It explains how the financial independence of cashless transactions affects their way of life. Through their research, it was discovered that Millennials make more use of UPI compared to Gen Z. A research by Sakhiya et al. (2024) examined that elderly citizen can exhibit a preference for traditional payment systems such as debit and credit cards, whereas young consumers tend to adopt UPI. These results suggest that although UPI is emerging as a prevalent means of transaction among younger generations, preferences and obstacles continue to influence adoption across age groups. This difference in UPI adoption among various age groups will be studied in this research.

2.2 Importance of factors affecting UPI adoption

Philip (2019) highlights that individual prefer UPI more than traditional services because it is cheaper, speed of transactions is higher, easier to use, and has better incentives, although traditional services are seen as safer and more secure. Fahad & Shahid (2022) found that users are more likely to utilize UPI if they recognize its benefits, find it easy to use, and see their friends and family using it. In addition, those who use UPI and are satisfied with it are more inclined to suggest it to their known ones. Jha & Kumar (2021)'s study supports this by showing that that user's intention to use and adopt UPI payments is influenced by performance expectancy, mobile features and network quality, cashback and rewards. Shanmugasundaram (2024) found that senior citizens take into consideration factors such as recommendations, usefulness, policy mandates, and family support when adopting UPI. However, barriers like low confidence, security concerns, complexity, and resistance to change hinder usage. Sharma & Chauhan (2025) in their research discovered that benefits, simplicity of using UPI and risk of losing money because of sharing personal details are the most significant determinants of behaviour to use UPI for elderly users. Although various factors behind UPI adoption have been recognized, the importance of such factors differ between different age groups. This difference in the importance of factors underlying UPI adoption is one major gap in the current literature that the current research seeks to fill.

2.3 Satisfaction levels of consumers with UPI adoption

Kakade & Veshne (2017) found that UPI provides a highly secure and easy transaction process, with customer satisfaction through convenient payments by just entering a phone number or virtual address without the hassle of remembering long bank details. Tungare (2019) highlights that customers are highly satisfied with UPI because it allows them to maintain a paperless record of their transactions and track them with ease and avail special perks such as rewards, cashback, and discounts—privileges that users do not receive through cash transactions. Sowbarnika & Vasanthakumar (2022) added that cluster analysis indicates discontent with bill payment services offered by UPI apps, especially by those who earn less than ₹25,000 per month. Better fund transfers, privacy, and recharges would be satisfaction drivers.

Rathinasamy et al. (2024) specified that users of UPI are dissatisfied because of server problems and lack of up-to-date information, which impacts their experience. Sakhiya et al. (2024) found that younger customers find UPI easy to use and convenient. On the other hand, older customers face more security and usability problems, reinforcing the importance of professional instructional materials and easy-to-use designs. These variations in satisfaction among users by age group indicate a research gap about how variations in the importance of satisfaction drivers and barriers occur across ages, which is a core focus for this research.

3. RESEARCH PROBLEM

The research problem studied in this paper is UPI Adoption in Mumbai across different age groups: An Empirical Analysis of Key Influencing Factors and Consumer Satisfaction.

4. RESEARCH OBJECTIVES

Based on the above research problem, the following are the objectives being studied in this research:

1) To understand the adoption of UPI across different age groups.
2) To analyse the importance of factors affecting UPI adoption in different age groups.

3) To understand the satisfaction levels of consumers with UPI adoption across different age groups.

5. RESEARCH HYPOTHESES

The hypotheses to be tested in this study are as follows:

H1: There is an association between the age group and UPI usage.

H2: There is a significant difference in the importance of factors affecting the adoption of UPI among the different age groups.

H3: There is a significant difference in the satisfaction levels with respect to different factors affecting UPI adoption among different age groups.

6. RESEARCH METHODOLOGY

This research is done to examine the adoption of Unified Payments Interface (UPI) and the important factors affecting the adoption and its satisfaction levels across different age groups. Hence, a multiple cross sectional descriptive research design has been used for the same. Further, the data collection method utilized for this research is primary as well as secondary. Under primary research, this study adopts a quantitative research design through a survey with structured questions. This data was collected via a google form platform using web page survey. Additionally, this research adopts a non-probability convenience sampling method. The sample size is 324 and the sample population comprises individuals residing in Mumbai. Finally, the data analysis for this research is structured into descriptive and inferential. As this research makes use of closed ended questions with a nominal scale, ordinal scale and interval scale using 5-point Likert scale to capture responses related to the importance of factors and satisfaction level of factors; the descriptive statistics used are mode, average, standard deviation and standard error. For Inferential statistics, One Way ANOVA, Post-Hoc, Chi Square was conducted using JAMOVI software to understand the significant difference in the usage pattern, important factors and satisfaction levels across different age groups.

7. FINDINGS

7.1 Demographic of Sample

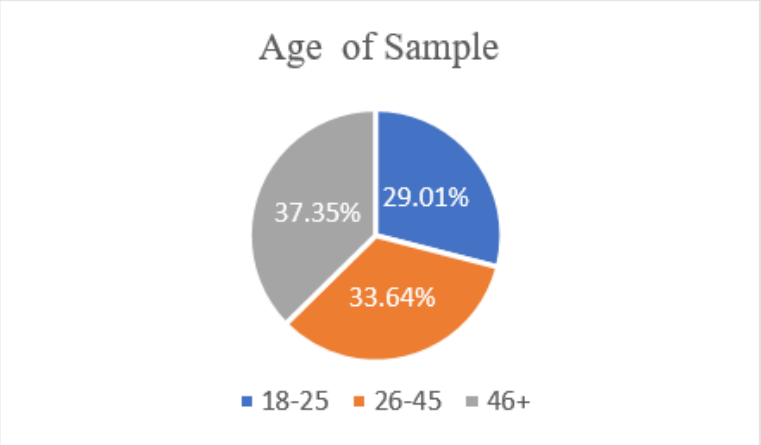

Figure 7.1.1: Demographic of Sample

Source: Author's Work

By their age, respondents comprised majorly of age 46+ (37.35%), then second largest group aged 26-45 (33.64%) and smallest group aged 18-25 (29.01%).

7.2 To understand the adoption of UPI across different age groups

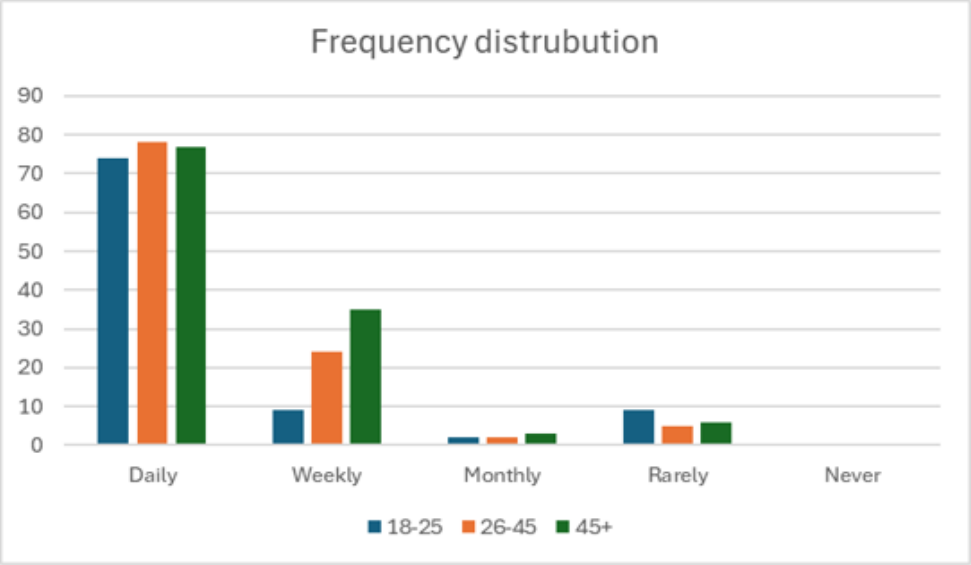

Figure 7.2.1: Frequency of UPI Usage across Age Groups

Source: Author's Work

N = 324; 18–25: 94; 26–45: 109; 46+: 121

The above figure gives us the distribution of frequency usage of UPI amongst the 3 age groups. A major proportion of all the three age groups use UPI daily showcasing the need and widespread adoption of it across all generations.

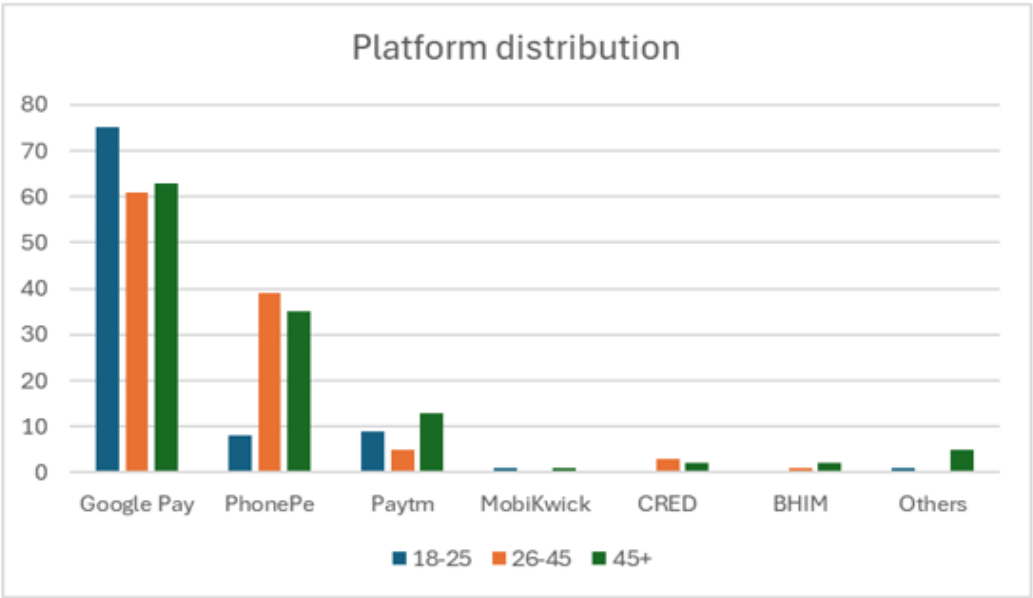

Figure 7.2.2: Preferred UPI Apps across Age Groups

Source: Author's Work

N = 324; 18–25: 94; 26–45: 109; 46+: 121

The above figure gives us the distribution of usage of different UPI apps amongst the 3 age groups. Although Google Pay is used highly by all age groups, it is more dominated by the 18-25 group. PhonePe has a relative higher user base in the older age groups compared to the younger ones indicating it has a better appeal amongst the 25+ age groups.

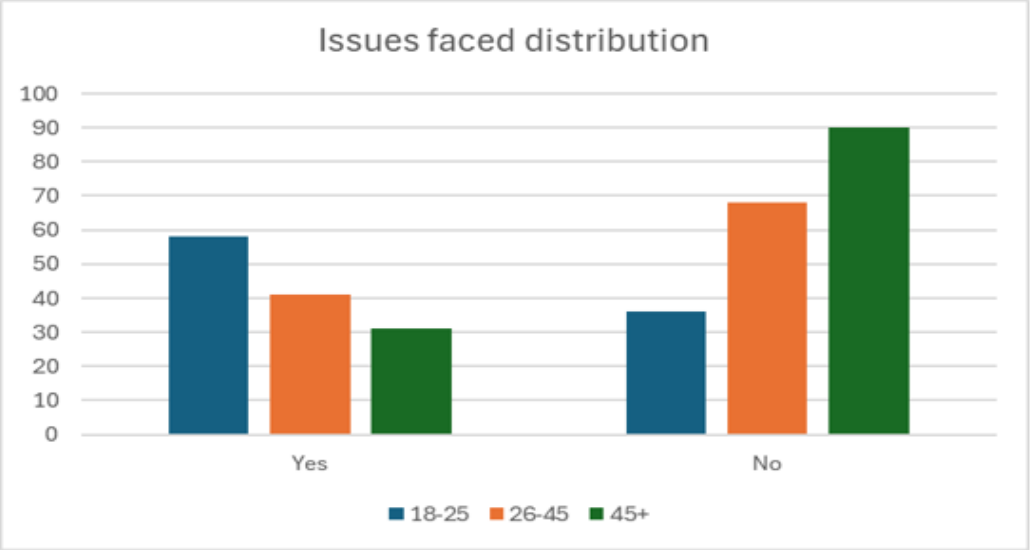

Figure 7.2.3: Issues Faced While Using UPI across Age Groups

Source: Author's Work

N = 324; 18–25: 94; 26–45: 109; 46+: 121

The above figure shows the distribution of issues faced amongst the age groups. The higher percent of 45+ group in the No section is due to the low adoption of UPI and a low usage of UPI.

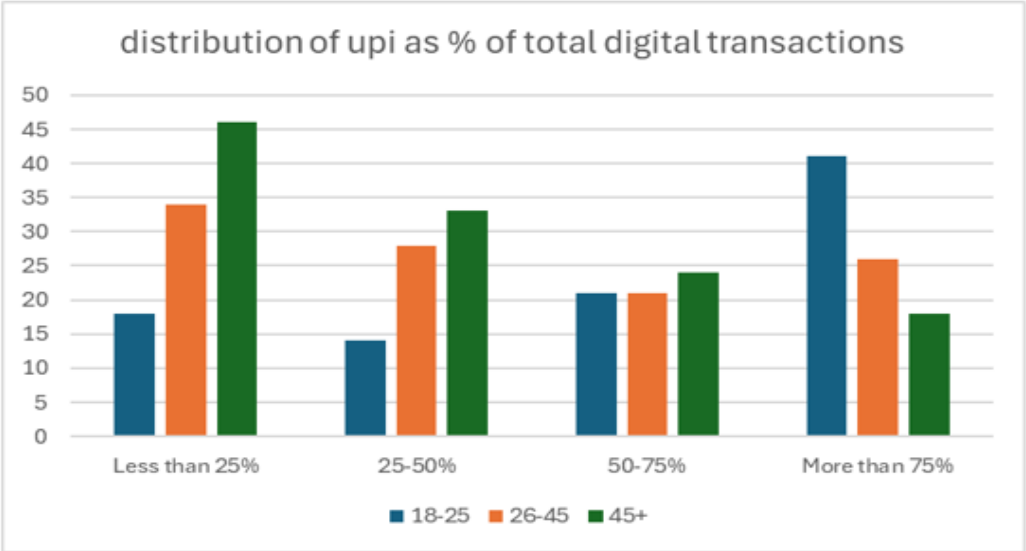

Figure 7.2.4: Distribution of UPI as Percentage of Total Digital Transactions across Age Groups

Source: Author's Work

N = 324; 18–25: 94; 26–45: 109; 46+: 121

The above figure shows the distribution of UPI as % of total digital transactions. Adoption of UPI is higher in the younger generation with a greater part of the More than 75% group. The older age group of 45+ still struggle with higher adoption of UPI with major share being in the Less than 25% group.

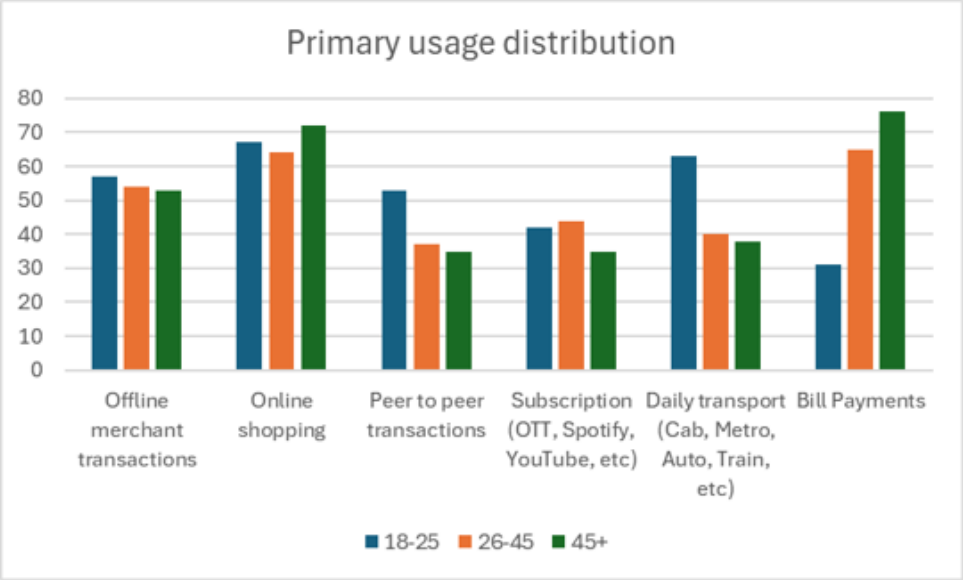

Figure 7.2.5: Primary UPI Usage across Age Groups

Source: Author's Work

N = 324; 18–25: 94; 26–45: 109; 46+: 121

The above figure shows how different age groups use UPI for different expenses. The higher age groups dominate the bill payment segment due to a higher amount of bills paid by them. The younger generation on the other hand dominate the daily transport segment showing their overall shift towards a cashless economy on a day-to-day basis.

Since the primary usage of UPI is varied across age groups, Chi Square test was conducted to assess whether differences are significantly different.

Table 7.2.1: Chi Square Results on usage of UPI

SUMMARY		Alpha	0.05
Count	Rows	Cols	df
926	3	6	10

CHI-SQUARE					
	chi-sq	**p-value**	**x-crit**	**sig**	**Cramer V**
Pearson's	33.4486	0.000229	18.30704	yes	0.13439
Max likelihood	35.03845	0.000123	18.30704	yes	0.137547

Source: REALSTAT

N = 324; 18–25: 94; 26–45: 109; 46+: 121

The table above shows the Chi square results which show that there is an association between age and UPI usage pattern. The age group 18-25 uses UPI the most for peer-to-peer transactions, daily transport whereas the age groups of 26-45 and 45+ uses it mostly for bill payments when compared with 18-25. Young consumers, especially millennials and Gen Z, are propelling India's UPI adoption primarily, as per Goyal et al. (2022). Peer-to-peer (P2P) transactions

also a key factor behind initial growth for UPI, with much support from a digitally aware youth population. While age-specific data on P2P usage is not available in detail, the trend points toward high use among 18–25-year-olds. The NPCI Smart Transit Solutions program points out that UPI is increasingly being utilized for public transportation payments like metros, buses, and auto-rickshaws. Junior professionals and students are the primary users of these services, which indicate high UPI usage for daily commutes among the 18–25 age group (RuPay, 2025).

7.3 To analyse the importance of factors affecting UPI adoption in different age groups

Table 7.1.1: Descriptive Statistics of Importance of Factors

Factors	Age Group					
	18-25		26-45		46+	
	Mean	SD	Mean	SD	Mean	SD
Security & Fraud Protection	4.41	0.86	4.5	0.857	4.46	0.764
Reliability & Fewer Transaction Failures	4.21	0.853	4.17	0.921	4.12	0.988
Recommendations from Family/Friends	3.71	1.17	3.91	1.151	3.8	1.173
Availability of Payment Options such as Cards, UPI, and Wallets	4.16	0.954	4.5	4.17	0.857	1.003
Ability to Track & Manage Expenses	4.2	0.784	4.29	0.956	4.34	0.9
Government Regulations & Compliance	3.95	1.02	4.22	0.994	4.24	0.904
User Reviews & Feedback	3.53	1.189	3.96	1.088	3.8	1.046
Transparency & Trust in Payment Platforms	4.4	0.677	4.52	0.856	4.4	0.881
Speed of Transactions	4.59	0.679	4.59	0.76	4.51	0.776
Discounts, Cashback & Rewards	3.61	1.138	3.75	1.299	3.57	1.341
Ease of Use & Interface	4.48	0.758	4.5	0.878	4.38	0.809

Table 7.3.2: One-Way ANOVA (Welch's)

Factors	F	df1	df2	p
Security & Fraud Protection	0.275	2	205	0.76
Reliability & Fewer Transaction Failures	0.25	2	212	0.779
Recommendations from Family/Friends	0.722	2	209	0.487
Availability of Payment Options such as Cards, UPI, and Wallets	5.202	2	209	0.006
Ability to Track & Manage Expenses	0.729	2	212	0.484
Government Regulations & Compliance	2.714	2	205	0.069
User Reviews & Feedback	3.594	2	205	0.029
Transparency & Trust in Payment Platforms	0.735	2	213	0.481
Speed of Transactions	0.36	2	212	0.698
Discounts, Cashback & Rewards	0.61	2	212	0.544
Ease of Use & Interface	0.727	2	210	0.485

Source: JAMOVI N = 324; 18–25: 94; 26–45: 109; 46+: 121

Table 7.3.3: Tukey Post-Hoc Test – Availability of Payment Options such as Cards, UPI, and Wallets

		18-25	26-45	46+
18-25	Mean difference	—	-0.345	-0.0057
	p-value	—	0.026	0.999
26-45	Mean difference		—	0.339
	p-value		—	0.018
46+	Mean difference			—
	p-value			—

Source: JAMOVI

N = 324; 18–25: 94; 26–45: 109; 46+: 121

Table 7.3.4: Tukey Post-Hoc Test – User Reviews & Feedback

		18-25	26-45	46+
18-25	Mean difference	—	-0.431	-0.27
	p-value	—	0.016	0.178
26-45	Mean difference		—	0.162
	p-value		—	0.509
46+	Mean difference			—
	p-value			—

Source: JAMOVI

N = 324; 18–25: 94; 26–45: 109; 46+: 121

The results indicate differences between the factors of user review and availability of payment options like such as cards, UPI and wallets, as evidenced by a $p < 0.05$ in both these factors. This indicates that these two are marked different in terms of being important across different age groups and are significant from the others. This is further validated by Tuckey's Post-Hoc test whereby both these factors show differences in mean differences with low p value. The age group of 26-45 places more importance on the above two factors (p value < 0.05) than the other age groups.

Experian (2022) revealed that 91% of Indian consumers prefer online payment methods over traditional ones. This preference is particularly strong among millennials (ages 26–45), who are leading the adoption of digital payments in India (Nagrani & Kakkar, 2022). The report also highlighted that security and privacy are top priorities for consumers, with 92% emphasizing the importance of these factors in online transactions (Experian, 2022).

7.4 To understand the satisfaction levels of consumers with UPI adoption across different age groups

Table 7.4.1: Descriptive Statistics of Satisfaction of Factors

Factors	Age Group							
	18-25		26-45		46+		Overall	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Security & Fraud Protection	4.33	0.808	4.26	1.004	4.32	0.819	4.3	0.880
Reliability & Fewer Transaction Failures	4.15	0.829	4.25	0.884	4.15	0.872	4.18	0.862
Recommendations from Family/Friends	3.9	0.995	4.12	1.052	3.98	0.957	4.01	1.002
Availability of Payment Options such as Cards, UPI, and Wallets	4.22	0.918	4.23	0.939	4.11	0.947	4.18	0.935
Ability to Track & Manage Expenses	4.28	0.809	4.28	0.934	4.24	0.904	4.27	0.885
Government Regulations & Compliance	4.17	0.825	4.19	0.986	4.2	0.891	4.19	0.903
User Reviews & Feedback	4.06	0.902	4.1	1.018	4.04	0.916	4.07	0.945
Transparency & Trust in Payment Platforms	4.23	0.835	4.31	0.889	4.21	0.906	4.25	0.878
Speed of Transactions	4.39	0.765	4.56	0.775	4.48	0.776	4.48	0.773
Discounts, Cashback & Rewards	3.67	1.195	3.73	1.252	3.61	1.200	3.67	1.214
Ease of Use & Interface	4.49	0.715	4.39	0.922	4.36	0.806	4.41	0.822

Source: JAMOVI

N = 324; 18–25: 94; 26–45: 109; 46+: 121

Table 7.4.2: One-Way ANOVA (Welch's)

Factors	F	df1	df2	p
Security & Fraud Protection	0.1933	2	208	0.824
Reliability & Fewer Transaction Failures	0.4621	2	210	0.631
Recommendations from Family/Friends	1.1498	2	208	0.319
Availability of Payment Options such as Cards, UPI, and Wallets	0.6072	2	210	0.546
Ability to Track & Manage Expenses	0.0803	2	211	0.923
Government Regulations & Compliance	0.031	2	210	0.97
User Reviews & Feedback	0.1079	2	209	0.898
Transparency & Trust in Payment Platforms	0.3696	2	211	0.691
Speed of Transactions	1.1708	2	209	0.312
Discounts, Cashback & Rewards	0.2843	2	209	0.753
Ease of Use & Interface	0.8083	2	211	0.447

Source: JAMOVI

N = 324; 18–25: 94; 26–45: 109; 46+: 121

The results indicate that there were no significant differences in satisfaction levels across different age groups ($p > 0.05$), but there are some factors which have higher scores when it comes to satisfying customers. It can be found out by looking at overall satisfaction level instead of comparing across age groups.

The descriptive table above clearly shows that, Speed of Transactions and Ease of Use & Interface and Security & Fraud are the factors categorised as highly satisfied across the sample when compared to others. These top 3 factors have mean scores greater than 4.3. Hence these come out to be most significant factors.

According to More (2023) crucial factors which deemed to be important and which would affect the UPI adoption levels and sentiments of the user were carefully considered to be the dependent variables whereas transaction speed, security, trust, ease in convenience were kept as the independent variables from the respondents.

8. CONCLUSION & RECOMMENDATIONS

According to this research, UPI dominates digital payments with high usage, trust, and dependency, despite transaction failures and security concerns, driven by younger users. The findings inform that even if transaction costs are introduced, a significant amount of people would continue to use UPI, showing its high usage and adoption. Purpose of usage of UPI is very different across the age groups.

Age group 26-45 places more importance on Availability of Payment Options such as Cards, UPI, and Wallets and User Reviews when compared to age groups 18-25 and 46+. Government should come up with strategies which improves these factors as age group 26-45 is a big part of the population which can lead to increase in adoption of UPI.

The satisfaction levels across different age groups are same because of similar features provided to each group even though each group has different importance levels for different factors and purposes as working population (26-45) uses more for bill payments while students (18-25) use more it for peer-to-peer transactions.

Overall picture shows that some factors like speed, security and ease of use tend to be better when it comes satisfaction levels as compared to others although there is no difference in it across age groups.

9. LIMITATIONS

Few limitations of this study include:

- Although study is on UPI, it is limited by the objectives studied.
- Findings are true only for the period that it is conducted in which is March 2025 as it is a cross-sectional study. Findings may not be true for other time periods.
- Since the study is conducted based on a sample that may not be a true representation of the entire population, the research is prone to sampling error.
- Since non-probability sampling was used, all individuals in the target population did not have an equal chance of being included in the survey leading to selection bias.
- Since this study is conducted on people residing in Mumbai, it may not be true for other locations.
- Since the research is conducted through google form web page survey, the accuracy and quality of data may be affected.

10. FUTURE RESEARCH AGENDA

- Longitudinal study can be conducted to see the change in adoption levels and satisfaction of the factors over time.
- UPI adoption in urban vs rural areas can be studied on.
- Evolving securities threats and fraud patterns and their impact on user trust in UPI system over a period can be researched upon for further analysis.

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