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Identification and Analysis of Problem Faced in Use of Unified Payment Interface (UPI) System

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Abstract : *Unified Payment Interface is embedded with innovative technology for payment with different extended features such as instant money transfer, no need of banking details etc. This system modernized the way of doing payment in the digital payment background of India and now it becomes the vital instrument for India to become a cashless economy. However, instead of UPI continuous popularity, there are different barriers or problems which affect its widespread adoption. The present study is related to identify and analyses and then highlight the crucial problems that slow down the UPI system adoption. The Primary data collected through the use of "Structured Questionnaire" in Google form. The research is descriptive and analytical in nature. In present study on the basis of "Exploratory Factor analysis" problems are identified that individual experiences under four category such as Infrastructural Problem, Technical Problem, Security Type and User Experience issues and on the basis of mean ranking it is found that banking server issue(infrastructural),Transaction failure issue (Technical), Public Wi-Fi security risks, Threat of payment on fake merchant websites(Security issue) and Delayed refund of blocked amount(User experience issue) are the key problems under different dimension faced by many consumer. The results of this study will be also substantial for policymakers, technology providers and financial institutions for usage of UPI at wide level and also to promote digital financial inclusion in India which ultimately contribute more to an "Inclusive and Cashless economy".*

Keywords: Adoption, Cashless Economy, Problems and Unified Payments Interface (UPI)

INTRODUCTION

In the existing digital payment ecosystem, every person requires secure, instant, and low-cost transactions and the Unified Payment Interface (UPI) is a core enabler of these needs. Therefore, adoption of UPI increasing day by day and it can be observed from the UPI related data available on official websites of "National Payment Corporation of India (NPCI)" month wise that is https://www.npci.org.in/what-we-do/upi/product-statistics. As per the availability of data from the inception of UPI in April 2016 the extended use and adoption of this system witnessed by analyzing the trend and growth rate of UPI transactions. As we all know that India population is combined with different demographic profile therefore adoption pattern is also different. However, despite of this exponential growth sometimes consumers sometimes face various issues, including infrastructural problems like banking server issues and poor internet connection, technical problems such as transaction failures, security problems like public Wi-Fi security risks, and user experience problems like difficulty of use and delays in resolving customer issues. These types of obstacles undoubtedly affect adoption pattern of UPI in near future that create hurdles for India to become a cashless country. This research focuses on identifying the key obstacles that hinder UPI adoption and contribute to a negative perception among existing and potential users. Identifying these obstacles can help policymakers and UPI service providers to develop and implement targeted strategies to address these issues. This study identifies and analyzes these issues and provides suggestions for mitigating them.

REVIEW OF LITERATURE

According to Vidhya and Sankar(2023) analyzed that while most consumers are satisfied with UPI, they often face server downtime issues during transactions. Ramya and Sandhiya (2023) found that consumers frequently encounter technical issues which leads to lower satisfaction level. Sankararaman et al. (2023) identified that customers experience payment failure and connectivity issues even then majority remain satisfied with UPI. Jain and Punjabi (2022) identified that usage of UPI is by affected by some key problems such as high dependence on cash and inadequate infrastructure. Thirupathi and Akula (2022) determined that while perception of post graduate students of Satavahana University, Telangana is positive, but they face technical and security issues during its use.

Bhuvaneswari et al.(2021)scrutinized security and privacy issues, which negatively affect consumer perceptions of UPI. Banerjee and Saha(2021) studied mobile payment preferences and found that while most consumers prefer mobile payments, they also face security and privacy concerns. Gupta and Hakhu(2021) noted that consumers generally have a positive perception of UPI"s benefits, but digital illiteracy and low internet connectivity hinder its usage. Saxena and Tripathi(2021) identified that most respondents use mobile payment options despite the presence of security issues during transactions.

N and Subbulakshmi (2021) analysed that the consumer hesitates to prefer UPI due to less discount offers and security issues. Kumar and Menon (2020) explained that although customers have positive perception of UPI, digital illiteracy remains a major challenge.

Many previous studies analyzed the problems in UPI adoption in general way only but in present study obstacles are categorized in four factors such as Infrastructural Problem, Technical Problem , Security issues and Users Experience problem then key problems are identified.

METHODOLOGY

The current study is based on the collection of primary data using a Google Form questionnaire The respondents are selected on the basis of "Random Sampling Method". The initial sample size was 460 respondents, but after removing responses with missing values and outliers, the final sample size was 453. The area of the study is Haryana and Delhi NCR. Responses were collected using a five-point Likert scale. Different statistical tools in SPSS are used for analysis of data such as "Frequency, Percentages, Mean, Factor analysis, mean ranking". Tables and figures are used to present the analysis.

RESULTS

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.918
Bartlett's Test of Sphericity	Approx. Chi-Square	4316.666
	Df	136
	Sig.	.000

Source: Computed in SPSS by using Primary Data

Table 1 presents the results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The KMO measure is 0.918, indicating that the sample is suitable for factor analysis. Bartlett's test of sphericity is statistically significant (Approx. Chi-Square = 4316.666, df = 136, Sig. = 0.000), confirming that there are significant correlations among the variables, which supports the appropriateness of factor analysis.

Table 2: Problem Factors Identified Using Exploratory Factor Analysis

Statements	Problem Faced by UPI Consumer	Factor Loading	Eigen Value	% of Variance	Cronbach Alpha
FACTOR 1			7.756	19.957	.877
User Experience And Support Problem					
36. Less Knowledge of new UPI features		.794			
39. Delay in refund of Blocked amount		.760			
38. Deactivation of UPI ID		.754			
35.UPI is difficult to use		.695			
37.Delay in resolving customer issues		.693			
FACTOR 2			1.595	17.768	.850
Technical Problem					
27. Transaction Failure Issues		.781			
28. Delayed important notifications		.776			
29. UPI app crashes during payment		.728			
30.Biometric authentication failures		.600			
FACTOR 3			1.447	16.493	.850
Security Problem					
34.Threat of payments on a fake mechant wesites		.827			
33.Risk of downloading fake UPI apps		.825			
32.Public Wi-Fi security risks		.779			
31.Risk of UPI ID hacking		.642			

FACTOR 4		0.898	14.578	.819
Infrastructural Problem				
24. Banking server issue	.843			
23.Poor internet connection	.714			
25. Inadequate Technical Support	.699			
26. Slow UPI app performance	.561			

Rotation Method: Varimax with Kaiser Normalization

Extraction Method: Principal Component Analysis

Table 2 shows the problem factors identified using exploratory factor analysis , comprising factor loadings, Eigenvalues, the percentage of variance explained, and Cronbach's alpha value for each factor.

Factor 1: User Experience and Support Problems: This factor has an Eigenvalue of 7.756 and explains 19.957% of the variance. The factor loadings for the statements within this factor range from 0.693 to 0.794, indicating that these statements strongly contribute to this factor. The Cronbach's alpha for this factor is 0.877, indicating high internal consistency.

Factor 2: Technical Problems: The Eigenvalue of this factor is 1.595 which is above 1 and expains 17.768% of the total variance. Factor loadings range from 0.600 to 0.781, and the Cronbach's alpha is 0.850, indicating good reliability and validity of the statements .

Factor 3: Security Problems: This factor has an Eigenvalue of 1.447 and explains 16.493% of the variance. Factor loadings range from 0.642 to 0.827, and the Cronbach's alpha is 0.850, showing strong and good reliability.

Factor 4: Infrastructural Problems: This factor has an Eigenvalue of 0.898 and explains 14.578% of the variance. Although the Eigenvalue is less than 1, the factor was retained because the sum of squared factor loadings is greater than 1 which is 2.0236 then this sum value also considered as eigenvalue (Tavakol and Wetzel 2020). Factor loadings range from 0.561 to 0.843 and the Cronbach's alpha is 0.819, indicating acceptable or adequte reliability.

The numbers of factors shows in table 2 are ascertained on the basis of Eigenvalue and Scree plot (Shrestha 2021) by using Principal Component analysis method with varimax rotation.The reliability of each factor was measured using Cronbach's alpha and all values are above 0.70 considered reliable.

3: Mean Ranking of Problem Factors: The following tables present the weighted sum, mean values and mean ranking of the different problems identified on the basis of responses collected using five-point Likert scale range from Strongly Agree to Strongly Disagree where scale are denoted as Strongly agree (SA)-5, Agree (A)-4, Neutral(N) – 3, Disagree(D)-2, Strongly Disagree(SD)–1.

3.1 USERS EXPERIENCE AND SUPPORT PROBLEM

Statements	**Number of respondents**					**Weighted Sum***	**Mean Value***	**Mean Ranking**
	5	**4**	**3**	**2**	**1**			
1.Difficult to use	36	94	96	183	44	1254	2.77	V
2.Less knowledge of new UPI features	40	179	126	84	24	1486	3.28	III
3.Delay in resolving customer issues	50	162	139	87	15	1504	3.32	II
4.Deactivation of UPI ID	33	144	147	103	26	1414	3.12	IV
5.Delayed refund of blocked amount	56	186	112	79	20	1538	3.40	I
COMBINED MEAN*							**3.18**	

Table 3.1 shows that for UPI users "Delayed refund of Blocked amount" is most significant concern with highest mean value 3.40 with rank I and "Difficult to use" is least important concern (Mean = 2.77, Rank = V). The combined mean for this problem category is 3.18.

3.2 TECHNICAL PROBLEM

Statements	**Number of respondents**					**Weighted Sum***	**Mean Value***	**Mean Ranking**
	5	**4**	**3**	**2**	**1**			
1.Transaction failure issues	72	232	96	44	9	1673	3.69	I
2.Delayed important notifications	60	180	130	72	11	1565	3.45	II
3.UPI app crashes during payment	57	154	132	93	17	1500	3.31	III
4. Biometric authentication failures	51	134	140	106	22	1445	3.19	IV
COMBINED MEAN*							**3.41**	

Out of different technical problems, "Transaction failure issues" are the most prominent (Mean = 3.69, Rank I), and "Biometric authentication failures" are the least severe (Mean = 3.19, Rank IV). The combined mean for technical problems is 3.41.

3.3 SECURITY PROBLEM

Statements	Number of respondents					Weighted Sum* Value*Sum*	Mean Value*	Mean Ranking
	5	4	3	2	1			
1.Risk of UPI ID hacking	81	205	97	51	19	1637	3.61	III
2.Public Wi-Fi security risks	87	251	74	29	12	1731	3.82	I
3.Risk of downloading fake UPI apps	78	226	89	40	20	1661	3.67	II
4.Threat of Payments on a fake mechant websites	104	223	84	25	17	1731	3.82	I
COMBINED MEAN*							**3.73**	

Table 3.3 shows that "Public Wi-Fi Security risk" and "Threat of payment on a fake merchant websites" both are equally significant having mean=3.82 and sharing the highest rank (I). The combined mean for security problem category is 3.73.

3.4 INFRASTRUCTURAL PROBLEM

Statements	Number of respondents					Weighted Sum*	Mean Value*	Mean Ranking
	5	4	3	2	1			
1.Poor internet connection	65	219	101	55	13	1627	3.59	II
2.Banking server down	70	245	86	37	15	1677	3.70	I
3.Inadequate technical support	47	196	152	45	13	1578	3.48	III
4.Slow UPI app performance	47	161	134	86	25	1478	3.26	IV
COMBINED MEAN*							**3.50**	

Source: Primary Data and SPSS

Table 3.4 shows that in Infrastructural problem category "Banking server down" is the key issue (Mean=3.70, Rank=I) and "Slow UPI app Performance" are less significant issue (Mean=3.26, Rank = IV). The value of combined mean is 3.50.

1. Weighted Sum* = Total of number of respondents multiplied by given weight
2. Mean Value* = Weighted sum of each Statement / Number of Responses
3. Combined Mean* =Total of Mean value of all statements / Number of Statements

Table 4: Comparison Of Combined Mean of Problem Categories

Problems Category	Combined Mean*	Mean Ranking
1.Users Experience Issues	3.18	IV
2.Technical Problem	3.41	III
3.Security Problem	3.73	I
4.Infrastructural Problem	3.50	II

Table 4 compares the combined mean values across the four problem categories and shows that "Security Problem" have the highest combined mean (3.73, Rank=I), implying they are most significant issue and "User Experience issues" with lowest combined mean (3.18, Rank=IV) indicating that they are less challenging.

Combined Mean* - This values are taken from table 3.1, 3.2, 3.3, 3.4.

DISCUSSION

The Exploratory factor analysis extracted four problem factors from 17 statements. Mean ranking was then used to analyze the problems commonly faced by consumers, revealing that delay in refund of blocked amount with mean value 3.40(User experience& support issues), Transaction failure issue (Technical) and Banking server issue(Infrastructural) are equally faced by consumer having mean value approx. 3.70 but relate to different category, Public Wi-Fi security risk and Threat of payment on fake merchant websites both have equal mean value which is 3.82(security issue) are the key problem with highest mean value under different category. But there is a statement in user experiences and support issues

that UPI is difficult to use but its mean value is 2.77 which less than 3 or neutral that conveys that consumers are disagree on this problem and they experience that UPI is easy to use. The finding of present research study is significant to increase adoption of UPI by focusing on making effective strategies to reduce the security issues regarding UPI because in table 4 security problems have highest mean and to maintain internet connectivity is also important to increase financial inclusion. The government should launch an educational campaign to inform users about how to use UPI effectively. The results of this study cannot be fully generalized due to the limited sample size. In future research can further proceed by analyzing that whether these problems are significantly differ or not on the basis of various demographic factors such as age, gender, education and residential area.

CONCLUSION

Based on the discussion, both individual and combined mean values indicate that security issues are the most significant concern for respondents, followed by infrastructural and technical issues. But they face less issues regarding support system of UPI therefore it ranked at last. To mitigate these issues, service providers should prioritize security measures, improve technical support and infrastructure, and conduct awareness campaigns to educate consumers on the effective use of UPI.

REFERENCES

1. Banerjee, S., & Saha, P.(2021). Study of Consumer Behaviour Towards Digital Payment: An Empirical Study With Reference To Kolkata. International Journal of Engineering Applied Sciences and Technology,6(1),159-167.
2. Bhuvaneswari, M., Kamalasaravanan, S., & Kanimozhi, V. (2021). A study on consumer behaviour towards UPI (unified payment interface) payment application based in Nilgiris district. International Journal of Advance Research, Ideas and Innovations in Technology, 7(3), 1096-1101.
3. Cattell, R. B. (1966). The scree test for the number of factors. Multivariate behavioral research, 1(2),245-276.

   http://dx.doi.org/10.1207/s15327906mbr0102_10.
4. Gupta, P., & Hakhu, R. (2021). An empirical analysis of customer perception towards cashless transactions: A case study of Haryana. International Journal of Applied Research, 7(12), 01-06.
5. Jain,S.A., & Punjabi,N.M.(2022). A Study On Challenges Faced By The Consumers And Its Impact On Usage Of Digital Mode Of Payments In The City Of Mumbai. International Journal of Creative Research Thoughts,10(3), 896-906.
6. Kumar, N.S., & Menon.S. (2020). Impact of Unified Payment Interface System on Customer Satisfaction and Role of National Payment Corporation of India in Promoting Digital Transactions. International Journal of Research in Engineering, Science and Management, 3(1), 508-510.
7. Kumar, R., Sharma, S., & Singh, J. (2018). Factor Analysis in Social Sciences: A Review. Journal of Social Sciences Research, 6(1), 1-13.
8. N, S., & Subbulakshmi, S. (2021). Unified Payment Interface Application: A Study of Customer Perception with Special Reference to Chennai City, International Journal of Transdisciplinary Research and Development (SIJTRD), 1(1), 24-28.
9. Ramya,N.,&Sandhiya,C.(2023). A Study On Consumer Perception Towards UPI Applications With Special Reference To Coimbatore City. International Journal of Scientific Research in Engineering and Management, 7(7),1-10.
10. Sankararaman, G., Suresh, S., & Thomas, T. C. (2023). A Study on Users 'opinion Towards Unified Payment Interface (UPI) Transactions. World Journal of Management and Economics, 258-266. https://ssrn.com/abstract=4566690
11. Saxena, A., & Tripathi, S. N. (2021). Exploring the security risks and safety measures of mobile payments in fintech environment in India. International Journal of Management, 12(2),408-417. DOI: 10.34218/IJM.12.2.2021.041
12. Shrestha, N. (2021). Factor analysis as a tool for survey analysis. American journal of Applied Mathematics and statistics, 9(1), 4-11. DOI:10.12691/ajams-9-1-2
13. Tavakol, M., & Wetzel, A. (2020). Factor Analysis: a means for theory and instrument development in support of construct validity. International journal of medical education, 11,245. doi: 10.5116/ijme.5f96.0f4a
14. Thirupathi, K., & Akula, R. (2022). Perceptions of Post Graduate Students towards UPI Transactions-A Study. Asian Journal of Economics, Business and Accounting, 22(24), 48-57. https://doi.org/10.9734/ajeba/2022/v22i24893
15. Vidhya, I.V.,& Sankar,C.P.(2023).Consumer Perception towards Cashless Economy with Special Reference to Unified Payments Interface (UPI). Shanlax International Journal of Economics,11(2),10–14. DOI: 10.34293/economics.v11i3.6068