A Study on Communication Efficiency of Chatbots in Banking Services

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Abstract

The rapid digital transformation of the banking sector has increased the use of chatbots to enhance customer communication and service delivery. This study examines the communication efficiency of chatbots in banking services, with special reference to customers in Ganapathy, Coimbatore city. The research aims to evaluate how effectively chatbots handle customer queries and how their communication quality influences customer satisfaction. Primary data were collected from 100 banking customers using a structured questionnaire through convenience sampling. The data were analyzed using percentage analysis, average score method, Chi-square test.

The findings indicate that banking chatbots are mainly used for routine services such as transactions, customer support, and complaint handling. Respondents expressed moderate to positive satisfaction, particularly appreciating the 24/7 availability and ease of use of chatbot services. The study concludes that while chatbots improve communication efficiency and digital banking experience, continuous improvements in accuracy, personalization, and human support are necessary to enhance customer trust and satisfaction.

Keywords: *Chatbots, Banking services, Communication efficiency, Customer satisfaction, Digital banking, Artificial intelligence in banking.*

INTRODUCTION

Digital transformation has reshaped the banking sector. It has led to the widespread use of AI tools like chatbots. Indian banks now use these systems to provide instant responses, cut down waiting times, and offer 24/7 customer support. The effectiveness of chatbot communication depends on how well these systems meet customer expectations concerning functionality, convenience, security, design, customization, enjoyment, and assurance. With banks competing to provide better digital experiences, assessing the quality of chatbot interactions has become an important area of research.

This research examines the effectiveness of chatbot communication in banking and how it affects customer satisfaction. It analyzes customer views to enhance chatbot efficiency and digital banking competitiveness.

STATEMENT OF THE PROBLEM

The growing adoption of chatbots in the banking industry seeks to enhance customer interaction and service effectiveness. Nonetheless, their capacity to deliver clear, precise, and satisfactory answers remains uncertain. Customers frequently face problems like misunderstandings and challenges in managing intricate inquiries. Poor chatbot communication can result in discontent and diminished trust in online banking services. Therefore, this research emphasizes evaluating the communication effectiveness of chatbots within the banking industry.

SCOPE OF THE STUDY

The purpose of this study is to evaluate how well chatbots manage customer interactions and communication effectiveness in the banking industry. It focuses on assessing how well chatbots handle common banking questions like account details, balance inquiries, transactions, loans, and complaint registration in terms of clarity, accuracy, speed, and usefulness. Customers who have utilized banking chatbots provide primary data for the study, which is restricted to particular banks that provide chatbot services. Excluding the technical and programming aspects of chatbot systems, the study looks at customer satisfaction, usability, problem-solving skills, communication barriers, and how chatbots can lessen the workload of human customer service representatives.

RESEARCH QUESTIONS

1. How well do chatbots manage customer inquiries in banking services compared to human agents?
2. When customers engage with banking chatbots, what are the main obstacles to communication?
3. How much can chatbot communication enhancements help banks reduce their customer service workload?

RESEARCH OBJECTIVES

❖ To determine the main communication-related challenges that consumers encounter when interacting with banking chatbots.

❖ To assess how better chatbot communication can help lower the customer service workload in banks, based on the views of respondents in the primary survey.

❖ To examine how customers view the reliability and consistency of chatbots when dealing with banking questions.

RESEARCH METHODOLOGY

1) Research Design and Approach

This research employs a descriptive design to examine customer interactions with banking chatbots. A quantitative research method is employed to gather numerical information regarding customers' views, experiences, and satisfaction with banking chatbots. The information is collected from a vast array of participants to guarantee unbiased evaluation.

2) Study of the area

The research takes place in Ganapathy, a swiftly growing residential and commercial region of Coimbatore, Tamil Nadu.

3) Sample Size and Sampling Technique

- **Sample Size:** The research involves 70respondents banking clients who have utilized chatbot services. This sample size is sufficient to evaluate chatbot efficiency in alleviating customer service pressure and enhancing communication.
- **Sampling Technique:** The research employs convenience sampling to choose participants who are readily available and eager to take part.

4) Sources of Data

The research gathered primary data via a structured questionnaire to understand respondents' experiences with chatbots, alongside secondary data from journals, research articles, reports, and online sources to offer theoretical backing and enhance the analysis.

5) Data Collection Methods / Tools

The survey assessed clarity in communication, accuracy of responses, speed, and the simplicity of interactions. Analytical methods like percentages and graphs were utilized for examination.

6) Statistical tools used

- Percentages and frequencies
- Chi-square test
- Average Score

7) Period of the study

The study uses primary data to collect information from respondents the period has been taken place between November 2025 and January 2026.

LIMITATIONS OF THE STUDY

1. The research relies on a small sample size, which might not adequately reflect the entire population of banking customers
2. Chatbot technology is constantly advancing, thus results might shift over time.

REVIEW OF LITERATURE

Dr. Poornima Kapadan Othayoth and Mr. Shivi Khanna (2024)[1] "Chatbot service quality in Indian banking and its impact on customer satisfaction and value". This study examines the quality of chatbot services in Indian banks and analyses how service quality influences customer satisfaction and value. Data were gathered from randomly chosen banking clients through a quantitative research approach. Customer satisfaction and value were regarded as dependent variables, whereas the dimensions of service quality such as functionality, convenience, security, design, customization, enjoyment, and assurance were viewed as independent variables. The findings indicate that the quality of chatbot services has a significant impact on customer satisfaction and value, emphasizing the necessity of enhancing chatbot quality to improve user experience and sustain competitiveness in the banking industry.

Dr. Deven Bhalerao and Dr. Shaji Joseph (2023)[2] in "Success factors for chatbots from the perspective of an Indian customer". The study examine how Indian customers perceive the performance of chatbots used in the customer service sector. Through an extensive literature review, the authors identified three major performance factors Efficiency, Effectiveness, and Satisfaction. A structured questionnaire was created to measure customer attitudes toward these factors, and data were collected from 87 Indian respondents. The findings revealed that Efficiency and Effectiveness are the strongest indicators of chatbot performance for Indian users. In contrast, Satisfaction was not considered significant, largely due to limited supportive experiences with chatbots. The study identifies important elements that can direct the creation of chatbots that are more successful and meet the needs of Indian customers.

Dr. Davinder Walia (2025)[3] "Chatbots and Conversational AI in Banking: Assessing Operational Efficiency and Customer Trust". The adoption of chatbots and conversational AI in banking marks a major shift toward digital service delivery aimed at improving efficiency and customer experience. Based on responses from 400 bank customers, this study found a significant positive correlation between customer trust and operational efficiency ($r = 0.602$, $p < 0.01$) and strong internal reliability (Cronbach's Alpha = 0.808). Regression analysis further showed that efficiency and trust together explain 55.7% of the variation in user satisfaction and intent to use ($R^2 = 0.557$). These findings highlight the fact that trust-building and favorable user perception are just as important to the success of banking technology projects as cost and time efficiency.

Dr. Srihari Subudhi (2019)[4] "Banking on Artificial Intelligence: Opportunities & Challenges for Banks in India". This study examines the current use of Artificial Intelligence (AI), especially chatbots, in Indian banking and the challenges banks face while adopting AI technologies. Using a descriptive, qualitative methodology, the research draws information from credible secondary sources such as RBI, IDRBT, NASCOM, consulting reports, and leading bank websites. Findings show that while major private and select public sector banks have begun implementing AI applications—including chatbots like SBI's SIA, HDFC's EVA, and ICICI's I Pal—many others still remain cautious. AI is revolutionizing banking globally by improving customer satisfaction, accuracy, and efficiency. AI is being used in India for robotic assistants, recruitment, personalized payments, and customer service. The study highlights best practices and opportunities that can guide broader AI adoption in Indian banks.

Dr. M. Swathi, Dr. Pankaj Pathak, Ms. Samaya Pillai (et.al) (2024)[5] "The Role of WhatsApp Bot and Generative AI in the Banking Sector". This examines the changing needs of the banking sector and its customers have led banks and fintech companies to adopt chatbots more frequently. Chatbots improve customer service by providing quick, accurate, and reliable responses. This reduces the need for phone calls or in-branch visits. They make banking operations more efficient and create a smoother experience for customers. By offering personalized services and useful insights, chatbots help banks bring in new customers and keep existing ones. Their ability to respond quickly to customer questions encourages faster digital adoption and boosts user engagement. This makes them a valuable tool in today's banking.

HISTORY OF CHATBOTS IN BANKING SECTOR

As digital banking and customer self-service technologies gained popularity, chatbots were first used in the banking industry.

To respond to consumer inquiries in the early 2000s, banks mostly used Interactive Voice Response (IVR) systems and simple online FAQs. These systems had limitations, and needed human assistance to solve complicated problems. Banks began experimenting with basic text-based chat interfaces on their websites to address commonly asked questions about account details and services as online banking grew.

In the 2010s machine learning, artificial intelligence, and natural language processing were developed. In order to offer round-the-clock customer service, banks started implementing chatbots on their websites, mobile banking apps, and social media platforms. These chatbots could lessen the workload of human customer service representatives by answering common questions about balances, transaction histories, branch details, and card-related problems.
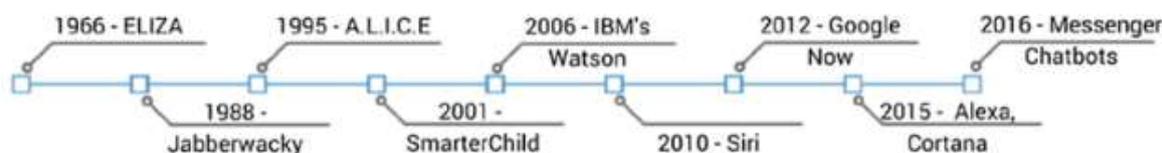
Banking chatbots advanced in sophistication by the late 2010s and early 2020s, providing individualized services like fraud alerts, loan eligibility checks, and bill reminders. Chatbot solutions were implemented by major banks worldwide to increase service efficiency; lower operating costs, and improves customer experience. In order to handle the growing number of customer interactions and support digital banking initiatives, banks in India implemented chatbots.

Today, chatbots in the banking industry are integrated with core banking systems and use cutting-edge AI to comprehend customer intent, deliver precise responses, and guarantee secure communication. They represent a major advancement in contemporary banking services and are essential in enhancing customer satisfaction, communication effectiveness, and stress relief for customer service representatives. Chatbots in the banking industry have certain drawbacks despite their benefits. They may give inaccurate or repetitive answers and frequently find it difficult to handle complicated or emotionally delicate client issues. Customer trust can be diminished by a lack of human empathy, a poor grasp of regional languages, and sporadic technical mistakes. Concerns about security and privacy are still issues, particularly when chatbots handle private financial data.

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data gathered from 100 banking customers utilizing chatbots. Descriptive findings indicate that chatbots are useful for fast and standard interactions. The chi-square test reveals a notable relationship between the use of chatbots and customer satisfaction. It shows variations in communication effectiveness among different user experience levels. In general, chatbots enhance fundamental communication but are not as effective with intricate inquiries.

PERCENTAGE ANALYSIS

TABLE NO: 4.1 PERSONAL PROFILES OF THE RESPONDENTS

Personal Profile	Particulars	No of Respondents	Percentage
Gender	Male	22	31
	Female	48	69
Age	18-25	16	23
	26-35	9	13
	36-45	15	21
	Above 45	30	43
Educational Qualification	Undergraduate	50	71
	Postgraduate	6	9
	Professional	14	20

Occupation	Student	16	23
	Employed	43	6
	Self-Employed	4	6
	Homemaker	3	4
	Others	4	6
Monthly Income	Below Rs.50,000	37	53
	Rs.50,000 - 70,000	14	20
	Rs.70,000 – 1,00,000	4	6
	Above Rs.1,00,000	1	1
	No Income	14	20

INTERPRETATION

Source: Primary Data

The data in Table No. 4.1 shows that, the majority of respondents are female and fall into the 18–25 age range. The study primarily represents young people in the early stages of education, with little representation from older and more experienced age groups, as the majority of participants are undergraduates.

The majority of respondents are students with no monthly income, according to the occupational and income profile. The percentage of people who are employed or self-employed and have different income levels is quite small. As a result, the study's conclusions primarily represent the viewpoints of students and should be interpreted cautiously when extrapolating the findings.
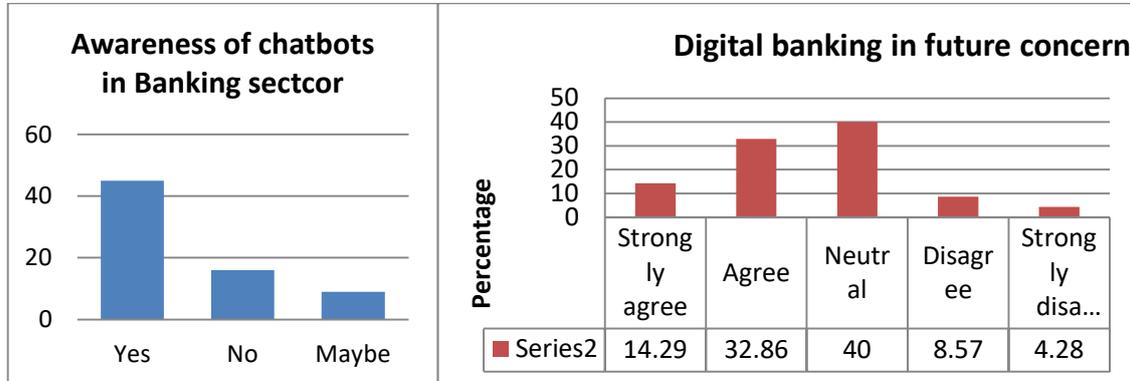
TABLE NO 4.2: CHATBOT USERS ANALYSIS

Particulars	Categories	No. of Respondents	Percentage
Aware of chatbots in Banking Sectors	Yes	45	64
	No	16	23
	Maybe	9	13
Usage of Banking Chatbots	Very often	8	11
	Often	18	26
	Sometimes	21	30
	Rarely	15	21
	Never	8	11
Banking service you mostly use in chatbots	Transactions	27	39
	Complaints	11	16
	Account Information	1	1
	Balance Enquiry	10	14
	Customer Service	12	17
	Loan queries	9	13
Chatbots improve the digital banking experience for future concern	Strongly agree	10	14
	Agree	23	33
	Neutral	28	40
	Disagree	6	9
	Strongly disagree	3	4
Satisfaction level of using Chatbots in Banking sector?	Highly satisfied	14	20
	Satisfied	26	37
	Neutral	25	36
	Dissatisfied	3	4
	Highly dissatisfied	2	3

INTERPRETATION

According to the data, the majority of respondents are aware of and occasionally use banking chatbots. Customer service and complaints are the next most popular services, after transactions. This suggests that chatbots are mostly favoured for routine and fast banking tasks.

Regarding chatbots enhancing future digital banking experiences, the majority of respondents either agrees or is undecided. Fewer respondents expressed dissatisfaction, and satisfaction levels are typically positive to neutral. This indicates a moderate level of acceptance of chatbots; however, enhancements are required to boost user satisfaction and confidence.


Awareness of chatbots in Banking sectcor

Digital banking in future concern

	Strongly agree	Agree	Neutral	Disagree	Strongly disa...
Series2	14.29	32.86	40	8.57	4.28

AVERAGE SCORE
TABLE NO: 4.3 ASSESSMENTS OF CUSTOMER VIEWSON BANKING CHATBOTS

S.NO	Statement	Average Score
1	The bank provides prompt customer service	4.12
2	Online banking services are easy to use	4.28
3	Information provided by the bank is clear and accurate	4.10
4	The bank resolves customer complaints quickly	3.98
5	The bank maintains transparency in transactions	4.00
6	ATM services are reliable and easily accessible	4.22
7	Mobile banking app is user-friendly	4.30
8	Overall satisfaction with the bank	4.18
Basis	Statement	Average Score
Lowest score	Chatbots provide accurate information about banking services	3.8
Highest score	Chatbots are available 24/7 for customer support	4.6

- Positive perception and high acceptance are indicated by scores ≥ 4.0.
- 5.0 indicates extremely high satisfaction (available around-the-clock)
- The overall findings strongly support the use of chatbots in banking.

TABLE 4.3 ANALYSIS OF CHATBOT SERVICE EVALUATION

Line Graph: Chatbot Service Evaluation
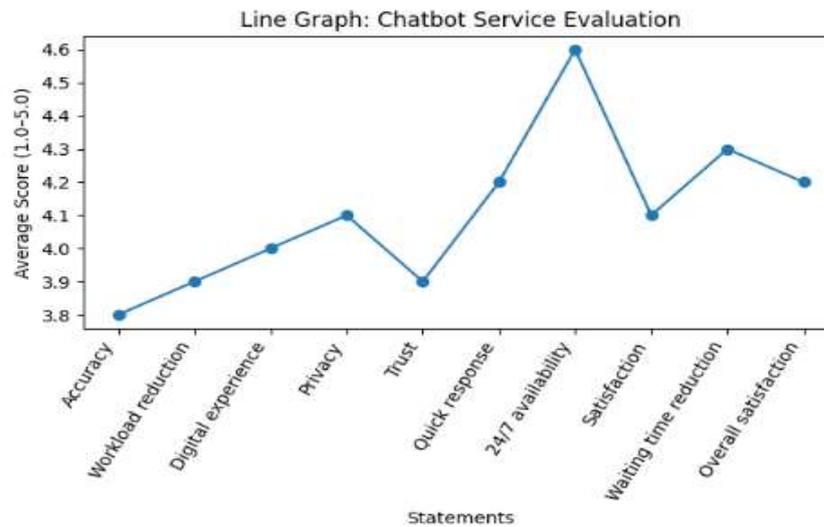
INTERPRETATION

The majority of statements scored above 4.0, indicating high customer satisfaction, and the average scores show a favorable opinion of banking services. The best ratings went to simple online services and user-friendly mobile banking. Chatbots were particularly appreciated for their round-the-clock accessibility, but information accuracy received a lower score, indicating room for improvement.

CHI-SQUARE TEST

Null Hypothesis (H_0): It implies the degree of customer satisfaction and the frequency of chatbot usage are not significantly different.

Alternative Theory (H_1): It implies the degree of customer satisfaction and the frequency of chatbot usage differ significantly.

TABLE NO: 4.4 ANALYSIS OF CHI-SQUARE TEST

Cell	Basis	Observed value	Expected value	$X^2 = (O-E)^2/E$
Frequently used	Satisfied	28	25.71	0.204
	Neutral	6	6.69	0.071
	Dissatisfied	2	3.60	0.711
Occasionally used	Satisfied	18	18.57	0.018
	Neutral	5	4.83	0.006
	Dissatisfied	3	2.60	0.062
Rarely used	Satisfied	4	5.71	0.512
	Neutral	2	1.49	0.175
	Dissatisfied	2	0.80	1.800

Formula:

CHI-SQ TEST =

$$X^2 = \sum \frac{(O-E)^2}{E}$$

$$X^2 = 2.64$$

INTERPRETATION

The correlation between customer satisfaction and chatbot usage frequency was investigated using the Chi-square test. At the five percent significance level, the computed Chi-square value (2.64) is lower than the table value (9.488). The null hypothesis is thus accepted. This suggests that the degree of customer satisfaction and the frequency of chatbot usage are not significantly correlated. Thus, **2.64 < 9.488** results **no significant difference.**

FINDINGS

➢ Percentage analysis: The majority of participants recognize banking chatbots and primarily utilize them for basic services, indicating moderate uptake and typically neutral to positive satisfaction rates. Most of them were female respondents (around 70%) and are above 45 years of age. The majority of them were employed person.

➢ Average Score: The mean scores reflect a positive view of chatbot services, particularly regarding their round-the-clock availability and user-friendliness, although the accuracy of information suggests room for enhancement.

➢ Chi –Square test: The Chi-square test indicates no significant correlation between the frequency of chatbot use and customer satisfaction, suggesting that satisfaction relies more on the quality of service than on the level of use.

SUGGESTIONS

• Particularly for complicated banking inquiries, banks should enhance the accuracy and clarity of chatbot responses.

• To cut down on inaccurate or repetitive responses, regular AI training and updates should be put into place.

• To increase communication effectiveness, chatbots should provide multilingual and regional language support

• When handling complicated or delicate customer issues, a human handover option should be offered.

• To improve chatbot performance and satisfaction, ongoing customer feedback mechanisms should be implemented.

Banks must prioritize enhancing the precision and transparency of chatbot replies, particularly for intricate banking inquiries, by consistently updating AI technologies and incorporating smooth human assistance. This will improve trust among customers, enhance satisfaction, and increase the overall communication effectiveness of chatbots in banking services.

CONCLUSION

The research finds that banking chatbots significantly enhance communication efficiency by offering fast, convenient, and round-the-clock support for everyday banking services. The majority of participants demonstrate moderate approval and favorable contentment with chatbot services, particularly among younger users. Nonetheless, challenges arise in managing intricate queries and maintaining information precision. The results emphasize that although chatbots boost digital banking expansion, ongoing enhancements in accuracy, personalization, and human involvement are crucial to optimize customer satisfaction and trust.

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