TOPIC: AN IMPACT OF AI CHATBOTS ON CUSTOMER SATISFACTION IN HDFC BANKIN CHENNAI CITY

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Abstract: Artificial intelligence is advancing quickly in the present era and is accessible to a large number of individuals worldwide. Artificial Intelligence (AI) will replace humans with computer programs to provide human-like intelligence and return choice for specific tasks. The Banking sector is undergoing a rapid transformation with the integration of Artificial Intelligence .AI is rapidly transforming the banking industry, revolutionizing how banks operate and interact with their customers. By offering services like chatbots, fraud detection, investment optimization, and financial counsellors, artificial intelligence (AI) assists millions of customers and representatives in managing their finances. Among the top banks in India utilizing AI, HDFC Bank is notable for its creative approach to client interaction, especially in urban areas like Chennai.

Introduction:

Artificial intelligence, the technology that gives robots human-like intelligence, is quickly becoming an essential part of the financial industry. Science fiction has changed over time. But first, what is artificial intelligence (AI) and how does the banking sector use it. Computer vision, natural language processing, and machine learning are just a few of the many technologies that make up artificial intelligence (AI). These technologies work together to analyse data, form opinions, and automate processes. Banking is using artificial intelligence (AI) to increase security, provide customized financial solutions, and enhance client satisfaction.As customers increasingly demand faster service, tailored communication, and seamless digital experiences, AI-powered solutions such as chatbots, predictive analytics, fraud detection systems, and personalized financial advisories have become central to HDFC Bank's strategy. These technologies not only help in improving efficiency but also play a crucial role in enhancing customer satisfaction and trust, especially in urban centres where digital banking adoption is high.

Benefits of chatbots in banking:

1. Customize communications with customers

You may satisfy consumer expectations about response times and answer quality by tailoring client interactions. Natural language comprehension and round-the-clock accessibility allow you to satisfy the needs of both domestic and international clients.

2. Recognize and stop fraud

By analysing consumer spending patterns and identifying anomalous payments, banking chatbots can assist you in lowering your risk of fraud. To protect both you and your clients, any outliers that are found are immediately reported to them for confirmation.

3. Manage a large volume of transactions

Conversational chatbots can relieve your live customer support personnel of a bottleneck by providing basic answers to questions concerning balances, transactions, and due dates. Even at times when there are a lot of queries, this enables you to promptly meet client expectations.

4. Education of customers

In the banking sector, chatbots are made to inform clients about the financial options that are available and respond to any related questions.

HDFC Bank in AI (Chatbot):

HDFC bank has been a pioneer in leveraging AI to transform its customer service, operations, and cybersecurity.

Some key AL initiatives include:

- **EVA Chatbot**: The first AI-driven financial chatbot in India, was introduced in 2017 and is powered by Sense forth. It improves customer service response times and lessens the need for human intervention by quickly responding to millions of client inquiries across several channels.EVAlearns and gets smarter from interactions and is planned to handle real banking transactions soon.
- **Customer service and fraud detection**:
  HDFC bank uses AI-powered chatbots to handle routine queriesin real time and machine learning algorithms for detecting suspicious transactions, helping prevent fraud.
- **Generative AI platform**: Enhance customer experience, improve staff productivity, and enable real-time credit decisioning through multiple high-impact AI programs.
- **Cybersecurity**: The bank is rapidly moving toward becoming an AI -first enterprise to strengthen its cybersecurity by deploying AI bots that enhance threat detection and response capabilities.

Objectives of the study:

- To assess the level of customer satisfaction with the promptness of chatbot responses.
- To analyse the relevance of chatbot replies in addressing customer queries and concerns.
- To investigate the extent to which chatbots meet customer expectations in delivering helpful and need based information.

Scope of the study:

This study examines how consumer satisfaction is affected by chatbots powered by artificial intelligence (AI), particularly HDFC Bank's EVA. It seeks to comprehend how chatbot technology contributes to overall customer experience and loyalty, increases response times, and improves customer service delivery.

Review of Literature:

Savitha Rajendran, Vincent Tawiah (2024) Recent studies emphasize the growing adoption of chatbot technology in Indian banking, particularly by institutions like HDFC Bank, to enhance customer service and virtual engagement. Research examining customer satisfaction with HDFC Bank's chatbot services has highlighted the importance of several influencing factors. Key findings show that System Quality and Trust significantly enhance customer satisfaction, aligning with existing literature that suggests a reliable, user-friendly system and perceived trustworthiness are critical in digital banking interactions. In contrast, Situational Factors, Service Quality, and Intention of Use were found to be non-significant, suggesting that traditional service quality metrics may not fully capture the chatbot user experience. The study used a quantitative cross-sectional design with regression analysis to investigate these variables. It contributes to the academic discourse by identifying context-specific factors that drive or hinder satisfaction in banking chatbots. The research underscores the need for ongoing user feedback integration and system improvements to refine chatbot services and better meet customer expectations in the digital banking ecosystem.

Suresh Raghavan, Ramesh Pai (2021) Customer engagement has emerged as a crucial factor in the banking sector, with prior studies indicating that fully engaged customers contribute up to 36% more revenue than unengaged ones. The advent of digital technology has reshaped the way banks operate, emphasizing the need for innovative digital strategies to retain customers. HDFC Bank stands out for its early and effective adoption of such digital initiatives, including Artificial Intelligence (AI) tools like the EVA chatbot, to enhance customer experiences. The objectives of the study centred on analysing HDFC Bank's strategic engagement initiatives, its AI applications, and the impact of omnichannel marketing on customer satisfaction. The research is exploratory in nature and relies on primary data from HDFC's official platforms and secondary sources like McKinsey, PwC, and Statista. Findings reveal a significant transformation in HDFC's operational efficiency, customer base, and satisfaction metrics, with 95% of transactions occurring through digital platforms. The bank's strong performance indicators, including a 16% year-on-year growth and a Net Promoter Score (NPS) of 67, suggest that its digital engagement strategies have effectively driven customer retention and loyalty. These outcomes align with earlier literature on the benefits of digital transformation and customer-centric banking approaches.

Geeta Narula, Rakhi Narula (2021) The Indian banking industry has embraced technological innovations to enhance service delivery and customer satisfaction. One of the most transformative developments in this space is the integration of Artificial Intelligence (AI)-powered chatbots. These chat interfaces are designed to simulate human conversation and are increasingly used by banks to handle customer queries, provide information on banking products, assist in transactions, and facilitate round-the-clock support. Various studies have acknowledged that the use of chatbots significantly contributes to improving the overall banking experience by offering convenience, speed, and efficiency.

Research Methodology:
The study was conducted using a descriptive research design. Both primary and secondary sources were used in the data collection process. A systematic questionnaire was used to gather primary data. The survey was conducted using a simple random sample design. Research papers, articles, and reports pertaining to the subject were used to gather secondary data. The correlation, chi-square, and Anova tests were used as statistical tools. There were 102 people in the sample**.**

Hypothesis:
- There is no association between occupation satisfaction with promptness of Chatbots responses.
- There is no statistically significant difference between age groups and chatbots response clear & understandable
- Thers is a strong positive correlation between chatbot's ability to meet user needs plays an important role in overall user satisfaction.

Descriptive Statistics
Table:1 Frequency Distribution of Gender of the Respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	18	17.6	17.6	17.6
	male	84	82.4	82.4	100.0
	Total	102	100.0	100.0	

Table 1 reveals that, 82.4 per cent are Male and 17.6 per cent are Female. Male bank customers were slightly higher in number as compared to female bank customers

Table:2 Frequency Distribution of Age of the Respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-27	6	5.9	5.9	5.9
	28-37	44	43.1	43.1	49.0
	38-47	45	44.1	44.1	93.1
	48-57	7	6.9	6.9	100.0
	Total	102	100.0	100.0	

Table 2 reveals that, 5.9 per cent of bank customers belonged to the age group between 18-27 years, 43.1 per cent to the age group of 28-37 years, 44.1 per cent age group of 38-47 years and 6.9 per cent age group of 48-57 years. The majority of the bank customers belonged to the group of 38-47 years.

Table:3 Frequency Distribution of Occupation of the Respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	2	2.0	2.0	2.0
	Self employed	13	12.7	12.7	14.7
	Employed	80	78.4	78.4	93.1
	Retired	0	0.0	0.0	0.0
	Others	7	6.9	6.9	100.0
	Total	102	100	100	

Table 3 reveals that, 78.4 percent of the customers belong to employed ,12.7 percent of the bank customers belong to self-employed;2 percent of the bank customers belong to student and 6.9 percent belong to others.

Table 4: Did the chatbots response clear &understandable and Age group of respondents

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.713	2	.357	2.192	.07
Within Groups	16.110	99	.163		
Total	16.824	101			

Table 4 results show that,the null hypotheses should be rejected because the P value of 0.07 is below the generally accepted significance level of 0.05. As a result, there is no statistically significant difference in the ratings of the chatbot's responses' clarity and understandability between age groups (F (2, 99) = 2.192, p = 0.07).

Table 5:

Pearson Chi-Square	**8.159**	**6**	**.227**

Table 5 reveals that, chi square calculated value is 8.159, p=0.227> 0.05 Level of significance and table at 5% level of significance with 6 degrees of freedom is 12.59 The calculated value is 8.159< table value 12.59. Hence null hypothesis is rejected, so it can be inferred, that there is no association between Occupation andsatisfaction with promptness of Chatbots responses.

Table 6:Correlate between satisfaction with chatbot performance and chatbotdelivering helpful information.

Did the chatbots meet your expectation in delivering helpful information based on your needs?	Pearson Correlation	1	0.7
	Sig. (2-tailed)		.000
	N	102	102
How satisfied are you with the chatbot performance during office hours?	Pearson Correlation	1	0.7
	Sig. (2-tailed)		0.00
	N	102	102

Table 6 reveals that, strong positive correlation (r = 0.7) between users feeling that the chatbot met their expectations in providing helpful information and their satisfaction with its performance during office hours. This relationship is statistically significant (p = 0.001), indicating that users who found the chatbot helpful were also more likely to be satisfied with its performance. This suggests that the chatbot's ability to meet user needs plays an important role in overall user satisfaction.

Limitations of the study:
1. Only HDFC Bank clients in Chennai City were included in the survey. As a result, might not apply to other areas or financial institutions.
2. Given the size and diversity of HDFC's clientele, the sample size of 102 respondents may not accurately reflect the bank's whole customer base.

Conclusion:
This study focused at how customer satisfaction was influenced by AI-powered chatbots, particularly HDFC Bank's EVA. Customers' opinions of the chatbot's ability to offer useful information and overall satisfaction with its performance during business hours are strongly and statistically significantly positively correlated. This demonstrates that improving customer satisfaction greatly depends on the chatbot's capacity to deliver pertinent and

helpful information. Overall, the results reveal that AI chatbots, such as EVA, can successfully enhance banking customer service by offering prompt and beneficial support, improving the customer experience, and possibly boosting customer loyalty.

Suggestion for the study:

1. To better understand regional differences in chatbot adoption and satisfaction, future research may examine several cities or rural areas.
2. Increasing the sample size may yield more accurate and broadly applicable findings.
3. To find best practices, researchers might evaluate how satisfied customers are with chatbots at other banks (for example, HDFC, ICICI, and SBI).
4. Trust, privacy, system security, personalization, and chatbot emotional intelligence are a few more variables that may be included in future studies.
5. In addition to surveys, focus groups or interviews can be used to gather more detailed information on customer experiences.
6. By monitoring the study over time, it is possible to gauge how consumer satisfaction varies as chatbots advance with AI.

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