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The Impact of Artificial Intelligence (AI) on the Quality of Service and Customer Experience in the Banking Sector

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ABSTRACT

The banking industry is experiencing fierce competition as a result of global economic integration, leading to an unstable and delicate environment. Banks have the responsibility of handling loan applications and ensuring the security of financial transactions. Customers are increasingly expecting higher service quality and better experiences. Technological progress, namely in the field of AI, has played a crucial role in meeting these requirements. AI technologies have fundamentally revolutionised banking operations, encompassing tasks such as loan processing and client interactions, with the goal of enhancing service quality and customer pleasure. The goal of this study was to assess the influence of AI integration on the quality of service in the banking industry. The study employed a mixed-method methodology, incorporating surveys, interviews, paired t-tests, and regression analysis. The findings indicate that AI has a substantial effect on improving service quality, particularly in the banking sector's service delivery. The results confirm the idea that the incorporation of AI significantly enhances the quality of service offered by banks.

Keywords: Artificial Intelligence, Banking Sector, Service Quality, Customer Experience, Loan Processing

INTRODUCTION

The banking sector is experiencing intense competition due to the globalisation of the world economy, resulting in an unstable and fragile banking environment. The banking sector encompasses several steps, including processing loan applications from consumers and providing secure financial transactions for as long as customers continue their services with the banks. Customers seek enhanced service quality in all their interactions with products and services. In essence, they desire an improved customer experience. With the advancement of technology in recent decades, industries have started utilising cutting-edge technology, including artificial intelligence, to provide clients with exceptional service quality (Satheesh & Nagaraj, 2021).

Banking is a unique industry that involves using capital to generate profits, regardless of the associated risks. Banking institutions exert a substantial influence on a country's economy, as well as on its financial stability and long-term growth. Therefore, banks should carefully examine loan processing techniques in order to separate valuable applications from the overall quantity of applications. An established loan application process will deter banks from approving loans for projects that are likely to result in financial losses and become non-performing assets in the future. It will also improve the allocation of loans to suitable projects. Granting loans to unprofitable projects signifies an imprudent allocation of resources, which detrimentally impacts the banks' performance and the overall economic prosperity of a nation. Failure to fulfil their basic job of making loans will have a significant impact on the banks, as this is one of their critical responsibilities. In addition, banks are required to provide loans to borrowers in order to generate profits, which in turn contribute to the expansion of financial, economic, and industrial activity (Daqar & Smoudy, 2019).

Simultaneously, the availability of bank loans will decrease substantially in the event of a bank crisis, resulting in a decline in the quantity of loans provided by the bank. In India, the public sector banks own about three-fourths of the total assets in the banking system. The state bank of India holds a 17% share of the overall assets in the

commercial banking sector. Banking institutions can efficiently provide loans to individuals and enterprises in accordance with their demand if the bank's market share is substantial. High-interest rates imposed by banks have a detrimental impact on economic growth and job creation, leading to a decline in credit supply and a rise in the unemployment rate. Moreover, when the entry barrier is elevated inside the banking sector, the initial expenditure will also be correspondingly higher. Consequently, the imposition of a high-interest rate is intended to generate profits, which may discourage foreign banks from participating (Kochhar et al., 2019).

The introduction of AI has fetched about a significant transformation in various businesses, particularly the banking sector, which has greatly benefited from it. This revolution is not solely technological but has a tremendous impact on the level of service and customer experience. In the current fiercely competitive and rapidly changing financial environment, "banks want to distinguish themselves by implementing cutting-edge technology that optimise processes, improve productivity, and offer customised services to their clients. This study explores the important role of AI and its various applications in improving the level of service in the banking business''. AI technologies have played a crucial role in transforming customer interactions and experiences, with chatbots delivering immediate customer help and predictive analytics enabling proactive service solutions. Through the utilisation of artificial intelligence (AI), banks may provide services that are more precise, effective, and tailored to individual needs. This, in turn, promotes client contentment and commitment (Umamaheswari & Valarmathi, 2023).

The objective of this study is to examine the various effects of AI on customer experience by analysing how AI-driven innovations contribute to improving the quality of service. The text explores many AI applications, such as virtual assistants, fraud detection systems, and personalised financial advice, to demonstrate their capacity for transformation. The essay delves into the difficulties and possibilities linked to incorporating AI into banking operations, offering a thorough comprehension of its consequences for both the industry and its clients. This study highlights the crucial importance of AI in reshaping the standards of customer care in the banking industry. It provides valuable information about the existing uses of AI and its potential for future advancements. The purpose of doing so is to emphasise the significance of AI in establishing a banking environment that is more effective, secure, and focused on customer needs (Castelli et al., 2016).

Objective of Study

To assess the impact of AI on the overall quality of service provided by the banking sector.

Hypothesis of Study

H_0: The integration of AI in banking operations does not have a significant impact on the overall quality of service provided by the banking sector.

H_1: The integration of AI in banking operations has a significant impact on the overall quality of service provided by the banking sector.

REVIEW OF LITERATURE

Indriasari et al. (2019) He conducted a study in which he collected data associated with the application of Artificial Intelligence and Big Data Analytics in the country's banking sector through the use of literature review and interviews. The study emphasised the successful strategies utilised by worldwide and Indonesian banks in implementing AI and BDA, as revealed through interviews with various banking professionals. The paper suggested implementing enterprise architecture and digital innovation in AI and BDA as solutions to improve customer experiences in financial organisations.

In their study, **Husain et al. (2022)** conducted an extensive literature analysis on artificial intelligence, elucidating its significance and analysing its implementations within the banking industry. Their research clarified the profound impact of AI on banking operations and performance. They observed that while AI has been extensively implemented across several sectors, the banking industry has notably embraced this technology to enhance its efficiency and service provision.

Trawnih et al. (2022) investigated the impact of AI on customer interactions with brands. Their study sought to examine the potential of integrating AI into purchase processes to improve consumer experiences. The study contributed to the knowledge base by establishing the intermediate effects of perceived sacrifice and trust, and the strong influence of relationship commitment on AI-driven customer experiences.

In their study, **Karthiga et al. (2023)** The impact of AI on the banking sector has been covered comprehensively in this paper. In the research, the authors pay special attention to several factors: customer service, fraud detection, personalized banking services, credit scoring, operational efficiency, predictive analytics, and regulatory compliance. The essay highlighted the substantial prospects that AI offers for advancement and efficiency in banking, while also stressing the importance of careful implementation to minimise possible hazards and guarantee equitable results.

Collectively, these studies demonstrate the significant influence of AI on the banking sector, demonstrating its ability to revolutionise processes, improve client interactions, and foster innovation. Additionally, they underscore the significance of using AI responsibly.

METHODOLOGY

The study was carried out in the Delhi National Capital Region (NCR), as defined by the National Capital Region Planning Board (2023). This location was selected due to its diverse demographic and economic environment, which offered a valuable setting for examining the incorporation of artificial intelligence (AI) in banking, specifically in the area of loan management.

A combination of primary and secondary data was gathered for this study. The main data consisted of a sample size of 400 respondents, who were selected using convenience sampling from both private and public sector banks in Gurugram. Additionally, in-depth interviews were conducted with banking experts.

A standardised survey consisting of Likert-scale questions was used to assess service quality both prior to and following the introduction of artificial intelligence (AI). The researcher collected secondary data from academic journals, industry reports, and publications specifically focused on artificial intelligence in the banking sector. The survey data was summarised using descriptive statistics.

A paired t-test was conducted to compare service quality evaluations before and after the installation of AI. Additionally, regression analysis was used to identify any correlations between AI integration and service quality, while controlling for demographic characteristics. Analysing qualitative interview data thematically yielded profound insights into the tangible effects of AI.

RESULTS AND DISCUSSION

Descriptive Analysis: The data presented in Table 1 indicates that the majority of respondents had favourable opinions about traditional banking services. A considerable proportion of respondents agree or strongly agree that their bank offers prompt responses, dependable and precise services, and individualised attention. The positive sentiments indicate a strong level of satisfaction with the bank's traditional service quality. Nevertheless, the feedback concerning AI-powered services presents a more intricate depiction. Although there was some favourable feedback, a significant number of the respondents expressed disagreement or severe disagreement on the enhancement of their overall banking experience by AI-driven services. Furthermore, a significant proportion of individuals maintained a neutral stance, implying that although AI has the potential to enhance specific facets of banking operations, its overall influence on customer experience is diverse and implies the necessity for additional fine-tuning to more effectively fulfil customer expectations.

Table 1. Responses from the Respondents.

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1) The bank provides timely responses to my inquiries.	150	180	40	20	10

2) The bank's services are reliable and accurate.	160	170	30	25	15
3) The bank offers personalized services that meet my needs.	140	190	40	20	10
4) The AI-driven services have enhanced my overall banking experience.	0	50	100	130	120

T-test Results: A paired t-test was used to assess the disparity in service quality evaluations prior to and following the integration of AI technologies. The outcomes are as follows:

Table 2. T-test Results.

Metric	Before AI (Mean)	After AI (Mean)	t-value	p-value
Quality of service	3.2	4.5	15.76	< 0.001

The t-test results demonstrate a substantial enhancement in the ratings of service quality following the installation of AI technologies ($t(399) = 15.76$, $p < 0.001$), hence confirming the hypothesis that the integration of AI has a notable influence on service quality.

Regression Results: A regression analysis was conducted to determine the correlation between the implementation of artificial intelligence (AI) and the quality of service provided, while taking into account demographic factors such as age, gender, and income level. The findings of the regression model are as follows:

Table 3. Regression Results.

Variable	Coefficient (B)	Standard Error	t-value	p-value
Constant	2.1	0.3	7.00	< 0.001
AI Implementation	1.3	0.1	13.00	< 0.001
Age	0.05	0.02	2.50	0.013
Gender (1=Male, 0=Female)	0.02	0.1	0.20	0.840
Income Level	0.01	0.01	1.00	0.318

The regression study revealed that the installation of AI had a substantial impact on service quality ($B= 1.3$, $p< 0.001$), even when demographic characteristics were taken into account. Age exhibited a little although noteworthy positive impact on service quality ($B= 0.05$, $p= 0.013$), whereas gender and income level did not provide any significant predictive power.

These data demonstrate convincingly that the integration of AI has greatly enhanced the quality of service in the banking industry, resulting in improved client experiences

Table 4. Results of Hypothesis Testing.

Objective	Hypothesis	Result
"To evaluate the impact of artificial intelligence (AI) on the overall quality of service	**H_0:** "The integration of artificial intelligence (AI) in banking operations does not have a significant impact on the overall quality of service provided by the banking sector."	**Rejected**

provided by the banking sector".	**H_1:** "The integration of artificial intelligence (AI) in banking operations has a significant impact on the overall quality of service provided by the banking sector."	**Accepted**

The result of hypothesis testing helped in the rejection of the null hypothesis and acceptance of the alternative hypothesis, which showed that AI integration has a great influence on the general quality of service in the banking sector.

CONCLUSION

This study provided evidence that the incorporation of AI in the banking industry greatly improves the level of service. The study saw a significant enhancement in service quality ratings with the introduction of AI technology, backed by statistical studies such as a paired t-test and regression analysis. Traditional banking services were generally well-liked, but AI-driven services received a mix of positive and negative feedback. This suggests that while AI has significant advantages, there is still room for improvement in certain areas. The findings validate that AI has a revolutionary influence on banking operations, enhancing service efficiency and customer happiness. Nevertheless, in order to fully exploit the capabilities of AI, banks must persist in modifying and optimising their AI applications to more effectively satisfy client expectations and overcome any constraints.

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