International Journal of Electronic Finance

ISSN online: 1746-0077 - ISSN print: 1746-0069
https://www.inderscience.com/ijef

A study on customer experience of using chatbots in banking sector with moderating role of age and gender

Shubhangi Agarwal, Bhawna Agarwal, Ruchika Gupta

DOI: 10.1504/IJEF.2024.10058571

Article History:

Received:	09 December 2022
Last revised:	02 May 2023
Accepted:	26 May 2023
Published online:	11 December 2024

A study on customer experience of using chatbots in banking sector with moderating role of age and gender

Shubhangi Agarwal*

Gyanarthi College,
Kashipur, Uttarakhand, India
Email: agarwalshubhangi111@gmail.com
*Corresponding author

Bhawna Agarwal

Jaypee Business School,
JIIT, Sector-62, Noida, India
Email: bagarwal@amity.edu

Ruchika Gupta

Mangalmay Institute of Engineering and Technology,
Greater Noida, India
Email: drruchikagupta30@gmail.com

Abstract: The purpose of the study is to propose an analytical framework by combining the ISS model, TAM model and customer experience to examine the impact of using chatbots on customer experience and customer satisfaction. The study also investigates the moderating role of demographics on customer experience. The present study considers chatbot as a form of information system, therefore the study proposes a framework based on information system (IS) success model, technology acceptance model (TAM). The survey method was conducted to collect the data from 325 users of banking chatbot and the proposed model was validated by using partial least square (PLS) techniques. The study concluded that information quality, system quality, service quality and perceived ease of use are significant drivers which influence customer experience and the latter affects customer satisfaction. The study also provided some key theoretical and managerial implications regarding customer experience of using banking chatbots. The study provides insight into a rapidly developing technology in banking industry. The primary value of this paper lies in examining the impact of factors on customer experience and examining moderating role of demographics (age, gender) variables.

Keywords: chatbots; banking industry; customer experience; customer satisfaction; Smart PLS; India.

Reference to this paper should be made as follows: Agarwal, S., Agarwal, B. and Gupta, R. (2025) 'A study on customer experience of using chatbots in banking sector with moderating role of age and gender', *Int. J. Electronic Finance*, Vol. 14, No. 1, pp.42–66.

Biographical notes: Shubhangi Agarwal is an Assistant Professor at Gyanarthi College, India. She has a specialisation in banking and marketing domain. She has presented numerous papers in national and international conferences and attended different workshops and seminars. She has completed her masters with first division with distinction. She is inspired to be a professor in future.

Bhawna Agarwal is a Professorat Jaypee Business School, India. She has 16 years of experience of teaching in reputed colleges/university. She has published 24 research papers in high indexed national/international journals, three chapters in edited book, and three articles in in-house magazine. She has also contributed as a co-author in many international conferences and presented numerous papers in national/international conferences.

Ruchika Gupta is the Director at Mangalmay Institute of Engineering and Technology, India. She has 18+ years of experience in teaching various colleges and universities. Her areas of specialisation are IT and finance. She has served as a reviewer and editor of many national and international indexed journals and conferences. She has published more than 20 research papers in various reputed journals.

1 Introduction

There is a substantial and rapid increase in interest concerning the automated user interface for enhanced customer engagement. Industries are exploring and deploying software programmes which initiates conversation with the customers. Expeditious advancement in technology has played a pivotal role in engaging customers with businesses (Trivedi, 2019). The present study aims to focus on the technological advancement being taken in banking industry. Chatbots is one of the latest technologies being deployed by the banks to engage customers and solve their everyday queries. Customers after availing services from chatbots feel good when the latter provide contextual information. The substantial importance of customer experience has taken the deployment of chatbots to another level (Alt et al., 2021).

To attain operational efficiencies, banks aim for cost saving and therefore implementing latest technologies like machine learning and internet of things (IoT) (Duijst, 2017). Chatbots are the systematic software programmes which can interact with human user in natural language. They have the capability to respond to the users' queries in real time and adapt their own responses suitable as per situation. Therefore, banks are investing heavily to implement the chatbots to attain enhance customer experience and customer satisfaction. This study considers the quality dimensions of information system (IS) and integrates it with perceived usefulness and perceived ease of use and examines the impact of all the above factors on customer experience and further hypothesised to customer satisfaction. DeLone and McLean (2003) define information quality, system quality and service quality as three major dimensions to examine the critical success of any IS. Moreover, chatbots are relatively new technology in the market, therefore demographic variables can moderate the relationship between factors and customer experience. The study aims to study the moderating role of age and gender on the customer experience. The swift rise of artificial intelligence (AI)-based technology is transforming the landscape of banking sector as banks are rapidly implementing these

technologies to deepen customer relationship management, reduce frauds, cost savings and personalised offers to the customers (Pal and Singh, 2019). According to Mordor Intelligence 2019, the market size of chatbot is expected to be 102 billion USD by 2025. However, to acquire the advantages of chatbots in banking industry, it is essential to identify the impact of factors on customer experience.

Over the years, different form of information technologies has been applied in banking industry such as internet banking, mobile banking, online banking and self-service technologies (Raza and Hanif, 2013; Hwang et al., 2007; Gao and Owolabi, 2008; Sakkthivel, 2011; Kuo et al., 2007). Abundant studies are available on the customer experience and satisfaction of the above technologies. Although, the studies provide requisite contribution to the society but however there is limited literature available in the context of emerging technology of chatbots in banking sector. To extend the knowledge in context to chatbots, a model was developed by integrating three dimensions of information system success (ISS) model with perceived usefulness and perceived ease of use and examining the impact of all these factors on customer experience.

Over the past years, banks are continuously transforming the way of providing services to their customers by implementing technology-based software to surge their revenues and escalate customer experience. This change is being acknowledged by several banks and is in the process of rolling out online to respond to change in consumer demographics. Banks deploy latest technology to widen consumer base and strengthen customer relations. Channel migration initiative is being undertaken by the banks to surge the enrolment of customers. Within 2025, 95% of the consumer interactions are predicted to be handled by AI-powered software.

The remainder of the paper is as follows. Section 2 will elaborate literature review and the variables which are being focused on. Section 3 will explain the methodology used in the study including sample collection and statistical tool used to find the results. Section 4 will elaborate the outcomes of the study with the result of hypotheses and discussion in Section 5. Section 6 will describe the implications and section 7 will describe the limitations and future scope of the study and lastly, the study will provide conclusions in Section 8.

2 Theoretical background and hypotheses

2.1 Information quality

It can be described as the quality of the information which system delivers to the customer. It is seen as a critical determinant of user satisfaction. If the chatbots fails to provide the right information to the user, it will lead to poor experience and eventually will dissatisfy the customer. It can also be defined as the completeness, timeliness, accuracy and relevance of information provided by technology. Customers spend the ample amount of time in seeking information from IS system, therefore, the information should be completed and relevant for the user. If the information is not up-to-date, irrelevant or incomplete then the user will move to the human staff to get their work done (Gorla, 2012). Experience can be undermined if the poor information quality is being provided to the users which would lead to operation difficulty (Jung et al., 2009). The

study aims to examine the impact of information quality on customer experience of using banking chatbots, therefore leading to the following hypothesis:

H1 Information quality has a significant positive impact on customer experience.

2.2 System quality

System quality can be posited that quality of the system can be measured by different constructs like adaptability, availability, usability, response time and reliability. Adaptability of an IS system means when system is capable to adapt to the environment. A scale of system quality was developed and authenticated by Sedera et al. (2004) which concluded in nine constructs – ease of use, ease of learning, user requirements, system features, system accuracy, flexibility, sophistication, integration, integration and customisation. The chatbot developers need to make the technology adapt to the environment to better support the interest of customers. Users who are availing the services from system expect that the latter offer 100% availability and if it fails to do so, it will surely undermine customer experience. Therefore, chatbot developers need to keep in mind that the right information should be delivered at the right time (Kim et al., 2003). The chatbot could be considered technically capable to provide reliable and accurate information to customers. Sometimes, chatbot require some personal data of users to render the information, therefore chatbot developers should consider the reliability and security of the system which will surge the customer experience (Mogaji et al., 2021). Response time is the time which is taken by chatbot to solve the query and it should be as minimum as possible and it is usually expressed in seconds. Users expect that that they receive the answer as soon as possible and if the system takes longer time to respond, it will impact the customer experience (Nah, 2004). Therefore, the study examines the impact of system quality on customer experience, leading to the following hypothesis:

H2 System quality has a significant positive impact on customer experience.

2.3 Service quality

The dimension service quality represents the quality of the support that the IT system delivers to its users. This is an additional dimension which is not present in original D&M IS success model. As far as service quality has been considered, it means ability of the system to meet the requirements of the user which is reflected by personalisation, assurance, reliability and responsiveness (Gao et al., 2015). Service quality is the difference between users' expectation from the system and the perception of service performance. If they both matches or perception of service performance is greater than their expectations it will lead to good customer experience and if not, users will be dissatisfied and will not look up to the chatbot in future for availing services. Service quality construct is being measured by five measures – reliability, responsiveness, assurance, empathy and tangibles but as the study is examining the quality of e-system, hence 'tangible' measure is being dropped. Reliability measures the construct as the extent to which the system strives to upgrade the information rendered to the customers. Responsiveness measures the extent to which the system is expeditious in providing services and helps the customers. Assurance can be described as the extent to which system enhances the confidence of users. Empathy is the extent to which system pays personal attention to its customers. A direct association is being observed between

service quality and customer satisfaction in context to banking customers but in this study the impact of service quality on customer experience is being examined and the impact of latter on customers' satisfaction is being studied.

The accurate, complete and relevant information from chatbot can enhance customer experience, therefore, the study examines the impact of service quality on customer experience, leading to the following hypothesis:

H3 Service quality has a significant positive impact on customer experience.

2.4 Perceived usefulness

Perceived usefulness in an IS can be defined as an extent to which customers feel that using the system can enhance their task performance (Lee, 2006). As stated by Davis (1989) and eventually examined by several studies, perceived usefulness is a chief component for user acceptance of information technology. Herrero and San Martín (2012) coined the term perceived usefulness as "the degree to which an individual considers that using a particular system will improve the performance in a task." It has been widely accepted in different technologies of banking sector (Laforet and Li, 2005; Bhatti, 1970; Liao and Cheung, 2002).

Behera et al. (2021) examines the performance of a cognitive chatbot in context to customer service by integrating ISS model and technology acceptance model (TAM). The study coins that technology should be embraced by customers who feel that using cognitive chatbots can be beneficial to them while performing their day-to-day tasks as it could save time and provide convenience. Richad et al. (2019) uses TAM to determine the drivers which influence use of chatbots in banking industry of Indonesia. The study examined the impact of perceived usefulness on attitude towards chatbots and proved the significant positive impact. Numerous studies revolving around technology have exhibited the power of perceived usefulness (Blut et al., 2016). Ferdianto (2022) investigates the impact of perceived usefulness on customer experience in context to mobile commerce and the findings demonstrated the significant positive influence on customer experience. Gümüş and Çark (2021) findings showed that perceived usefulness positively affects the customer experience of using chatbots. Elaborating, users who feel chatbots as a useful tool are likely to have a positive customer experience and hence will be satisfied, therefore, the study examines the impact of perceived usefulness on customer experience, leading to the following hypothesis:

H4 Perceived usefulness has a significant positive impact on customer experience.

2.5 Perceived ease of use

Perceived ease of use has been acknowledged as a critical variable for examining the user acceptance and customer experience of information technology as per past studies. Adapted from Davis (1989), perceived ease of use can be defined as "the degree to which a person believes that using a particular system would be free of effort." Higher the effortless using the system is, greater the intention to use the system is. Studies also demonstrated that perceived ease of use affects perceived usefulness as when the system is free of mental effort, customers perceive that system is useful to complete their tasks too (Çakıroğlu et al., 2017). Behera et al. (2021) examine the impact of perceived ease of use on attitude towards cognitive technology of contextual chatbot in B2B enterprises and

results depict the positive influence. Ferdianto (2022) found that perceived ease of use positively influences customer experience of using mobile commerce.

Also, many previous studies have investigated the relationship between perceived usefulness and perceived ease of use as latter too contributes in enhancing the performance of users' tasks (Moon and Kim, 2001). Alt et al. (2021) also advocated the positive influence of perceived ease of use on perceived usefulness with reference to banking chatbots in Romania.

Therefore, the study examines the impact of perceived ease of use on customer experience and perceived usefulness leading to the following hypothesis:

H5 Perceived ease of use has a significant positive impact on customer experience.

H6 Perceived ease of use has a significant positive impact on perceived usefulness.

2.6 Customer experience

Customer experience has been a crucial concept for marketers from past few years in modern day world as it creates a unique and memorable experience for customers which eventually makes customers satisfied from the products and services (Jain et al., 2017). Schmitt (2010) had coined that marketers are moving from traditional marketing practices to modern marketing which focuses on catering the products and services in accordance with the demand of customers to give them pleasure experience. Customer experience can be defined in numerous ways (Carbone and Haeckel, 1994). Jain et al. (2017) defined customer experience as "cumulative sum of learning, perception, attitude and feelings which are formed during the whole process of decision making and consumption which involves an integrated series of communication with people, objects, processes and environment which eventually lead to cognitive, sensory, emotional and behavioural responses." From the above discussions on customer experience offered by different authors, Trivedi (2019) can conclude that:

1 it is a modern way of defining customer-business relationships

2 it is a sum of different ways in which customer interact with industry till disposing off the product or service

3 it impacts long lasting impression on consumer-brand relationships.

According to Homburg et al. (2015), customer experience is "the evolvement of a person's sensorial, cognitive, affective and behavioral responses to the business by learning through purchase, post purchase decisions and continuously judging all the experience relating to users' environment." Hence, it can be said that customer experience is totality of all the cues and touchpoints with business to have a memorable experience (Payne et al., 2007).

The present study aims to investigate the impact of three quality dimensions, perceived usefulness and perceived ease of use on customer experience. Chatbots are the new offering in Indian banking sector, hence it becomes indispensable to know its impact on customer experience.

2.7 Customer satisfaction

The term satisfaction can be examined in two several ways. First, the overall satisfaction which is the overall evaluation of the customer of the service provided till date. Second is specific-transaction which defines the customer satisfaction as an emotional respond by the consumer through the most recent experience with the service provider.

Satisfaction is an important outcome measure of traditional marketing services, technology-based services or blended services. Many researchers have examined satisfaction in different contexts like Van Dolen et al. (2007) examined the impact of technology attributes on satisfaction with reference to online group chat and Chung et al. (2017) studied how e-service agents impacts communication quality and satisfaction in context to luxury fashion brands which use chatbot technology for their customers. Customer satisfaction is an important benchmark for industries and marketers in modern day world as it caters to the needs of consumers and helps in providing competitive advantage (Akbari et al., 2015). Extant literature of marketing provides several definitions of marketing but still there is no universal accepted definition of it (Giese and Cote, 2000). The present study relies on the definition proposed by Oliver (2014) that satisfaction is the consumers' fulfilment response. It is the measurement that product or service has provided with reasonable amount of consumption related fulfilment.

Brill et al. (2019) examined the customer satisfaction with the use of expectation-confirmation model in context to digital assistants. The study provided evidence that using digital assistants, expectations of the consumers are being met. Ashfaq et al. (2020) proposed a framework which combines expectation-confirmation model, ISS model, TAM and the need for interaction of human employee to identify the factors influencing customer satisfaction and continuance intention of chatbot-based services. The findings reveal that information quality and service quality positively impact customer satisfaction. The study also stated that satisfaction is a strong antecedent to continuance intention of using chatbot services in customer service context. Therefore, chatbot developers should focus on the above factors to enhance customer satisfaction and integrate the chatbot with human interaction to provide satisfaction to digital users.

Hence, the study aims to examine the impact of customer experience on customer satisfaction, leading to the following hypothesis:

H7 Customer experience has a significant positive impact on customer satisfaction.

2.8 Moderating effects of age and gender

Moderating influence of age and gender is widely being examined in previous studies. Venkatesh et al. (2012) stated that age and gender have moderating influence on the constructs of UTAUT and behavioural adoption intent of consumers. Also, several studies have integrated and investigated the moderating effect of age and gender with different models like TAM, unified theory of acceptance and use of technology and diffusion of innovation and coined that age and gender moderate the relationship among different contexts and frameworks (Liébana-Cabanillas et al., 2014; Khalilzadeh et al., 2017; Riskinanto et al., 2017; Shao et al., 2019.

Studies examining the moderating influence of age on the use of technology provide the similar results until early 2000s (Kim, 2016). Riskinanto et al. (2017) posited that age does not have moderate the relationship between perceived usefulness, perceived ease of

use and adoption intent of e-payment technology. Kim et al. (2012) found that age significantly have moderating influence on the use of self-service technologies in context to hospitality setting as older consumers were not likely to adopt these technologies. Singh (2019) stated that young customers were keener to adopt mobile banking whereas older customers were less likely to adopt the technology with having negative attitude towards it (Laukkanen et al., 2007). In contrast, some studies found that older generation are more willing to adopt mobile banking apps rather new generation (Dasgupta et al., 2011; Suoranta and Mattila, 2004). Laforet and Li (2005) also asserted that major adopters of mobile banking users are not necessarily young. Based on the previous studies, the study aims to ascertain the moderating influence of age on the relationship between the factors of customer experience and customer experience, the following hypotheses is being developed:

H8 Age moderates the relationship between five factors and customer experience of using banking chatbots.

- H8a Age moderates the relationship between information quality and customer experience.
- H8b Age moderates the relationship between system quality and customer experience.
- H8c Age moderates the relationship between service quality and customer experience.
- H8d Age moderates the relationship between perceived usefulness and customer experience.
- H8e Age moderates the relationship between perceived ease of use and customer experience.

Similarly, moderating influence of gender gave numerous different results in different contexts. For instance, gender has a significant moderate influence on the use of self-service technologies as found that female with children and male below 40 years of age are more inclined towards using the self-service technologies (Darian, 1987). It has been also proved that male, younger and educated ones are more likely to use new technologies (Sim and Koi, 2002). Studies done before 1990 argues that males are the first ones to use new technologies while argued that females are more likely to adopt technologies, limiting the moderating role of gender differences in adopting latest technologies (Breakwell et al., 1986; McQuarrie, 1989). A recent study reported that 14% of women between age group of 25–29 access the internet with the means of their mobile devices while only 6% males in the same age group do. Also, it has been stated that gender can have moderating influence on how men and women process and intent to adopt the technology (Lou and Xie, 2020). Based on the previous studies, the study aims to ascertain the moderating influence of gender on the relationship between the factors of customer experience and customer experience, the following hypotheses is being developed:

H9 Gender moderates the relationship between five factors and customer experience of using banking chatbots.

- H9a Gender moderates the relationship between information quality and customer experience.

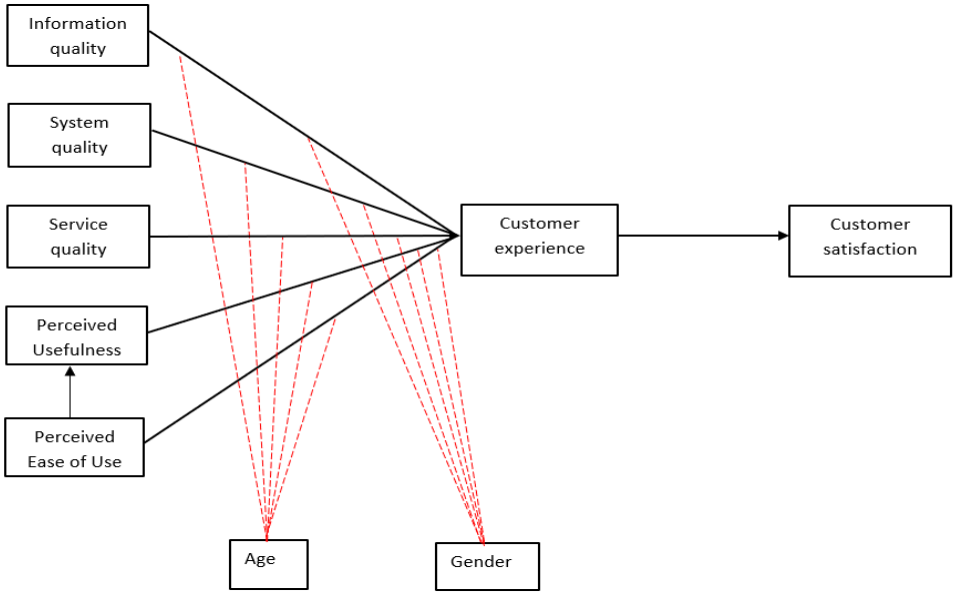
H9b Gender moderates the relationship between system quality and customer experience.

H9c Gender moderates the relationship between service quality and customer experience.

H9d Gender moderates the relationship between perceived usefulness and customer experience.

H9e Gender moderates the relationship between perceived ease of use and customer experience.

Figure 1 The research model (see online version for colours)



3 Methodology

3.1 Data and sample

The study was conducted in India, which is a developing country and as an emerging country, the adoption of AI-enabled chatbots is still in progress, therefore, it is necessary to examine how the customer feels after availing the service and investigate the customer satisfaction. Moreover, India majorly comprises of young golden population which are tech-savvy and with a high proliferation of smartphone devices. Therefore, in the context of Indian banking sector, this study could be a reference for other developing countries where AI-enabled technologies like chatbots is in its nascent stage.

The data was collected from users who have experienced using chatbots in banking in India. The survey method was used to collect the data from respondents with the use of Google Form and the questionnaire was shared on social media platforms also for better reach to respondents like face book, LinkedIn. To confirm whether the respondent has previously interacted with the chatbot, a screening question was included in the

questionnaire: 'Have you previously interacted with the chatbot?' If the respondent clicked on 'yes' option, the form would move to the next section, otherwise the form will display the option to submit the form. The time taken to collect the data was nearly three months, i.e., July 2022 to September 2022. The 400 questionnaires were sent in total to collect the data which in return we received responses from 355 with a response rate of 88.75%. After receiving the responses, the next step was to filter the data by eliminating the responses which were not users of banking chatbot. Among all the respondents, 30 respondents did not have any experience with the chatbot, therefore these were not considered and hence, final sample of 325 respondents were used for analysis of data.

The frequency of female population (52.6%) was more than the male frequency (47.4%). Highest number of respondents of data belongs to age group of 26–35 years (43.7%), followed by 18–25 years of age group (28.6%). Majority of the respondents belong to the working section (55.4%). Moreover, regarding the educational level of sample, 43.4% hold a bachelor's degree while 35.7% hold a master's degree. The demographic information of respondents is shown in Table 1.

Table 1 Demographic information of the respondents

Category	*Subcategory*	*Frequency*	*Percentage*
Gender (n = 325)	Male	154	47.4
	Female	171	52.6
Age (n = 325)	Below 18 years	9	¬2.8
	18–25 years	93	28.6
	26–35 years	142	43.7
	36–45 years	58	17.8
	46–55 years	20	6.2
	Above 55 years	3	0.9
Employment (n = 325)	Student	114	35.1
	Working	180	55.4
	Unemployed	14	4.3
	Others	17	5.2
Educational level (n = 325)	High school or less	45	13.8
	Bachelor's degree	141	43.4
	Master's degree	116	35.7
	Doctoral degree	23	7.1
Having experience with chatbot (n = 325)	Yes	325	91.54
	No	30	8.50

3.2 Instrument design and statistical software

The constructs of the questionnaire were adapted from the relevant past literature. Information quality comprises of five statements, system quality and service quality with four statements, were adapted from Brown and Jayakody (2008). Perceived usefulness and perceived ease of use with three and four statements respectively, were modified

from Davis (1989). Customer experience with three items was taken from Agarwal and Singh (2018) and customer satisfaction with four items was measured from Teo et al. (2008). Each statement was measured on a five-point likert scale ranging from 1–5, where 1 denotes strongly disagree and 5 denotes strongly agree. Moreover, the statements were amended according to the current scope of the study and to validate the measurement items pilot study has been conducted with 50 chatbot users to test the reliability and validity of the scales. The final items and the definitions of all the variables taken in the study are shown in Table 2. MS Excel, SPSS, Smart PLS are the statistical software used in the study for the purpose of data analysis.

Table 2 Definitions of variables

Constructs	*Definitions*	*Sources*
Information quality	The quality of information and contents provided by chatbot systems	DeLone and McLean (2003)
System quality	The quality of chatbot systems and their technical aspects	DeLone and McLean (2003)
Service quality	Evaluations of the quality of chatbot services in terms of reliability, assurance, responsiveness and personalisation	DeLone and McLean (2003)
Perceived usefulness	The extent to which users are confident that using chatbot services can help them finish their tasks efficiently	Davis (1989)
Perceived ease of use	The extent to which users believe that using chatbot services are free of mental effort	Davis (1989)
Customer experience	Aggregate and cumulative customer perception created during learning about, acquiring, using, maintaining and disposing of a product or service	Carbone and Haeckel (1994)
Customer satisfaction	The level of user's satisfaction after comparing the actual performance of chatbot service with their expected performance	Oliver (2018), Bhattacherjee (2001)

4 Data analysis and results

SPSS and Smart PLS 4.0 were used as a statistical tool for the analysis of the data. Five-step procedure was adapted to check and examine the measurement model.

4.1 Measurement model analysis

This study employs partial least square structural equation modelling (PLS-SEM) to test the model. The measurement should be assessed with examining factor loadings of the items, reliability (Cronbach's alpha) and discriminant validity (Hair et al., 2019). Items with factor loading of more than 0.708 are considered acceptable (Hair et al., 2019). All factor loadings in this study are above threshold limit, therefore, satisfying the above criterion. Moreover, according to Hair (2009), Cronbach alpha is used to test the reliability of the model with the cut off limit of 0.70. All the items meet the acceptable limit. To check the validity of the measurement model, this study uses two approaches:

a convergent validity

b discriminant validity (Hair, 2009).

The composite reliability (Fornell and Larcker, 1981) and average variance extracted (AVE) (Hair et al., 2019) are used to check the convergent reliability. Composite reliability should be above 0.70 and AVE should be above 0.50 to satisfy the validity and this study demonstrates the values above the threshold limit. Discriminant validity is checked with the help of square root of AVE as shown in Table 3 (Fornell and Larcker, 1981). The correlation among any two constructs should be less than the square root of AVE of each construct. Lastly, model fit is tested using standardised root mean square residual (SRMR) (Hu and Bentler, 2009). According to Hu and Bentler (2009), the value of SRMR should be less than 0.08. As shown in Table 5, the SRMR value is which is below the maximum limit of 0.08 which indicates the adequate model fitness.

Table 3 The reliability and validity of the measurement

Construct	*Items*	*Factor loadings*	*VIF*	*Cronbach's alpha*	*CR*	*AVE*
Information quality (INFQ)	INFQ1	0.813	2.199	0.824	0.876	0.587
	INFQ2	0.747	1.664			
	INFQ3	0.753	1.648			
	INFQ4	0.671	1.374			
	INFQ5	0.835	2.045			
System quality (SYQ)	SYQ1	0.705	1.375	0.709	0.816	0.527
	SYQ2	0.631	1.279			
	SYQ3	0.772	1.338			
	SYQ4	0.785	1.344			
Service quality (SEQ)	SEQ1	0.752	1.399	0.713	0.823	0.538
	SEQ2	0.765	1.415			
	SEQ3	0.741	1.330			
	SEQ4	0.673	1.239			
Perceived usefulness (PU)	PU1	0.834	1.637	0.747	0.856	0.665
	PU2	0.769	1.331			
	PU3	0.840	1.673			
Perceived ease of use (PEOU)	PEOU1	0.801	1.569	0.756	0.845	0.578
	PEOU2	0.744	1.442			
	PEOU3	0.730	1.390			
	PEOU4	0.762	1.486			
Customer experience (CX)	CX1	0.779	1.333	0.747	0.855	0.664
	CX2	0.845	1.653			
	CX3	0.818	1.000			
Customer satisfaction (CS)	CS1	0.811	1.679	0.758	0.846	0.579
	CS2	0.768	1.484			
	CS3	0.752	1.369			
	CS4	0.709	1.397			

4.2 Multicollinearity

This study further examined the variance inflation factor (VIF) to test the multicollinearity in the measurement model. As per Hair et al. (2019), the value of VIF should be maximum of 5.0 otherwise it indicates multicollinearity in the model. The results of the study states that all the values of measurement meet the criterion and therefore, the model does not consists multicollinearity as shown in Table 3.

4.3 Common method bias

Since, the data was collected using a single instrument, therefore responses could be vulnerable to common method bias. To check the anonymity of responses, Bagozzi et al. (1991) states that common method bias could be possible if minimum of one correlation among construct is more than 0.90. In this study, highest correlation value is seen between (0.735 for CS-PEOU) which is below the threshold limit of 0.90 which proves that data is not vulnerable to CMB as shown in Table 4.

Table 4 Correlation and discriminant validity

Construct	*CS*	*CX*	*INFQ*	*PEOU*	*PU*	*SERQ*	*SYSQ*
CS	*0.761*						
CX	0.521	*0.815*					
INFQ	0.492	0.496	*0.766*				
PEOU	0.735	0.592	0.577	*0.760*			
PU	0.615	0.490	0.693	0.724	*0.815*		
SERQ	0.348	0.511	0.368	0.382	0.360	*0.733*	
SYSQ	0.320	0.254	0.399	0.374	0.412	0.428	*0.726*

Note: The square root of the AVE in diagonal (italic values) and off-diagonal values are correlation among constructs.

Table 5 Model fitness

Indicator	*Accepted criteria*	*Measurement model*	*Result*	*Source*
SRMR	< 0.08	0.069	Good	Hu and Bentler (2009b)

4.4 Structural model analysis

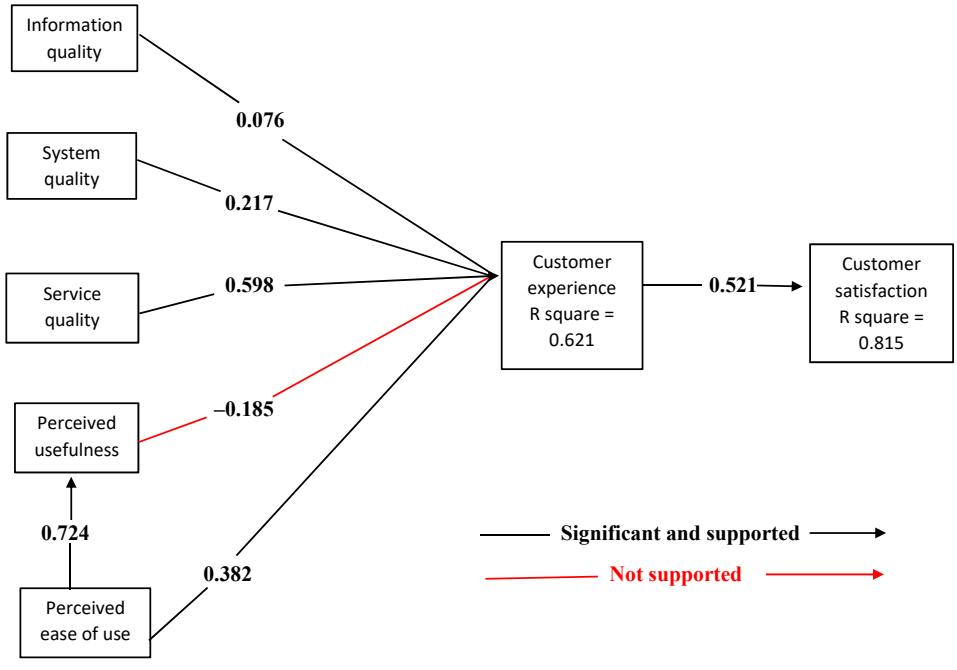
After checking the reliability and validity of the measurement model and model fitness, the proposed hypotheses are being tested using bootstrapping technique (subsample = 5,000). As shown in Table 6 and Figure 2, majority of hypotheses are supported except H4 at 5% significance level. Information quality (beta = 0.076, $p < 0.05$) significantly and positively influenced customer experience, hence, confirming H1. System quality (beta = 0.217, $p < 0.05$) and service quality (beta = 0.598, $p < 0.05$) also positively impacts customer experience, therefore, H2 and H3 are confirmed. However, perceived usefulness (beta = –0.185, $p < 0.05$) negatively impact customer satisfaction, rejecting H4. Perceived ease of use (beta = 0.382, $p < 0.05$) positively impact customer experience and perceived usefulness (beta = 0.724, $p < 0.05$), hence, H5 and H6 are confirmed.

Finally, customer experience (beta = 0.521, p < 0.05) also positively affects customer satisfaction, confirming H7.

Table 6 Hypotheses testing

Hypotheses	*Paths*	*Beta*	*T-values*	*p-values*	*Decision*
H1	INFQ -> CX	0.076	0.338	0.000	Accepted
H2	SYQ -> CX	0.217	2.94	0.002	Accepted
H3	SEQ -> CX	0.598	3.116	0.001	Accepted
H4	PU -> CX	-0.185	0.767	0.222	Rejected
H5	PEOU -> CX	0.382	1.631	0.051	Accepted
H6	PEOU -> PU	0.724	15.857	0.000	Accepted
H7	CX -> CS	0.521	9.458	0.000	Accepted

Figure 2 The structural model with path coefficients (see online version for colours)



4.5 Multi-group moderation Analysis

4.5.1 Age

Table 7 depicts the results of moderation analysis of age as a moderator. Age does not moderate the relationship between information quality (beta = –0.019, p-value = 0.4000) and customer experience at 5% significance level. But age moderates the relationship between system quality (beta = –0.085, p-value = 0.062), service quality (beta = 0.218, p-value = 0.000) and customer experience. The relationship between perceived usefulness (beta = 0.035, p-value = 0.343) and customer experience is not being moderated by age at

5% significance level. However, impact of perceived ease of use (beta = –0.054, p-value = 0.266) on customer experience is being moderated by age.

Table 7 Moderating analysis with age and gender as a moderator

Hypotheses	*Paths*	*Beta*	*T-values*	*p-values*	*Decision*
H8a	Age*INFQ -> CX	–0.019	0.254	0.400	Rejected
H8b	Age*SYQ -> CX	–0.085	1.540	0.062	Accepted
H8c	Age*SEQ -> CX	0.218	3.524	0.000	Accepted
H8d	Age*PU -> CX	0.035	0.405	0.343	Rejected
H8e	Age*PEOU -> CX	–0.054	0.626	0.266	Rejected
H9a	Gender*INFQ -> CX	0.111	0.704	0.241	Rejected
H9b	Gender*SYQ -> CX	0.286	2.643	0.004	Accepted
H9c	Gender*SEQ -> CX	–0.217	1.711	0.044	Accepted
H9d	Gender*PU -> CX	0.112	0.730	0.233	Rejected
H9e	Gender*PEOU -> CX	–0.020	0.131	0.448	Rejected

4.5.2 Gender

Table 7 shows the moderating effects of gender on the relationship between five constructs and customer experience. The impact of information quality (beta = 0.111, p-value = 0.241) on customer experience is not being moderated through gender at 5% significance level. However, gender moderates the relationship between service quality (beta = 0.286, p-value = 0.004), service quality (beta = –0.217, p-value = 0.044) and customer experience. Remaining two hypotheses are rejected (H9d, H9e), hence, effects of perceived usefulness and perceived ease of use is not moderated by gender at 5% significance level.

5 Discussion

This study majorly focuses on the ISS model (DeLone and McLean, 2003) and TAM (Davis, 1989) to shed light on the customer experience and customer satisfaction towards using banking chatbots in India. The findings of the study are as follows.

First, the relationship between all the three quality dimensions of ISS model and customer experience is accepted which is coherent with Zhou et al. (2011) and Trivedi (2019). Trivedi (2019) aims to observe the effect of quality dimensions on customer experience of using banking chatbots and it validates the significant influence of information quality, system quality and service quality on customer experience. Therefore, this study emphasises on the critical role of information quality in improving the customer experience of using chatbot services provided by banks. It can be justified as when banks modify its exchange rates, interest rate and other different complex process which is difficult to deal with by the customers. But if the banking chatbot provides reliable, accurate, timely and precise information, customers will possess positive customer experience. System quality also positively influences the customer experience and this result is similar to Trivedi and Trivedi (2018) which examined the impact of three quality dimensions on customer satisfaction of using fashion apps.

System quality incorporates different factors like reliability, adaptability, usability and availability. Hence, it can be concluded that if banking chatbot is easy to use and reliable, consumers tend to use it which would enhance users' experience. Moreover, service quality positively impacts customer experience and among all the three quality dimensions, service quality is the strongest antecedent to customer experience (beta = 0.598). The result is coherent with studies considering ISS model (Ashfaq et al., 2020; Veeramootoo et al., 2018; Gao and Waechter, 2015; Zheng et al., 2013). Therefore, it can be interpreted that when the chatbot provides real-time responses and customised responses to individual responses to each user, it will significantly affect customer experience. Instead of being in a long queue waiting for human staff to resolve their query, customers find chatbot as a time saving option. Hence, chatbot developers should focus on the promptness of banking chatbot service to ensure positive user experience.

Second, this study examined the impact of drivers of TAM, i.e., perceived usefulness and perceived ease of use on customer experience. The study shows the insignificant relationship of perceived usefulness on customer experience which is incoherent with the findings of Ferdianto and Hendar (2022). It examined the role of perceived usefulness on the repurchase intention of using mobile while purchasing through e-commerce sites in COVID-19 and concludes that more the perceived usefulness the users enjoy in shopping, the greater is the mobile customer experience. This study confirms the positive influence of perceived ease of use on customer experience of using chatbots. The result is in line with Ferdianto and Hendar (2022), Araújo and Casais (2020) and Gümüş and Çark (2021). It implies that if the chatbot is easy to use and hassle free and when the chatbot provides convenience to its users, the customers tend to have better customer experience. Hence, service providers should keep in mind that using should chatbot should be hassle free and easy to use.

Third, this study investigates the influence of perceived ease of use on perceived usefulness which is examined by Davis (1989). The study validates the positive relationship between the perceived usefulness and perceived ease of use. Aladwani (2002) and Moon and Kim (2001) investigates the influence of perceived ease of use on perceived usefulness. Perceived ease of use influences in enhancing the users' task and performance. Because using chatbot is hassle free and requires less mental effort, users will have spare efforts to accomplish other tasks. Therefore, chatbot services should require less effort to use by customers to enhance performance of customers.

Fourth, customer experience significantly affects customer satisfaction which is in line with the findings of previous literature (Homburg et al., 2006; Andreassen and Lindestad (1998) which validates that enhanced customer experience ultimately leads to customer satisfaction. Srivastava and Kaul (2014) investigated the influence of customer experience on customer satisfaction of shoppers in Indian retail industry and validate the relationship between customer experience and customer satisfaction. Every experience of the service by the user leads to evaluation of service which further leads to satisfied customer.

Finally, the result depicts the insignificant moderating effect of age on the relationship between information quality and customer experience (H8a). Hence, it can be inferred that age does not strengthen or diminish the relationship between the two and the generation of the individuals does not influence the impact of quality of information on customer experience. Age has the significant impact on the relationship between system quality and customer experience which confirm (H8b) and also on the relationship between service quality and customer experience is being strengthen (H8c). The results

state that different age groups of individuals affect the system quality and service quality on the experience of customers. Hence, consumers tend to consider the age factor and the extent to which they are tech-savvy escalates the customer experience when the chatbot provides prompt services to its users. Results signify the insignificant moderating effect of age on the relationship between perceived usefulness, perceived ease of use and customer experience. It can be inferred from the results that older or younger generation of the individuals does not give weightage to the usefulness and ease of use of the system in forming their experience. Hence, age does not play any role in strengthening or weakening the relationship. Therefore, H8d and H8e are rejected. Gender also does not moderate the relationship between information quality and customer experience (H9a). Hence, it can be said that males and females' perception are not significantly different in framing customer experience. But gender significantly moderates the relationship between system quality and customer experience. With the role of gender, the relationship between the system quality and customer experience is being strengthen. Hence, confirming H9b with the plausible reason that system quality is an important factor for either males or females in obtaining customer experience with chatbots. Gender also moderates the relationship between the service quality and customer experience (H9c). The reason could be that customer support, after-sales service provided by chatbots has more impact on framing customer experience either for females or males. Moreover, gender does not moderate the relationship between perceived usefulness, perceived ease of use and customer experience. It means that males and females' perception are significantly same for usefulness and ease of use of chatbots. Consequently, when the customers feel that using chatbot service is useful and it aids in performing tasks as well as it is easy to use without much mental effort, this leads to customer experience without the moderating effect of gender, hence, H9d and H9e are rejected.

6 Implications

6.1 Theoretical implications

This study focuses on the advancement of theory relating to the customer experience and customer satisfaction after using chatbots in banking sector in India. First, this paper is one of the few attempts to integrate ISS model, TAM and customer experience to examine the user acceptance of banking chatbots. Past literature has focused on the single theory to examine the user acceptance of customer experience of using banking chatbots. By integrating the above model with the concept of customer experience and testing the proposed model, this study will offer insightful implications on the factors which drive customer experience and its impact on customer satisfaction. Also, majority of hypotheses were accepted in this study which is in line with TAM and ISS model. The robust result of the study can provide various inputs for academicians and practitioners to study the other information technology with the use of proposed model of the study.

Second, no study till now has examined the moderating role of age and gender in context to banking chatbots. This study takes into consideration the moderating role of age and gender between the relationship of five antecedents and customer experience. This study is expected to provide meaningful results regarding whether age and gender moderates the relationship between antecedents and customer experience.

Third, this study is expected to enhance the understanding of chatbot service providers regarding the behaviour of consumers in context to banking chatbots. The banking industry is continuously changing its landscape and heading towards better technology and enhanced customer experience which would further lead to customer satisfaction. Despite of the fact that deploying chatbot services in the industries is beneficial but as it is in its nascent stage, it is indispensable to investigate the consumer behaviour regarding chatbots. This study would provide deeper understanding of reaction of users to academicians and practitioners.

Altogether, this study proposed an analytical model integrating TAM, ISS model, customer experience and age and gender to investigate the antecedents of customer experience and customer satisfaction towards AI-enabled chatbot service from the data collected from actual users of banking chatbot in India.

6.2 Managerial implications

As chatbots are the new offering in the industry, managers should consider the following implications. First, service managers should keep in mind that chatbot service should provide reliable, precise, prompt and up-to-date information in a precise format. Additionally, chatbot service should provide useful information which helps the user in completing the tasks which would enhance customer experience. If the service fails to deliver the information which is required to the user, he will tend not to choose chatbot next time and would consider this system as useless. In this case, it will leave a negative impact on customer and would lead to customer dissatisfaction.

Second, system quality and service quality are also equally important along with information quality. The chatbot service should be usable, available and provide prompt services in real time. Hence, altogether support provided by chatbot should be of high quality, then only it would lead to a positive customer experience, otherwise if chatbot does not deliver the required and necessary services, the users' satisfaction will collapse. Hence, managers should keep in mind while developing chatbot system.

Third, the findings of the study reveal that chatbot service should be easy to use and should not require much mental effort. While using the service, if the user becomes frustrated and displeased, this will make the customers dissatisfied and would not use the service again. Thus, service managers should consider the above points while developing chatbots.

7 Limitations and future research directions

Despite of the rigorous process of collecting the data, the study possesses some limitations. First, the data is collected through convenience sampling therefore, it is possible that results may not be generalised to all users of banking chatbots in India. Although, common method bias technique was checked but future researchers can focus on different method of data collection like experimental method to ensure the better quality of results and respondents.

Second, this study focused only on single context to India regarding usage and acceptance of chatbots which is a developing country. Future studies can focus on other developing or developed countries to have deeper understanding of results. Moreover,

comparison between different countries could enhance the results. This study can be replicated in different contexts like some other industry or country.

Third, we checked the moderating role of age and gender in the proposed model. However, future studies can add other moderating variables like perceived risk, need for human interaction to check how these variables play a role in moderating the customer experience.

Finally, although, the study used an integrative model to study the customer experience and customer satisfaction towards using chatbots in banking sector but future researchers could add other variables in the domain of customer service.

8 Conclusions

This study proposed an analytical framework to develop the deeper and thorough understanding regarding the antecedents of customer experience and customer satisfaction in context to banking chatbots in India. Although, chatbot has been studied in different countries but not much literature has been available in context to Indian banking sector. While the landscape of banking sector is continuously transforming, AI-enabled technologies such as chatbots is working towards the creation of positive customer experience and in enhanced competitive advantages. The role of chatbots cannot be ignored up to certain extent because during COVID-19 where face-to-face interactions are prohibited, chatbots delivered the services through online platform and serve the customers. The current proposed model integrates TAM, ISS model with customer experience and examines the drivers which influence customer experience and customer satisfaction along with considering the moderating role of age and gender which would affect customer experience. The findings of the study suggest that chatbot service providers and mangers should consider the drivers which influence customer experience and customer satisfaction and deploy these factors while providing services to the customers to gain sustainable development and enhance competitive edge.

References

Agarwal, A. and Singh, M.R.P. (2018) 'The relationship between retail experience, customer satisfaction, and behavioral intention: exploring the consumer shopping behavior in unorganized retail settings', *Indian Journal of Marketing*, Vol. 48, No. 1, pp.9–27, https://doi.org/10.17010/IJOM/2018/V48/I1/120733.

Akbari, M., Salehi, K. and Samadi, M. (2015). Brand heritage and word of mouth: the mediating role of brand personality, product involvement and customer satisfaction', *Journal of Marketing Management*, Vol. 3, No. 1, pp.83–90.

Aladwani, A.M. (2002) 'The development of two tools for measuring the easiness and usefulness of transactional web sites', *European Journal of Information Systems*, Vol. 11, No. 3, pp.223–234.

Alt, M-A., Vizeli, I. and Săplăcan, Z. (2021) 'Banking with a chatbot – a study on technology acceptance', *Studia Universitatis Babes-Bolyai Oeconomica*, Vol. 66, No. 1, pp.13–35, https://doi.org/10.2478/subboec-2021-0002.

Andreassen, T.W. and Lindestad, B. (1998) 'Customer loyalty and complex services. The impact of corporate image on quality, customer satisfaction and loyalty for customers with varying degrees of service expertise', *International Journal of Service Industry Management*, Vol. 9, No. 1, pp.7–23, https://doi.org/10.1108/09564239810199923.

Araújo, T. and Casais, B. (2020) 'Customer acceptance of shopping-assistant chatbots', *Smart Innovation, Systems and Technologies*, Vol. 167, pp.278–287, https://doi.org/10.1007/978-981-15-1564-4_26/COVER.

Ashfaq, M., Yun, J., Yu, S. and Loureiro, S.M.C. (2020) 'I, Chatbot: modeling the determinants of users' satisfaction and continuance intention of AI-powered service agents', *Telematics and Informatics*, Vol. 54, p.101473, https://doi.org/10.1016/J.TELE.2020.101473.

Bagozzi, R.P., Yi, Y. and Phillips, L.W. (1991) 'Assessing construct validity in organizational research', *Administrative Science Quarterly*, Vol. 36, No. 3, p.421, https://doi.org/10.2307/2393203.

Behera, R.K., Bala, P.K. and Ray, A. (2021) 'Cognitive Chatbot for personalised contextual customer service: behind the scene and beyond the hype', *Information Systems Frontiers*, pp.1–21.

Bhattacherjee, A. (2001) 'Understanding information systems continuance: an expectation-confirmation model', *MIS Quarterly: Management Information Systems*, Vol. 25, No. 3, pp.351–370, https://doi.org/10.2307/3250921.

Bhatti, T. (1970) 'Exploring factors influencing the adoption of mobile commerce', *The Journal of Internet Banking and Commerce*, Vol. 12, No. 3, pp.1–13 [online] https://www.icommercecentral.com/open-access/exploring-factors-influencing-the-adoption-of-mobile-commerce.php?aid=38513.

Blut, M., Wang, C. and Schoefer, K. (2016) 'Factors influencing the acceptance of self-service technologies: a meta-analysis', *Journal of Service Research*, Vol. 19, No. 4, pp.396–416, https://doi.org/10.1177/1094670516662352.

Breakwell, G.M., Fife-Schaw, C., Lee, T. and Spencer, J. (1986) 'Attitudes to new technology in relation to social beliefs and group memberships: a preliminary investigation', *Current Psychological Research & Reviews*, Vol. 5, No. 1, pp.34–47, https://doi.org/10.1007/BF02686595.

Brill, T.M., Munoz, L. and Miller, R.J. (2019) 'Siri, Alexa, and other digital assistants: a study of customer satisfaction with artificial intelligence applications', *Journal of Marketing Management*, Vol. 35, Nos. 15–16, pp.1401–1436.

Brown, I. and Jayakody, R. (2008) 'B2C e commerce success: a test and validation of a revised conceptual model', *Electronic Journal of Information Systems Evaluation*, Vol. 11, No. 3, pp.109–126.

Çakıroğlu, Ü., Gökoğlu, S. and Öztürk, M. (2017) 'Pre-service computer teachers' tendencies towards the use of mobile technologies: a technology acceptance model perspective', *European Journal of Open, Distance and E-Learning*, Vol. 20, No. 1, pp.176–191, https://doi.org/10.1515/EURODL-2017-0011.

Carbone, L.P. and Haeckel, S.H. (1994) 'Engineering customer experiences', *Marketing Management*, Vol. 3, No. 3, pp.8–19.

Chung, M., Ko, E., Joung, H. and Kim, S.J. (2020). Chatbot e-service and customer satisfaction regarding luxury brands', *Journal of Business Research*, Vol. 117, pp.587–595.

Darian, J.C. (1987) 'In-home shopping: are there consumer segments?', *Journal of Retailing*.

Dasgupta, S., Paul, R.I.K. and Fuloria, S. (2011) 'Factors affecting behavioral intentions towards mobile banking usage: empirical evidence from India', *Romanian Journal of Marketing*, No. 1, p.6.

Davis, F.D. (1989) 'Perceived usefulness, perceived ease of use, and user acceptance of information technology', *MIS Quarterly*, pp.319–340.

DeLone, W.H. and McLean, E.R. (2003) 'The DeLone and McLean model of information systems success: a ten-year update', *Journal of Management Information Systems*, Vol. 19, No. 4, pp.9–30, https://doi.org/10.1080/07421222.2003.11045748.

Duijst, D. (2017) *Can We Improve the User Experience of Chatbots with Personalisation*, Master's thesis, University of Amsterdam.

Ferdianto, R. (2022) 'The role of perceived usefulness and perceived ease of use in increasing repurchase intention in the era of the COVID-19 pandemic', *Research Horizon*, Vol. 2, No. 2, pp.313–329.

Ferdianto, R. and Hendar (2022) 'Role of perceived usefulness and perceived ease of use in increasing repurchase intention in the era of the Covid-19 pandemic', *Research Horizon*, Vol. 2, No. 2, pp.313–329, https://doi.org/10.54518/RH.2.2.2022.313-329.

Fornell, C. and Larcker, D.F. (1981) 'Evaluating structural equation models with unobservable variables and measurement error', *Journal of Marketing Research*, Vol. 18, No. 1, pp.39–50, https://doi.org/10.1177/002224378101800104.

Gao, L. and Waechter, K.A. (2015) 'Examining the role of initial trust in user adoption of mobile payment services: an empirical investigation', *Information Systems Frontiers*, Vol. 19, No. 3, pp.525–548, https://doi.org/10.1007/S10796-015-9611-0.

Gao, L., Waechter, K.A. and Bai, X. (2015) 'Understanding consumers' continuance intention towards mobile purchase: a theoretical framework and empirical study – a case of China', *Computers in Human Behavior*, Vol. 53, pp.249–262.

Gao, P. and Owolabi, O. (2008) 'Consumer adoption of internet banking in Nigeria', *Int. J. Electronic Finance*, Vol. 2, No. 3, pp.284–299.

Giese, J.L. and Cote, J.A. (2000) 'Defining consumer satisfaction', *Academy of Marketing Science Review*.

Gorla, N. (2012) 'Information systems service quality, zone of tolerance, and user satisfaction', *Journal of Organizational and End User Computing (JOEUC)*, Vol. 24, No. 2, pp.50–73.

Gümüş, N. and Çark, Ö. (2021) 'The effect of customers' attitudes towards chatbots on their experience and behavioural intention in Turkey', *Interdisciplinary Description of Complex Systems*, Vol. 19, No. 3, pp.420–436, https://doi.org/10.7906/INDECS.19.3.6.

Hair, J. (2009) *Multivariate Data Analysis* [online] https://digitalcommons.kennesaw.edu/facpubs/2925/.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019) 'When to use and how to report the results of PLS-SEM', *European Business Review*, Vol. 31, No. 1, pp.2–24, https://doi.org/10.1108/EBR-11-2018-0203/FULL/XML.

Herrero, Á. and San Martín, H. (2012) 'Developing and testing a global model to explain the adoption of websites by users in rural tourism accommodations', *International Journal of Hospitality Management*, Vol. 31, No. 4, pp.1178–1186, https://doi.org/10.1016/J.IJHM.2012.02.005.

Homburg, C., Jozić, D. and Kuehnl, C. (2015) 'Customer experience management: toward implementing an evolving marketing concept', *Journal of the Academy of Marketing Science*, Vol. 45, No. 3, pp.377–401, https://doi.org/10.1007/S11747-015-0460-7.

Homburg, C., Koschate, N. and Hoyer, W.D. (2006) 'The role of cognition and affect in the formation of customer satisfaction: a dynamic perspective', *Journal of Marketing*, Vol. 70, No. 3, pp.21–31, https://doi.org/10.1509/JMKG.70.3.21.

Hu, L.T. and Bentler, P.M. (2009) 'Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives', *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6, No. 1, pp.1–55, https://doi.org/10.1080/10705519909540118.

Hwang, H.G., Chen, R.F. and Lee, J.M. (2007) 'Measuring customer satisfaction with internet banking: an exploratory study', *International Journal of Electronic Finance*, Vol. 1, No. 3, pp.321–335, https://doi.org/10.1504/IJEF.2007.011502.

Jain, R., Aagja, J. and Bagdare, S. (2017) 'Customer experience–a review and research agenda', *Journal of Service Theory and Practice*, Vol. 27, No. 3, pp.642–662.

Jung, Y., Perez-Mira, B. and Wiley-Patton, S. (2009) 'Consumer adoption of mobile TV: examining psychological flow and media content', *Computers in Human Behavior*, Vol. 25, No. 1, pp.123–129.

Khalilzadeh, J., Ozturk, A.B. and Bilgihan, A. (2017) 'Security-related factors in extended UTAUT model for NFC based mobile payment in the restaurant industry', *Computers in Human Behavior*, Vol. 70, pp.460–474, https://doi.org/10.1016/J.CHB.2017.01.001.

Kim, B., Park, K. and Kim, J. (2003) 'Satisfying different customer groups for IS outsourcing: a Korean IS company's experience', *Asia Pacific Journal of Marketing and Logistics*, Vol. 15, No. 3, pp.48–69.

Kim, J. (2016) 'An extended technology acceptance model in behavioral intention toward hotel tablet apps with moderating effects of gender and age', *International Journal of Contemporary Hospitality Management*, Vol. 28, No. 8, pp.1535–1553.

Kim, J., Christodoulidou, N. and Brewer, P. (2012) 'Impact of individual differences and consumers' readiness on likelihood of using self-service technologies at hospitality settings', *Journal of Hospitality and Tourism Research*, Vol. 36, No. 1, pp.85–114, https://doi.org/10.1177/1096348011407311.

Kuo, F-Y., Tseng, F-C. and Liou, D-Y. (2007) 'Understanding the effects of relationships on the intention of a firm to adopt e-banking', *Int. J. Electronic Finance*, Vol. 1, No. 4, pp.484–501.

Laforet, S. and Li, X. (2005) 'Consumers' attitudes towards online and mobile banking in China', *International Journal of Bank Marketing*, Vol. 23, No. 5, pp.362–380, https://doi.org/10.1108/02652320510629250.

Laukkanen, T., Sinkkonen, S., Kivijärvi, M. and Laukkanen, P. (2007) 'Innovation resistance among mature consumers', *Journal of Consumer Marketing*, Vol. 24, No. 7, pp.419–427, https://doi.org/10.1108/07363760710834834/FULL/XML.

Lee, Y.C. (2006) 'An empirical investigation into factors influencing the adoption of an e-learning system', *Online Information Review*, Vol. 30, No. 5, pp.517–541.

Liao, Z. and Cheung, M.T. (2002) 'Internet-based e-banking and consumer attitudes: an empirical study', *Information and Management*, Vol. 39, No. 4, pp.283–295, https://doi.org/10.1016/S0378-7206(01)00097-0.

Liébana-Cabanillas, F., Sánchez-Fernández, J. and Muñoz-Leiva, F. (2014) 'Antecedents of the adoption of the new mobile payment systems: the moderating effect of age', *Computers in Human Behavior*, Vol. 35, pp.464–478, https://doi.org/10.1016/J.CHB.2014.03.022.

Lou, C. and Xie, Q. (2020) 'Something social, something entertaining? How digital content marketing augments consumer experience and brand loyalty', *Technology Analysis & Strategic Management*, Vol. 40, No. 3, pp.376–402, https://doi.org/10.1080/02650487.2020.1788311.

McQuarrie, E.F. (1989) 'The impact of a discontinuous innovation: outcomes experienced by owners of home computers', *Computers in Human Behavior*, Vol. 5, No. 4, pp.227–240, https://doi.org/10.1016/0747-5632(89)90002-2.

Mogaji, E., Balakrishnan, J., Nwoba, A.C. and Nguyen, N.P. (2021). Emerging-market consumers' interactions with banking chatbots', *Telematics and Informatics*, Vol. 65, p.101711.

Moon, J.W. and Kim, Y.G. (2001) 'Extending the TAM for a World-Wide-Web context', *Information and Management*, Vol. 38, No. 4, pp.217–230, https://doi.org/10.1016/S0378-7206(00)00061-6.

Nah, F.F.H. (2004) 'A study on tolerable waiting time: how long are web users willing to wait?', *Behaviour & Information Technology*, Vol. 23, No. 3, pp.153–163.

Oliver, R.L. (2014) *Satisfaction: A Behavioral Perspective on the Consumer*, 2nd ed., pp.1–519, Routledge, https://doi.org/10.4324/9781315700892.

Oliver, R.L. (2018) 'A cognitive model of the antecedents and consequences of satisfaction decisions', *Journal of Marketing Research*, Vol. 17, No. 4, pp.460–469, https://doi.org/10.1177/002224378001700405.

Pal, S. and Singh, D. (2019) 'Chatbots and virtual assistant in Indian banks', *Industrija*, Vol. 47, No. 4, pp.75–101, https://doi.org/10.5937/INDUSTRIJA47-24578.

Payne, A.F., Storbacka, K. and Frow, P. (2007) 'Managing the co-creation of value', *Journal of the Academy of Marketing Science*, Vol. 36, No. 1, pp.83–96, https://doi.org/10.1007/S11747-007-0070-0.

Raza, S.A. and Hanif, N. (2013) 'Factors affecting internet banking adoption among internal and external customers: a case of Pakistan', *International Journal of Electronic Finance*, Vol. 7, No. 1, pp.82–96, https://doi.org/10.1504/IJEF.2013.051746.

Richad, R., Vivensius, V., Sfenrianto, S. and Kaburuan, E.R. (2019) 'Analysis of factors influencing millennial's technology acceptance of chatbot in the banking industry in Indonesia', *International Journal of Management*, Vol. 10, No. 3, pp.107–118, https://doi.org/10.34218/IJM.10.3.2019.011.

Riskinanto, A., Kelana, B. and Hilmawan, D.R. (2017) 'The moderation effect of age on adopting e-payment technology', *Procedia Computer Science*, Vol. 124, pp.536–543, https://doi.org/10.1016/J.PROCS.2017.12.187.

Sakkthivel, A.M. (2011) 'Modelling of determinants influence consumer behaviour towards different technology products', *Int. J. Electronic Finance*, Vol. 5, No. 1, pp.53–67.

Schmitt, B. (2010) 'Experiential marketing', *Journal of Marketing Management*, Vol. 15, Nos. 1–3, pp.53–67, https://doi.org/10.1362/026725799784870496.

Sedera, D., Gable, G. and Chan, T. (2004) 'A factor and structural equation analysis of the enterprise systems success measurement model', *Proceedings of the 10th Americas Conference on Information Systems*, pp.676–682, Association for Information Systems.

Shao, Z., Zhang, L., Li, X. and Guo, Y. (2019) 'Antecedents of trust and continuance intention in mobile payment platforms: the moderating effect of gender', *Electronic Commerce Research and Applications*, Vol. 33, p.100823, https://doi.org/10.1016/J.ELERAP.2018.100823.

Sim, L.L. and Koi, S.M. (2002) 'Singapore's internet shoppers and their impact on traditional shopping patterns', *Journal of Retailing and Consumer Services*, Vol. 9, No. 2, pp.115–124.

Singh, S. (2019) 'Measuring e-service quality and customer satisfaction with internet banking in India', *Theoretical Economics Letters*, Vol. 9, No. 2, pp.308–326, https://doi.org/10.4236/TEL.2019.92023.

Srivastava, M. and Kaul, D. (2014) 'Social interaction, convenience and customer satisfaction: the mediating effect of customer experience', *Journal of Retailing and Consumer Services*, Vol. 21, No. 6, pp.1028–1037, https://doi.org/10.1016/J.JRETCONSER.2014.04.007.

Suoranta, M. and Mattila, M. (2004) 'Mobile banking and consumer behaviour: new insights into the diffusion pattern', *Journal of Financial Services Marketing*, Vol. 8, No. 4, pp.354–366, https://doi.org/10.1057/PALGRAVE.FSM.4770132.

Teo, T.S.H., Srivastava, S.C. and Jiang, L. (2008) 'Trust and electronic government success: an empirical study', *Journal of Management Information Systems,* Vol. 25, No. 3, pp.99–132, https://doi.org/10.2753/MIS0742-1222250303.

Trivedi, J. (2019) 'Examining the customer experience of using banking chatbots and its impact on brand love: the moderating role of perceived risk', *Journal of Internet Commerce*, Vol. 18, No. 1, pp.91–111, https://doi.org/10.1080/15332861.2019.1567188.

Trivedi, J.P. and Trivedi, H. (2018) 'Investigating the factors that make a fashion app successful: the moderating role of personalization', Vol. 17, No. 2, pp.170–187, https://doi.org/10.1080/15332861.2018.1433908.

Van Dolen, W.M., Dabholkar, P.A. and De Ruyter, K. (2007) 'Satisfaction with online commercial group chat: the influence of perceived technology attributes, chat group characteristics, and advisor communication style', *Journal of Retailing*, Vol. 83, No. 3, pp.339–358.

Veeramootoo, N., Nunkoo, R. and Dwivedi, Y.K. (2018) 'What determines success of an e-government service? Validation of an integrative model of e-filing continuance usage', *Government Information Quarterly*, Vol. 35, No. 2, pp.161–174, https://doi.org/10.1016/J.GIQ.2018.03.004.

Venkatesh, V., Thong, J.Y.L. and Xu, X. (2012) 'Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology', *MIS Quarterly: Management Information Systems*, Vol. 36, No. 1, pp.157–178, https://doi.org/10.2307/41410412.

Zheng, Y., Zhao, K. and Stylianou, A. (2013) 'The impacts of information quality and system quality on users' continuance intention in information-exchange virtual communities: an empirical investigation', *Decision Support Systems*, Vol. 56, No. 1, pp.513–524, https://doi.org/10.1016/J.DSS.2012.11.008.

Zhou, D., Nakatani, K. and Chuang, T.T. (2011) 'Data quality in collaborative commerce', *International Journal of Information Quality*, Vol. 2, No. 3, pp.264–278, https://doi.org/10.1504/IJIQ.2011.040672.

Appendix

Items used to measure research constructs

Construct	*Measurement items*	*Source*
	Information quality	
INFQ1	Banking chatbots provide me with the necessary information.	Trivedi (2019), Brown and Jayakody (2008)
INFQ2	Banking chatbots provide responses to queries as I expect.	
INFQ3	Banking chatbots provide sufficient information.	
INFQ4	I am satisfied with the accuracy of the information provided by banking chatbots.	
INFQ5	The information provided by banking chatbots is helpful regarding my questions or problems.	
	System quality	
SYQ1	I find it easy to become skilful at using banking chatbots.	Trivedi (2019), Brown and Jayakody (2008)
SYQ2	I believe that banking chatbots are easy to use.	
SYQ3	Using banking chatbots require minimal mental effort and quite quick in response.	
SYQ4	Banking chatbots are reliable.	
	Service quality	
SEQ1	I am satisfied with the customer support provided by banking chatbots services.	Trivedi (2019), Brown and Jayakody (2008)
SEQ2	I am satisfied with the after-sales service provided by banking chatbots services.	
SEQ3	Banking chatbots services understand my problems and requests.	
SEQ4	Banking chatbots services respond to my requests fast enough.	

Items used to measure research constructs (continued)

Construct	*Measurement items*	*Source*
	Perceived usefulness	
PU1	Using the banking chatbot helps me to complete tasks more promptly.	Davis (1989)
PU2	Using the banking chatbot increases my productivity.	
PU3	Using the banking chatbot helps me to perform many things more conveniently.	
	Perceived ease of use	
PEOU1	Learning how to use the banking chatbot is easy for me.	Davis (1989)
PEOU2	My interaction with the banking chatbot is clear and understandable.	
PEOU3	I find the banking chatbot easy to use.	
PEOU4	It is easy for me to become skilful at using the banking chatbot.	
	Customer experience	
CX1	I enjoy using banking chatbots.	Trivedi (2019), Agarwal and Singh (2018)
CX2	The experience of using banking chatbots was interesting.	
CX3	I am happy with the experience of using banking chatbots.	
	Customer satisfaction	
CS1	The banking chatbots has met my expectations.	Teo et al. (2014)
CS2	The banking chatbots efficiently fulfilled my needs.	
CS3	I am pleased with support from the banking chatbots.	
CS4	Overall, I am satisfied with the banking chatbots.	