Digital customer care- AI powered chatbots in Banking services

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Abstract-*The revolution of Artificial intelligence has conquered the world; it has simplified tasks by breaking down complex concepts via their language processing, algorithms, machine learning, robotics etc., It has been implemented across various sectors like healthcare, transportation, education, media, entertainment, education agriculture, and finance. Artificial intelligence in banking industry has been utilized in customer service, risk management, fraud detection, and trading. It has helped the financial institution by automating the daily repeated tasked, instigating personalized recommendations and enhancing the customer service, the technology has been implemented to make banking safer, faster, and efficient. Ai powered chatbots handle frequently asked questions, provide instant replies, and assist in troubleshooting providing around the clock service and increasing customer service accessibility.*

Keywords: Artificial intelligence, machine learning, algorithms, chatbots, customer service

INTRODUCTION

Artificial intelligence has become a defining and transformative innovation in the recent times, profoundly changing the landscape of operations across all the industries and economies worldwide. The term "artificial intelligence" was initially used by John McCarthy primarily for assessing, reasoning and problem solving. In the recent times due to increasing usage of digital technology, advancement of machine learning and algorithms there has been a major leap in innovation of generative AI. The recent years have witnessed the boom of artificial intelligence in various fields, bringing in an innovative and efficient method to transform the operations. The usage of artificial technology has spread its wings across health care sector resolving prognosis with high accuracy, manufacturing sector- from quality maintenance to quality control and supply chain management, Transportation has witnessed science fiction becoming reality with auto-pilot cars and drone delivery through ai-driven systems. Like any other sector financial sector across the globe has been impacted by artificial intelligence. It has helped financial institutions in reducing costs and improving efficiency of its operations. Banks have implemented various innovations backed by artificial intelligence in its daily operations. The following are the areas artificial intelligence is adapted.

- Customer service- AI Chatbots are the norm for the age, digital banking being used vividly AI powered chatbots are provided by banks for customer queries resolution 24/7.
- Customized recommendations- The financial institution offer tailor made products for customers using AI technology by assessing the customers financial data and creating personalized products.
- Fraud detection- AI detects frauds through identifying patterns of fraudulent activities, it is conducted through machine learning algorithms and is done real time.
- Risk management- the innovative technology assists financial institutions in risk mitigation, credit risk assessment, regulatory compliance and streamlining the account opening process.
- Inventory management- The process of managing customer needs through physical inventory of cheques, debit cards etc. is simplified through implementation of artificial intelligence in financial institutions.
- Figure 1

Benefits of AI

Source: Primary

The banking sector have been swamped by financial technology and artificial intelligence; it has transformed the face of operations enhancing the customer service by enabling automated query resolution systems. Banks in India are adeptly implementing AI to improve efficiency, cut down the costs and provide round the clock customer support. The progress of artificial intelligence is hinged on the user perception which is dependent of various elements such as simplicity – the ease to use, accuracy and trust.

The innovation in technology in the banking sector is chatbot powered by AI. Chatbot are computer programmed assistants drafted to interact with customer. In banking sector chatbots handle customer inquiries, answer frequently asked questions, acts as user guide, personal assistant. Chatbots are basically computer programs designed to automate tasks and The study explores how users across the city of Hyderabad perceive the AI driven customer service in financial institutions, The insights into the effects of artificial intelligence on customer overall experience and loyalty assists the financial institutions in comprehending the user experience and planning to bridge the gap in acceptance of AI in banking sector.

Chatbots powered by AI have become an imperative and integral part of customer service in banking industry, The banks in India have adopted the virtual assistant to undertake technical support and helpdesk services. They provide instant resolution for frequently asked questions about products, services and accounts, it facilitates reduced waiting times, deflecting major volumes of customers call on customer care human representatives, it also assists in reducing workflow in form of balance enquires, statements generation, ordering deliverables etc. and improving the human representative's efficiency for more complicated and complex issues. The system also prompts for product recommendation as per the transaction history of the customer. The major banks of India have personalized their AI-powered customer service chatbots- Public sector banks lead by State bank of India has SIA- State Bank of India's Intelligent Assistant, Indian banks has chatbot named ADYA as their 24/7 banking assistant, Canara banks has AURA, private sector bank the revisors of innovation in banking sector have their separate chatbots, ICICI banks has iPal, HDFC bank has EVA and Axis bank has AXIS AHA.

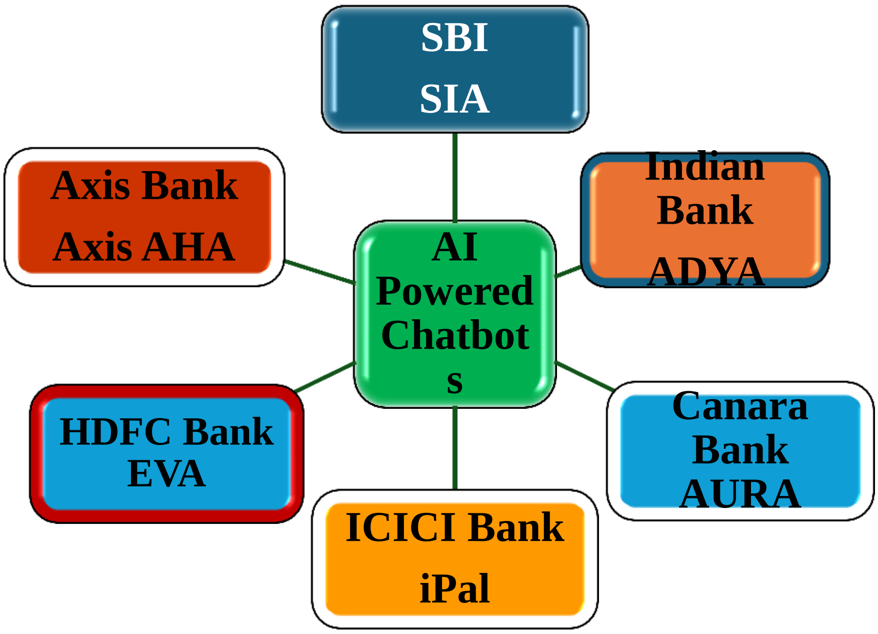

Figure 2 Chatbots used by major banks in India:

Source: Primary

Objectives

1- To determine the association between user satisfaction and trust relating to AI customer service chatbots in banking sector
2- To assess the features of AI chatbot in banking customer service that impacts customers assistance.

Scope

The study explores the strengths of artificial intelligences by assessing the level of satisfaction the users are deriving and the areas for improvement. It explores the effects of demographic variables in Hyderabad- Telangana- a tech savvy hub on the usage of artificial intelligence in banking customer service.

Research Methodology

To comprehend the user acceptability and trust of using AI powered chatbots and to infer the link between the satisfaction and trust as well as assess the beneficial element impacting the user perception of AI customer service chatbots in banking sector. Primary data is collected through a questionnaire; it contains 10 closed ended questions which has been collected from diverse range of age groups and background across Hyderabad-Telangana. The questionnaire contains the distinct demographics, the educational attainment, occupation, primary usage of bank, frequency of usage of chatbots, trust, satisfaction and the aspects of chatbots user find helpful. The questionnaire was collected from 107 respondents in the city of Hyderabad- Telangana, India.

Existing research work in the area is examined to understand the earlier studies carried out; it aids as a secondary source of data.

The data collected is organised using Microsoft excel representing the data collected. Correlation analysis is applied to assess the relationship between users trust and user satisfaction, Descriptive analysis is used to identify the beneficial element impacting the user perception of AI customer service chatbots in banking sector

Review of literature

Shashikumar Bhambhani et.al (2025)

The study investigates the trajectory of automation and artificial intelligences in the banking sector; it highlights change in the method of operation in the banks due to its implementation and its advantages. The objective of the study is comprehending the effects, benefits, and the emerging patterns of development of artificial intelligence and automation. The data has been collected through primary and secondary sources, questionnaires have been obtained from stakeholders of banks and secondary data has been complied through existing research work, publications, and case studies. The study finds AI to be widely impactful in transforming the face of banking sector in various departments, it also enumerates the challenges and obstacles to keep the impact dynamic and persistent.

Ashima Narang et.al (2024)

The research recognizes the revolution of artificial intelligence in the world of banking and finance; it looks delves into the benefits of artificial intelligence and discovers the improvement it generates. The target of the study is to pin down the challenges and advantages of AI adoption in the financial system. It has collected data from the existing literatures and case studies on JPMorgan Chase, Citibank, PayPal etc. The study finds the outcome of implementation of AI in banking sector is favorable having reduced transaction processing time, accuracy in transactions, greater productivity, cost reduction, and overall profitability. The study concludes AI to be revolutionary in the field of banking and suggests ethical practices to maintain its long-term growth.

Chandni Bansal et.al (2024)

The study investigates the hindrances of AI backed chatbots adoption and implementation in Indian banking sector. The study assesses the advantages of chatbots the possible roadblocks for its adoption. The study aims to find the elements hindering widespread adoption of AI chatbots, it investigates the relationship of dependency between the factors. The research work has identified twelve barriers and has applied Interpretive structural modelling (ISM) to determine the relationship between the factors effecting obstacles, and MICMAC analysis to make out the dependency of variables. The study finds the lack of guidelines for artificial intelligence to the major factor effecting its implementation and a need to come up with a comprehensive framework for banking sector.

Danish Anwar et.al (2024)

The study evaluates the journey of artificial intelligence in the banking sector, its impact on customer care, productivity and communication, the chief goal of the study is to determine the adoption and the capacity of AI. The study is conducted with India as its universe; however, it examines AI technology implementation worldwide. The study collects its data from existing journal and investigations. The research finds the role of AI to be imperative in today's competitive world of banking, the innovation brought in by AI has enhanced the operational efficiency of the financial sector.

Emmanuel Baffour Gyau et.al (2024)

The study explores the impact of artificial intelligence on banks financial performance; it determines the relationship between bank artificial intelligence and financial outcome of the institutions. It explores the impact of AI across 20 countries during the period 2010 to 2020, the data for the study is collected world bank database and Centre for Security and Emerging Technology (CSET), it analyses the bank return on assets to determine the effect of AI on the banks financial performance. Analytical tools like correlation test, Heteroscedasticity test, Slope Heterogeneity (SH) tests were applied. It finds a positive effect of AI on the banks return on assets, growth due to the collaboration with AI. It concludes banking sector growth has a significant contribution of AI innovation.

Georgios L. Vousinas (2024)

The study delves into the crucial elements of transformation artificial intelligence has brought in the banking sector, the objectives of the study is to discover the role of artificial intelligence in the metamorphosis of banking industry. The data is collected through secondary sources, the research work discusses the impacts, strategies, and upcoming trends in the area of artificial intelligence. The study finds artificial intelligence to be a transformation driver bringing in major shift towards digitalization and operational automation, it enables banks in delivering around the clock customer service and resolution along with deterring farud.

Jurijs Baltgailis et. al (2024)

The research work explores the transformation of banking sector caused by artificial intelligence; the study lists the numerous rewards of AI implementation and its threats. The aim of the study is to probe into the prospects of artificial intelligence in banking sector. It investigates AI's role in operations, customer service, and risk management of financial institutions. The data for the study is collected via internet sources, data from world bank and the state statistics service of Ukraine, comparative analysis is conducted on the data collected. The study finds numerous benefits of AI adoption and it also finds an impact on banks cost reduction and improvement in customer service. It concludes the potential of AI in banking sector to be resourceful in the coming years.

Radika K G (2024)

The study investigates the concept of AI in India, its progression and development in the Indian banking sector, its role in transforming the customer service segment of banking. The study's chief aim is to examine the notion, the opportunities, and the growth of artificial intelligence in Indian banking sector. The study is focused on the implementation of artificial intelligence in customer service and other operation areas of banking sector in India. The study has collected data through case studies and existing literature. The study finds AI applications in banking to be very effective in improving the operational efficiency and user satisfaction, various private sector banks and SBI has proactively adopted the innovation in creating chatbots. The study concludes AI to be the innovation which enhances operational ability and reduces fraud risk.

Simin Tao (2023)

The study dwells into the link between implementation of artificial intelligence and socio-economic environment in China. It examines the determinants of socio-economic environment influence on the implementation if artificial intelligence in Chinese IT companies. The data for the study is collected through survey questions collected from 350 employees of Chinese IT organizations. The data complied was analysed using SPSS software, descriptive analysis, reliability testing and correlation test was applied for hypothesis testing. The study finds an influence of socio-economic environment on adoption of artificial intelligence.

Macrina P (2022)

The study is the literature review investigating the influencer and the roadblocks in the journey of artificial intelligence, it provides a cross-sectional viewpoint from the different stakeholders of banking sector. The aim of the study is to determine the influencer and the barriers in implementing artificial intelligence in banking operations. The research has collected and reviewed data from the year 2017 to 2022. The study finds the need for multi stakeholder elements, keeping a check on every stakeholder's viewpoint in effective adoption of artificial intelligence in the finance and banking industry.

Kommana V Ganesh Kumar (2021)

The study determines the importance of analytics and artificial intelligence in the Indian financial system. The study looks into the shift from traditional banking to digital and the challenges of the new innovations and implementation of AI and analytics to undermine the threats of digital banking. The study probes in the usage of AI and analytics in State bank of India, the data for the study is collected from reserve bank of India. The study finds artificial intelligence implementation in SBI to be extremely profitable, responsible for increased operational efficiency, fraud detection. The study concludes AI to be the gamechanger in the future of banking industry.

Research Analysis

Table- 1

Correlation	Trust	Satisfaction
Trust	1	
Satisfaction	0.814815196	1

Source- Primary

The relationship between the customers trusts and satisfaction in AI customer support chatbots in the banking industry is ascertained through correlation analysis carried out using Microsoft Excel. The analysis showcases the trust and satisfaction relating to AI chatbots in bank's customer support. Trust and satisfaction's correlation coefficient (r) is 0.8148, indicating a strong direct link, The analysis advocates that as trust increases, user satisfaction tends to increase. Users who have trust while using Ai chatbot in banking solutions are highly likely to have higher trust. This exhibits a close link between satisfaction and trust of AI chatbots. Therefore, there is an association between user satisfaction and trust relating to AI customer service chatbots in banking sector.

Table- 2

Mean	2.09345794
Standard Error	0.14699285
Median	1
Mode	1
Standard Deviation	1.52050581
Sample Variance	2.31193793
Kurtosis	-0.55432795
Skewness	1.00422321
Range	4
Minimum	1
Maximum	5
Sum	224
Count	107

Source- Primary

The most beneficial functionality of AI customer service chatbot is analyzed through descriptive analysis performed through Microsoft Excel. The average response of the users calculated through mean (2.09) is rapid response and around the clock availability, this exhibits the respondents leaning towards speed and accessibility over other features of personalization and simplicity. Median, the middle value (1) as well as the mode the most frequently selected option for functionality is "Quick response" which presents the priority of prompt action. Therefore, the beneficial element impacting the user perception of AI customer service chatbots in banking sector is quick response.

CONCLUSION

Financial services have been engulfed by Artificial intelligence across the globe; the adoption has driven accessibility and efficiency in customer service segment of banking sector. The study senses the need for building trust in AI powered chatbot with more transparency, competence, and consistency, as it is evaluated to be directly related to user's level of satisfaction. The revolution of AI powered customer care support have assisted in delivering 24/7 care, prompt resolutions, and improved efficiency.

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