FACTORS INFLUENCING ADOPTION AND CUSTOMER SATISFACTION OF M-BANKING APPS IN INDIA

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Abstract
All public and private sector banks in India have incorporated banking 4.0 applications, and Mobile banking has adopted banking 4.0 technologies and effectively changed the state of banking operations and services. The cross-sectional study assessed the level of innovation, responsiveness and communication, security and privacy, accessibility and reliability, and openness and trust in m-banking Apps provided by YONO, iMobile Pay and both users through a structured questionnaire in the form of Google form; and identified the factors that influence the adoption and usage of YONO, iMobile Pay and both app users in India from demographic factor perspective. The study also assessed the achievability level of all factors. The study discovered that SBI YONO is the most preferred app compared to iMobile Pay. The cross-tab analysis was applied and found that the period of using M-banking is related to the frequency of M-banking Apps usage. Kruskal Wallis test was applied and found all null hypotheses were rejected for factors, i.e., innovation, security and privacy, responsiveness and communication, accessibility and reliability, openness and trust and Customer satisfaction are not same among YONO, iMobile Pay and both users in the era of banking 4.0. The study finds a gap in the achievability of all the factors that affect both banks' adoption and usage of m-banking platforms. The investigation used a sample of 531, sampling bias and the likelihood and may not accurately reflect the total population, the study relied on self-reported data, and the study was conducted in India; thus, the findings may not be generalisable to other banks and countries. The study will assist banks in creating and providing services better suited to customer requirements and expectations. The banks could improve mobile banking and create technological plans to remain competitive in the mobile banking era, and must continually hone their services.

Keywords:
Banking 4.0, YONO, iMobile Pay, m-banking apps, adoption, usage, innovation, responsiveness and communication, security and privacy, accessibility and reliability, openness and trust, Customer Satisfaction

1. Introduction

Banking history is almost 700 years old and has undergone several changes, but this present era, the information technology era, has changed its scenario completely. Information technology is spreading fast and impacting every aspect of human life. The technical term "Industry 4.0" emerged due to technological advancements, called Banking 4.0, in the banking sector**.** Banking 4.0 forces us to adopt upcoming technologies and develop new capabilities, jobs and skills to meet the market challenges and redefine how banks fit in the latest demands of customers – anytime and anywhere service. Banks must provide the best services to their valuable customers using information technologies. Banking 4.0 is marked as accommodating emerging technologies - Artificial Intelligence, Blockchain, Augmented Reality, Machine Learning, Data Science, Cloud Computing, Cyber Security and many more. Banks are simultaneously accommodating all new upcoming and in-demand technologies for their services, operations and infrastructure.

The journey of advancement of banking technologies explained by Thimmaiyan (2022) and characterised as - Physical outlets and branches and analogue transactions; Self-service banking, and internet use in banking services; Adding a layer to self-service banking with digital technologies and personalised banking; and is completely digital, Mobile Banking and Banking Everywhere, respectively. The transition from product base operations to service-based operations; the need to adopt

a customer-centric approach and personalisation of services on demand; providing digital solutions for overall services and improving service-based customer satisfaction; and requires collaboration with fintech companies to create co-branded products (Bhowmik, 2020). Banking 4.0 witnessed the emergence of innovative and in-demand technologies in its services, operations and infrastructure, and mobile banking is the latest version of banking.

The ultimate result of mobile banking is providing satisfaction through services and operations. This study assessed the customer satisfaction of banking regarding innovation, responsiveness, communication, security and privacy, accessibility and reliability, openness and trust, particularly M-banking Apps of the State Bank of India and ICICI, i.e., YONO and iMobile Pay. The study examined the achievability level of all factors because it is assumed that the applications of the mobile banking platform certainly satisfy customers in terms of creativity, responsiveness and communication, security and privacy, usability and dependability, openness, and trust. Though, these factors have never been evaluated or examined regarding achievability.

All public and private sector banks in India have incorporated mobile banking applications. The Union budget 2022-23 vision for Indian banks to move towards the Banking as a Service (BaaS) model or the Banking 4.0 model and suggested achieving this target within ten years. The banking sector implements information technologies for all its operations, services, and infrastructure. All applications and facilities being adopted keep in mind the focal point, i.e. develop customer-centric services. At this stage, it needs to understand the customer's satisfaction level and the performance of the various technological applications of the banking sector. Mobile banking has adopted banking 4.0 technologies and effectively changed the state of banking operations and services. Mobile banking help customer performs all financial transactions through a mobile device, a bank anywhere and at any time. There are several issues involved with mobile banking, such as customer satisfaction regarding innovation, responsiveness, communication, security and privacy, accessibility and reliability, and openness and trust in M-banking Apps. All these issues need to be addressed to understand the customer satisfaction level. Thus, this descriptive study is done to understand the satisfaction level of mobile banking customers, especially YONO (SBI) and iMobile Pay users. The study tried to evaluate customers' satisfaction regarding their mobile banking of these two banks' services.

2. Literature Review

2.1 Factors Influencing the Adoption of mobile banking

Singh and Srivastava (2014) investigated the factors influencing the adoption of mobile banking. They suggested a model incorporating the five antecedents: perceived ease of use, compatibility, social influence, security, and perceived cost on its influence on customers' decision to use mobile banking. Mobile banking allows customisation, providing the data and analytics capabilities needed to examine each customer's profitability and offer individualised or segmented products and pricing (Rao & Budde, 2015). The M-banking customer in India is a young, literate male from the middle-income strata. Security issues are important in the adoption of e-banking and m-banking options. Customers using m-banking found that time-effectiveness, convenience, safety, operational simplicity and ease of navigation are more important in adopting mobile banking (Bhatt & Bhatt, 2016). Singh (2016) studied the e-Services of three public sector banks in India to know the adoption and customer satisfaction level, adding that customer satisfaction is an essential quality of M-Banking. Garín-Muñoz et al. (2019) and Elhajjar & Ouaida (2020) have underlined that the level of Internet and computer skills are significant in adopting electronic banking services. Khan and Basir (2022) have opined that attitude, trust and performance are significantly associated with the adoption of mobile banking. Khadafi and Ruslan (2020) investigated and analysed the performance of the Indonesian commercial banking business in digital banking. They have proposed an agile management approach that views digital transformation as an opportunity and relies on partnerships to interact with varied actors—technologically, socially, and culturally (Fasnacht, 2021). The developing nations' consumers are adopting mobile payments to fulfil their daily requirements such as utility bills, shopping and personal or individual-level fund transfers (Karjaluoto et al., 2021; Shaikh et al., 2021). Thakur (2021) analysed the level of artificial intelligence application in India's banking sector and proposed the prospective

areas where artificial intelligence is/can be utilised in the banking sector. According to Telli et al. (2022), digital transformation has changed how banks connect with their clients. Adopting mobile technologies by consumers and businesses follow a contactless payment approach that is considered a convenient, fast and cost-saving mode of transaction (Majumdar & Pujari, 2022). Tater and John (2022) examined four APPs (SBI Bank (YONO), PNB Bank (PNB ONE), and ICICI Bank (iMobile Pay), and HDFC Bank (HDFC Mobile Banking APP) on services, visual design, interfaces, value-added services, top-up recharge, m-passbook, and supplied by all APPs. Cardless withdrawals, bill payments, top-ups, opening an online PPF account, and other services have benefited users and non-users and have enhanced safety and security features. Sharma (2022) studied the impact of innovative technology on customer satisfaction in public and private sector banks in Bhopal, and innovative technology has enhanced customer satisfaction in public and private sector banks. It was found that private sector banks had an edge in terms of success in innovation. The study (Noreen et al., 2023) discussed consumer perspectives on mobile banking adoption in five Asian countries. The finding disclosed that awareness, attitude, subjective norms, perceived usefulness, and knowledge of artificial intelligence technology play important roles in mobile banking. The study confirms that risk, the convenience of use, ease of access, cost, and comparative advantage are important factors influencing mobile banking adoption (Mamun et al. (2023).

2.2 Factors influencing customer satisfaction.

As the Internet of Everything-enabled solutions creates personalised interactions, Digital Bank 4.0 will become a reality (Bradley et al. 2014). In Digital Bank 4.0, customers require more interactions, personalised advice, mobile options, and fast and efficient advice. The study (Cudjoe et al., 2015) examined the factors influencing mobile banking usage among bank customers in Ghana, focusing on Access Bank, and each component significantly affected customer intention to adopt and utilise m-banking Apps. Reliability means the stability of performance and service delivery properly and has been promised to the client. Reliability includes - the accuracy of the accounts, files, and errors that do not occur; Providing banking service properly and on time; and stability of the performance level of service (fang et al., 2013). The selected security aspects of commercial banks concerning customer satisfaction were investigated. According to a study (Belás, 2016) in the banking sector of Slovakia, results expressed that bank takes proper care of them, trust in the security of electronic payments was found to be relatively low, and customers are a target for hackers, men are a more frequent target.

Jun & Palacios's (2016) analysis revealed about 17 dimensions of m-banking service quality; out of these five dimensions, such as mobile convenience, accuracy, various mobile application service features, ease of use, and continuous improvement, are the primary sources of customer satisfaction/dissatisfaction. Kureshi & Bhatt (2018) have investigated the impact of various factors on digital banking service quality and customer satisfaction, and it was discovered that materiality, competence, assistance, accessibility, complexity, connection, and security issues significantly impact the service quality of digital banking. The study (Hammoud et al., 2018) examined the relationship between Banking service quality and customer satisfaction to determine which dimension can substantially influence customer satisfaction. Mchomba (2018) examined the effects of electronic banking on customer satisfaction in the Tanzania banking industry and determined a strong positive association between e-banking services and customer satisfaction. The study (Hammoud et al., 2018) investigated the relationship between E-Banking service quality and customer satisfaction. According to the findings, dependability, efficiency and convenience of use; responsiveness and communication; and security and privacy substantially impact customer satisfaction. Dependability has the most significant impact. Research (Chen, 2019) was conducted to know the behaviour of mainly mobile payment users in Taiwan. The study found that utilitarian value, hedonic value, and salesperson selling behaviours affect customers' satisfaction, affecting mobile payment usage intention. Pakurár et al. (2019) have investigated service quality dimensions measured by the modified SERVQUAL model. The findings include several subscales: assurance, reliability, access, and personnel competencies; responsiveness and empathy; financial aspect and tangibility, which are different elements, to interpret the effect of the model.

According to empirical studies, safety, simplicity, and a wide range of m-banking Apps substantially impact perceived m-banking quality (Pejić Bach et al., 2020). An empirical study (Haq & Awan, 2020) showed that the relationship between e-banking privacy and security and e-banking loyalty was entirely mediated by e-banking satisfaction. However, the indirect influence of dependability and website design on e-banking loyalty was somewhat mediated by e-banking satisfaction. Luthfi et al. (2020) have determined the effects of Bank 4.0 experiencing qualities of Banking 4.0 and discovered that Bank 4.0 experience quality had been scientifically proven to influence word-of-mouth behaviour, customer satisfaction, and retention intention.

The study (Rashid et al., 2020) examined whether service aspects influence consumer loyalty. The study used five factors to assess the service quality of Bangladeshi Islamic banks (tangibles, empathy, assurance, reliability, and responsiveness). The study found that service quality (tangibles, empathy, reliability, and responsiveness) has a favourable and significant impact on customer loyalty. The influence of mobile banking on customer satisfaction at selected Commercial Bank of Ethiopia branches in Addis Ababa districts was observed by Legesse (2020). According to the survey, customer satisfaction was most positively affected by accessibility, followed by customer support. The study (Hussein & Ratnawati, 2020) identified the dimensions of Bank 4.0 experiencing quality based on millennial client impressions. The results demonstrated that functional quality, convenience, innovations, trust, value, risk reduction, and security are proven elements of Bank 4.0 experiential quality.

According to a study (Sugiarto & Octaviana, 2021), all variables are simultaneously serviced. Quality factors such as Tangible, Reliability, Responsiveness, Assurance, and Empathy have a favourable influence. Tangible, Reliability, and Empathy positively influence customer happiness. The study (Madhuwanthi & Patil, 2021) identified and studied Internet banking usage variables. The results showed that client trust and appeal are two characteristics that can influence customer commitment to Internet banking. An investigation (Li et al., F., 2021) examined four factors influencing consumer satisfaction with e-banking: cloud services, security, e-learning, and service quality, and these four key elements influence customer satisfaction in Internet banking services.

The SERVQUAL (Sugiarto & Octaviana, 2021) model was used to assess the influence of service quality on customer loyalty and satisfaction for four central Islamic banks in the Sultanate of Oman. The survey indicated that a significant association existed between the three variables: service quality, customer satisfaction, and customer loyalty. According to the correlation and empathy and responsiveness considerably benefit customer satisfaction. Said et al. (2022) examined that Customers' impressions of Islamic online banking transactions are highly related to trust, security, and convenience. PristiYONO et al. (2022) studied to identify the level of banking digitalisation implementation. The findings show that client trust is critical in the banking service business based on digital transformation. Financial services can attract new customers by improving consumer satisfaction and loyalty.

Hussein et al. (2022) investigated the structure and dimensions of experience quality in Indonesian Bank 4.0. It was found that experiential quality is a multidimensional construct with access reliability, digital interaction and security as the primary dimensions. Banking services have to increase customer satisfaction and loyalty to attract new customers. Rezeki & Sfenrianto (2022) analysed system services on customer satisfaction in opening savings accounts online. The variables of System Quality, Service Quality, Trust, Complaint and Suggestion System on Customer Satisfaction have a positive influence. The study (Balamurugan & Kanagaraju, 2022) focuses on consumer satisfaction with e-banking services in public sector banks in the Cuddalore District. As a result, the banker should provide online banking services and address all customers' complaints. Amalia and Sumarsono Sudarto (2023) investigated mobile banking behaviour in Indonesia and concluded that attitude, perceived usefulness, subjective norms, and responsiveness influence customers' mobile banking behaviour.

2.3 Summary of Literature Review and Research Gap

While summarising the literature review, it finds that Digital banking allows customisation, providing the data and analytics capabilities needed to examine each customer's profitability and offer individualised or segmented products and pricing. Banking 4.0 presents limitless potential to the

banking industry. Banking service quality and customer satisfaction are essential characteristics of Banking 4.0. Five dimensions, such as mobile convenience, accuracy, various mobile application service features, ease of use, and continuous improvement, are the primary sources of customer satisfaction/dissatisfaction.

The effects of Bank 4.0 experiencing quality on word-of-mouth behaviour, customer happiness, and retention intention. The influence of mobile banking on customer satisfaction and accessibility, customer assistance, transactional efficiency, and reliability favoured customer satisfaction with the bank's mobile banking service. Service quality, site aesthetics and content, privacy and security, usability, and internet access speed all impact consumer happiness. Banking services have to increase customer satisfaction and loyalty to attract new customers.

As a result of a comprehensive literature review, has developed a reasonable understanding of the research made in Banking 4.0, mobile banking, and customer satisfaction. The mobile apps of State Bank of India and ICICI, i.e. YONO and iMobile Pay, have never been studied so far in terms of their innovation, responsiveness, communication, security and privacy, accessibility and reliability, openness and trust, and satisfaction.

Thus, it is comprehended that a study on Mobile applications in Banking 4.0 environment would be appropriate to fill the research gap. It would be more appropriate to add the factors of customer satisfaction to do proper research, which is required. So empirical study on "Factors Influencing Adoption and Customer Satisfaction of M-banking Apps in India" is carried out.

3. Objectives of the Study:

- To identify the demographic characteristics of YONO, iMobile Pay and both App Users.
- To identify and compare the factors influencing the adoption and usage of YONO,iMobile Pay and both app users in India, specifically focusing on innovation, responsiveness and communication, security and privacy, accessibility and reliability, and openness and trust.
- To assess the customer satisfaction of YONO, iMobile Pay and both app users in India, specifically focusing on innovation, responsiveness and communication, security and privacy, accessibility and reliability, and openness and trust.
- To assess the achievability of all factors provided by M-banking Apps.

4. Methodology

The study aimed to assess customers' satisfaction with banking regarding innovation, responsiveness and communication, security and privacy, accessibility and dependability, openness and trust, particularly among users of the YONO, iMobile Pay and both app users of M-banking Apps from the State Bank of India and ICICI. The study will benefit banks by assisting them in providing superior banking services that satisfy consumers' changing wants and preferences. This will raise customer happiness and loyalty and help banks acquire a competitive edge in the market. Thus, the following research method was used:

4.1 Research Design

The study's nature and objectives insisted on adopting a descriptive research design. The study needed a research design to adequately understand a particular phenomenon or situation, in this case, customer satisfaction with banking service. Thus, it is the framework capable of executing the objective-based analysis. The study is cross-sectional. The study's approach involves collecting data from users of the YONO,iMobile Pay and both apps users in India belonging to different genders, ages, employment, education, and income levels and also exploring various factors influencing the adoption of m-banking Apps, including user perceptions of innovation, responsiveness and communication, security and privacy, accessibility and reliability, and openness and trust.

4.2. Area of the study

The study focuses on "Factors Influencing Adoption and Customer Satisfaction of M-banking Apps in India". Specifically, the study examines YONO and iMobile Pay, two popular M-banking Apps offered by the State Bank of India (SBI) and ICICI Bank, respectively.

4.3 Sampling Method

The non-probabilistic sampling method was used. Purposive, simple, random sampling has been performed to select the respondents from users of iMobile Pay, YONO and both app users belonging to a different gender, ages, employment, education and income. The primary reason for adopting the non-probabilistic method was that users of iMobile Pay, YONO and both app users ensure that the study sample is representative of the larger population, increasing the reliability and validity of the study's findings. The sample size was determined with the help of the Raosoft Sample Calculator, which suggests that for an online survey with a confidence level of 95%, the sample size would need 385 samples. The study received a total of 531 responses, which is enough to meet the study's objectives.

4.4 Data Collection Method

A survey administers YONO, iMobile Pay and both users to collect data on their adoption and satisfaction with these m-banking Apps. The survey includes questions about innovation, responsiveness and communication, security and privacy, accessibility and reliability, openness and trust and satisfaction. A Google form was created and shared with the respondents through email. Moreover, requested them to share it with their social circles.

4.5 Data Collection Tool

The data was collected through a structured questionnaire, basic demographic information, period and Frequency of Using m-banking Apps through apps. Thirty structured statements on innovation, responsiveness and communication, security and privacy, accessibility and dependability, openness and trust and Customer satisfaction were measured on a Likert's five-point scale ranging from "1" (strongly disagree) to "5" (strongly agree) were prepared.

4.5.1 Validity Test

The validity was tested through bivariate correlations. The significance (2-tailed) for the items was less than 0.05 except for gender and education. So, the critical value for Pearson *r* at Degree of Freedom (534-2) measured at 0.05 significance level was 0.113.

4.5.2 Reliability Test

The combined reliability of 30 items results from alpha Cronbach's score of 0.976. Hence the reliability of collected data is considered excellent.

4.5.3 Normality Test

The Shapiro-Wilk, Kolmogorov-Smirnov and Chi-Square tests were applied in the study to know the normality of the sample data using SPSS 20. The significance value of p was less than 0.05 for all factors. The distribution of the sample data set is not normal, i.e., the sample data distribution is skewed. As a result, a non-parametric test was used.

5. Data analysis

5.1 Demographic Profile

Table No. 1: Demographics Profiling of Respondents

Demographic		Frequency	%	Cumulative Percent
M-Banking App	iMobile Pay	126	23.7	23.7
	YONO	279	52.5	76.3
	Both	126	23.7	100.0
	Total	531	100.0	
Gender	Male	387	72.9	72.9
	Female	144	27.1	100.0
	Total	531	100.0	
Age	20-30 Years	198	37.3	37.3
	31-40 Years	144	27.1	64.4
	41-50 Years	108	20.3	84.7
	51-60 Years	72	13.6	98.3
	60 Years & Above	9	1.7	100.0
	Total	531	100.0	
Employment	Student	152	28.6	28.6

	Student & Employed	73	13.7	42.4
	Employed	297	55.9	98.3
	Unemployed	9	1.7	100.0
	Total	531	100.0	
Education	Professional/Vocational Training	18	3.4	3.4
	Bachelor's Degree	36	6.8	10.2
	Master's Degree	216	40.7	50.8
	Doctorate	225	42.4	93.2
	12th Pass	36	6.8	100.0
	Total	531	100.0	
Monthly income	No Income-Dependent	144	27.1	27.1
	0 to 25,000.00	81	15.3	42.4
	25,000.00 to 50,000.00	54	10.2	52.5
	50,000.00 to 75,000.00	108	20.3	72.9
	75,000.00 to 1,00,000.00	27	5.1	78.0
	1,00,000.00 to 1,25,000.00	27	5.1	83.1
	1,25,000.00 to 1,50, 000	18	3.4	86.4
	Above 1,50, 000	72	13.6	100.0
	Total	531	100.0	
Period of using m-banking	Less than One Year	99	18.6	18.6
	One to Three years	270	50.8	69.5
	Three to Six Years	81	15.3	84.7
	More Than 6 Years	81	15.3	100.0
	Total	531	100.0	
Frequency of m-banking Apps Usage	Daily	216	40.7	40.7
	Weekly	198	37.3	78.0
	Fortnightly	36	6.8	84.7
	Monthly	45	8.5	93.2
	Yearly	36	6.8	100.0
	Total	531	100.0	

Table 1 illustrates that the total number of iMobile Pay respondents were126, representing 23.7% of the total sample, while YONO respondents were 279, representing 52.5%, and both Apps respondents were 126, representing 23.7% of the total sample. The male and female respondents are 387 (72.9%) and 144 (27.1%). The respondents aged between 20-30 Years were 198, representing the highest percentage (37.3%), followed by respondents aged between 31-40 Years 144, representing (27.1%) of the sample; aged between 41-50 Years 108, representing (20.3%) of the sample while age between 60 Years & Above was 09 accounting lowest percentage (1.7%) of the total sample. Regarding employment, 297 (55.9%) are employed, which is the highest, followed by 152 (28.6 %) student respondents, 73 (13.7%) students & Employed, and 9 (1.7%) are unemployed. Regarding education, 225 (42.4%) have a doctorate, which is the highest, followed by 216 (40.7%) have a Master's Degree, and 18 (3.4%) have Professional/Vocational Training, which is the lowest value of the series. Income revealed that 144 (27.1) respondents have no income-dependent, which is the highest, followed by 108 (20.3) respondents with an income range of Rs 50,000.00 to Rs 75,000.00, and 18 (3.4%) respondents having income between Rs 1,25,000.00 to Rs 1,50,000.00, which is lowest. Usage of m-banking Apps revealed that 270 (50.8) respondents used it for one to three years, followed by 99 (18.6%) respondents using it for less than one year, and 81 (15.3%) respondents using from three to six years and more than six years respectively. Similarly, 216 (40.7%) respondents were found to use banking services daily, which is the highest, followed by 198 (37.3%) respondents using m-banking Apps weekly. In

contrast, respondents using both fortnightly and Yearly m-banking Apps represent the lowest percentage (6.8%) of the total sample.

6.2 Usage and Frequency of Usage of m-banking Apps

Ho_1: The period of Usage and Frequency of usage of m-banking Apps are independent

Ha_1: The usage period of m-banking depends on the frequency of m-banking Apps

Table No. 2: Period of using m-banking Apps * Frequency of m-banking Apps

		Frequency of m-banking Apps Usage					Total
		Daily	Weekly	Fortnightly	Monthly	Yearly	
period of using m-banking	Less than One Year	27	27	9	9	27	99
	One to Three years	99	126	18	18	9	270
	Three to Six Years	36	27	9	9	0	81
	More Than 6 Years	54	18	0	9	0	81
Total		216	198	36	45	36	531

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	121.447[a]	12	.000
Likelihood Ratio	110.875	12	.000
Linear-by-Linear Association	42.026	1	.000
N of Valid Cases	531		

The Cross-tabulation analysis was used for two categorical variables, period of Usage of m-banking and Frequency of usage of m-banking Apps through Apps. Table 2 found that the value of the Chi-square is 121.447. The results are significant if this value of "Asymptotic Significance (2-sided)" is equal to or less than the designated alpha level (usually .05). In this case, the p-value is smaller than the standard alpha value, so the null hypothesis was rejected. In other words, there is significant relation, i.e. The result suggests Period of Usage of m-banking and the Frequency of usage of m-banking Apps through Apps are dependent on each other.

6.3 Innovation of m-banking Apps

Ho_2: Innovation of m-banking Apps is not same among YONO, iMobile Pay and both Apps users.

Ha_2: Innovation of m-banking Apps is same among YONO, iMobile Pay, and App users.

Table No. 3: Innovation of m-banking Apps (Kruskal-Wallis test)

	Item 1	**Item 2**	**Item 3**	**Item 4**	**Item 5**
	I find m-banking updating innovative technological applications regularly.	I find that m-banking Apps adopt novel and convenient solutions and effortless transactions.	I find that m-banking Apps provide a consistent user experience across all online channels.	I find that m-banking Apps reduce the cost of operation and enhance productivity.	I find that m-banking Apps offer tailored products with great personalisation.
Chi-Square	20.058	13.213	8.760	3.271	1.509
df	2	2	2	2	2
Asymp. Sig.	.000	.001	.013	.195	.470
a. Kruskal Wallis Test					

b. Grouping Variable: m banking app (1,2,3)

The Kruskal-Wallis test was used to test the hypothesis and performed at a 5% significance level. The table shows that the Asymp sig value is less than Chi-square Statistics. The Asymp sig value for all items 1,2 and 3 is less than 0.05, thus rejecting the null hypothesis. Hence, the innovation of m-banking Apps is the same for YONO, iMobile Pay and both app users. However, item 4 and 5 innovation of m-banking Apps is not the same among YONO, iMobile Pay and both app users.

6.4. Responsiveness and communication of m-banking Apps

Ho_3: Responsiveness and communication of m-banking Apps are not the same among YONO, iMobile Pay and both app users.

Ha_3: Responsiveness and communication of m-banking Apps are the same among YONO, iMobile Pay and both app users.

Table No. 4: Responsiveness and communication of m-banking Apps (Kruskal-Wallis test)

	Item 1	**Item 2**	**Item 3**	**Item 4**	**Item 5**
	Responsiveness and communication I find m-banking Apps available 24x7x365 environments on Facebook, messenger, Viber, etc.	I find m-banking Apps Readiness to support customers and deliver them rapid services.	I find that m-banking Apps guide customers properly in case of any failing operations.	I get a quick response from m-banking Apps in case of any problems or queries.	I find that m-banking provides timely, prompt, and real-time services.
Chi-Square	16.955	6.173	8.377	26.704	1.630
df	2	2	2	2	2
Asymp. Sig.	.000	.046	.015	.000	.443
a. Kruskal Wallis Test					
b. Grouping Variable: m banking app (1,2,3)					

Table 4 shows that the Asymp sig value is less than Chi-square Statistics. The Asymp sig value for all the responsiveness and communication items from 1 to 4 is less than 0.05; hence we fail to reject the null hypothesis. Responsiveness and communication are the same among YONO, iMobile Pay and both app users, but for item 5, responsiveness and communication are not the same among YONO, iMobile Pay and both app users.

6.5. Security and privacy of m-banking Apps

Ho_4:Security and privacy of m-banking Apps are not the same among YONO, iMobile Pay and both app users.

Ha_4:Security and privacy of m-banking Apps are the same among YONO, iMobile Pay and both app users.

Table No. 5: Security and privacy of m-banking Apps (Kruskal-Wallis test)

	Item 1	Item 2	Item 3	Item 4	Item 5
	Security and privacy I find m-banking Apps are safe from fraud and protect personal information.	I find m-banking Apps adhere to customer privacy requirements	I find m-banking Apps maintain the confidentiality of operations and individuality	I find that m-banking Apps check the authenticity of data, transactions, and communication	I find m-banking secure by sending information about myself and for online transaction
Chi-Square	34.547	5.844	10.550	8.134	11.869

df	2	2	2	2	2
Asymp. Sig.	.000	.054	.005	.017	.003
a. Kruskal Wallis Test					
b. Grouping Variable: m banking app (1,2,3)					

The table shows that the Asymp sig value is less than Chi-square Statistics. The Asymp sig value for all the Security and privacy items is less than 0.05; hence we fail to reject the null hypothesis. Hence, security and privacy are the same among YONO, iMobile Pay, or both.

6.6. Accessibility and reliability of m-banking Apps

Ho_5: Accessibility and reliability of m-banking Apps are not the same among YONO, iMobile Pay and both users.

Ha_5: Accessibility and reliability of m-banking Apps are the same among YONO, iMobile Pay and both users.

Table No. 6: Accessibility and reliability of m-banking Apps (Kruskal-Wallis test)

	Item 1	**Item 2**	**Item 3**	**Item 4**	**Item 5**
	I find m-banking Apps are user friendly	I find m-banking Apps save time	I find that m-banking Apps are accessible with ease without any location constraints.	I find m-banking Apps reliable to use on any e-gadget	I find m-banking Apps are flexible to interact
Chi-Square	1.330	20.937	8.216	.421	19.964
df	2	2	2	2	2
Asymp. Sig.	.514	.000	.016	.810	.000
a. Kruskal Wallis Test					
b. Grouping Variable: m banking app (1,2,3)					

The asymp sig value for items 1 and 4 is more than 0.05. The null hypotheses for these two items are rejected. Hence, accessibility and reliability differ among YONO, iMobile Pay, and both App users. However, the asymp sig value for items no 2, 3 and 5 is less than 0.05. Hence we reject the null hypothesis for three items. For Items 2, 3, and 5, accessibility and reliability are the same among YONO, iMobile Pay, and both App users. For Items 1 and 4, accessibility and reliability are not the same among YONO, iMobile Pay, and both App users.

6.7. Openness and trust of m-banking Apps

Ho_6: Openness and trust of m-banking Apps are not the same among YONO, iMobile Pay and both app users.

Ha_6: Openness and trust of m-banking Apps are the same among YONO, iMobile Pay and both app users.

Table No. 7: Openness and trust of m-banking Apps (Kruskal-Wallis test)

	Item 1	**Item 2**	**Item 3**	**Item 4**	**Item 5**
	Openness and trust I find m-banking Apps provide robustness of services across several platforms.	I find that transaction is never wrongly credited/debited by M-banking	I find the integrity of data is maintained while sharing with the third party	I feel confident in using m-banking Apps	I find the transaction is secure while using a third-party platform for a transaction.
Chi-Square	4.397	21.523	19.411	22.548	2.849
df	2	2	2	2	2
Asymp. Sig.	.111	.000	.000	.000	.241

a. Kruskal Wallis Test
b. Grouping Variable: m banking app (1,2,3)

Table 6 shows that the Asymp sig value for the Openness and Trust items 1 and 5 is more significant than 0.05. Hence we accept the null hypothesis for the 2 Items and reject the null hypothesis for the rest three items. Hence, security and privacy are the same among YONO, iMobile Pay and both app users for Item no 2,3,4. However, it is not same for Items 1 and 5.

6.7 Customer Satisfaction towards M-banking App

Ho_7: Customer Satisfaction is not the same among YONO, iMobile Pay and both app users.

Ha_7: Customer Satisfaction is the same among YONO, iMobile Pay, and both app users.

Table No. 8: Customer Satisfaction (Kruskal-Wallis test)

	Item 1	**Item 2**	**Item 3**	**Item 4**	**Item 5**
	Customer Satisfaction I find m-banking users are adapting to Changing habits and lifestyle	I find it very easy to use Click Services while Paying	I find Technology advancement and services satisfactory per changing market conditions and my requirements.	I find that m-banking transactions meet expectations completely	I find technology advancement and services are entirely satisfactory as per customer requirements.
Chi-Square	46.494	5.372	14.367	6.952	4.144
Df	2	2	2	2	2
Asymp. Sig.	.000	.068	.001	.031	.126
a. Kruskal Wallis Test					
b. Grouping Variable: m banking app (1,2,3)					

Table 8 shows that the Asymp sig value for Customer Satisfaction items 2 and 5 is more than 0.05. Hence we accept the null hypothesis for the 2 Items and reject the null hypothesis for the rest three items. Hence, Customer Satisfaction is the same among YONO, iMobile Pay and both users for 1,3 and 4. However, it is not same for the two items 2 and 5.

6.7 Achievability of Factors

The study analysed the achievability of all the factors; in other words, both banks provide better services through mobile Banking platforms, especially in mobile banking. The results of the factors are given as under:-

Table No. 9 Difference between expected outcomes and actual outcomes of the factors

Factors	**Expected Outcomes**	**Actual Outcomes**	**Difference**
Innovation	100%	72.20%	22.80%
Responsiveness and communication	100%	74.80%	25.20%
Security and privacy	100%	78.48%	21.52%
Accessibility and reliability	100%	79.36%	20.64%
Openness and trust	100%	75.99%	24.02%
Customer Satisfaction	100%	75.90%	29.10%

The data presented in the above figures were calculated through the total responses, converted into numbers, and then percentages. It was assumed that all factors should achieve 100% in providing mobile services on Digital Banking 4.0 Platform. After analysing the achievability of all the factors, it was found that there is a gap between the expected or actual outcome of all factors.

7. Findings and Discussions:

The data shows that the users prefer YONO; maybe SBI was established before ICICI, and the respondents have started using SBI YONO in due course. YONO offers come with a host of other

banking conveniences, ease of anywhere, state of the art security features that allow online purchases at all major portals. Male respondents use more m-banking Apps than Female respondents, meaning that males use apps more in financial and investment decisions than females. This finding supports the view of Bhatt & Bhatt (2016). The respondents aged between 20-30 Years fall in the highest category to use m-banking apps, which means the user has crossed the minor's age, now they are opening more account, and this age group mostly have smartphone devices. So they are using m-banking apps more in comparison to others. They find the apps easy, convenient, and comfortable. The users who have passed the doctorate and master's degrees seem to use more M-banking apps than others, showing that they find the apps reliable, safer, and convenient and provide the best experience in using the 24*7*365 environment. The respondents have no Income, but the dependent falls in the category of mainly using m-banking Apps showing they are young users dependent on their families but have smartphones where they can download apps, explore and use all its features. The respondents have been associated with m-banking apps for the last one to three years. This shows that most respondents downloaded apps for Financial and non-financial services during the pandemic phase. The respondents use daily m-banking apps to check their balances, transfer money from one bank, analyse their spending and expenses, etc.

The result of the hypothesis shows that the period of using M-banking apps is related to the frequency of usage of m-banking Apps; this shows that the longer the association, the more the frequency of using m-banking Apps.

It is accepted that the innovation of m-banking Apps is not the same among YONO, iMobile Pay and both app users. The innovative features of m-banking apps such as updating the innovative technological applications regularly, adopting novel and convenient solutions, and effortless transactions, a consistent user experience across all online channels, reducing the cost of operation and enhanced productivity, offering customised products with great personalisation are not same among the users of YONO, iMobile Pay and both app users, Sharma (2022) has already asserted that the innovation is the base of mobile banking.

The security and privacy feature of m-banking Apps are safe from fraud, and personal information is protected. It adheres to customer privacy requirements, m-banking Apps maintain the confidentiality of operations and individuality, and check the authenticity of data, transactions and communication. The m-banking is secure by sending information about me, and the online transactions are not the same among YONO, iMobile Pay and both app users. The security and privacy are not identical among YONO, iMobile Pay and app users.

Responsiveness and communication are not the same among YONO, iMobile Pay and both app users, which means the readiness of the app to support bank customers, guide customers in case of failing operations, give a quick response from m-banking Apps in case of any problem or queries and provide timely, prompt and real-time services seems to are not same among YONO, iMobile Pay and both app users.

The accessibility and reliability of m-banking Apps are not the same among YONO, and iMobile Pay, as they save time, are accessible with ease without any location constraint, and m-banking Apps are flexible to interact. In contrast, the hypothesis is rejected that m-banking Apps are user-friendly and reliable for any e-gadget is the same among YONO, iMobile Pay and both app Users.

Openness and trust are not same among YONO, iMobile Pay and both app users. The transaction is never wrongly credited/debited by m-banking; if it reverses the transaction, and the integrity of data is maintained while sharing with the third party; feel confident in using m-banking Apps, the concept developed by Khan and Basir (2022) is visible. In contrast, the hypothesis is rejected as m-banking Apps provide robustness of services across several platforms, and the transaction is secure while using a third-party platform for the transaction is the same among YONO, iMobile Pay and both app Users.

Customer satisfaction is is not same among YONO, iMobile Pay and both app users. Users have embraced this as they adjust to changing habits, lives, and technology innovation. The services are adequate in light of changing market conditions and requirements. Transactions perfectly meet the

user's expectations. Using Click Services while paying is simple, and technological advancements and services are pretty good according to consumer needs.

The results expressed that there is a gap between the expected outcome and the actual outcome. This conclusion expresses the need for improvement in both banks' Digital banking 4.0 Platforms, especially for mobile banking. Moreover, data expressed that if the banks want to improve their Digital Banking 4.0 Platforms, there is a need to improve creativity, responsiveness and communication, security and privacy, usability and dependability, openness and trust in Digital Banking 4.0 Platform through mobile baking.

8. The Implication, Limitation and Future Scope

The study firstly emphasises how crucial it is to comprehend customer behaviour and preferences regarding m-banking Apps. M-banking Apps will rise due to this information's ability to assist banks in creating and providing services better suited to customer requirements and expectations.

Secondly, the study contrasts YONO and iMobile Pay and discusses their advantages and disadvantages. Banks can utilise this information to enhance their mobile banking applications by taking note of these apps' features and best practices.

Thirdly, the study clarifies the aspects of innovation, responsiveness and communication, security and privacy, usability and dependability, and openness and trust that affect the adoption of m-banking Apps. With this data, banks may create marketing plans and campaigns that target particular user categories and take into account their preferences and concerns.

The study's conclusions generally imply that the banking revolution from 1.0 to 4.0 has to keep funding m-banking Apps and strive to offer a seamless and secure user experience. To remain competitive in the Banking 4.0 era, they must continually hone their services and pay attention to user input.

Limitations

The study might interest other researchers who analyse YONO and iMobile Pay app usage and customer satisfaction. Still, it is unable to generalise the research's conclusions because of several limitations:

1. The investigation used a sample of 531 respondents, which may not be enough to generalise the findings accurately.
2. Purpose, simple, random sampling was employed because other sample procedures could not be used to reach the target population within the study's time frame and budget. The method has limitations, including sampling bias and the likelihood that the sample does not accurately reflect the total population.
3. The study relied on self-reported data from respondents, which may be subject to biases and errors. For example, respondents may have provided socially desirable responses or not accurately recalled their usage patterns.
4. The study was conducted in India, and the findings may not be generalisable to other countries or cultural contexts.

Future Scope

The analysis and the result can be used for the following further work:

- To examine how other well-known apps, like Google Pay, PhonePe, or Paytm, are adopted and used in order to develop a complete understanding of user preferences and actions.
- To explore new technologies, such as virtual or augmented reality, or offer personalised recommendations based on user behaviour and preferences.
- How can banks improve their communication channels, such as chatbots, to provide quick and efficient support for users?
- How can banks enhance the security and privacy of their m-banking Apps, such as by implementing biometric authentication, to build user trust and confidence?
- How can banks improve their m-banking Apps' user interface and overall usability and ensure the service's dependability through proper testing and maintenance?
- How can banks be more transparent in their practices and ensure they comply with regulations and standards to build user trust?

11. Endnote

The study "**Factors Influencing Adoption and Customer Satisfaction of M-banking Apps in India**" highlights several important factors influencing the adoption and usage of m-banking Apps, including innovation, responsiveness and communication, security and privacy, usability and dependability, and openness and trust. All services of the banks are provided through a Digital Banking Platform, especially mobile banking. Banks need to provide service with 100% achievability of expected outcome. Banks must improve their services regarding creativity, responsiveness and communication, security and privacy, usability and dependability, and openness and trust to improve their m-banking Apps to satisfy their customer's needs and expectations more effectively. Customers who trust the bank and feel their personal and financial information is secure are more inclined to accept and use m-banking Apps. Consumers anticipate user-friendly, straightforward, and dependable m-banking Apps. In order to meet consumers' expectations, banks must ensure that their m-banking Apps are created with the user in mind and tested for dependability and usability. Also, if users believe that m-banking Apps are progressive, attentive to their demands, and open in their dealings, they are more inclined to accept and use them. For the benefit of consumers and to maintain their position in the unstable banking market, Indian banks are upgrading technology improvements and improving their services. This process of acceptance and transition of technological innovations is continuing. The study's goals were met, and it was discovered that both banks are utilising Industry 4.0 tools to please their customers.

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