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ARTIFICIAL INTELLIGENCE-POWERED CUSTOMER RELATIONSHIP MANAGEMENT IN THE INDIAN BANKING SECTOR

Neetu
Ph.D. Research scholar
BGR campus, Pauri, HNB Garhwal University
E-mail: rscholarneetu@gmail.com
Dr. Anoop Pandey
Professor
BGR campus, Pauri, HNB Garhwal University
E-mail: anoop.pandey2007@gmail.com

Abstract

While several Indian banks have already embraced artificial intelligence in the workplace, others are attempting to do the same after seeing how banks use AI to improve customer relationships. How do banks employ artificial intelligence to improve customer relationship management, and what AI-powered technologies are they utilising to improve CRM? Several banks have recently included artificial intelligence (AI) in customer relationship management. A literature-based method was used to synthesise current information, determine essential topics, and assess the results of AI deployment in banking customer relationship management. The results showed that bankers may better understand their customers with AI-powered CRM. These days, AI-based algorithms operate efficiently and intelligently, whereas the old approach takes too long to identify client problems and offer solutions. Data is the most crucial component for AI to work and provide outcomes. Instead of seeing AI from this viewpoint, banks should consider the domain in which they wish to implement artificial intelligence, and data and staff training should be made available to banks.

Keywords: artificial intelligence, customer relationship management, AI-powered CRM, banking sector.

Introduction

Joe Atkinson, Global Chief AI Officer at PwC US, said, "Technology is a powerful force constantly evolving, but it cannot redesign our businesses or transform how we operate. To meet that challenge, clever, creative, and integrity-driven individuals must immerse themselves in and embrace emerging technologies, learning to employ AI responsibly and innovatively. India's recent policy efforts, including the National Strategy for Artificial Intelligence, India AI Mission, AI for India 2.0, and Skill India AI Portal, attempt to harness the promise of AI and associated technologies while recognising the dangers and problems they pose (Goel et al., 2024). The Reserve Bank of India acknowledged the potential of AI/ML and related technologies. It is recommended that banks incorporate them suitably for continued due diligence and efficient KYC/AML regulatory monitoring (Goel et al., 2024). As stated by Haenlein & Kaplan (2019), AI may be characterised as analytical, human-inspired, or humanised AI based on the categories of intelligence it shows (cognitive, emotional, and social intelligence), or as Artificial Narrow, General, or Super Intelligence based on its evolutionary stage. The current quest to create artificial intelligence (AI) equivalent to that of humans began when it was found that electronic computers could handle symbols and numbers. This goal may be accomplished without assuming that human and machine intelligence are similar. Fjellan (2020) noted that several AI researchers have attempted to achieve strong AI or artificial intelligence theoretically equivalent to human intellect. Weak AI is less ambitious than strong AI, which makes it less disruptive.

According (singh, 2019), AI is the most sought-after word in practically every industry. At the same time, there is a lot of discussion and debate on how AI might positively transform/impact the customer experience. Artificial intelligence (AI) has experienced tremendous commercial success with technologies like Siri and Alexa and has also influenced the financial services business. To enhance the customer experience, IndusInd now allows clients to access their bank accounts using Alexa. The insurance sector makes it simple for consumers to verify the progress of their claims using Google Home. Customers may now interact with simple voice or text instructions instead of waiting for extended phone calls. These devices save time and help businesses meet their clients' hectic schedules. Personalisation is another significant advantage that AI provides in the customer experience. The question emerges while addressing AI-powered customer relationship management. What is AI-powered customer relationship management? How can banks leverage artificial intelligence to improve customer relationship management? According to Eric Colson's report in the Harvard Business Review, many

organisations have embraced a "data-driven" approach to efficient customer relationship management. Data may help banks make better decisions, which leads to more successful client relationships, but it must be appropriately processed. Many people assume that processors are human. The term "data-driven" refers to data sorted and summarised for human processing. AI can rapidly and reliably examine massive amounts of data using modern algorithms and machine learning techniques, making it an invaluable tool for improving data-driven customer relationship management. Several studies examine the function of artificial intelligence. However, extensive research on AI-powered customer relationship management in the Indian banking industry is absent. The key question that comes up while considering the application of AI-powered customer relationship management is

RQ1. How is artificial intelligence used to enhance customer relationship management?

RQ2. What artificial intelligence technologies are banks using to enhance customer relationship management?

Literature Review

As M (2025) pointed out, Old CRM techniques relied heavily on human data input and minimal customer contact tracking, resulting in disorganised customer insights and reactive service models. In contrast, the bank's adoption of AI-powered CRM technologies has allowed it to leverage advanced data analytics, machine learning, and predictive modelling to thoroughly understand client behaviours and preferences. This move has enabled proactive involvement, individualised service offers, and increased operational efficiency. (Quˆan, n.d.) The heart of these intelligent CRM systems is the capacity to ingest, evaluate, and understand massive and diverse data sources. Financial institutions gather a wide range of data, including transactional records, mobile app usage trends, contact centre transcripts, CRM logs, website clickstreams, social media interactions, and third-party credit bureau reports. Each data source provides distinct perspectives on consumer behaviour, financial health, sentiment trends, and interaction choices.

Banking institutions rapidly recognise the importance of AI-enabled CRM solutions in boosting client interactions, responsiveness, customisation, and operational efficiency. Many banks already use AI in marketing and sales, with ambitions to extend into customer service for targeted suggestions and operational improvements, reflecting a larger trend of AI-driven

engagement and relationship building (Rui Murta, 2025). AI helps to improve decision-making and personalised banking experiences. Deep learning algorithms capture meaningful insights from client data, including behaviour patterns, preferences, and transaction history, allowing for personalised interactions and product suggestions (Shaikh et al., 2024). Chatbots and virtual assistants provide 24/7 help and real-time issue resolution, increasing responsiveness and convenience (Satheesh et al., 2020). AI helps backend CRM activities by automating client segmentation and optimising marketing communication, resulting in more focused and successful customer interaction (Kanchan et al., 2025) (SRIHARI SUBUDHI, 2019).

The selection of chatbots is critical since each circumstance requires a distinct type of chatbot. The introduction of chatbots has improved the customer experience by enhancing existing services and making it easier to deal with many consumers by offering information about the offers and advantages of items such as mortgage loans, card data, etc. Then, current consumers have provided additional convenience through chatbots, such as product marketing with sample screening. Finally, the chatbots were simplified to address clients' commonly requested queries, which need to be automated owing to recurrent requests (Satheesh et al., 2020). AI-powered fraud detection solutions have evolved as a key component of modern banking CRM, providing real-time monitoring and predictive analytics. According to (V. Kumar et al., 2024), AI's capacity to analyse massive amounts of transactional and location-based data enables banks to detect fraudulent activity as it occurs and forecast future risks. (Chandratreya et al., 2024) (SRIHARI SUBUDHI, 2019). This proactive risk mitigation considerably decreases financial losses while increasing client trust in digital banking services.

According to Chandratreya et al. (2024) (Chakrabarti & Datta, 2024), Artificial intelligence (AI) in financial institutions increases decision-making speed and quality, lowers default rates, and improves consumer security. However, it also calls for a reassessment of ethical norms and changes to regulatory systems. AI improves bank decision-making by speeding risk assessments, allowing efficient credit scoring via machine learning, detecting suspicious activity, automating routine operations, and personalising services. (Meena et al., 2024) (Lawrence Damilare Oyeniyi et al., 2024) This eventually leads to enhanced client loyalty, satisfaction, and improved relationships. Artificial intelligence (AI) is critical in banks' financial decision-making. It increases predictive modelling for risk assessment, client service delivery, and the creation of new FinTech applications. This results in better-informed and efficient banking operations.

The worldwide market for AI in CRM is projected to rise rapidly, with its value expected to rocket from USD 4.1 billion in 2023 to about USD 48.4 billion by 2033, reflecting a strong compound annual growth rate (CAGR) of 28% over the forecast period from 2024 to 2033. This rise highlights the growing use of AI technology in CRM across various sectors, including banking, to improve customer engagement and operational efficiencies. Organisations that integrate AI into their CRM systems may automate business operations, easily organise and manage customer information, and generate more tailored conversations with their customers, resulting in increased customer satisfaction and loyalty. AI enhances customer service and gives banks greater insight into their clients' interests and habits, allowing them to tailor their goods and servicesndia, 2022 better (Gorre, 2023). In banking, AI increases revenue by enhancing risk management and client happiness. AI technologies provide higher service customisation for consumers and workers, increasing income. AI integration aimed at improving consumer engagement and revenue *(Gorre, 2023)*. Back-office banking activities often involve time-consuming and complex clerical tasks. These operations, frequently managed by outdated systems, require significant staffing to fulfil single customer requests. Such manual processes are costly and prone to error. Modernising these procedures with the latest technological advancements is necessary to address time, cost, and accuracy (Gorre, 2023).

AI has evolved from rule-based systems to data-driven models (Collins et al., 2021). Explainable AI (XAI), developed through the integration of AI and human-computer interaction (BaniHani et al., 2024), addresses the "black box" problem. Pattern identification and disentanglement reduce bias and enhance trust in AI decision-making (Arun Kumar Mittapelly, 2025; Kethu & N, 2025). Machine Learning (ML) and Artificial Intelligence (AI) are increasingly prevalent in finance, as organisations leverage these technologies to optimise front- and backend operations. These technologies enhance efficiency and improve customer experience (Bhattacharya & Sinha, 2022). AI adoption in banking is driven by intense competition, demand for streamlined services, and the need for personalised solutions to maintain operational efficiency. The objectives include boosting staff productivity, enhancing profitability and acceptance, mitigating risks, managing large datasets, and improving decision-making through data analysis. *Artificial intelligence is increasingly important across economic sectors, particularly banking and finance, impacting risk assessment, fraud detection, customer service, investment strategies, and regulatory compliance (Roeder et al., 2022). As AI capabilities grow, so does their impact on customer relationship management.*

AI's potential to automate processes, minimise errors, and offer cost-effective solutions promises to reduce inefficiencies (Goel et al., 2024). Hybrid AI-human decision-making enhances the consistency and contextual awareness of financial judgments. Using AI as a decision-support tool, human expertise remains integral to financial operations (Dwivedi et al., 2023).

Research Methodology

This study employs a literature review technique to evaluate the application of artificial intelligence (AI)-powered customer relationship management in the Indian banking sector. A literature-based method was used to identify major topics, describe the research body, and assess AI's findings in banking applications. This method enables a complete understanding of customer relationship management techniques, use cases, and issues associated with AI-powered CRM in banking. Given the limited research on AI-powered CRM in the Indian banking sector, the study aims to highlight the significance of this Technology in the banking business. The review incorporates sources from Google Scholar, Scopus, government publications, and bank websites.

Discussion and Findings

PwC's AI Predictions 2021 indicates that enhancing customer experience is the leading business driver for AI deployment. While a majority (two-thirds) anticipate a competitive edge and greater efficiency from AI, concerns about data privacy and protection persist. Notably, 83% of Indian financial services organisations prioritise customer experience as the main reason for AI adoption, and 57% are confident AI will deliver a competitive advantage (PwC India, 2022).

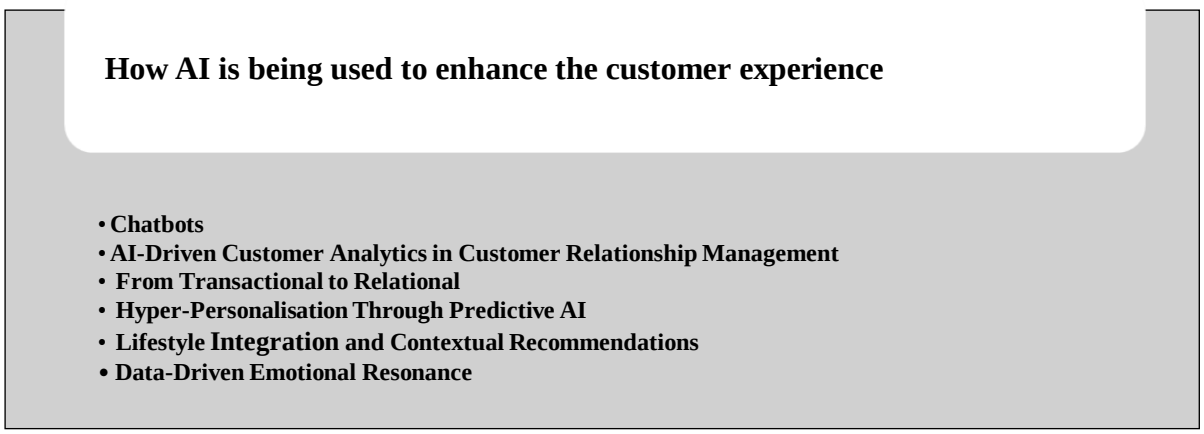

Figure 1, source: authors' own

1. **Chatbots:** According to Gartner, by 2027, chatbots are projected to become the primary customer care channel for 25% of organisations. Research from Bain & Company suggests AI could reduce bank downtime by 99%, and chatbot success rates in banking are expected to exceed 90% by 2026. Chatbots enhance financial process efficiency by managing numerous requests, decreasing wait times, and improving customer service. Chatbots will provide increasingly accurate and personalised responses as they learn from interactions. They enable banks to enhance customer service cost-effectively by rapidly addressing common inquiries, thus reducing the need for extensive support staff. This allows human agents to concentrate on complex issues, further elevating overall service quality.

Banks Using Chatbots In India

Table 1

S.NO.	BANK NAME	CHATBOT	YEAR OF INTRODUCTION	TYPE OF BANK	WAY TO CONNECT
1.	State Bank of India	SBI Intelligent Assistant (SIA)	2017	Public	Bank's Website
2.	HDFC Bank	Electronic Virtual Assistant (EVA)	2017	Private	Bank's Website, Google Assistant, Amazon Alexa
3.	ICICI Bank	iPal	2017	Private	Bank's Website, mobile bank
4.	Yes Bank	Yes Robot	2017	Private	Facebook Messenger, Bank's Website
5.	Union Bank of India	Union Voice Assistant (UVA)	2017	Public	Bank's Website
6.	Kotak Mahinda Bank	Keya	2018	Private	Bank's Website

7.	Axis Bank	Axis Aha	2018	Private	Bank's Website, Axis mobile apps
8.	IndusInd bank	Indusassist	2018	Private	Alexa, Bank's Website
9.	Andhra Bank	ABHI	2019	Public	Bank's Website
10.	Canara bank	AURA	2024	Public	Banks website
11.	PNB	PIHU	2025	Public	Bank's Website
12.	Bank of Baroda	ADI	NA	Public	Bank's Website

Source: banks' websites

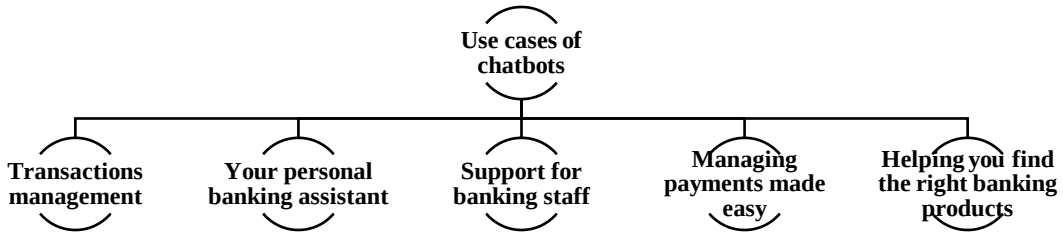

Figure 2 source: Authors' own

2. **AI-Powered Customer Analytics in Customer Relationship Management:** (singh, 2019) AI has revolutionised Customer Relationship Management (CRM) by providing data-driven insights that surpass traditional analytics. Unlike conventional methods limited by complexity and scope, AI-powered customer journey analytics can scan vast, multidimensional data to detect trends, predict behaviours, and pinpoint key performance indicators like retention, satisfaction, and profitability. AI enhances CRM customisation and responsiveness through machine learning by automatically recognising and acting on data correlations. (PwC India, 2022) It helps businesses detect early churn indicators, evaluate past customer interaction effectiveness, and refine outreach and marketing targeting. AI enhances marketing by analysing behavioural, demographic, and transactional data to predict customer response to promotions. (singh, 2019) AI enhances customer relationships and marketing effectiveness through individualised interactions. Banks like BBVA and

Danske Bank leverage AI-powered recommendation systems and predictive communication models to achieve higher engagement. AI transforms digital sales by automating tailored product suggestions, targeted advertising, and demand forecasting. As customer expectations for Technology and personalisation evolve, AI is crucial for meeting these needs, fostering loyalty, and creating a sense of belonging through personalised financial solutions.

3. **From Transactional to Relational:** The Emergence of Emotionally Intelligent CRM Modern clients, particularly younger populations like millennials and Generation Z, demand that banks go beyond their conventional duties. Banks are no longer regarded as mere service providers but prospective lifestyle partners. The findings imply that by leveraging AI and data analytics, banks may promote themselves as a "digital best friend" available anytime the consumer needs help, not only in financial but across personal and professional life domains (singh, 2019) (Satheesh et al., 2020).

4. **Hyper-Personalisation Through Predictive AI**: By leveraging AI to analyse customer personalities, behaviours, and preferences, banks can create highly customised experiences. For instance, a bank might offer millennial customers personalised financial planning, career support, educational resources (such as business school alternatives), or guidance on major life decisions like buying a home or car. This real-time AI-driven approach, powered by extensive customer data, fosters stronger emotional connections (Quˆan, n.d.) (singh, 2019).

5. **Lifestyle Integration and Contextual Recommendations**: The most significant discovery is the ability for banks to integrate themselves into their customers' daily lives using context-aware AI technologies. Such capabilities transform the bank's identity from a financial authority to a trusted lifestyle adviser, strengthening the relationship through value-driven micro-engagements (singh, 2019) (M., 2025) (Bhattacharya & Sinha, 2022).

6. **Data-Driven Emotional Resonance:** A strong customer relationship hinges on emotional connection with the client's goals. AI enables banks to achieve this by offering timely, personalised, and emotionally intelligent recommendations. Research indicates that customers perceive such proactive assistance as genuine care, building trust and lasting loyalty (Pathak & Singh, 2020) (Kethu & N, 2025) (singh, 2019) (Rui Murta, 2025).

Reducing cost of operations & increasing revenue: AI offers significant cost savings by automating frontline customer engagement with intelligent systems, distributing risk across millions of interactions (Satheesh et al., 2020).

Enhancing customer engagement: AI will enhance personalised goods and services through user-friendly features. This direct consumer connection fosters loyalty without requiring extensive physical interaction. Banks can also leverage advanced AI, such as chatbots, in sophisticated applications (singh, 2019).

Beyond digital marketing, according to David Griffiths, solutions like "smile-to-pay" identification for seamless transactions or conversational bots that handle simple requests are enhancing the consumer experience. Additionally, at-scale personalisation enables banks to anticipate client demands and provide highly customised services, improving customer engagement and opening up new avenues for product innovation, upselling and cross-selling. "You must have a solid understanding of data and data architecture before you can begin to walk with AI."

An IBM report Artificial Intelligence (AI) in CRM, Artificial intelligence (AI) technologies are currently essential to CRM systems, with chatbots, natural language processing (NLP), and machine learning playing key roles in improving customer interactions and operational efficiency; NLP enables chatbots and virtual assistants to have meaningful conversations with customers, improving service efficiency and satisfaction; and machine learning algorithms allow CRM systems to analyze large datasets to find patterns and trends, facilitating personalized customer experiences and informed decision-making.

The banking and financial industry's data richness and large customer base make it well-suited for leveraging AI and machine learning in data-driven decision-making (singh, 2019). Machine learning, a subset of artificial intelligence, uses algorithms to extract information from data with minimal human intervention. Applications like Apple's Siri, Amazon's Alexa, and Google Assistant exemplify machine learning. The banking and finance sector utilises it for automated lending, fraud detection, decision-making, and customer support (singh, 2019). AI techniques are crucial for analysing large datasets and extracting valuable insights. These methods employ machine learning algorithms to identify correlations, trends, and patterns. Supervised learning, a popular approach, trains systems on labelled data for classification or prediction. Unsupervised learning, conversely, allows algorithms to discover relationships and structures in data without prior labelling (Guru Prasad Dash, 2022).

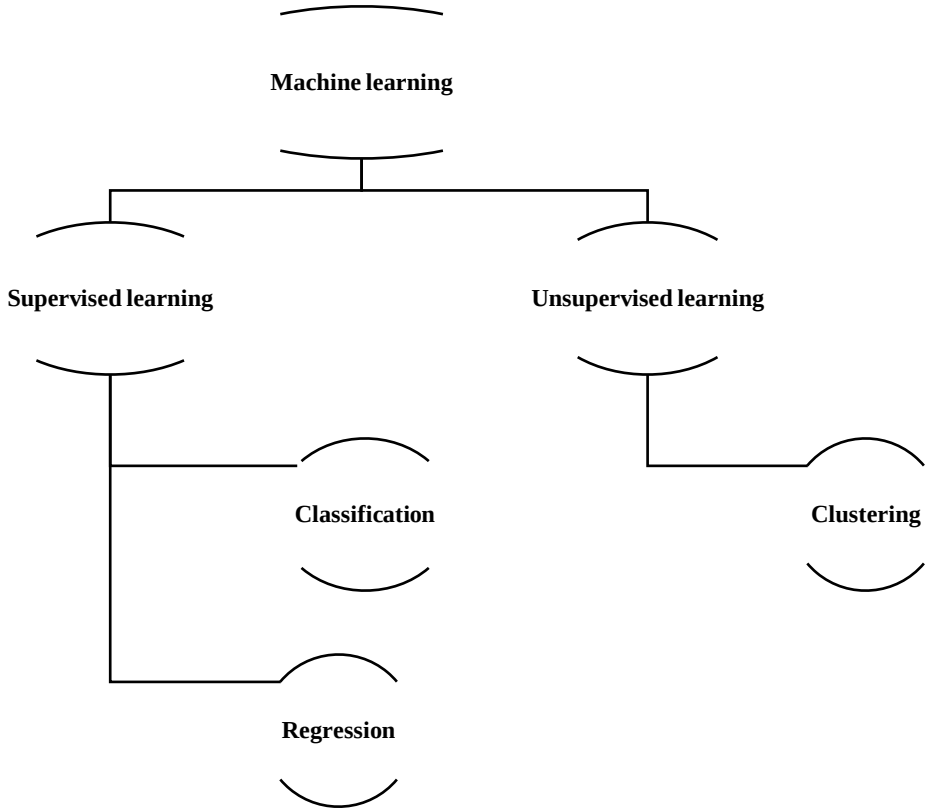

Figure 3, Source: Author's own

What data strategy is required to succeed?

Banks should first understand their available data because data labelling is costly. With labelled data, implementing supervised machine learning becomes significantly easier. After establishing a supervised learning model, banks can explore other models to leverage AI further, making a machine learning program a beneficial starting point (Egbuhuzor et al., 2025) (singh, 2019).

Data is the most crucial component for AI to work and provide outcomes. Instead of seeing AI from that angle, banks should consider the domain in which they wish to implement machine learning. It is crucial to comprehend the type of data bank artificial intelligence already possesses rather than merely embarking on an aimless trip. AI deployment will fail without a data strategy, wasting money and effort (singh, 2019). To effectively leverage machine learning for understanding customer behaviour, banks must continuously refine and complete their data before unification. This ensures accurate data flow into the system, enabling machine learning algorithms to learn effectively. Filling data gaps correctly

through ongoing training and improvement is crucial for sound, data-driven decision-making (singh, 2019).

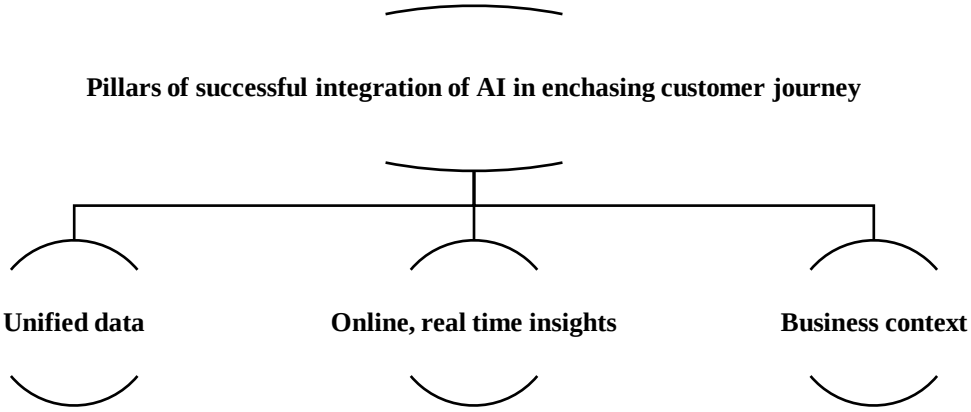

Figure 4 source: Author's own

Unified data is crucial for effective AI-powered customer behaviour analytics. Modern unification tools offer rapid and affordable data integration, with customer journey analytics platforms shortening integration times from months to hours, sometimes even for free (singh, 2019).

Real-time insights are crucial for AI to improve customer experience. Delivering these insights effectively requires seamless integration with customer touchpoints via APIs. Although most modern customer platforms support third-party integrations, data fragmentation from legacy systems hinders real-time analytics. Modern customer journey analytics platforms are overcoming this challenge with advanced API frameworks and toolkits that enable comprehensive, real-time integration with minimal investment (Arun Kumar Mittapelly, 2025) (singh, 2019).

AI must operate within a well-defined ***business context*** to generate meaningful business value. This means understanding the strategic significance of customer touchpoints within the customer journey and their impact on key KPIs. Rather than simply reacting to isolated interactions, AI should provide a holistic, cross-channel perspective, tailored to each organisation's unique customer engagement framework. Properly contextualised, AI can proactively identify touchpoints and strategies that influence customer behaviour and drive core business performance (PwC India, 2022) (singh, 2019).

Use Cases of AI-Powered CRM

Figure 5, Source: Author's own

Government Support for the Implementation of AI

According to (Alex Avelar & Jordão, 2024) (Future Networks (FN) Division, 2020), to lower the risks related to data protection, accountability, and transparency, AI-powered CRM need tighter governance structures. Explainable AI is crucial for regulatory compliance because it makes AI-driven decisions more transparent and understandable. FinTech innovations are essential to adopting AI because they guarantee that the Technology enhances human judgment rather than replaces it. Governments throughout the globe are actively drafting laws to encourage the proper deployment of AI because they consider it a driver for economic change. This assistance in India involves money, legislation, and vision. Flagship projects like Digital India, NITI Aayog's "AI for All," and the AI Task Force provide a well-defined plan for AI-led inclusive growth. Massive funding from the National Development Foundation is expected to accelerate AI development in various fields (PwC India, 2021). RBI, SEBI, and IRDAI have implemented regulatory sandboxes for safe AI innovation testing. The Account Aggregator framework enables secure, consent-based financial data sharing, fostering FinTech and lending advancements. The forthcoming Data Protection Bill seeks to ensure privacy and fairness, as policymakers develop ethical AI frameworks, emphasising transparency, accountability, and real-time governance (McBride, 2021; PwC India, 2022).

Challenges in AI-powered customer relationship management: Although many obstacles must be overcome before integrating AI into banking and finance, each must be carefully considered because of the consequences for the financial industry and the economy(Goel et al., 2024). Since AI systems lack proper contextual awareness, employees find it challenging to appreciate AI-driven insights. Banking workers may become less skilled if AI is used excessively, necessitating ongoing training and upskilling programs. Instead of replacing

human knowledge, employees need to learn digital literacy, adjust to new AI-powered workflows, and collaborate with AI systems (R. Kumar et al., 2024).

The banking sector has several challenges regarding customer care, including inadequate database administration and a dearth of modern technological goods. Technology integration in banking will improve the consumer experience and customer service (Satheesh et al., 2020)(SRIHARI SUBUDHI, 2019)

Key Challenges

- **Privacy vs Personalization**
  AI in CRM thrives on data, but customers must choose between protecting their privacy and receiving personalized experiences. Limited data sharing restricts AI's ability to tailor interactions.
- **Legacy System Limitations**
  Many organizations still rely on outdated CRM infrastructure that cannot handle the speed and complexity of AI-driven data, limiting real-time engagement and customer insights.
- **Security and Trust Issues**
  AI introduces new vulnerabilities such as data leaks, algorithm manipulation, and cyber threats, which can compromise customer trust and the integrity of relationship data.
- **Integration & Operational Challenges**
  AI models need to be aligned with marketing, sales, and service workflows. Fragmented teams and manual data processes slow down AI deployment and diminish CRM effectiveness**.**
- **Skill Gaps in CRM Teams**
  Lack of expertise in AI, data analytics, and customer behavior modeling hampers CRM transformation. Upskilling and cross-functional collaboration are crucial.
- **Explainability of AI Decisions**
  Black-box AI models can create skepticism among both customers and staff. CRM teams need AI tools that are interpretable, so actions and recommendations can be trusted and explained.
- **Budget Constraints**
  AI-enabled CRM requires investment in data infrastructure, tools, and training. Cost concerns often delay implementation or limit it to pilot programs.

- **Bias in Customer Data**
  AI models trained on biased or incomplete customer data can lead to unfair treatment or missed engagement opportunities, harming customer relationships.
- **Ethical Use and Accountability**
  Automated customer decisions without clear human oversight raise concerns. CRM strategies must include ethical AI governance to ensure transparency and accountability

Conclusion and Suggestions

One aspect of banking operations is customer relationship management, which aims to keep clients and offer excellent services. These days, banks use AI-powered CRM to carry out this task, and research indicates that AI-powered CRM benefits clients. The study reveals a paradigm change in how Indian banks must view and place themselves in the digital ecosystem to create long-lasting, meaningful connections with their clientele. Strong client loyalty requires more than just financial services in today's cutthroat and digitalised world; it also requires emotional intelligence, tailored interactions, and lifestyle integration. In conclusion, banks must work to be more than just service providers to keep their excellent client relationships in the digital age. They must develop into informed, proactive, and sympathetic friends. Banks may "strike the right chord" and carve out a treasured place in the customer's emotional ecology by utilising AI and data-driven insights at their heart, transforming ordinary financial transactions into highly customised life experiences (singh, 2019).

The results show that AI-powered solutions help employees with risk assessments, fraud detection, and credit evaluations, depending less on human judgment and improve decision accuracy to improve consumer relationships. Complex financial patterns that people would miss are detected by machine learning algorithms, enabling more proactive and knowledgeable decision-making (Holden & El-Bannany, 2004**).** Banks should be aware of how much they must use AI to improve their solutions; relying too much on AI suggestions may limit workers' ability to think critically and use discretion, resulting in blind spots when making decisions ***(Weber et al., 2024).*** This study explored a single facet of AI-powered CRM. Future research could investigate other AI applications related to bank profitability, overall performance, and employee performance. The findings can help banks evaluate AI adoption for customer

relationship management and inform customers about technology integration for improved relationships and decision-making.

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