

An Analytical Study on the Role of Satisfaction in Mediating Customer Loyalty and AI-Powered Digital Banking

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ABSTRACT

In modern digitized world, Artificial Intelligence (AI) technology that is acknowledged to have received the most impact on the global economy. AI is expected to benefit the world economy nearly \$ 15.7 trillion by 2030 due to its reach, scope, application and environmental protection. Achieving sustainable development goals relies on long-term customer loyalty, which has a huge impact on the circular economy and social responsibility. The study aims to use satisfaction as a mediator to better understand how the changed AI technology acceptance factors connect to customer loyalty for digital banking services. This study used a cross-sectional survey in Hyderabad, India to get valid responses from 380 participants. A measurement model was created utilising a survey questionnaire and partial least squares path modeling to validate the measured items, test hypotheses, and assess the relationship between the various constructs. In terms of digital banking services, satisfaction totally mediates the modified AI Technology Acceptance Model (TAM) factors (perceived usefulness, perceived ease of use, perceived risk, perceived trust, and perceived benefit), as well as customer loyalty. Subsequently, the findings indicate that satisfaction plays a partial role in mediating AI acceptance factors and customer loyalty for digital banking services. Gender does not alter the association between AI acceptance criteria, customer loyalty, or satisfaction. In contrast, age serves as a moderator in the relationship between satisfaction, loyalty, and AI acceptance. According to the study's findings, the employment of AI technology in sustainable financial services is critical for offering excellent customer experiences, which improves customer satisfaction and loyalty and hence pulls people to those services. The study shows how marketing managers can use modified AI acceptance factors to their advantage while promoting digital banking services in order to promote positive client loyalty.

Keywords: Digital Banking, Artificial Intelligence, Sustainability, Partial Least Square Path Modeling Method, AI Acceptance Factors, Satisfaction and Customer Loyalty

JEL Classifications: G21, M00, O32

1. INTRODUCTION

With gadgets like smartphone apps, platforms, and QR codes, Asian consumers are adopting digital technology more quickly. Certain Asian nations are more advanced than others in this regard, even though Western nations have moved from branch banking to digital technologies, card payments, and automated teller machines (ATMs). The four primary trends in digital banking in Asian nations are digital sales, multi-channel customer journeys,

digital usage, and channel preferences. More and more, it is becoming evident that marketers need to put brand experience first as the banking sector digitizes. Online banking platforms can create captivating activities that enhance the user experience of their brand. Loyalty and increased word-of-mouth are anticipated outcomes of a happier customer (Bapat and Kannadhasan, 2022). Financial services companies aim to enhance customer loyalty by implementing self-directed solutions, artificial intelligence, real-time transactions, rich content management, and straight-through

processing. Many modern industries are adopting AI for many applications as the era grows more advanced and intelligent daily.

One of the first industries implementing AI is banking. Although AI cannot retain customers, it can improve processes and personalize their experience, providing long-term services. For this reason, it is crucial to watch how banks use AI. With the development of technology over the last few decades, industries have begun integrating cutting-edge technologies, such as artificial intelligence, to provide clients with higher-quality services (Berger et al., 2008). Increasing bank customer loyalty requires the use of digital banking. According to a survey, in the event that their current bank does not offer online banking, almost 20% of clients are open to moving to another financial institution (Guru et al., 2003).

Companies must prioritize technology management to remain competitive, and technological innovation is essential to sustainability (Lee et al., 2018). Since 1987, the World Commission on Sustainability and Development has held discussions regarding the impact of business operations on society and the environment. Corporate sustainability has drawn the interest of academia, policymakers, and businesses alike, resulting in a rise in interest in the concept.

AI is a decisive tool for effective risk management and forecasting techniques in the banking and financial industries. Primary data processing techniques can become professional and effective with substantial data research. By automating the customer support system, banks and customers can communicate around the clock. In addition to technology, it provides clients with 24/7 account access. AI has a significant role that could influence banking in the future. Additionally, this system will sustain the company's profitability by extending credit and advising numerous clients on the best ways to invest their money immediately in the banking industry.

Considering the increasing number of people using online banking, assessing the level of service, customer satisfaction, and loyalty of AI-enabled digital banking services that banks consistently provide in India is critical. Customers frequently lament numerous persistent shortcomings in digital banking, even with its advantages. These include coverage of wireless networks, security concerns, technical difficulties, user incapacity, lack of banking technological advancements, etc.

The issue with the antiquated banking system currently in place is that decisions are made using massive amounts of data. It is very costly, and between twenty and thirty percent of decisions are erroneous because of inaccurate or insufficient information in the organizational plan. In order to process the reports, the AI system will intelligently handle these problems and keep an eye on all stakeholder-related data. Additionally, it will use real-time data to guide and coordinate the customer's decision-making process to comply with laws and regulations.

A wave of digitization is transforming digital into a valuable offering in the financial services industry, as described by Roy and Balaji (2015), Herington and Weaven (2007), Pikkarainen

et al. (2004), and others. It is, therefore, imperative that marketers reconsider their approach to customer experience.

AI acceptance factors are becoming increasingly important in marketing strategies in the current competitive landscape. Besides the rising significance of digital banking, financial services are now characterized by digital interface, intangibility, and faith, making it imperative to investigate the phenomenon of customer experience in the age of digitization (Zeithaml et al., 1985; Khan et al., 2016). Klein et al. (2016) cite Nielsen's 2015 study as evidence that mass media marketing was less important (50%) than customer loyalty (87%) in driving business. Since customers rely so heavily on referrals and advice from one another, customer loyalty—a non-commercial, interpersonal preference—is crucial to providing services (Arndt, 1967). Customer loyalty marketing significantly impacts consumer behavior (Pruden and Vavra, 2015). A breakdown in service could lead to negative loyalty (Arora et al., 2021). Because of how consumers interact with service providers in the current digital era, loyalty has evolved and grown in importance (Naylor, 2016). Gender differences in consumer behavior and information processing have been studied in the past. Gender disparities in banks' convenience, service delivery strategies, and servicescape concerning service marketing were discovered by Garg et al. (2014). Gender differences in self-awareness materialism, aversion to risk, power, and societal contrast were examined by Keech et al. (2020). The study considers age, in addition to gender, as a moderating variable. Previous studies have found that age affects how technology is embraced and accepted (Wang et al., 2009). Furthermore, past studies (Stafford et al., 2004) discovered a relationship between the age of the customer base and their online purchasing behaviors. Khan et al. (2020) found that affective commitment and customer experience were moderated by age.

The association between AI acceptance factors alongside other brand-related constructs, such as affective engagement, personality, trustworthiness, attitudes, satisfaction, loyalty, and consumer-based equity in a brand, has been examined in earlier research (Brakus et al., 2009; Iglesias et al., 2011; Nysveen et al., 2013; Shamim and Muhammad, 2013; Nysveen and Pedersen, 2014). Studies that examine the effects of specific AI acceptance factors are scarce in any case. Analyzing TAM in a digital context is pertinent, considering how digital banking has transformed the banking sector.

Digital banking now includes more services than just online and mobile banking. Third, emerging countries are also starting to embrace digital banking, even in developed countries where it is a significant factor. A direct shift toward digital technologies is occurring among consumers in many developing nations. The research will be beneficial and insightful for brand managers working with developing countries. Finally, the moderating variables in this study include gender and age.

Concerning digital banking services, the study looks at age and gender as moderating factors against demographic variations in banking service user loyalty. The current study's primary objective is to investigate the relationship between tailored AI acceptance

factors and digital banking customer loyalty. With technology acceptance factors becoming increasingly important, managers in digital banking will be curious to learn about the connection between TAM and customer loyalty.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

According to Sharma (2017), digital banking converts all conventional banking services and activities into a digital setting. The technological demands of digital banking are very high. These demands include financial services innovation for consumer and business clients, encompassing regtech, data, blockchain, API, distribution channels, and mobile digital AI payment strategies (Sharma 2017). Digital banking, as a whole, refers to an information-sharing and transaction-based operating model that banks use to communicate with their customers through technology platforms. Digital gadgets linked to internet-connected computer software carry out this process. To transact, customers do not need to visit a bank's physical branch, and vice versa. Banks can complete transactions (such as tracking records and signing documents) without meeting with customers. Service marketing theories play a significant role in conceptualizing database management systems despite their technological connection (Van Looy et al., 1998). As a result, Hoehle et al. (2012) observe that although the use of database channels has increased significantly, a previous study may have been limited because of its fragmented findings and study methods and has yet to identify all customer-related issues.

The TAM theory is commonly acknowledged within information technology. Davis (1989) created TAM to theorize computer technology usage behavior. According to Ajzen and Fishbein (1975), the theory of reasoned action (TRA) is another well-known theory that explains the connection between users' beliefs, attitudes, and intentions. This theory was the source of inspiration for the Theory of Accepted Model. As per Chittur (2009) and Dwivedi et al. (2017), factors such as perceived ease of use and perceived utility can account for user acceptance. The TAM has been tested, improved, and expanded over the last 20 years to understand greater intent to use technology. Therefore, the TAM has been primarily used by researchers to comprehend digital banking practices (Al-Qeisi et al., 2014; Diatmika et al., 2016; Martins et al., 2014; Park et al., 2014; Pikkarainen et al., 2004). This study employed modified versions of the AI acceptance factors: Perceived Usefulness, Perceived Ease of Use, Perceived Risk, Perceived Trust, and Perceived Benefit.

2.1. Perceived Usefulness

The amount a person thinks information system technology could increase efficiency and save costs is perceived usefulness (Davis, 1989). The benefit of using chatbots and other AI-enabled devices could be best described as "perceived usefulness." As per Herrero and Martín (2017), it is the point at which a person considers that utilizing a specific system will enhance their ability to complete a task. Customers' perceptions of AI devices, like chatbots, are greatly influenced by their perceived usefulness. It demonstrates that people are more likely to embrace technology if they believe

it is functional. In order to gain their trust, banks that want their clients to use chatbots and other devices should speak convincingly and highlight the advantages of doing so, such as quicker and easier procedures, priority customer service, etc. User satisfaction should increase if users believe digital banking payments using AI technology are more beneficial than other payment methods.

2.2. Perceived Ease of Use

According to Davis (1989), a system's ease of use is measured by the manner in which a user feels it might be to use it. A system can improve work performance if it is easy to use. Studies reveal a direct and indirect relationship between intention and perceived usefulness, which influences perceived ease of use. The perceived ease of use of technological devices shapes users' attitudes toward and intention to use them. In order to reach a wide range of individuals, the developers of AI devices ought to determine how to make AI devices simple to use. Customer loyalty and customer satisfaction are impacted by perceived ease of use.

2.3. Perceived Risk

Customers' perception of potential adverse outcomes and apprehension about purchasing a good or service is known as perceived risk. Five categories of risks are present for customers: time, money, social, psychological, and performance. Every transaction entails some degree of risk. Clients should know these risks and adjust their plans and strategies appropriately. Consumers using AI-enabled devices for transactions may run into privacy violations. For instance, their address, phone number, or other personal information might be misused or disclosed to uninvited parties. Users' perceptions and the technology's actual performance are only partially consistent. Users often need to be aware of the risks connected to that inconsistency. Customers who feel a more significant risk is involved in a banking transaction are more likely to have a negative experience. The role of risk should be examined in technology research.

2.4. Perceived Trust

The degree of risk associated with financial transactions is assessed using trust, which is closely linked to user satisfaction. Users' perceptions of digital banking will naturally improve when trust grows. The transactional relationship between banks and customers is sustained by trust (Peha and Khamitov, 2004). Prior research revealed that perceived trust has a beneficial function in banking services. Digital banking discovered that the effective integration of new technologies into the service depends heavily on trust. It was established that a positive correlation exists between PU and PEOU and consumers' trust in online technologies. In light of these considerations, the current study suggests that perceived trust is the primary criterion for assessing customer loyalty across various banking contexts.

2.5. Perceived Benefit

The degree to which customers believe they will benefit more from an online transaction is perceived benefit. Compared to traditional banking methods, internet users report numerous advantages (such as greater convenience, cost and time savings, and a more comprehensive selection of products) (Margherio, 1998). Consumers may find using a specific system enjoyable and believe

utilizing new technology is entertaining. Users are more likely to return to a system they find enjoyable. Customers who think using a specific technology will benefit them are, more likely to engage in online transactions that lead to satisfaction and loyalty.

2.6. Customer Satisfaction

The post-activity measuring indicator, also known as satisfaction, evaluates customer sentiment about past purchases or services and their shopping or service-using experiences. Customer satisfaction levels are essential to gauge because they affect whether or not a customer decides to stick with a particular channel after experiencing a certain level of satisfaction with the distribution service. Oliver (1997) defined fulfillment as the customer's reaction to a product. In accordance to some researchers, a comprehensive post-purchase assessment constitutes customer satisfaction (Mano and Oliver, 1993; Fornell, 1992; Westbrook and Oliver, 1991). Shanker et al. (2003) distinguish between two categories of customer satisfaction: satisfaction with service interactions and overall customer satisfaction. While overall customer satisfaction results from time accumulation, satisfaction with service encounters is transaction-specific (Bitner and Hubbert, 1994; Oliver, 1997). Customers' relationships with banks via the Internet constitute the primary construct, so this psychological viewpoint is appropriate for the research setting. By the above interpretation, a customer's attitude toward the bank throughout their relationship leads to satisfaction (Casaló et al., 2008; Eshghi et al., 2007).

2.7. Customer Loyalty

Oliver (1999) defines customer loyalty as the unwavering determination to consistently purchase the same brand or assortment of goods or services in the future, despite outside influences and promotional efforts that might persuade them to shop elsewhere. According to Ranaweera and Prabhu (2003), loyalty comprises behavioral and attitudinal aspects. Purchase intentions were the inclination to buy a good or service later (Ranaweera and Prabhu, 2003). According to Arndt (1967), word-of-mouth refers to oral, interpersonal communication between a communicator and a recipient that the recipient understands to be non-commercial and relates to a company, exemplary, or service. The strength of a relationship and the desire to keep a relationship going are referred to as customer commitment (Bansal et al., 2003).

2.8. Interrelationship between AI Acceptance Factors, Customer Satisfaction and Customer Loyalty

This study relies on the following hypotheses, supported by the modified AI acceptance factors: perceived usefulness, perceived ease of use, perceived risk, perceived trust, and perceived benefits. According to Davis (1989), perceived usefulness and ease of use are the two main elements affecting a technology user's acceptance. Ease of use is the capacity to persuade someone that information system technology is straightforward. A person's perception of the cost-effectiveness and performance-enhancing potential of information system technology is known as perceived usefulness. In addition to the basic TAM model, five dimensions—content and website design, speed of delivery, security and privacy, accessibility and convenience—may be used to evaluate e-banking practices (Ahmad and Al-Zu'bi, 2011; Gorgani, 2016; Kazi, 2013; Poon, 2007). Considering what was previously

discussed, this study aims to find out how additional technology factors, like perceived risk, perceived trust, and perceived benefits, affect customers' satisfaction and loyalty when it comes to using AI-enabled digital banking services. Therefore, we propose the hypotheses that follows:

H_1 : Modified AI Technology Acceptance factors and customer satisfaction have positive relationship.

2.9. Relationship among Customer Satisfaction and Customer Loyalty

According to research by Douglas et al. (2017), customer loyalty and satisfaction are positively correlated. In order to gain client loyalty, banks are advised to impact customer satisfaction positively. (Prus and Brandt, 1995) thought satisfied customers would likely be more loyal, make repeat purchases, and recommend businesses to others. Customers rarely switch brands when they are more satisfied; in other words, they will stick with the brand's original goods or services (Shukla, 2004). Additionally, (Kim et al., 2008) established that customer satisfaction positively impacts consumer loyalty. We propose the following hypotheses:

H_2 : Customer satisfaction and customer loyalty have positive relationship.

H_3 : Modified AI Technology Acceptance factors and customer loyalty is mediated by satisfaction.

2.10. Gender being a Moderating Variable

Previous studies examining gender differences have looked at perceived risk (Laroche et al., 2000), processing of information (Darley and Smith, 1995), and making decision (Mitchell and Walsh, 2004). While women emphasize emotional value, men process information more analytically and selectively (Wood and Eagly, 2012; Rocha et al., 2005). Researchers contend that the relationship between word-of-mouth, satisfaction, and brand experience dimensions will be moderated by gender. Gender modifies the association between customer experience, loyalty, and emotional attachment, revealed by Khan and Rehman (2017). There is likely to be a gender difference in the degree of association between word-of-mouth, satisfaction, and brand experience dimensions. Consequently, the following hypotheses are proposed:

H_4 : The influence of modified AI Technology Acceptance factors on customer satisfaction is moderated by gender.

2.11. Age as Moderating Variable

According to Ye et al. (2019), age is a significant demographic variable in marketing research. It has been observed that younger consumers make greater use of digital products. Age may moderate the adoption and acceptance of technology, according to previous research (Venkatesh et al., 2003; Wang et al., 2009). According to Khan et al. (2020), age moderates the relationship between affective commitment and experience of customer. Thus, the relationship among customer experience dimensions, satisfaction, and word-of-mouth will be moderated by the age of the customer. Variations exist in the correlation in between various consumer age groups and customer experience, satisfaction, and word-of-mouth. It is, therefore, assumed that:

H_5 : The influence of modified AI Technology Acceptance factors on customer satisfaction is moderated by age.

Figure 1 depicts the suggested model that illustrates how AI technology influences customer satisfaction and impacts customer loyalty. The model for digital banking services considers modified AI acceptance factors, which are acknowledged as a critical component in the financial services context.

3. METHODOLOGY

3.1. Sample Profile

The study included 380 participants, by gender 200 of whom were female and 180 were male. By age, there were 90 respondents under 21 years, 196 between 21 and 39 years, 75 between 40 and 59 years, and 19 over 60 years old.

3.2. Data Collection

With a structured questionnaire, a single cross-sectional survey design was employed in the study. Through an online survey, information was gathered from Indian digital banking clients. Practitioners with relevant expertise determined the content validity prior to the pilot study starting. And then they carried out the pilot study. Data from 402 clients were gathered using a purposive sample technique. The study excluded 22 incomplete responses from a total of 402 responses. For the additional analysis, 380 responses in total were used.

3.3. Measurement of Variables

Customer satisfaction, loyalty, and AI acceptance factors were the three variables used in the study. The Davis et al. (2003) scale was used as the model for the modified AI acceptance factors, which include perceived usefulness, perceived ease of use, perceived risk, perceived trust, and perceived benefits. Alonso-Dos-Santos et al. (2020) and Oliver (1989) developed the customer loyalty scale, while Fornell (1992) and Oliver (1980) developed the satisfaction scale. Table 1 provides specific dimensions and descriptive statistics. The reliability and construct validity values are displayed in Table 2. According to Nunnally (1978), all calculated values exceed the minimum threshold level. In addition, the item factor loadings are higher than the significance level of 0.50 (Hulland, 1999).

Convergent and discriminant validity need to be confirmed next. To assess convergent validity, the “Average Variance Extracted (AVE)” value was calculated. According to Hair et al. (2006), the AVE value, or the number of related variances between the indicators for a construct, ought to be greater than 0.50. Each construct meets the convergent validity requirements. The Fornell and Larcker Criterion (1981) examined the constructs’ discriminant validity. There is a larger inter-correlation between the construct and the other variable than the squared root of the AVE.

Figure 1: The proposed model illustrates the relationships among customer satisfaction, customer loyalty, and AI acceptance factors. The moderating effect is shown by the dot-line

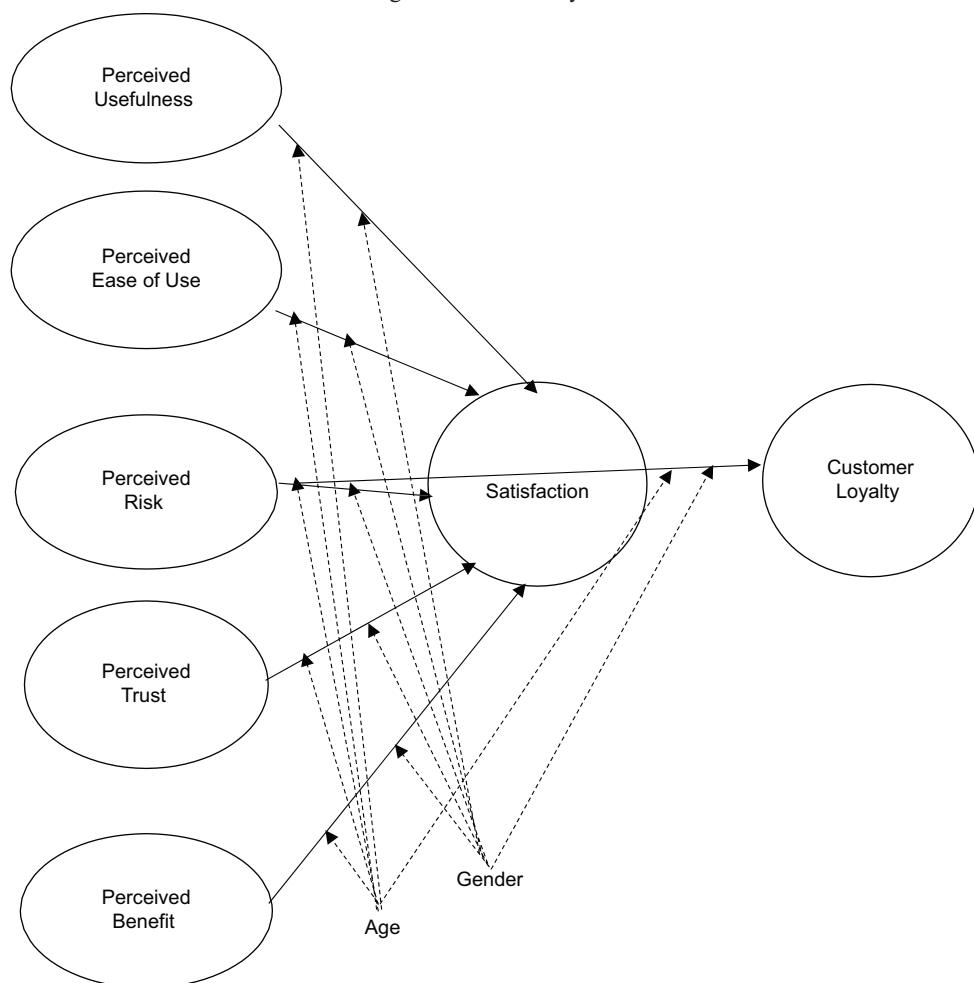
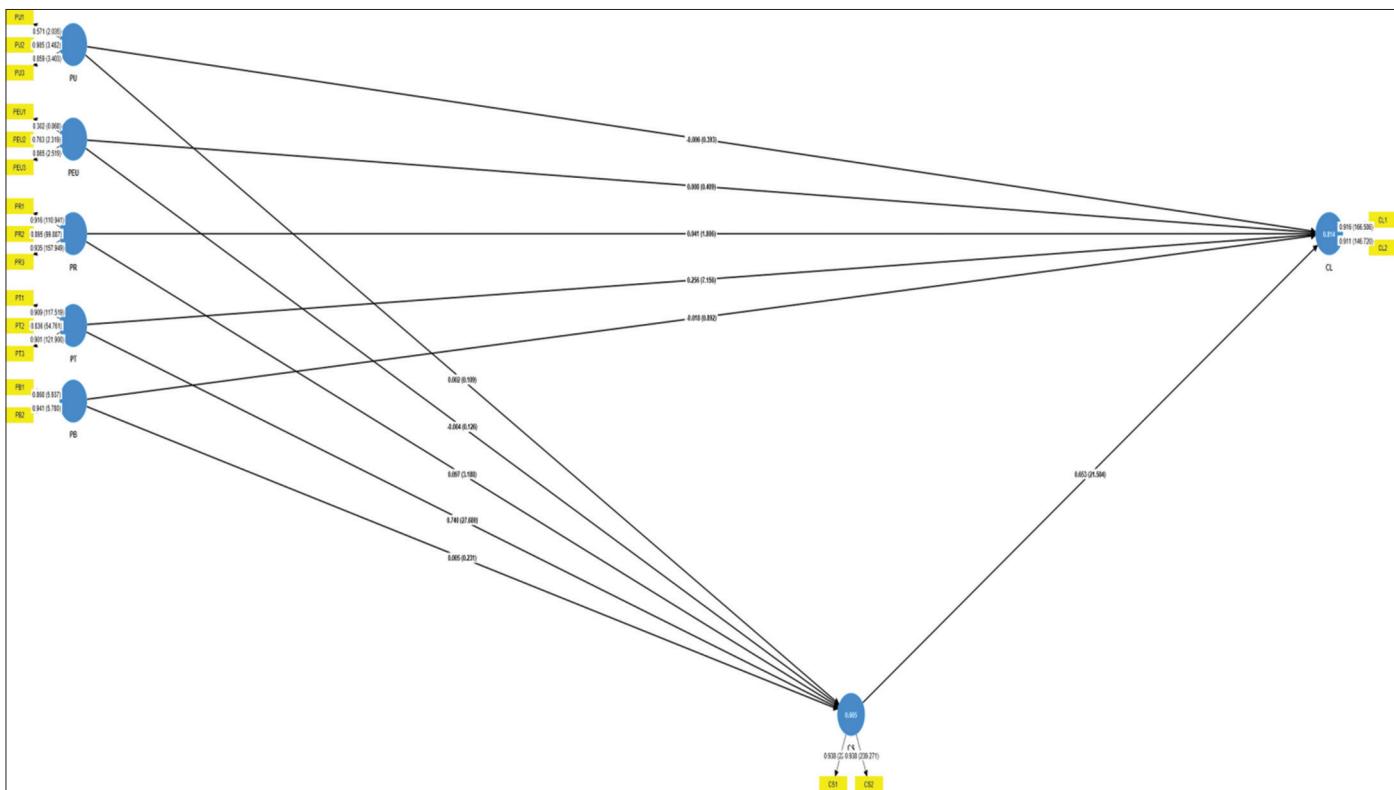


Figure 2: SmartPLS4-PM demonstrating the relation between customer loyalty, customer satisfaction, and AI acceptance factors**Table 1: The details of the items, source, mean, standard deviation, and AI acceptance factors are listed below**

S.No.	Factors	Source	Items	Mean	Standard Deviation
1	Perceived	Davis et al.	PU1	3.48	0.94
2	Usefulness	(1989)	PU2		
3	(PU)		PU3		
4	Perceived	Davis et al.	PEOU1	3.35	0.90
5	Ease of Use	(1989)	PEOU2		
6	(PEU)		PEOU3		
7	Perceived	Yang et al.	PR1	3.04	0.92
8	Risk (PR)	(2015)	PR2		
9			PR3		
10	Perceived	Owusu	PT1	3.16	0.94
11	Trust (PT)	Kwatem et al. (2019)	PT2		
12			PT3		
13	Perceived	Owusu et al.	PB1	3.18	0.93
14	Benefit (PB)	(2020)	PB2		
15	Customer	Sikdar et al.	CS1	3.54	0.89
16	Satisfaction	(2015)	CS2		
17	Customer	Alonso-Dos-Santos et al. (2020)	CL1	3.49	0.95
18	Loyalty (CL)		CL2		

Each construct's strong discriminant validity is shown in Table 3. Therefore, the variables in the research model are appropriate for assessing the hypotheses (refer Figure 2).

4. RESULTS

4.1. Structural Model Assessment

According to Chin (1998), Partial Least Squares (PLS) is a variance-based method for concurrently analyzing the associations between the variables in structural equation modeling. Without mediation, all constructs had a statistically significant positive relationship with customer loyalty (Table 3 and Figure 3). 73.40 percent of customer loyalty constructs explained the variation. The study used the integrated assessments for the mediation effect, as suggested by Iacobucci and Duhachek (2003).

Table 2 shows the result of Cronbach's alpha, composite reliability, and AVE of all constructs that meet the construct reliability and validity. According to Hair et al. (2013), each construct's average variance extracted (AVE) threshold value needs to be >0.5 . Cronbach's α and composite reliability are acceptable at 0.7 (Hair et al., 2013).

According to Hair et al. (2013) and Lee et al. (2011), the model's explanatory power can be indicated by the R^2 value. In Table 4, the R^2 values of exogenous variables such as customer satisfaction and customer loyalty are 0.625 and 0.605, respectively, drawn from SmartPLS4-PM, thus indicating the model's significance and substantive explanatory power.

Table 3 shows the result of all constructs that meet the Discriminant Validity. Hair et al. (2019), state that the Heterotrait-Monotrait

Table 2: Construct reliability and validity

Construct	No. of items	Cronbach's Alpha	Composite reliability	Average variance extracted (AVE)
PU	3	0.88	0.94	0.83
PEU	3	0.89	0.93	0.81
PR	3	0.82	0.88	0.74
PT	3	0.83	0.92	0.78
PB	2	0.87	0.91	0.79
CS	2	0.84	0.92	0.76
CL	2	0.86	0.93	0.74

Figure 3: Below figure illustrates the Path coefficients for AI acceptance factors, customer satisfaction, and customer loyalty. The moderating effect is shown by the dot-line

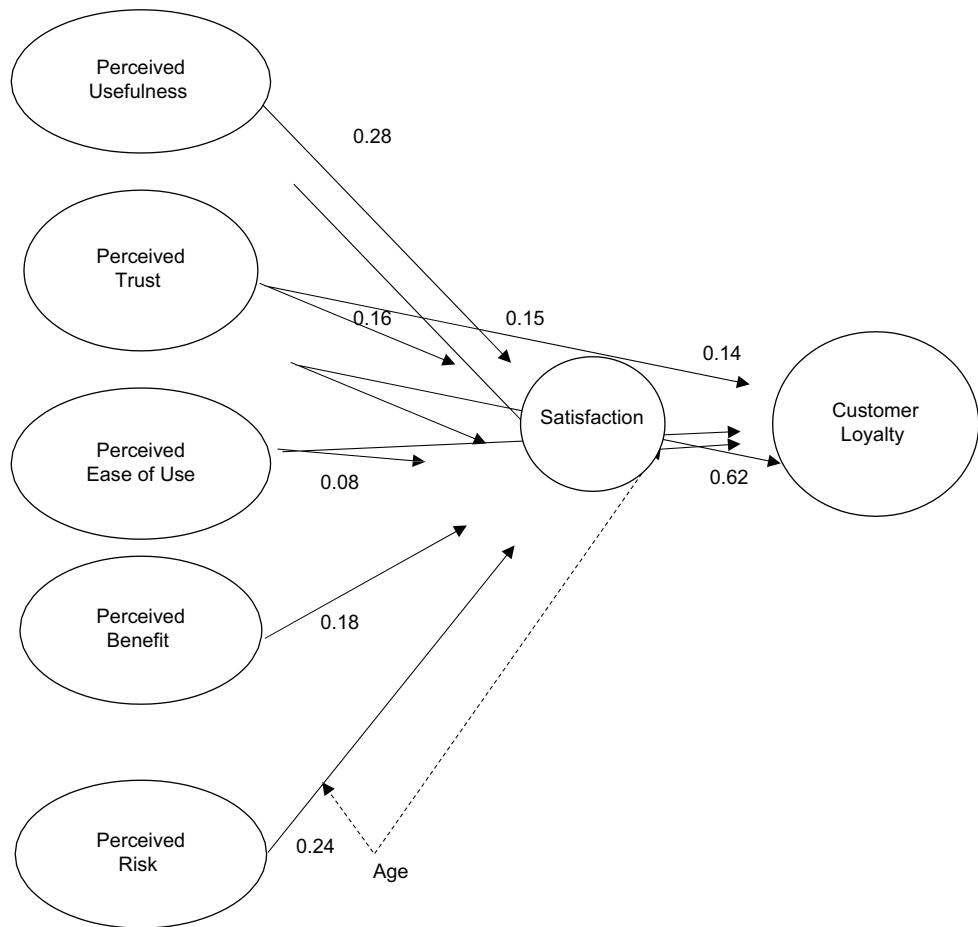


Table 3: Discriminant Validity-HTMT

Construct	PU	PEU	PR	PT	PB	CS	CL
PU	0.83						
PEU	0.65	0.82					
PR	0.58	0.55	0.75				
PT	0.59	0.48	0.67	0.78			
PB	0.33	0.54	0.48	0.33	0.80		
CS	0.62	0.80	0.56	0.75	0.49	0.82	
CL	0.81	0.64	0.59	0.53	0.63	0.80	0.84

Table 5: Multicollinearity statistics

Items	VIF
PU1	1.754
PU2	2.038
PU3	2.894
PEU1	1.732
PEU2	1.677
PEU3	1.633
PR1	2.506
PR2	2.777
PR3	2.79
PT1	2.357
PT2	1.859
PT3	2.854
PB1	1.799
PB2	1.99
CUS1	1.776
CUS2	1.889
CL1	1.812
CL2	1.812

Table 4: Coefficient of Determination (R²)

Construct	R-square	R-square adjusted
CS	0.625	0.612
CL	0.605	0.591

(HTMT) ratio of correlations ought to be lower than the 0.85 threshold.

According to Hair et al. (2011), a VIF value of 5 or higher in the PLS-PM context indicates a possible collinearity issue. The present study model has no collinearity issue, as shown by all of the VIF values in Table 5 that are <5.

Table 6 indicates the measurement model without mediator customer satisfaction, and the results were significant as the path coefficients fulfill the threshold value between 0 and 1.

Table 7 indicates that all constructs' factor loading results meet convergent validity requirements as all indicators have loading factor values >0.70 . The study's outcomes satisfied the Smart PLS outer model test.

It is necessary to fulfill the requirements for the mediating test, which include that the mediator significantly influences the

criterion variable and that predictors significantly influence both of them (Table 8). The Z-test developed by Sobel (1982) was employed to confirm the research model's mediation effect. If the Z-value at the 1% significance level is >2.58 , there is an indirect effect. An indirect effect is present at the 1% significant level (Z value = 2.98; $P < 0.01$). The results indicate that perceived risk and ease of use indirectly impact customer loyalty; complete mediation for perceived benefit, perceived usefulness, and perceived trust is shown in Tables 8 and 9. The relationship between the modified TAM dimensions and satisfaction showed a more substantial impact on perceived usefulness ($\beta = 0.28$) and benefits ($\beta = 0.24$) among the path coefficients. There was a higher path coefficient ($\beta = 0.62$) from customer loyalty to satisfaction.

Thus, study incorporates the emerging marketing aspects of AI acceptance factors by connecting the dimensions of technology

Table 6: Measuring model without a mediator

Relationship	Coefficients	Standard error	T Statistics	Results
PU ->CL	0.08	0.02	2.14	Significant
PEU ->CL	0.23	0.05	3.00	Significant
PR -> CL	0.19	0.07	2.42	Significant
PT ->CL	0.07	0.04	2.32	Significant
PB ->CL	0.22	0.05	3.53	Significant

Table 7: Outer Loadings

Items	PU	PEU	PR	PT	PB	CS	CL
PU1	0.792						
PU2	0.92						
PU3	0.882						
PEU1		0.833					
PEU2		0.807					
PEU3		0.792					
PR1			0.916				
PR2			0.895				
PR3			0.935				
PT1				0.909			
PT2				0.837			
PT3				0.9			
PB1					0.886		
PB2					0.928		
CS1						0.938	
CS2						0.937	
CL1							0.915
CL2							0.912

Table 8: A mediator-based measurement model

Constructs	Coefficients	Standard Error	T Statistics	Results	Hypotheses
PU -> CS	0.28	0.07	3.98	Significant	H_{1a} supported
PU -> CL	0.10	0.05	1.76	Insignificant	
PEU -> CS	0.16	0.07	2.15	Significant	H_{1b} supported
PEU -> CL	0.15	0.06	2.24	Significant	
PR->CS	0.08	0.04	1.99	Significant	H_{1c} supported
PR -> CL	0.14	0.06	2.06	Significant	
PT -> CS	0.18	0.07	2.35	Significant	H_{1d} supported
PT -> CL	-0.03	0.05	-0.70	Insignificant	
PB -> CS	0.24	0.06	3.76	Significant	H_{1e} supported
PB -> CL	0.07	0.04	1.56	Insignificant	
CS -> CL	0.62	0.06	10.10	Significant	H_2 supported

acceptance from the perspective of digital banking, which is quickly becoming a critical differentiator for a competitive advantage. The moderating effect of gender on modified AI acceptance factors, customer loyalty, and satisfaction is shown in Table 10. The findings show that the relationship is not moderated by gender. For females, satisfaction was impacted by perceived Usefulness ($\beta = 0.373$), perceived benefit ($\beta = 0.215$), and customer loyalty ($\beta = 0.796$) as a result of satisfaction. The moderating effect of age on the AI acceptance factors, customer loyalty, and satisfaction is displayed in Table 11. Two age groups were created: one for each age group, lower and higher. The results show that the relationship between perceived benefit, loyalty, and customer satisfaction is moderated by age. Perceived Usefulness ($\beta = 0.332$), perceived benefit ($\beta = 0.426$), and customer loyalty ($\beta = 0.678$) were found to have an impact on satisfaction for the lower age group. The factors that affected satisfaction were specifically perceived benefit ($\beta = 0.146$), perceived risk ($\beta = 0.197$), perceived ease of use ($\beta = 0.228$), and perceived usefulness ($\beta = 0.228$). For the older age group, customer loyalty was impacted by satisfaction ($\beta = 0.881$). Figure 3 shows the outcomes along with the path coefficient values.

5. DISCUSSIONS AND IMPLICATIONS

This study offers insightful theoretical and practical contributions. First, the banking industry in India has been selected for this study to examine how AI affects customer experience, satisfaction, and loyalty. The government places great importance on the banking sector, particularly in light of the numerous contemporary initiatives implemented, such as financial inclusion and sustainable finance which attempts to make more essential and affordably priced financial goods and services available to individuals and businesses. To achieve technically advanced banking, financial services must attract more customers. The application of AI technology in financial services is crucial for providing customers with positive experiences, which influences customer satisfaction and loyalty and draws customers to use those services, according to the study's findings.

The research outcomes mentioned above such as Cronbach's alpha, composite reliability, and AVE, Discriminant validity, R^2 value, Outer Loadings, Multicollinearity (VIF), Beta value, path coefficients, mediated measurement models and multigroup analysis of moderator models are all significant and satisfy the

threshold limits. Hence, the results clearly comprehend the impact of modified AI acceptance factors and present a comprehensive image of how altered TAM dimensions may affect customer loyalty and satisfaction.

Researchers and practitioners recognize modified AI acceptance factors as significant in influencing consumer behavior. Over time, the idea of TAM dimensions has changed and gained significance. Marketing managers understand that banking strategies and customer loyalty must be coordinated (Clatworthy, 2012). The current study put forth the theory that certain modified AI acceptance factors affect customer satisfaction, influencing customer loyalty for services related to digital banking. A combined brand experience's effects on brand personality, satisfaction, and loyalty were examined by Brakus et al. (2009). Perceived benefit, perceived risk, and perceived trust were added to the other TAM dimensions by Nysveen et al. (2013) after looking at each item separately. Although previous research has examined the effects of aggregated TAM, this paper investigates the impact of individual modified AI acceptance factors on customer loyalty and satisfaction. Given the ongoing significance of customer loyalty, managers understand that providing a better brand experience will lead to customer loyalty through satisfaction. Customer loyalty is more important for gaining new customers than traditional marketing channels because it is an informal form of customer communication. Customer loyalty is anticipated to increase with increased customer satisfaction. Perceived usefulness, perceived trust, and perceived benefit show complete mediation through satisfaction to customer loyalty.

Table 9: Customer loyalty and AI acceptance factors are mediated by satisfaction

Constructs	Hypotheses Support	Mediation	Hypotheses
PU -> CS -> CL	Yes	Full	H3 _a
PEU -> CS-> CL	Yes	Partial	H3 _b
PR -> CS -> CL	Yes	Partial	H3 _c
PT -> CS -> CL	Yes	Full	H3 _d
PB -> CS -> CL	Yes	Full	H3 _e

according to our study's analysis of the model with and without a mediator. Customer loyalty was partly explained by the mediation effect of customer satisfaction between perceived ease of use and perceived risk.

Research findings validate the hypotheses, according to which satisfaction partially mediates perceived risk and ease of use and fully mediates perceived usefulness, perceived trust, and perceived benefit regarding customer loyalty. Reducing perceived risk adds secure value to banking by implementing appropriate privacy and security measures. Digital banking customers can access exciting and captivating events that enhance the user's perception of ease of use. Incorporating aesthetically pleasing brand elements can help brand managers increase customer loyalty and satisfaction. Appropriate financial advisory services would be rendered by utilizing the digital banking environment. It can use blogs, video conferences, online discussion boards, and aspiration-building to obtain suitable banking and financial guidance. Digital financial services refer to online platforms for managing loans, investments, savings, and payments. We can add an affective component by focusing on specific life events related to financial decision-making.

The association between the modified AI acceptance factors, customer loyalty, and satisfaction is not moderated by gender.

The findings of Ladhari and Ledrec (2013), who demonstrated that gender has no moderating effect on the relationships between online service quality, trust, satisfaction, and loyalty, are as per our findings. Age is one of the key factors influencing the acceptance of digital technology. Friemel (2016) shows that the probability of using the internet falls by 8% for each year that passes. Our study considered age as a moderator since it has a more significant impact. The findings of Dzogbenku et al. (2021) verify that older consumers are more concerned with security, while teenage consumers are more concerned with convenience. Khan et al. (2020) found that the association between affective commitment and customer experience is moderated by age.

Table 10: Gender as a moderator in multigroup analysis

Constructs relationship	Female		Male		Difference P-value	Hypotheses Support
	β	P-value	β	P-value		
PU ->CS	0.373	0.000	0.175	0.100	0.154	H _{4a} not supported
PEU-> CS	0.106	0.332	0.203	0.06	0.547	H _{4b} not supported
PR-> CS	0.164	0.100	0.175	0.054	0.960	H _{4c} not supported
PT-> CS	0.023	0.803	0.241	0.02	0.062	H _{4d} not supported
PB-> CS	0.215	0.041	0.212	0.010	0.987	H _{4e} not supported
CS-> CL	0.796	0.000	0.865	0.000	0.156	H _{4f} not supported

Table 11: Age as a moderator in multigroup analysis

Constructs relationship	Low age		High age		Difference P-value	Hypotheses Support
	β	P-value	β	P-value		
PU-> CS	0.332	0.015	0.228	0.013	0.467	H _{5a} not supported
PEU-> CS	0.003	0.506	0.254	0.003	0.056	H _{5b} not supported
PR-> CS	0.074	0.575	0.197	0.015	0.309	H _{5c} not supported
PT-> CS	0.002	0.930	0.152	0.072	0.297	H _{5d} not supported
PB-> CS	0.426	0.003	0.146	0.028	0.038	H _{5e} supported
CS-> CL	0.678	0.000	0.881	0.000	0.000	H _{5f} supported

The findings imply that age is a mediator in the relationship between customer loyalty and satisfaction and the AI acceptance factors. Therefore, when creating marketing strategies, managers need to consider age. Virtual reality and Simulation are just a few tools marketers should utilize to connect with younger consumers and improve their perception of their usability. Younger clients give positive answers to relationship managers who pose digital questions. To answer consumer questions, several banks now provide video interfaces.

Marketers can use functional brand quality-related interventions to target senior consumers. Through AI acceptance factors, current customers could be joined to digital banking through brand differentiation strategies. Modified TAM dimensions can be linked to customer loyalty and satisfaction through the handholding and trust aspects. Furthermore, the secured associations boost customer loyalty by raising customer satisfaction.

5.1. Artificial Intelligence and Customer Loyalty

While many studies have examined marketing management and artificial intelligence, very few have concentrated primarily on customer loyalty. In a recent study that investigated the effect of AI service quality on customer loyalty, Chen et al. (2023) examined at the possible advantages of artificial intelligence (AI) chatbots for customer retention. It was discovered that through affective trust, perceived value, cognitive trust, and satisfaction, AI chatbots have a positive impact on customer loyalty and service quality.

Prentice et al. (2020) examined in another study the connection between customer satisfaction and loyalty, artificial intelligence, and employee service quality. The survey was carried out in various Portuguese hotels, with a particular emphasis on departing guests who had dealt with AI and employee services related to the hotels under investigation. Customer satisfaction and loyalty were found to be positively impacted by AI and employee service quality. However, AI's impact became negligible and negative when both AI and employee services declined within the same scenario.

Hanifin (2019) explored the implications of artificial intelligence for customer loyalty marketing in a Forbes leadership report. The CEO of Hanifin Loyalty LLC, Bill Hanifin, said that his company's research revealed that in 2017, 80% of businesses had incorporated augmented reality (AR)—machine learning or deep learning—into their production systems. Another 30% were planning to increase their investment in AI. The same survey also discovered that 62% of businesses choose to invest in AI because they want to improve customer experiences.

As a result, management agrees that AI positively affects customer loyalty since it improves service delivery and overall customer loyalty (Hanifin, 2019).

6. CONCLUSION

The present study concludes that AI positively and significantly impacts customers' satisfaction and loyalty. The influence of AI is partially mediated in a positive way by satisfaction. Consequently, banks that wish to enhance customer loyalty and satisfaction must

employ AI to customize their offerings of products and services. Thus, integrating the bank's products and services according to the customer's needs and convenience raises customer satisfaction and loyalty.

Prioritizing sustainable development requires balancing innovation, security, competition, and customer satisfaction. With this strategy, optimum customer satisfaction can be attained and maintained, fostering increased customer loyalty.

The study has substantial applications and provides practitioners with valuable insights, but it has flaws. These restrictions will affect subsequent studies. There are gaps in the study that call for more research to be done. For instance, only one industry and one nation were the study subjects, complicating the findings' generalizability. Therefore, to improve the generalizability of the findings, it is suggested that more research is required in different industries and markets.

First, even though the current study looked at the relationship between satisfaction, customer loyalty, and individual TAM dimensions, we recommend that other technology acceptance model dimensions be included in future research. Second, cross-cultural replication will improve the study's generalizability since the study was conducted in India. Third, to expand the sample size and incorporate additional industry types, additional resources will be required for future research. Fourth, future research should concentrate on negative technology acceptance factors as well as positive ones, as the current study concentrated on the former. Managers can get guidance from the research on negative factors associated with technology adoption. Finally, since the data are self-reported, more objective measures should be used in future research, such as gathering transaction data and other customer-related information like occupation and education. In conclusion, moderating variables such as occupation and education could be considered in future research.

Future research should focus on the specific variables used to measure customer satisfaction and loyalty to better understand how artificial intelligence affects these variables. This recommendation arises from the mentioned limitations. Such research should also be specific about the products or services under investigation, as this will limit the applicability of the results to particular product or service categories.

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