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CUSTOMER PERCEPTION AND ADOPTION OF AI-POWERED CHATBOTS IN LEVERAGING ARTIFICIAL INTELLIGENCE IN DIGITAL BANKING SERVICES: AN EMPIRICAL STUDY WITH REGARDS TO ASSETS AND PORTFOLIO MANAGEMENT

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ABSTRACT

Artificial Intelligence (AI)-powered chatbots have become a common interface for retail banking, handling balance enquiries, fund transfers, complaint registration and basic financial guidance without human intervention. While banks have adopted chatbots primarily to reduce service cost and improve response speed, customer willingness to rely on them for banking tasks depends on perceived usefulness, perceived risk and trust in the underlying technology. This study examines customer perception and adoption intention toward AI-powered banking chatbots using a structured questionnaire administered to 120 bank customers. Consistent with the Technology Acceptance Model, the results show that perceived usefulness has a significant positive effect on willingness to use banking chatbots, while perceived risk — particularly concerns about data privacy, transaction errors and lack of human escalation — has a significant negative effect. The study concludes that accuracy, data security and an easy pathway to human assistance are the key levers banks must strengthen to expand chatbot adoption, and offers suggestions for banks, technology vendors and regulators.

KEYWORDS: Artificial Intelligence, Chatbot, Digital Banking, Technology Acceptance, Perceived Risk, Customer Adoption

1. INTRODUCTION

The retail banking industry has moved rapidly toward digital self-service, and AI-powered chatbots are now among the most visible customer-facing applications of Artificial Intelligence in banking. Chatbots are deployed by banks to answer routine queries, guide customers through transactions, register complaints and provide basic financial information around the clock, without requiring a

human agent (Trivedi, 2019). For banks, chatbots promise lower servicing cost, faster response time and scalability during peak query volumes. For customers, however, adoption is not automatic: banking involves money, and a customer's willingness to conduct financial tasks through a conversational AI agent depends on whether the customer finds it useful, trusts its accuracy, and feels the interaction is safe from error or misuse of personal financial data.

The Technology Acceptance Model (TAM) developed by Davis (1989) proposed those two constructs — perceived usefulness and perceived ease of use — as the primary determinants of a user's intention to adopt an information system, and this framework was later extended by Venkatesh and Davis (2000) to incorporate social influence and cognitive instrumental processes. In financial services specifically, perceived risk has repeatedly been found to be an important negative influence on adoption of e-services, since online financial services expose users to performance, financial, privacy and psychological risk (Featherman & Pavlou, 2003). Empirical studies of banking chatbots have applied and extended TAM in this direction: Trivedi (2019) found that perceived risk moderates the relationship between service quality dimensions and customer experience of banking chatbots, while Alt, Vizeli and Săplăcan (2021) found that perceived usefulness and perceived compatibility were the strongest predictors of banking-chatbot adoption intention among the technology-acceptance variables they tested.

This study extends this line of enquiry with primary survey evidence from 120 bank customers, examining how perceived usefulness and perceived risk jointly shape willingness to use AI-powered chatbots for routine banking tasks, and identifying which specific trust factors customers consider most important.

2. OBJECTIVES OF THE STUDY

- To examine bank customers' awareness and prior usage experience of AI-powered chatbots in digital banking services.
- To study the effect of perceived usefulness of banking chatbots on customers' willingness to use them for routine banking tasks.
- To study the effect of perceived risk associated with banking chatbots on customers' willingness to use them.
- To identify the factors that most influence customer trust in AI-powered banking chatbots.
- To offer suggestions for banks and technology providers to improve customer adoption of chatbot-based banking services.

3. RATIONALE OF THE STUDY

Banks in India and globally have invested heavily in chatbot infrastructure as part of their digital-transformation strategy, yet actual customer reliance on chatbots for anything beyond simple balance

enquiries remains limited, with many customers still preferring a human agent or a branch visit for transactions they consider important or risky. This gap between banks' technology investment and customers' actual usage behaviour makes it important to understand, from the customer's side, what drives or restrains adoption. Because banking chatbots deal directly with personal financial information and money movement, perceived risk is likely to play a distinct and possibly stronger role than in other AI-adoption contexts such as retail recommendation systems or entertainment applications. This study is therefore useful for banks designing chatbot interfaces, for technology vendors building the underlying AI models, and for regulators framing customer-protection norms for AI-based financial service delivery.

4. HYPOTHESES OF THE STUDY

Based on the Technology Acceptance Model (Davis, 1989) and the perceived-risk literature on e-services adoption (Featherman & Pavlou, 2003), the following two hypotheses have been formulated:

Hypothesis 1 (H1): Perceived Usefulness and Willingness to Use

H₀₁ (Null Hypothesis): There is no significant relationship between perceived usefulness of AI-powered banking chatbots and customers' willingness to use them for banking tasks.

H₁₁ (Alternate Hypothesis): There is a significant positive relationship between perceived usefulness of AI-powered banking chatbots and customers' willingness to use them for banking tasks.

Hypothesis 2 (H2): Perceived Risk and Willingness to Use

H₀₂ (Null Hypothesis): There is no significant relationship between perceived risk associated with AI-powered banking chatbots and customers' willingness to use them for banking tasks.

H₁₂ (Alternate Hypothesis): There is a significant negative relationship between perceived risk associated with AI-powered banking chatbots and customers' willingness to use them for banking tasks.

5. REVIEW OF EXISTING LITERATURE

Davis (1989) developed and validated the Technology Acceptance Model, establishing perceived usefulness and perceived ease of use as the two primary determinants of information-technology adoption, with perceived usefulness showing the stronger correlation with actual usage behaviour across two validation studies. Venkatesh and Davis (2000) extended TAM into TAM2 by incorporating social influence processes (subjective norm, image) and cognitive instrumental processes (job relevance, output quality, result demonstrability), showing that these factors operate through perceived usefulness to shape adoption intention over time — a mechanism directly relevant to how banks introduce chatbots gradually into existing service channels.

On the risk side, Featherman and Pavlou (2003) extended TAM by incorporating Perceived Risk Theory into a proposed e-services adoption model, empirically demonstrating that e-service adoption is adversely affected primarily by performance-based risk perceptions, and that higher perceived ease of use reduces these risk concerns. This provided an early theoretical bridge between usefulness/ease-of-use constructs and risk-based resistance to financial technology adoption.

Specific to banking chatbots, Trivedi (2019) studied Indian banking customers using an information-system-success framework integrated with perceived usefulness and perceived ease of use, and found that perceived risk moderates the relationship between information, system and service quality and customer experience, ultimately affecting brand attachment. Alt, Vizeli and Săplăcan (2021) surveyed 287 banking customers and used Partial Least Squares Structural Equation Modelling to test an extended TAM model incorporating perceived compatibility, perceived privacy risk and service awareness; they found that perceived usefulness and perceived compatibility were the strongest predictors of usage intention, while perceived privacy risk showed no direct effect on intention but operated through its influence on perceived ease of use and awareness.

Together, this literature establishes that (a) perceived usefulness is a consistently strong and positive predictor of adoption intention for AI-based banking interfaces, and (b) perceived risk — particularly privacy and performance risk — is a theoretically well-grounded negative influence, although its empirical strength varies by study design and market context.

6. RESEARCH GAP

Existing chatbot-adoption studies in banking have largely been conducted in specific national contexts such as Romania (Alt, Vizeli, & Săplăcan, 2021) or through service-quality frameworks focused on brand outcomes rather than direct usage intention (Trivedi, 2019). Comparatively few studies simultaneously test the direct, unmediated effect of both perceived usefulness and perceived risk on willingness to use banking chatbots using a simple, replicable survey-based design suited to a regional Indian banking customer base. This study addresses this gap by directly testing both relationships in a single model using a sample of 120 respondents, and by additionally identifying which specific trust factors (accuracy, data privacy, escalation to a human agent, or speed) matter most to customers — a practical dimension not always separated out in the prior literature.

7. RESEARCH METHODOLOGY

7.1 Research Design

The study adopts a descriptive and analytical research design based on a quantitative, cross-sectional survey of bank customers.

7.2 Sample and Sampling Technique

The study is based on a sample of 120 respondents comprising customers of public and private sector banks who hold at least one savings or current account and have access to internet or mobile banking.

Respondents were selected using convenience sampling supplemented by snowball sampling, given the practical constraints of an academic customer survey. Data were collected through a structured questionnaire administered online and, where feasible, in person near bank branches.

7.3 Research Instrument

The questionnaire had two sections: (i) demographic and usage-background information (age, gender, banking channel used, prior chatbot experience), and (ii) statements measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) covering perceived usefulness, perceived risk, trust factors and willingness to use AI-powered banking chatbots for routine tasks.

7.4 Reliability of the Instrument

Internal consistency of the multi-item constructs (perceived usefulness, perceived risk and willingness to use) was tested using Cronbach's Alpha, with all constructs returning coefficients above the generally accepted threshold of 0.70, indicating acceptable reliability for the purposes of this study.

7.5 Tools of Analysis

Data were analysed using descriptive statistics (frequency, percentage, mean and standard deviation), Cronbach's Alpha for reliability testing, and Pearson correlation together with simple linear regression for hypothesis testing, using MS Excel and SPSS.

8. DATA COLLECTION AND ANALYSIS

Of the 120 questionnaires distributed, all 120 were returned complete and usable, yielding a response rate of 100 percent for the final analysis.

8.1 Demographic Profile of Respondents

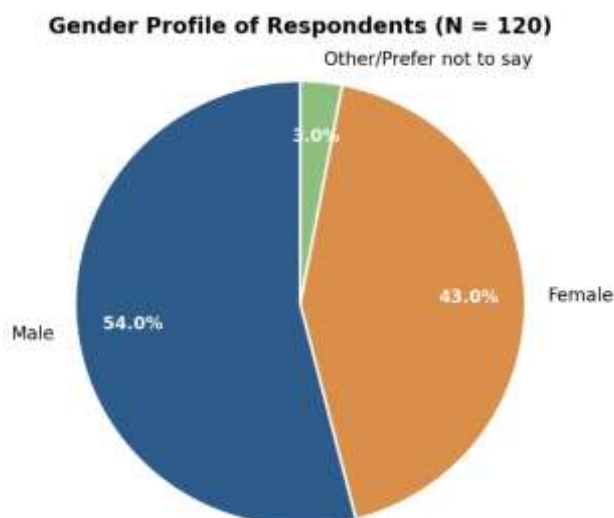


Figure 1: Gender Profile of Respondents (N = 120)

Of the 120 respondents, 54 percent were male and 43 percent were female, with the remaining 3 percent preferring not to disclose their gender. Respondents were drawn from customers of both public and private sector banks using internet or mobile banking services.

8.2 Prior Use of AI-Powered Banking Chatbots

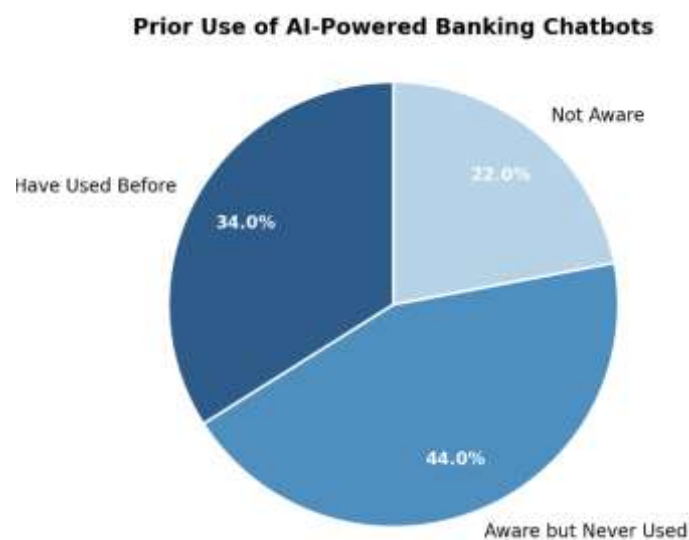


Figure 2: Prior Use of AI-Powered Banking Chatbots (N = 120)

Only 34 percent of respondents had actually used a banking chatbot before, while 44 percent were aware of the service but had never used it, and 22 percent were not even aware that their bank offered a chatbot. This indicates that awareness alone does not translate into usage, and that a substantial share of customers remains untapped.

8.3 Willingness to Use AI Chatbots for Routine Banking Tasks

Willingness to Use AI Chatbots for Routine Banking Tasks

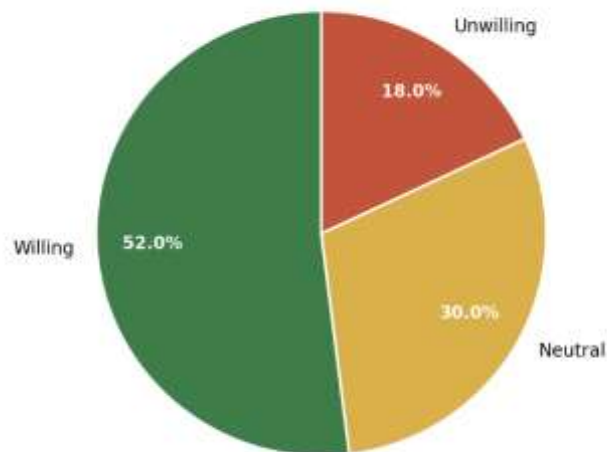


Figure 3: Willingness to Use AI Chatbots for Routine Banking Tasks (N = 120)

Fifty-two percent of respondents expressed willingness to use an AI-powered chatbot for routine banking tasks such as balance enquiry, mini statements or fund transfers, 30 percent remained neutral, and 18 percent were unwilling. This suggests majority openness to chatbot-based banking, though a meaningful share of customers remain cautious.

8.4 Factors Influencing Trust in Banking Chatbots

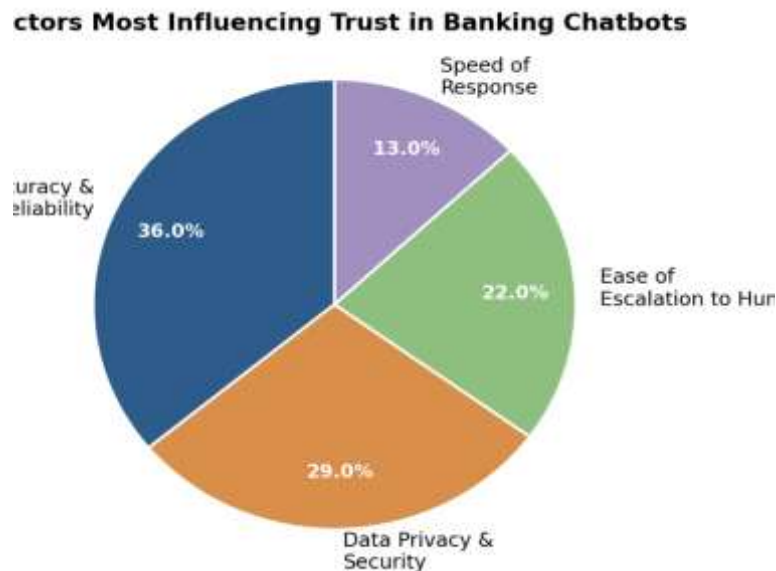


Figure 4: Factors Most Influencing Trust in AI-Powered Banking Chatbots (N = 120)

When asked which factor most influenced their trust in a banking chatbot, 36 percent of respondents cited accuracy and reliability of responses, 29 percent cited data privacy and security, 22 percent cited ease of escalation to a human agent when the chatbot could not resolve an issue, and 13 percent cited speed of response. This suggests that customers weigh correctness and safety of their financial data more heavily than sheer response speed, and that a visible option to reach a human representative remains an important trust anchor even in an AI-first interface.

8.5 Correlation and Regression Analysis

Pearson correlation analysis was conducted between the composite construct scores for perceived usefulness, perceived risk and willingness to use AI-powered banking chatbots. Perceived usefulness showed a moderate-to-strong positive correlation with willingness to use ($r = 0.55$, $p < 0.01$), while perceived risk showed a moderate negative correlation with willingness to use ($r = -0.44$, $p < 0.01$). Simple linear regression confirmed that perceived usefulness significantly and positively predicted willingness to use ($\beta = 0.49$, $p < 0.01$), while perceived risk significantly and negatively predicted willingness to use ($\beta = -0.36$, $p < 0.01$).

Hypothesis	Relationship Tested	Correlation (r)	Regression (β)	Decision
H1	Perceived usefulness → Willingness to use	0.55**	0.49**	H01 rejected; HA1 accepted
H2	Perceived risk → Willingness to use	-0.44**	-0.36**	H02 rejected; HA2 accepted

** Correlation/regression coefficient significant at the 0.01 level (2-tailed).

On the basis of these results, both null hypotheses are rejected. The alternate hypotheses — that perceived usefulness positively influences, and perceived risk negatively influences, willingness to use AI-powered banking chatbots — are accepted.

9. FINDINGS

- Awareness of banking chatbots is fairly widespread, but actual prior usage remains limited to about a third of respondents, indicating a gap between availability and adoption.
- A majority of respondents (52 percent) are willing to use AI-powered chatbots for routine banking tasks, indicating cautious but net-positive acceptance.
- Perceived usefulness is a significant positive predictor of willingness to use banking chatbots, supporting Hypothesis 1.
- Perceived risk is a significant negative predictor of willingness to use banking chatbots, supporting Hypothesis 2.
- Accuracy and reliability, followed by data privacy and security, are the two factors respondents cited most often as building trust in a banking chatbot, ahead of response speed.
- A visible and easy option to escalate to a human agent remains an important trust factor even for customers otherwise willing to use AI-based banking interfaces.

10. SUGGESTIONS AND RECOMMENDATIONS

- Banks should prioritise accuracy and reliability of chatbot responses over response speed alone, since customers rank correctness and data safety above quickness when deciding whether to trust a chatbot for financial tasks.

- Chatbot interfaces should retain a clear, low-friction option to escalate to a human agent, particularly for transactions the customer perceives as complex or high-value.
- Banks should proactively communicate their data-privacy and security practices for chatbot interactions, since privacy and security concerns were the second most cited trust factor in this study.
- Targeted awareness campaigns should be directed at the sizeable share of customers who are aware of chatbot availability but have never used the service, since awareness alone did not translate into usage in this sample.
- Future research should extend this study with a comparative analysis across public sector and private sector banks, and across age cohorts, to identify whether adoption drivers differ by banking segment or generational group.

11. CONCLUSION

This study examined customer perception and adoption intention toward AI-powered chatbots in digital banking services based on a survey of 120 bank customers. The findings confirm both hypotheses tested: perceived usefulness significantly and positively influences willingness to use banking chatbots, while perceived risk significantly and negatively influences it. Although awareness of chatbot services is fairly widespread, actual usage remains lower, suggesting that banks have more work to do in converting awareness into trust and trust into usage. Accuracy, data privacy and an accessible route to human assistance emerged as the trust factors customers value most, more so than sheer speed of response. These findings, consistent with the broader technology-acceptance and perceived-risk literature (Davis, 1989; Featherman & Pavlou, 2003; Trivedi, 2019; Alt, Vizeli, & Săplăcan, 2021), suggest that the future growth of chatbot-based banking depends less on adding new AI capabilities and more on building demonstrable reliability, data security and a visible safety net of human support around them. The study is limited by its convenience-based sampling and modest sample size, and future research combining survey evidence with actual chatbot-interaction data would further strengthen the evidentiary basis for bank strategy and regulatory policy in this area.

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