



Artificial Intelligence: Unlocking New Frontiers of Customer-Centric Banking

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Abstract. This study examines the role of Artificial Intelligence (AI) in enhancing customer service, with a particular focus on personalized services and post-sales support in the banking sector. The research is centered on AU Bank's branches in Indore, India, utilizing a mixed-methods approach. A quantitative survey was conducted with approximately 90 customers, complemented by qualitative interviews with bank managers, to assess AI's impact on customer satisfaction and operational efficiency. Findings of the study indicate that AI accounts for 32.8% of the variance in overall customer experience. The introduction of AI-driven personalized customer service explains 22.9% of this variance, while AI's role in after-sales support contributes only 7%. These results align with prior predictions regarding AI's effectiveness in post-sales services. Further, AU Bank leverages AI by automating routine operational tasks, thereby enhancing service personalization. This allows customers to experience seamless interactions without frequent human intervention. However, challenges such as language barriers and the need for constant AI model updates limit its effectiveness, particularly in post-sales support. AI is poised to revolutionize customer experience in banking. However, to fully realize its potential, sustained investments in AI infrastructure, data security, and regional adaptability are essential. Future research should explore AI's long-term impact on customer loyalty and business performance, along with its adaptability across diverse cultural and linguistic contexts.

Keywords: Customer Experience, Artificial Intelligence, Personalized Customer Service

1. Introduction

The impact of Artificial Intelligence (AI) on marketing has garnered significant attention from researchers and economists, highlighting three key benefits of AI for customer experience: support from virtual assistants, personalized services that influence buying decisions, and valuable insights into customer behavior [1]. However, caution against

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potential disruptions to the labour market due to AI integration [2].

As consumer expectations rise, businesses must improve customer experiences beyond just delivering information and create strategies that alleviate discomfort during the buying process. For client satisfaction and loyalty, top-notch customer service is essential [3]. For instance, AU Bank effectively uses its Customer Relationship Management (CRM) system to collect and analyze client data, facilitating customized banking experiences and enhancing communication [4].

AI is crucial for overcoming marketing challenges, enabling data analysis, pattern recognition, and informed decision-making. Consumers encounter AI through personalized advertising and virtual assistants during online purchases [5]. Overall, AI has revolutionized customer service by enhancing personalization and real-time problem resolution; although challenges like data privacy and ethical concerns remain [6].

1.1 Research Problem

As artificial intelligence (AI) becomes more widely used across industries, banks are particularly finding it difficult to effectively utilize AI to improve customer service. Even though AI can provide real-time solutions and individualized interactions, its application in after-sales support is still somewhat limited. This study tackles the issue of comprehending how artificial intelligence (AI) enhances customer happiness and operational efficiency, as well as the obstacles that prevent AI from realizing its full potential in revolutionizing customer service experiences, especially in areas with linguistic and technological constraints.

1.2 Research Goal

The primary aim of this research, therefore, is to examine how artificial intelligence (AI) can enhance the overall customer experience, with a focus on personal customer service and after-sales support within the banking sector. With the data obtained from the branches of AU Small Finance Bank stationed in Indore, the study seeks to assess the impact of AI on customer satisfaction, operational efficiency as well as the complete customer experience journey.

1.3 The scope of study

The present study investigates the effects of using artificial intelligence on customer service or care in the locations of AU Small Finance Bank branch Indore targeting personalized and post-purchase care. It assesses the impact of AI on customer satisfaction

and efficiency through a quantitative survey of 90 customers, and qualitative interviews with bank management staff. Furthermore, the report addresses the challenges posed by the banking sector about the adoption of AI including issues of data privacy, and cultural and language diversity barriers.

2 Literature Review

Due to the proliferation and evolution of artificial intelligence technology (AI), customer service has changed dramatically. Initially, AI was limited to solving simple problems such as entertaining deep ready-made questions that involved straightforward bots and voice systems. The first acknowledgment of such potential to improve customer service through the decrease of turnaround time and the increase in productivity was highlighted by [7]. Nonetheless, the early systems' shortcomings of being personalized to the customers made it impossible for them to enhance customer satisfaction in the actual sense.

From 2010 to 2022, progressions in AI and regular language handling (NLP) altogether upgraded computer-based intelligence's abilities in client assistance. Simulated intelligence-driven personalization turned into a key concentration, with concentrates by [8] exhibiting how personalization expanded consumer loyalty and reliability. [9] Claim that AI systems started effectively analyzing the preferences and actions of customers. As a result, they were able to provide personalized recommendations and responses that far exceeded the expectations of customers. During this period, the capacity to appreciate anyone on a deeper level in computer-based intelligence frameworks likewise turned out to be progressively significant, as [10] looked at AI's ability to respond sympathetically and analyze sentiment, resulting in customer experiences that are more engaging and satisfying.

The literature focuses on ongoing AI advancements from 2020 to 2024, particularly enhanced automation and predictive analytics. AI systems have evolved to provide proactive solutions based on predictive insights rather than providing reactive support. [11] emphasized that predictive AI made it possible for businesses to anticipate customer needs and provide anticipatory service, both of which significantly increased customer satisfaction. Moreover, the combination of man-made intelligence with rising advancements like the Web of Things (IoT) and increased reality (AR) further improved client support encounters. [12] talked about how AR applications powered by AI make experiences that are both immersive and interactive, which makes customers happier and highlights, that marketers are increasingly focusing on creating customer experiences to foster sustainable relationships [13].

Regardless of these progressions, challenges stay in completely understanding

computer-based intelligence's true capacity in client assistance. Significant obstacles continue to be privacy concerns, algorithmic bias, and the loss of human interaction [14]. Resolving these issues is fundamental to guarantee that man-made intelligence innovations improve proficiency as well as encourage certifiable consumer loyalty. To keep customers' trust and satisfaction, strong data protection and ethical considerations are essential. While simulated intelligence has fundamentally further developed client encounters through computerization, personalization, and prescient capacities, further innovative work is important to conquer current difficulties and open simulated intelligence's maximum capacity in making superb client support connections [6]. The development of simulated intelligence in client support started with simple robotization [7] and has fundamentally advanced through normal language handling (NLP) and AI progressions. Early artificial intelligence applications were restricted to routine errands yet neglected to customize client encounters successfully.

Personalization and predictive analytics are now handled by sophisticated AI tools. The significance of immersive AI technologies like augmented reality (AR) in increasing customer engagement is emphasized by [12]. In addition, Verhoef et al. [11] emphasize the significance of predictive AI in anticipating customer requirements, which results in proactive problem-solving.

Concerns regarding algorithmic bias, data protection, and the ethical use of artificial intelligence (AI) in business are significant and [14] highlight the need for strong data management strategies to protect client information and ensure transparency in AI decisions, also, [15] note that product prices influence consumer choices, with customer satisfaction playing a key role.

AI and Customer Relationship Management (CRM) have transformed the banking sector by enhancing customer interactions and personalizing services [16]. These technologies boost customer satisfaction and loyalty through customized products and real-time support via AI-driven chatbots [17].

AU Small Finance Bank embraces a customer-centric approach by utilizing AI and CRM to offer personalized banking experiences, blending technology with a human touch to provide effective service around the clock [18].

3 Research Methodology

3.1 Research Design and Approach (Qualitative, Quantitative, and Mixed-Method)

The review embraces a blended technique approach, joining subjective and quantitative strategies to investigate the job of man-made intelligence in improving client experience. The qualitative portion involved semi-structured interviews with managers at AU Small Finance Bank in Indore, examining the advantages, drawbacks, and impacts of AI on operations. The quantitative portion involved a survey distributed to 90 internet users who visited the bank branches. The information gathered from these two sources was integrated to gain an extensive comprehension of artificial intelligence's role in client support.

3.2 Detailed Explanation of Data Collection Methods (Surveys, Interviews, etc.)

Semi-structured interviews were conducted with bank managers to gather insights into the benefits, challenges, and effects of AI on operations, focusing on AI-driven personalization and enhancement of after-sales service. In the quantitative part, a survey was distributed to 90 internet users who visited the bank branches. The survey explored user perceptions and experiences with AI in customer service.

3.3 Sampling, Participant Demographics, and Analytical Tools Used for Data Interpretation

The qualitative interviews deliberately selected bank managers who were well-versed in AI applications. For the quantitative portion, a straightforward random sampling strategy was used to ensure a diverse sample of internet users from various demographics. The sample size of 90 participants represented web-savvy customers who actively engaged with AI-based services. Data analysis included correlation, R-square, and ANOVA tests to assess relationships between AI implementation and customer experience metrics. A thematic analysis of interview data was also conducted to identify recurring themes and managerial insights, complementing the quantitative findings.

The conceptual model (Fig. 1) that is portrayed in the picture is a hierarchy that consists of three related parts that branch out from a main idea. In light of the current research, the image depicts a paradigm in which artificial. Palestinian enterprises due to high implementation costs. Intelligence (AI) is a key driver of customer experience elements.

1. Key Concept: Artificial Intelligence (AI) - This serves as the model's main source of motivation. With AI at the top, it is evident how much of an impact it has on the other aspects.
2. Dimensions of Customer Experience - The branches could stand for important aspects

of the AI- AI-influenced consumer experience:

- Personalization: AI's capacity to adjust interactions and services per user preferences
- After-sales service: Streamlining correspondence, order fulfilment, and after-sales customer support procedures.

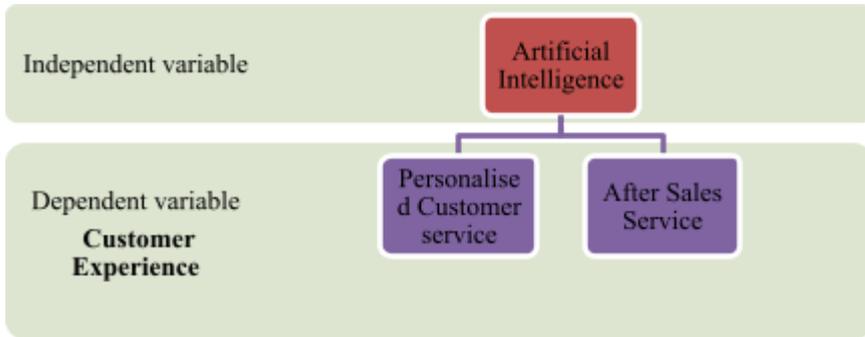


Fig.1. Developed Conceptual Model indicating the relationship between independent and dependent variables

4 Results and Discussions Quantitative Data

4.1 Findings

Using correlation, R-square, and ANOVA tests, the quantitative study investigates the empirical link between artificial intelligence (AI) and consumer experience. Ninety consumers were surveyed to get information about how they felt AI would affect after-sales assistance and tailored customer care. A better knowledge of how AI impacts various aspects of the customer experience and its capacity for explanation in these domains is made possible by this quantitative assessment. The results highlight the concrete impact of AI on financial services and support qualitative insights.

H0-1: No Empirical Relationship between Artificial Intelligence and Customer Experience

A correlation test (shown in Table 1) indicated a direct, moderately positive relationship between AI and customer experience, with a correlation coefficient (R) of 0.536. This relationship is statistically significant at the 0.01 level, suggesting less than a 1% chance that the result is due to random variation. Therefore, we reject the first hypothesis (H0-1) and conclude that there is a significant relationship between AI and customer experience.

Table 1. Correlation between AI and customer experience

Dimensions	1	2
Artificial Intelligence	1	0.536**
Customer Experience	0.536**	1

**Correlation is significant at the 0.01 level.

H0-2: No Empirical Influence of Artificial Intelligence on Customer Experience

The second hypothesis (H0-2) proposed that AI has no significant influence on customer experience. However, R-square and ANOVA tests (Table 2 in annexure) revealed a significant relationship between AI and customer experience, indicating AI explains 32.8% of the variance, with a moderate positive correlation (R = 0.489). Further analysis focused on personalized customer service and after-sales support, supported by an F-statistic (F = 22.669, Sig. = 0.000). This suggests AI influences customer experience but is not the sole factor, as other elements like service quality and brand reputation are also important.

Table 3 shows AI accounts for 22.8% of the variance in personalized service, while Table 4 indicates only 7% for after-sales support, highlighting AI's weak explanatory power in this area. Limited access to AI systems affects after-sales support, where the influence is relatively weak (R-square = 0.07). Even with a significant F-statistic (F = 6.294, Sig. = 0.014), the low R-square suggests a limited practical significance, indicating that additional variables may be needed for a comprehensive understanding of customer support dynamics.

Table 2. R-square and ANOVA for customer experience econometric model

Model	Sum of squares	Df	Mean square	F	Sig.	R	R square
Regression	14.341	1	14.342	22.669	0.000 b		
Residual	18.831	89	0.306			0.489a	0.401
Total	32.402	90					

Dependent variable: Customer experience

Table 3. R-square and ANOVA for personalized customer service econometric model

Model	Sum of squares	df	Mean square	F	Sig.	R	R square
Regression	9.93	1	9.93	23.098	0.000 b		
Residual	33.409	89	0.403			0.479 a	0.228

Total 43.420 90
 Dependent variable: personalized customer service

Table 4. R-square and ANOVA for After-sales customer support econometric model

Model	Sum of squares	df	Mean square	F	Sig.	R	R square
Regression	3.641	1	3.641	6.294	0.014 b		
Residual	48.014	89	0.578			0.265 a	0.07
Total	51.781	90					

Dependent variable: After-sales customer support

4.2 Analysis of Quantitative Data:

The quantitative study indicates a positive correlation between artificial intelligence (AI) usage and customer experience, with AI accounting for 32.8% of overall customer satisfaction. Specifically, 22.9% of this satisfaction relates to AI in personalized customer service, highlighting its role in customization and engagement. However, AI's impact on after-sales service is minimal, at about 7%, suggesting limited integration in that area.

Overall, while AI has an average statistical effect on customer experience, particularly in individualized support, its influence on after-sales is less significant. The findings emphasize the need for greater adoption of AI in customer service to enhance overall customer experiences, as current usage is limited. Improved integration of AI with IT systems is anticipated to further benefit customer service.

4.3 Collected Qualitative Data

Leveraging the open-dialogue format, the research paper explores the adoption of artificial intelligence (AI) by AU Small Finance Bank focusing on customer experience enhancement, optimization of cash in ATMs, and risk control. The Branch Manager also addresses the challenges, such as the financial and language barriers, in employing artificial intelligence in the context of India.

4.4 How does artificial intelligence assume a part in after-deals support at AU Bank?

AI is revolutionizing post-sales services by automating repetitive tasks and providing 24/7 support through chatbots and virtual assistants. These systems handle basic inquiries

about accounts and transactions, while complex issues are escalated to live agents for seamless service. As AI learns from interactions, it reduces response times and boosts customer satisfaction.

4.5 Can computer-based intel also anticipate the requirements of a customer regarding after-sales services?

Yes, after-sales services can benefit from AI's predictive capabilities as well. For instance, by dissecting a client's past connections and record utilization, simulated intelligence can predict likely issues, for example, the requirement for a higher credit cutoff or travel-related administrations. AI enables us to meet the requirements of our customers before they even encounter a problem by providing proactive solutions. This proactive methodology supports consumer loyalty by forestalling bothers and showing that we are mindful of their necessities.

4.6 When using AI for personalization and after-sales services, what obstacles do you encounter

One of the key challenges is ensuring AI systems understand the variety of languages and accents in regions like Indore. Our chat bot initially struggled with regional nuances, despite learning from extensive datasets. We gathered over a million messages to improve its performance in different dialects. Additionally, it's crucial to keep the AI aligned with our client's evolving needs, requiring constant updates and refinements for accuracy in personalized services and after-sales support.

4.7 How does simulated intelligence affect functional effectiveness in conveying customized administrations and after-deals support?

AI not only improves operational efficiency but also personalizes our services. Via computerizing routine requests and errands, we can allot HR all the more really, lessening costs and further developing reaction times. We can handle a large number of after-sales requests more quickly and accurately thanks to AI systems, which boost productivity overall. Over the long haul, the proficiency Gains from man-made intelligence assist us with controlling functional expenses while keeping up with high help norms.

4.8 You referenced that AU Bank is utilizing man-made brainpower. Could you please explain how AI is being used to improve personalized services?

AI is central to AU Bank's personalized services. By analyzing clients' transaction history,

we can predict future needs. For instance, after a client takes out a home loan, we might suggest related services like insurance or personal loans. This predictive capability allows us to offer relevant products proactively, enhancing the client experience and fostering greater engagement and loyalty.

4.9 How different are regional adoption rates of AI, particularly for personalized and post-sale services?

Computer-based intelligence reception in customized services and after-sales support is faster in urban areas due to better client education. However, language barriers and limited awareness of AI's capabilities slow adoption in less urbanized regions. For instance, while many clients in Indore appreciate personalized product suggestions, some are still learning to use AI-driven chatbots for after-sales queries. As AI systems become more inclusive with local languages, broader adoption across various demographics is expected.

4.10 What are the drawn-out advantages of simulated intelligence in upgrading customized administrations and after-deals support at AU Bank?

Over time, AI's ability to provide personalized recommendations and efficient after-sales support will greatly enhance customer satisfaction. As AI learns from interactions, it will better predict client needs and quickly resolve issues. This will improve the client experience and help AU Bank maintain operational efficiency, lower costs, and foster long-term customer loyalty, making AI integration essential for competitiveness in the evolving financial sector.

5. Analysis of Qualitative Data

5.1 Key insights on customer satisfaction, loyalty, and service experiences at AU Bank

AU Small Finance Bank has successfully increased client satisfaction and loyalty by integrating AI into personalized services. The bank uses predictive analytics to anticipate client needs and AI-driven solutions, like chatbots, to provide swift and efficient service delivery. AI also plays a crucial role in tailoring services based on customer behavior, enhancing customer engagement and satisfaction. However, implementing AI presents challenges in linguistically diverse regions like India. Despite this, AI is expected to greatly enhance customer satisfaction and loyalty, establishing AU Bank as a leader in customer service innovation.

5.2 Collective Analysis of both the data sets:

The analyses demonstrate the significant impact of artificial intelligence (AI) on improving customer experience, particularly at AU Bank. Quantitative data indicates that AI implementation explains 32.8% of customer satisfaction variance, with a strong positive correlation linked to personalized services (22.9%). However, engagement with AI in after-sales support remains lower.

AI enhances customer experience by anticipating needs and simplifying manual tasks. It excels in predicting customer requirements, and offering tailored financial products before inquiries. Despite these advantages, challenges such as language proficiency and the need for regular AI updates exist. Customer stratification also requires accommodating regional dialects over time.

Overall, the findings reveal AI's effectiveness in delivering tailored services while identifying challenges in implementation. While AI enhances back-end processes and customer interactions, the limited impact on after-sales services highlights areas for improvement. Nonetheless, AI remains crucial in supporting AU Bank's customer service strategy.

6. Conclusion and Future Research Prospects

AI is expected to bring significant competitive advantages to AU Bank in terms of customer satisfaction, loyalty, and operational sustainability. It will enhance the quality of service, timely addressing of customer needs, and productivity. Despite challenges, the use of AI promises better customer service and improvement of business operations. The application of artificial intelligence in AU Bank gives it a competitive advantage in the market in general, especially in the area of providing personalized services. Nevertheless, the issues of local content and after-service support should be considered. The study indicates that AI has the potential to increase the level of customer satisfaction.

Yet it also states that there are drawbacks such as the incurred high cost of implementation and issues with data protection. Regarding AU Bank, the strategic consequences are almost evident – further development of AI technology-related components, advanced security of data, and introduction of AI within customer care practice should be done without delay. Further studies ought to look at the long-term effect of AI on customer retention and business activity and also look into the relationship between AI and other sectors and the design of AI systems according to languages and cultures.

References

1. Morgan, B.: 3 use cases of artificial intelligence for customer experience. *Forbes* (Retrieved from <https://www.forbes.com/sites/blakemorgan/2018/08/01/3-use-cases-of-artificial-intelligence-for-customer-experience/>, last accessed 2024/01/17 (2018).
2. Mannino, A., Althaus, D., Erhardt, J., Gloor, L., Hutter, A., Metzinger, T.: Artificial intelligence: Opportunities and risks. Policy Paper by the Effective Altruism Foundation, 1–16 (2015).
3. Smith, D.: AI's role in enhancing business performance and customer satisfaction: A longitudinal study. *J. Bus. Innov.* 12(5), 88–102 (2020).
4. Smith, A., Kumar, R.: Leveraging CRM in financial services: A case of AU Bank. *J. Customer Exp.* 12(2), 112–130 (2020).
5. Johnson, R., Lee, M.: The transformative power of AI in modern marketing. *J. Mark. Technol.* 38(2), 85–101 (2022).
6. Thompson, L., Martinez, A.: Ethical AI: Navigating challenges in customer experience management. *Int. J. Technol. Ethics* 12(1), 45–60 (2023).
7. Mauldin, M.L.: Chatterbots, Tinymuds, and the Turing test: Entering the Loebner Prize competition. *AI Mag.* 18(1), 25–29 (2002). <https://doi.org/10.1609/aimag.v18i1.1230>.
8. Homburg, C., Jozić, D., Kuehnl, C.: Customer experience management: Toward implementing an evolving marketing concept. *J. Acad. Mark. Sci.* 45(3), 377–401 (2017). <https://doi.org/10.1007/s11747-015-0460-7>.
9. Kumar, V., Anand, A., Song, H.: Customer experience management in the age of AI. *J. Interact. Mark.* 54, 73–89 (2021). <https://doi.org/10.1016/j.intmar.2021.01.001>.
10. Mende, M., Scott, M.L., Grewal, D., Roggeveen, A.L., Bolton, R.N.: The role of artificial intelligence in service interactions: Contemporary issues and future research directions. *J. Serv. Mark.* 33(7), 818–828 (2019). <https://doi.org/10.1108/JSM-05-2019-0203>.
11. Verhoef, P.C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., Haenlein, M.: Digital transformation: A multidisciplinary reflection and research agenda. *J. Bus. Res.* 122, 889–901 (2021). <https://doi.org/10.1016/j.jbusres.2019.09.022>.
12. Huang, M.H., Rust, R.T.: Artificial intelligence in service. *J. Serv. Res.* 23(3), 279–291 (2021). <https://doi.org/10.1177/1094670520917665>.
13. More, A.B.: Implementing digital age experience marketing to make customer relations more sustainable. In: *New Horizons for Industry 4.0 in Modern Business*, pp. 99–119. Springer, Cham (2023).
14. Marr, B.: The future of AI in customer service: How AI transforms customer service. *J. Bus. Res.* 142, 377–386 (2022). <https://doi.org/10.1016/j.jbusres.2021.12.036>.
15. Appu, A., Bhavana, R.K., Kalkar, P., Shrivastava, A.: Impact of pricing and packaging on consumer buying behavior: A study of IT employees in India. *Acad. Mark. Stud. J.* 28(1) (2024).
16. Siddiqui, A., Tripathi, S.: AI in banking: Transforming customer experience. *J. Digit. Bank.* 4(2), 112–121 (2020).
17. Verma, R., Sahu, P.: Role of CRM in enhancing customer satisfaction in banking. *Int. J. Bank. Finance* 6(3), 98–105 (2021).
18. AU Small Finance Bank: About us. Retrieved from <https://www.aubank.in>, last accessed 2024/01/17.

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