

CUSTOMER TRUST IN AI-ENABLED DIGITAL BANKING IN INDIA

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ABSTRACT:

Artificial Intelligence (AI) has become central to digital banking transformation in India. AI-driven systems—such as fraud detection, chatbots, automated credit scoring and personalized financial recommendations—enhanced customer experience and offer efficiency. However, customer trust remains a critical determinant of adoption and continued usage. This paper examines the key drivers of customer trust in AI-enabled digital banking in India, including perceived security, privacy, usefulness, ease of use, transparency, awareness, and institutional reputation. Demographic influences and challenges related to fraud, algorithmic bias, and explainability are explored. The paper concludes with strategies for strengthening customer trust, highlighting the role of ethical AI governance and digital literacy.

Keywords: AI in banking, customer trust, digital banking, India, explainability, security, TAM

1. Introduction:

India is now one of the fastest-growing digital banking markets in the world thanks to rapid digitalization, government programs like Digital India, and the growth of the Unified Payments Interface (UPI). India is now one of the fastest-growing digital banking markets in the world thanks to rapid digitalization, government programs like Digital India, and the growth of the Unified Payments Interface (UPI). Artificial Intelligence (AI) is now deeply integrated into banking processes, from customer service to risk assessment (Nass & Wong, 2020). Despite its advantages, the widespread adoption of AI-enabled digital banking depends heavily on customer trust. Trust is essential because AI systems autonomously process sensitive financial information and may make decisions affecting customers' financial well-being (Mayer et al., 1995). The present paper examines how customer trust is formed and maintained in AI-enabled digital banking in India.

2. Review of Literature

2.1 Trust as a Multidimensional Construct

Studies consistently show that customer trust in AI-enabled digital banking depends on *competence*, *integrity*, and *benevolence* of the system. Indian customers particularly value accuracy and reliability in automated services such as chatbots and fraud detection (Bharti, 2023). Perceived fairness and ethical behaviour further strengthen adoption intentions (Sharma & Narayan, 2022).

2.2 Privacy, Security, and Risk Perception

Privacy concerns and perceived risks remain the strongest barriers to trust in AI-based banking applications in India. Research finds that customers fear data misuse and identity theft, making visible security safeguards essential for trust formation (Gupta & Bansal, 2023). AI-driven fraud detection can enhance trust when effectively communicated (Mehta & Raj, 2023).

2.3 AI Explainability and Transparency

Opaque "black-box" AI systems weaken customer confidence, especially in loan or credit decisions. Studies emphasise that transparent explanations, data usage disclosures, and simple appeal mechanisms significantly improve perceived fairness and trust (Arora & Singh, 2024). Explainability has become a central requirement for customer acceptance of automated financial decisions.

2.4 Institutional Trust and Brand Reputation

Customers often transfer their trust in traditional banks to the AI technologies those banks deploy. Research shows that reputable Indian banks—especially those with strong digital credibility—generate higher trust in automated systems (Kumari & Joseph, 2024). However, institutional trust alone cannot overcome concerns about privacy or unfair algorithms (Roy & Sinha, 2024).

2.5 Customer Experience and Usability of AI Services

Positive user experiences with AI tools—such as smooth app navigation, responsive chatbots, and personalized recommendations—enhance customer trust. Usability strengthens perceptions of reliability and reduces technology-related anxiety (Nayak & Rout, 2022). Conversely, chatbot errors or poor interface design quickly erode trust and discourage repeated use (Saha, 2023).

3. AI in Digital Banking: An Overview

AI in digital banking has evolved significantly from its early reliance on rule-based automation to more intelligent and adaptive systems. During the initial phase (2000–2015), banks primarily adopted expert systems for tasks such as credit scoring, fraud detection, and back-office automation. This period focused on improving accuracy, standardising routine workflows, and reducing manual intervention. However, adoption progressed slowly due to limited digital infrastructure, scarce data availability, high implementation costs, and lower levels of digital literacy among users.

In the present landscape, AI is deeply embedded in customer-facing and operational banking processes. Indian banks such as SBI, HDFC, ICICI, Kotak, and Axis now use natural language processing, real-time analytics and machine learning to deliver enhanced services. AI currently powers 24/7 multilingual chatbots, personalised financial recommendations, biometric authentication, real-time fraud detection, and automated loan underwriting. These advancements have made digital banking faster, more secure, and more user-friendly, with a strong emphasis on predictive analytics, customer engagement, and seamless digital experiences supported by widespread smartphone and UPI usage.

Looking ahead, AI in banking is expected to move toward greater autonomy, transparency, and human-AI collaboration. Future developments include the rise of generative AI for conversational banking and document automation, explainable AI to ensure fairness and accountability in credit and risk models, and hyper-personalised financial coaching tailored to individual behaviour. AI-driven open banking ecosystems and autonomous finance will further transform how consumers manage savings, investments, and payments. These advancements will require strong governance frameworks focusing on ethical AI use, privacy protection, algorithmic fairness, and cybersecurity, ultimately creating a balanced environment where difficult financial decisions are guided by human specialists while AI manages data-intensive chores.

4. Research Gap

Despite growing adoption of AI in digital banking, limited research examines how customer trust develops over time, especially beyond urban and digitally literate

users. Existing studies rarely explore the role of explainable transparency, AI and customer recourse in shaping trust. The impact of emerging technologies like decision-making and generative AI on trust remains largely unstudied. There is also a lack of holistic frameworks combining technological, psychological, and regulatory factors to fully explain trust in AI-enabled banking.

5. Need for the Study

As AI becomes deeply integrated into digital banking, understanding customer trust has become essential for ensuring successful adoption and long-term usage. Although banks increasingly rely on AI for personalization, security, and automated decision-making, many customers still express concerns about data privacy, fairness, transparency, and reliability. India's diverse demographic landscape—ranging from highly tech-savvy users to rural and low-digital-literacy populations—further highlights the need to examine how trust is formed and sustained across different groups. This study is therefore needed to identify the key factors influencing trust, evaluate customer perceptions of AI-driven banking services, and provide insights that can help banks design more transparent, ethical, and user-centred AI systems.

6. Objectives of the Study

1. To examine the key factors influencing customer trust in AI-enabled digital banking services.
2. To analyse customer perceptions of security, privacy, transparency, and reliability in AI-driven banking.
3. To evaluate customer satisfaction and their overall experience with AI-enabled digital banking services.

7. Hypothesis:

1. Customer trust has a significant positive relationship with customer satisfaction in AI-enabled digital banking services.

8. Scope of the Study

Customers' trust in AI-enabled digital banking services, particularly in Sindhanur Taluk, is the main emphasis of this study. It investigates key factors such as security, privacy, transparency, reliability, and customer experience associated with AI-based features including chatbots, automated loan processing, biometric authentication, and fraud detection. The study is limited to digital banking users residing in Sindhanur Taluk who actively interact with AI-driven banking services. It evaluates customer perceptions rather than the technical performance of AI systems. The findings aim to provide insights relevant to banks and policymakers for improving satisfaction and trust in AI-enabled digital banking within the local context of Sindhanur Taluk.

9. Methodology

This study uses a quantitative survey approach and a descriptive research design to investigate the variables affecting consumer satisfaction, perception, and trust in AI-enabled digital banking services in Sindhanur Taluk. A standardized questionnaire with five-point Likert scale items on trust, security, privacy, transparency, reliability, and happiness was used to gather primary data from active users of digital banking. Convenience sampling was used to choose a sample of fifty respondents. To examine the connection between customer happiness and trust, data was analysed using regression, correlation, and descriptive statistics. Despite the study's focus on Sindhanur Taluk, analytical generalization is used to offer insights applicable to other semi-urban locations throughout India.

10. Analysis of Data and Outcomes

Table No. 1: Respondents' Demographic Profile			
Demographic	Category	Frequencies	Percentage
Age Group	Below 24	4	8%
	25 - 34	31	62%
	35 - 44	15	30%
	Total	50	100 %
Gender	Male	40	80%
	Female	10	20%
	Total	50	100 %
Education	PUC	1	2%
	Graduation	11	22%
	Post Graduation	38	76%
	Total	50	100 %
Occupation	Student	6	12%
	Corporate Employee	36	72%
	Government Employee	8	16%
	Total	50	100 %

Source: SPSS Output

Table 1 displays the respondents' demographic information. A total of 50 customers using AI-enabled digital banking services in India participated in the study. The sample is predominantly young, with 62% belonging to the 25-34 age group, indicating that AI-driven banking is widely adopted by younger adults. The gender distribution shows that 20% of the respondents are female, while 80% are male. Most participants are highly educated, with 76% holding postgraduate degrees, and a majority (72%) are corporate employees. Overall, the demographic profile suggests

that young, educated, and professionally employed individuals form the primary user group of AI-enabled digital banking services.

Reliability Table (Cronbach's Alpha)

Construct	No. of Items	Cronbach's Alpha
Customers' Trust	4	0.908
Security & Privacy	4	0.921
Transparency & Reliability	4	0.947
Customers' Experience	4	0.927
Customers' Satisfaction	4	0.949

Strong internal consistency among the measuring items was indicated by Cronbach's alpha values for all constructs exceeding the suggested cutoff of 0.70. Customers' Satisfaction ($\alpha = 0.949$) and Transparency & Reliability ($\alpha = 0.947$) demonstrated the highest reliability, while the remaining constructs—Security & Privacy ($\alpha = 0.921$), Customers' Experience ($\alpha = 0.927$), and Customers' Trust ($\alpha = 0.908$)—also showed excellent reliability. These findings attest to the statistical reliability of every scale employed in the investigation.

Table No. 2: Customers' Trust in AI Banking					
Statements	N	Min.	Max.	Mean	Std. Dev.
I trust AI-enabled digital banking services to work reliably.	50	1	5	3.94	1.24
I believe AI improves the accuracy of banking transactions.	50	1	5	3.74	1.29
I feel confident using AI-driven features during banking activities.	50	1	5	3.70	1.33
I believe banks use AI in a fair and responsible manner.	50	1	5	3.72	1.33

Source: SPSS Output

The descriptive statistics show that respondents exhibit a moderately positive level of trust toward AI-enabled digital banking services. The highest mean score was observed for the belief that AI-driven banking works reliably ($M = 3.94$, $SD = 1.24$), followed by the perception that AI enhances transaction accuracy ($M = 3.74$). Confidence in using AI features ($M = 3.70$) and trust in the fair use of AI by banks ($M = 3.72$) also received similar mean ratings. Overall, the results indicate that customers hold a favourable, though not strongly overwhelming, trust in AI-supported digital banking processes.

Table No. 3: Customers' Security & Privacy in AI Banking					
Statements	N	Min.	Max.	Mean	Std. Dev.
I feel my personal data is safe when using AI-enabled banking services.	50	1	5	3.74	1.17
AI-based systems protect my account from fraud and scams.	50	1	5	3.74	1.24
I believe the bank uses my data responsibly.	50	1	5	3.84	1.23
I feel safe about my data privacy when using AI-enabled banking services	50	1	5	3.64	1.14

Source: SPSS Output

The results indicate a generally positive perception of security and privacy in AI-enabled digital banking. The respondents were most in agreement with the statement that banks use their data responsibly ($M = 3.84$, $SD = 1.23$), suggesting moderate trust in institutional data practices. Perceptions of data safety and fraud protection also yielded similar mean scores (both $M = 3.74$), while feelings of overall data privacy security rated slightly lower ($M = 3.64$). Overall, customers display a reasonable level of confidence in the security and privacy features of AI-driven banking systems, though perceptions remain moderately strong rather than highly favourable.

Table No. 4: Customers' Transparency & Reliability in AI Banking					
Statements	N	Min.	Max.	Mean	Std. Dev.
AI-based services clearly explain how decisions are made.	50	1	5	3.94	1.25
The information provided by AI systems is accurate and trustworthy.	50	1	5	3.86	1.18
Banks are transparent about how AI uses customer data.	50	1	5	3.92	1.14
I can easily understand AI recommendations or actions.	50	1	5	3.78	1.13

Source: SPSS Output

The findings demonstrate that respondents hold moderately positive perceptions regarding the transparency and reliability of AI-enabled banking services. The Strongest agreement was observed for the clarity of AI decision-making mechanisms ($M = 3.94$), followed closely by transparency in the bank's use of customer data ($M = 3.92$). Perceptions of the accuracy and trustworthiness of AI-generated information also remained strong ($M = 3.86$). Respondents showed slightly lower but still favourable confidence in their ability to understand AI recommendations ($M = 3.78$).

Overall, the results indicate that customers generally perceive AI-driven banking systems as transparent and reliable, although there remains some scope for improving clarity and communication.

Table No. 5: Customers' Experience in AI Banking					
Statements	N	Min.	Max.	Mean	Std. Dev.
AI-based services make banking faster and more convenient.	50	1	5	4.02	1.24
Chatbots respond quickly and provide helpful solutions.	50	1	5	3.74	1.21
AI makes my banking experience smooth and hassle-free.	50	1	5	3.72	1.13
I find AI features easy to use and interact with.	50	1	5	3.92	1.18

Source: SPSS Output

The results indicate that AI-enabled digital banking services are generally well-received by clients. The highest-rated aspect was the convenience and speed offered by AI-based banking ($M = 4.02$), highlighting its significant contribution to operational efficiency. Ease of use also received a strong mean score ($M = 3.92$), suggesting that customers find AI interfaces intuitive. Perceptions of chatbot responsiveness ($M = 3.74$) and the smoothness of overall AI-driven banking interactions ($M = 3.72$) were similarly favourable. These findings demonstrate that AI enhances customers' banking experiences by improving convenience, usability, and service responsiveness.

Table No. 6: Customers' Satisfaction in AI Banking					
Statements	N	Min.	Max.	Mean	Std. Dev.
I am satisfied with AI-enabled digital banking services provided by my bank.	50	1	5	3.84	1.17
The performance of AI services meets my expectations.	50	1	5	3.72	1.16
I would like to continue using AI-based banking services in the future.	50	1	5	3.80	1.12
I would recommend AI-enabled digital banking services to others.	50	1	5	3.72	1.05

Source: SPSS Output

The findings indicate that Consumer satisfaction with AI-enabled digital banking services is typically positive. Respondents agreed most strongly that they are satisfied with AI-based services provided by their banks ($M = 3.84$), followed closely by their intention to continue using such services in the future ($M = 3.80$). Overall satisfaction with AI performance ($M = 3.72$) and willingness to recommend AI-enabled banking to others ($M = 3.72$) also showed favourable results. Collectively, these outcomes suggest that AI-driven banking services meet expectations of customer and contribute to sustained level of satisfaction and future adoption intentions.

Hypothesis Testing:

The hypothesis of the study aimed to examine the relationship between Customer Trust and Customer Satisfaction in AI-enabled digital banking services.

H_1 : Customer trust has a significant positive relationship with customer satisfaction in AI-enabled digital banking services.

To test this hypothesis, Pearson Correlation and Simple Linear Regression were conducted using SPSS.

Correlations			
		Trust Mean	Satisfaction Mean
Trust Mean	Pearson Correlation	1	.524 ^{**}
Satisfaction Mean	Pearson Correlation	.524 ^{**}	1
**. Correlation is significant at the 0.01 level (2-tailed).			

SPSS Output

The relationship between consumer satisfaction and trust in AI-enabled digital banking services was examined using Pearson correlation analysis. Higher levels of satisfaction are linked to higher levels of trust, according to the data, which indicated a moderately positive association ($r = 0.524$, $p < 0.01$). The link is statistically significant at the 1% level, as indicated by the p-value of 0.000. As a result, the hypothesis (H_1), which claims that customer pleasure and customer trust are significantly positively correlated, is accepted.

Model Summary^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.524 ^a	.275	.260	.90304	.275	18.194	1	48	.000	2.131
a. Predictors: (Constant), Customer Trust Mean										
b. Dependent Variable: Satisfaction Mean										

SPSS Output

To determine if consumer satisfaction in AI-enabled digital banking services is predicted by customer trust, a straightforward linear regression analysis was conducted. According to the model summary, the independent variable (customer trust) accounted for 27.5% of the variation in customer satisfaction ($R^2 = 0.275$, Adjusted $R^2 = 0.260$). The F-value, $F(1,48) = 18.194$, $p < 0.001$, demonstrated that the regression model was statistically significant and offered a strong fit for the data. A somewhat positive association between the variables is indicated by the correlation coefficient ($R = 0.524$). The Durbin-Watson statistic (2.131), which confirms that there is no autocorrelation among residuals, is within the acceptable range (1.5–2.5). These findings show that consumer satisfaction in AI-enabled digital banking is significantly predicted by customer trust.

ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.837	1	14.837	18.194	.000 ^b
	Residual	39.143	48	.815		
	Total	53.980	49			
a. Dependent Variable: Satisfaction Mean						
b. Predictors: (Constant), Customers Trust Mean						

SPSS Output

The regression model's statistical significance is confirmed by the ANOVA table ($F(1,48) = 18.194$, $p < 0.001$). This suggests that a major factor in predicting consumer pleasure is customer trust. The low p-value (0.000) indicates that the independent variable (customer trust) has a significant influence on the dependent variable (customer Satisfaction) and that the model's explanatory capacity is not the result of chance.

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.958	.444		4.415	.000
	Customers Trust Mean	.480	.113	.524	4.265	.000
a. Dependent Variable: Satisfaction Mean						

SPSS Output

According to the regression coefficients, there is a statistically significant positive relationship between customer satisfaction and customer trust. According to the unstandardized coefficient ($B = 0.480$), customer satisfaction rises by 0.480 units for every unit increase in customer trust. The effect size is modest and significant, as indicated by the standardized beta value ($\beta = 0.524$). The predictor variable is highly significant, as indicated by the t-value of 4.265 at a significance level of $p = 0.000$. As a result, customer satisfaction with AI-enabled digital banking services is strongly predicted by customer trust. Therefore, Hypothesis H1 is accepted.

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