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A Study On The Integration Of Artificial Intelligence For Customer Service In Banks Of Rajasthan

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1.1 ABSTRACT

Purpose: To critically evaluate the integration of AI for customer service in Banks of Rajasthan.

Research methodology: The study was carried out in the entire Rajasthan state , using a sample of 141 individuals who were bankers working in various banks operative in the state. Purposive sampling was employed to specifically choose particular data. 10 Likert statements were drafted to determine individuals' awareness on the stated topic.

Applicability: The emergence of Artificial Intelligence (AI) in banking has initiated a dramatic change, redefining customer service and operational efficiency. This academic article examines the complex relationship between AI and banking, seeking to clarify the various effects of AI integration in this industry. The study, grounded in a comprehensive theme analysis and an extensive literature review, systematically explores the multiple facets and potential future of AI in banking, emphasising the improvement of customer experience and the resolution of operational difficulties.

Research Limitations: Keeping research constraints in mind, only 141 Bankers were interrogated in the present paper, which is the biggest limitation. Also, the study was restricted to Rajasthan state; this could have been extended further for the sake of better acceptability of results.

Keywords: Artificial intelligence, customer service, Banks, Rajasthan.

1.2 INTRODUCTION

Artificial intelligence provides enterprises with a competitive advantage. The Appen State of AI Report for 2021 asserts that all enterprises must integrate AI and ML into their frameworks to avoid obsolescence. Banking institutions are progressively employing AI to optimise their internal operations, along with certain customer-facing processes and services. Integrating AI can enable the organisation to attain its objectives more swiftly and with more accuracy. The role of AI in banking and financial services has been revolutionary since its emergence. The integration of AI in banking applications and software solutions has profoundly transformed how firms access and manage their funds. It lowers expenses, enhances productivity, and facilitates decision-making through data that would otherwise be unintelligible to humans. Moreover, intelligent algorithms can identify bogus information within seconds, rendering AI's involvement in banking crucial in combating fraud. In 2020, Business Insider indicated that over 80% of banks recognized the influence of AI in the financial sector. Three years later, this potential has surged, and AI has become integral to daily operations in the banking sector.

The rapid ascendance of AI in banking is attributable to the extensive volume of data that must be utilised. Banks possess extensive data, enabling them to leverage AI to surpass human capabilities and forecast outcomes. In scenarios involving numerous variables prevalent in this area, artificial intelligence is crucial, providing significant advantages to the organisation. The evolution of customer service in the banking sector has been profoundly impacted by the emergence and incorporation of Artificial Intelligence (AI). This transition is grounded in the banking sector's increasing focus on consumer requirements, especially those of technologically adept individuals who frequently engage with advanced innovations. Consumers anticipate that banks will deliver cohesive experiences across many operations, including digital monetary transactions, electronic banking, and physical cash transfers. To address these needs, financial institutions have broadened their industrial scope to include components from the retail, IT, and telecommunications industries, thereby improving the accessibility of banking services to consumers at any time and from any location. The incorporation of AI in banking has transformed customer service by providing tailored banking experiences, therefore enhancing the efficiency and success of financial operations. AI advancements, as a fundamental component of Industry 5.0, seek to integrate automation with human intelligence, hence enhancing a highly personalised client experience in banking. This strategy has enhanced service efficiency and ushered in a new era of customer service centred on the seamless delivery of financial products. Nonetheless, the digital shift within the banking sector has resulted in heightened consumer expectations. Despite banks enhancing their customer service with virtual agents such as chatbots, client engagement with these technologies has not met anticipated levels. This disparity underscores the difficulties banks encounter in synchronising their digital transformation initiatives with consumer expectations and experiences. Furthermore, the utilisation of AI in customer support has markedly enhanced the efficiency of these services. By implementing AI technologies, banks can fulfil the increasing expectations for efficiency and personalisation while effectively addressing the obstacles of digital transformation. The evolving banking sector highlights the crucial role of AI in developing customer service strategies, emphasising the necessity for banks to adjust to shifting consumer expectations

and technological progress. The banking sector is focused on leveraging AI to develop innovative, efficient, and customer-centric banking products amongst the hurdles of AI integration. The continuous advancement of AI in banking demonstrates the industry's resilience to technical progress and its commitment to addressing the evolving demands of consumers in the digital era. The future of banking resides in the deliberate advancement and implementation of AI technologies, which are poised to transform the banking experience for both individuals and enterprises.

1.3 REVIEW OF LITERATURE

(Demba, 2024) The research findings indicate that the use of artificial intellect (AI) in banking significantly enhances efficiency and accuracy in information processing, allowing for easier automation of standard tasks and enabling employees to focus on more complex analytical goals. This leads to improved risk assessment, particularly in evaluating credit risks, which reduces the likelihood of defaults and bolsters the overall security of the banking system. - The findings also highlight that AI improves client servicing through the implementation of chat-bots that provide quick and precise responses to client inquiries, facilitating problem-solving. This capability allows banks to create personalised offers and services tailored to the specific preferences and needs of clients, thereby enhancing customer satisfaction.

(**Kinil, 2024)** The research highlights that the integration of AI in banking is not just limited to automating routine tasks but extends to critical functions such as cybersecurity, risk evaluation, and real-time transaction oversight, thereby enhancing overall bank performance and customer experience. - The findings suggest that the future of banking will increasingly rely on AI to create smart systems that improve risk assessment, strengthen customer relationships, and streamline court proceedings, indicating a significant shift toward innovation and advancement in the banking industry.

(**Lawrence Damilare *et al.*, 2024)** The investigation reveals significant enhancements in customer service metrics attributed to the integration of AI in banking, highlighting its potential to revolutionise service delivery and customer engagement through personalised banking experiences. - The study emphasises the strategic implications for banks adopting AI technologies, particularly the necessity of addressing ethical and privacy concerns, advocating for a balanced approach that combines ongoing research and development with ethical governance to responsibly harness AI's full potential.

(**Pawan *et al.*, 2024)** The chapter highlights that AI technologies, such as machine learning, natural language processing, and predictive analytics, are significantly transforming service marketing strategies by automating personalised communications and predicting customer needs, which leads to more efficient and tailored customer experiences. - Through case studies and empirical data, the research demonstrates that the integration of AI applications, like chatbots and virtual assistants, into service marketing not only enhances service delivery and improves customer satisfaction but also helps businesses create a competitive edge in the market.

(**Roshni, 2024)** The paper highlights the critical role of Artificial Intelligence and Machine Learning in enhancing various banking operations, including customer services, fraud detection, personalised banking services, credit scoring, operational efficiency, and sophisticated product development, indicating that these technologies are essential for banks to remain competitive in the digital era. - It emphasises that banks that do not adopt digital transformation and new technologies risk losing customers and falling behind competitors, underscoring the urgency for the banking sector to embrace these advancements to improve service delivery and operational effectiveness.

(**Ying *et al.*, 2024)** The research findings identify three main themes related to the integration of AI in customer experience: AI experience, AI functions, and AI services, which collectively contribute to understanding how AI influences customer interactions and satisfaction. - A conceptual framework is developed based on the findings, which serves as a guide for future research and offers practical implications for practitioners aiming to enhance customer experience through the application of AI along the customer journey.

(**Zhong *et al.*, 2024)** The paper identifies and addresses the limitations of current intelligent customer service systems, which typically provide only single answers. It proposes a Seq2Seq-based response method that allows for multiple answers in chat scenarios, enhancing response diversity and improving user experience by making interactions more engaging and emotionally expressive. - To assist users who struggle to articulate their needs in a single sentence, the research introduces a task-oriented multi-turn dialogue module. This module employs intent recognition and slot-filling techniques to maintain contextual information throughout conversations, thereby facilitating better problem resolution for customers.

(**Feras Mi *et al.*, 2023)** The research findings indicate that digital banking user satisfaction is determined by factors such as expectation confirmation, perceived performance, visual attractiveness, problem-solving, communication quality, and corporate reputation, with a substantial variance of 51.1%. - The study also shows that user acceptance of AI-enabled digital banking is influenced by satisfaction and corporate reputation, with a considerable variance of 48.3%.

(**Jeremy, 2023)** The paper highlights the transformative role of artificial intelligence (AI) in financial services, emphasising its ability to enhance customer experience through a seamless and personalised omnichannel approach. AI tools, such as conversational chatbots and advanced fraud protection, are identified as key components in proactively engaging customers and addressing their needs effectively. - It underscores the importance of starting small with AI implementations, advocating for incremental changes that deliver immediate value. This approach allows organisations to balance the integration of AI with the essential human touch in customer interactions, ensuring that the evolving expectations of customers are met while maintaining a personal connection.

(**Rita, 2023)** AI technologies in banking and finance have significantly improved decision-making processes, reduced operational costs, and increased overall profitability. - Concerns related to data privacy, bias, and ethical implications must be carefully addressed to ensure the responsible and sustainable use of AI in the financial sector in the future.

(**Ruzyieva Olima *et al.*, 2023)** The paper identifies four key strategies that banks should implement to enhance the use of digital tools, focusing on a customer-centric approach that prioritises user-friendly design and personalisation to improve the overall customer experience in banking services. - It emphasises the importance of integrating advanced technologies, such as encryption and biometric verification, alongside financial product innovation and effective marketing strategies to address security concerns and meet diverse customer needs in the digital banking landscape.

(**S. Vidhya, 2023)** The research highlights the significant impact of artificial intelligence on banking, particularly in enhancing customer interactions, which leads to improved service delivery and customer satisfaction. - The study emphasises AI's role in risk management and fraud prevention, showcasing how it streamlines operations and allows for more tailored financial services to meet individual customer needs.

(**Saurav, 2023)** Artificial Intelligence (AI) significantly enhances operational efficiency in the banking sector by automating routine tasks, which allows financial institutions to allocate human resources towards more strategic initiatives and innovative solutions. This integration of A.I. technologies, such as machine learning and predictive analytics, streamlines processes and optimises operations. - A.I. plays a crucial role in personalising customer experiences and managing risk. By analysing large volumes of customer data, banks can offer tailored services that improve customer satisfaction and loyalty. Additionally, A.I. models enable real-time identification of potential risks and vulnerabilities, leading to more effective risk assessment and fraud detection, thereby safeguarding customer assets and reducing financial losses.

(**Thi Hong, 2023)** The study highlights the application of artificial intelligence (AI) in managing customer loyalty within banks, emphasising the use of advanced technologies such as machine learning, natural language processing, and cognitive computing to analyse customer behaviour and preferences. This analysis aids in improving banking products and enhancing customer loyalty. - The research demonstrates the effectiveness of the CART (Classification And Regression Tree) algorithm in predicting customer loyalty by creating decision trees that classify customer data based on transaction history and other attributes. This method allows banks to assess whether customers will continue using their banking services or decide to discontinue them, thereby providing insights into customer relationship management.

(**Chandrima *et al.*, 2022)** The paper analyses the efficacy of banking functions in implementing Artificial Intelligence to enhance customer engagement, indicating that AI can significantly improve the overall customer experience in banking by making processes more efficient and fast. - It emphasises the importance of creating personalised and seamless services for tech-savvy customers in metropolitan cities of India, highlighting that these customers expect high levels of service quality and engagement from their banks.

(**Manzoor Anwar, 2021)** The integration of Natural Language Processing (NLP) into automated banking customer care systems has been shown to enhance customer satisfaction and operational efficiency, particularly for routine queries and transactions, as evidenced by improved satisfaction levels and reduced response times after NLP implementation. - The research highlights that while NLP significantly benefits customer service for straightforward inquiries, it struggles with complex problems and technical assistance, necessitating human intervention, which poses management challenges and raises concerns regarding privacy and data security.

1.4 RESEARCH METHODOLOGY

1.4.1 RESEARCH OBJECTIVE

The primary objective of the study was to identify the perception of integration of artificial intelligence for customer service in banks of Rajasthan.

1.4.2 RESEARCH DESIGN

The study adopts a descriptive research design due to its applicability for cross-sectional studies and for understanding the theme.

1.4.3 SAMPLING TECHNIQUE

The sampling method employed in the thesis was the Purposive Non-Probability Sampling technique, as we selected participants based on their judgment and the characteristics they possess.

1.4.4 DATA

The study was carried out in the entire state of Rajasthan, using a sample of 141 bankers. Hence, purposive sampling has been the methodology utilised for data sampling. Likert statements were drafted to identify the bankers' perception of the penetration of AI into banks.

1.5 LIKERT STATEMENTS

Following were the Likert statements drafted to ascertain the perception of the respondents

1. It certainly helps in eliminating human errors and risks.
2. AI-powered chatbots can provide customer service even during off-hours.
3. The AI algorithm has been trained using unbiased datasets and tested for programming bias.
4. AI development can be extremely costly.
5. It can overtake humans' ability completely.
6. AI can do nothing without human intervention to help it improve over time.

7. AI is machine based, thus, is hackable and risky.
8. It has led to a fall in the employment status in Banking.
9. AI is capable of creating more value in the same day as a human worker.
10. AI is not a choice now; it is a need.

1.6 HYPOTHESIS

H_{01}: There is no significant difference in bankers' perceptions of the emergence of artificial intelligence in their regular banking practices.

For the purpose of testing the above-mentioned hypothesis, the mean score of the primary data collected with the help of the Likert Statement was calculated

1.6.1 Descriptive Statistics

	n	Mean	Median	Standard deviation
Mean Score	141	4.1	4.5	0.81

The descriptive statistics reveal that mean (4.1) and median (4.5), it can be concluded that 50% of the sample respondents have a mean score of more than 4.5

1.6.2 Summary of Ranks (test value = 3)

		n	Mean Rank	Sum of Ranks
Mean Score	Negative Ranks	23	16.8	386.5
	Positive Ranks	115	80.04	9204.5
	Ties	3		
	Total	141		

The summary of ranks reveals that the count of positive ranks (115) was more than that of negative ranks (23), which states that the maximum respondents were on the agreement side of the statement and had a common approach.

1.6.3 Wilcoxon-Test

	W	z	p
Mean Score	386.5	-9.38	.001

The P-value of the one-sample Wilcoxon test states that the sample was not from the population with a mean of less than or equal to 3.

1.6.4 Decision

Based on the work done above, the researcher accepts the null hypothesis, which states that ***there is no significant difference in bankers' perceptions of the emergence of artificial intelligence in their regular banking practices.***

1.6.5 CONCLUSION:

The integration of artificial intelligence in banking encompasses not only technological advancement but also considerations of trust and ethics. By effectively weighing the advantages and disadvantages of AI, the banking industry may pioneer a more efficient and inclusive future whereby humans and robots collaborate together. The benefits include increased efficiency, time conservation, bias elimination, and automation of repetitive processes, among others. The drawbacks include expensive implementation, probable employment displacement, and a deficiency in emotion and inventiveness. It is crucial for organisations to recognise the inherent downsides of employing AI, although it is equally vital to advance the utilisation of AI. Understanding the drawbacks will enable the deployer to address these issues, facilitating a more effective and ethical application of AI in the workplace. Artificial intelligence has revolutionised the banking sector by providing personalised, efficient, and real-time solutions that improve client experience and optimise internal operations. Nonetheless, it is fraught with obstacles. Data privacy management, ethical considerations in automated decision-making, and the risk of reinforcing existing biases necessitate thorough examination and regulation. The banking sector, integral to daily life, must confront these risks with transparency and accountability. The study's key conclusions emphasise the ambivalent nature of AI in banking. AI has become a crucial element for innovation, enhancing productivity and facilitating individualised customer interactions. Conversely, it introduces a complex array of ethical and privacy issues that require diligent oversight and ethical structures. The study's suggestions endorse a balanced strategy for AI adoption, highlighting the necessity for continuous research, development, and ethical considerations to traverse the future banking landscape.

1.7 SUGGESTIONS:

Banks are transforming customer service through the utilisation of AI technologies such as chatbots, virtual assistants, and sentiment analysis. Artificial Intelligence facilitates round-the-clock help, tailored guidance, anticipatory aid, fraud identification, and enhanced efficiency, resulting in increased client satisfaction and elevated revenue. It is recommended to integrate AI in banks concurrently with training their current staff, as subjecting them to the rapid pace of AI deployment can cause emotional distress and require prompt intervention. Furthermore, it is crucial to make only the necessary modifications within the system rather than implement all the elements found.

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