



# Impact of Artificial Intelligence on Customer Relationship Management

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## Abstract

The study "Impact of Artificial Intelligence on Customer Relationship Management" explores the transformative role of Artificial Intelligence (AI) in Customer Relationship Management (CRM) within Portugal's banking sector. Employing a case study methodology, the research examines AI adoption across five leading banks through 50 semi-structured interviews with middle and senior management. The findings underscore AI's potential to revolutionize CRM by enhancing customer interaction, process automation, and data-driven decision-making. However, challenges persist, particularly in data agility, as many institutions lack the infrastructure necessary for efficient data utilization—an essential component for effective AI implementation. Trust in AI providers is another critical factor, with security, compliance, and data management capabilities heavily influencing vendor selection. This study proposes a diagnostic model to assess AI-CRM adoption stages, emphasizing the prerequisites for success: robust data management, organizational readiness, and employee training. Practical recommendations include fostering partnerships with trusted AI providers, ensuring data quality, and building internal capabilities. The research highlights the immediate need for banks to address these challenges to maximize the benefits of AI-driven CRM. The paper concludes with a call for future research to expand the scope of analysis, including diverse banking institutions and other sectors, to validate and enhance the applicability of the findings. By addressing these gaps, organizations can unlock AI's full potential to deliver personalized, efficient, and secure customer relationship management.

**Keywords:** Artificial Intelligence, Customer Relationship Management, Retail Banking, Data Agility

## 1. Introduction

Artificial Intelligence is transforming Customer Relationship Management (CRM) by enabling businesses to analyze customer data more effectively, personalize interactions, and automate routine tasks, ultimately enhancing the overall customer experience (Vlačić et al.,

2021). This technological advancement allows companies to anticipate customer needs and preferences, leading to more proactive engagement strategies that foster loyalty and satisfaction. As a result, organizations can leverage AI-driven insights to tailor their marketing efforts, ensuring that they reach the right audience with relevant messages at the optimal time (Libai et al., 2020). By integrating AI tools, businesses can also streamline their operations, reduce response times, and improve the accuracy of customer interactions, creating a more seamless and efficient service experience (Pedersen & Ritter, 2024). This shift not only empowers businesses to respond swiftly to customer inquiries but also enables them to develop deeper relationships through meaningful engagement, ultimately driving growth and profitability in an increasingly competitive market (Stăncioiu et al., 2023). In this landscape, companies that harness the power of AI will find themselves at a distinct advantage, as they can anticipate market trends and adapt their strategies accordingly to meet evolving consumer demands (Chatterjee et al., 2022). By leveraging predictive analytics and machine learning, organizations can gain valuable insights into customer behavior, allowing them to tailor their offerings and marketing efforts for maximum impact. This proactive approach not only enhances customer satisfaction but also fosters loyalty, as consumers increasingly seek personalized experiences that resonate with their individual preferences and needs. As businesses continue to prioritize customer-centric strategies (Li et al., 2023). The integration of AI technologies will become essential for maintaining relevance and achieving sustainable success in a rapidly changing environment. The ability to harness data effectively will empower companies to innovate continuously, ensuring they remain competitive while delivering exceptional value to their customers (Salameh et al., 2022). This shift towards data-driven decision-making will also enable businesses to identify emerging trends and adapt their strategies, accordingly, ultimately leading to more effective resource allocation and improved overall performance. In this dynamic landscape, organizations that embrace these advancements will not only thrive but also set new benchmarks for excellence in customer engagement and satisfaction (Gaczek et al., 2023). As companies leverage AI and data analytics, they will unlock new opportunities for personalized experiences, fostering deeper connections with their customers and enhancing brand loyalty in the process. By prioritizing data literacy among their workforce, organizations can cultivate a culture of informed decision-making that drives collaboration and innovation across all levels (Kumar Deb et al., 2018). This commitment to fostering a data-driven culture will empower employees to harness insights effectively, ensuring that every decision is backed by solid evidence and aligned with the organization's strategic goals (Khneyzer et al., 2024). As a result, businesses will become more agile and responsive to market changes, positioning themselves as leaders in their respective industries while continuously adapting to meet evolving customer needs. This proactive approach not only enhances operational efficiency but also encourages a mindset of continuous improvement, where feedback loops and data-driven insights play a crucial role in shaping future strategies (Prasanth et al., 2023). By prioritizing transparency and open communication, organizations can create an environment where employees feel valued and motivated to contribute their ideas, ultimately leading to a more dynamic and innovative workplace. That fosters collaboration and empowers teams to take ownership of their projects, driving both individual and collective success.

This research defines advanced CRM systems with AI support as the use of one or more AI functionalities within an organisation. A case study methodology was chosen to develop an adoption model for these systems in banking institutions, as it is well-suited for understanding the practical challenges banks face with AI-supported CRM.

The integration of Artificial Intelligence (AI) in Customer Relationship Management (CRM) has revolutionized the way businesses interact with their customers, offering increased

efficiency, data-driven decision-making, and personalized experiences. However, successful AI adoption in CRM is contingent upon several key factors, including trust, data management, organizational readiness, and customer experience enhancement.

Trust plays a pivotal role in AI implementation, with 96% of respondents prioritizing trust when selecting AI providers. Concerns surrounding data security (62%) and privacy protection (60%) highlight the need for organizations to ensure robust safeguards when leveraging AI-powered CRM solutions. Building transparent AI systems that maintain compliance with regulatory frameworks is crucial for fostering customer confidence and long-term adoption.

AI-driven data management strategies are transforming industries, particularly in sectors like banking, where financial institutions use AI for campaign analysis and online sales. The ability to harness data agility is essential for developing predictive analytics and personalized recommendations, enabling businesses to anticipate customer needs more effectively and refine their engagement strategies.

Beyond technology, organizational readiness is a critical factor in AI adoption. Companies must assess training needs for middle and senior management to bridge the knowledge gap and ensure seamless implementation. Empirical studies, such as semi-structured interviews with 50 managers lasting 30-45 minutes, provide insights into the readiness of leadership teams and their ability to integrate AI within CRM frameworks successfully.

Finally, AI significantly enhances the customer experience by enabling businesses to provide swift responses to inquiries, facilitating personalized interactions and proactive engagement strategies. Moreover, AI-driven automation boosts operational efficiency, allowing organizations to streamline processes, reduce manual workload, and focus on delivering high-quality, customer-centric services.

By addressing these key dimensions—trust, data management, organizational readiness, and customer experience—companies can fully leverage AI's potential in CRM, fostering stronger customer relationships and long-term business growth.

The study focused on five leading banks in Portugal to create a generalisable model for the industry. Semi-structured interviews were conducted with 50 middle and senior management employees, covering general questions and specific topics related to the opportunities and challenges of AI-driven CRM adoption. The 30–45-minute interviews explored motivations for adoption, areas of pressure, and training needs. The analysis aimed to identify critical functional areas needing attention, addressing three key research questions:

- Do banks recognise the need for AI-driven CRM?
- Does CRM require data agility for successful AI implementation?
- Do banks prioritise trust when selecting an AI-supported CRM provider?

This article begins with an introduction that outlines relevant and current topics discussed by the authors in the literature review. The introduction also presents the key questions to be analyzed within the case study, which is detailed as the methods in Section 2. Section 3 provides a discussion and analysis of the case study results. Finally, Section 4 summarise the main findings, suggest directions for future research, and draw conclusions on the research questions.

## **1.1 Literature Review**

Based on the scientific database Web of Science the search on the impact of AI on CRM was conducted according to the following equation 1:

"Customer Relationship Management" (Topic) and "artificial intelligence" (Topic) and Article or Proceeding Paper or Review Article or Early Access (Document Types) and Business or Management or Economics (Web of Science Categories) and English (Languages)

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(1)

The screening process was conducted by selecting the web of science categories of Business, Management and Economics for the document type as articles, proceeding papers, three reviews and two early access articles, all filtered for the English language. The result was 45 documents as presented in the following Figure 1 as the chronological evolution of publications and citations.

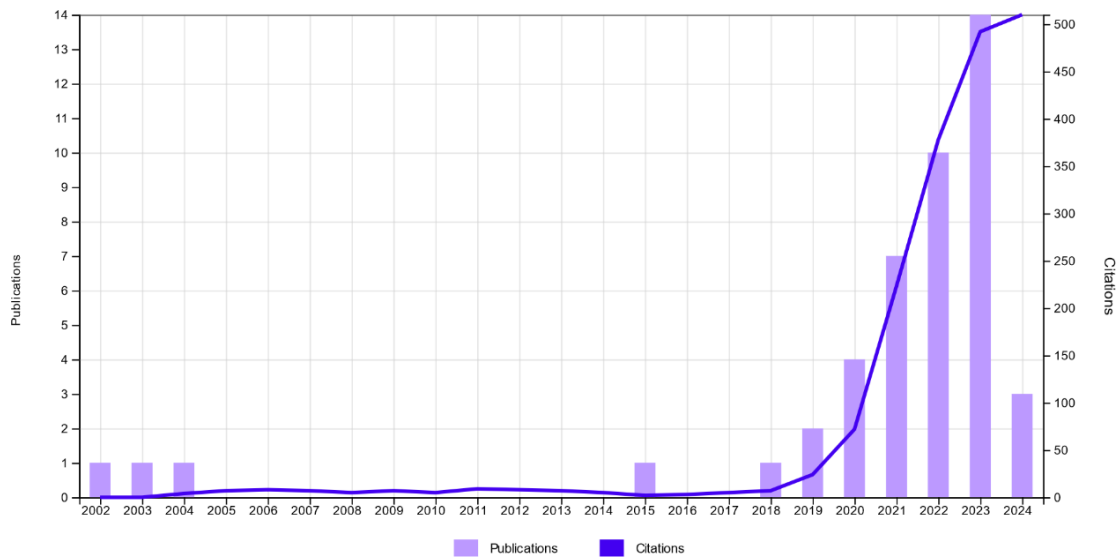


Figure 1. Chronological evolution of publications and citations for AI and CRM  
 Source: Web of Science equation search result

As can be validated the AI impact on CRM has been an increasing thematic in the last years. The high citation count in recent years indicates that the research conducted during the peak publication years (2021-2023) has had a substantial impact. The relatively high citation count in 2024, despite fewer publications, could reflect a continuing influence of previous works. This trend suggests that the research has achieved a level of recognition and relevance in its field.

Figure 2 can prove that the main areas of research and web of science categories are Business and Management for AI and CRM.



Figure 2. Web of Science categories of publications for AI and CRM  
 Source: Web of Science areas for the different categories results

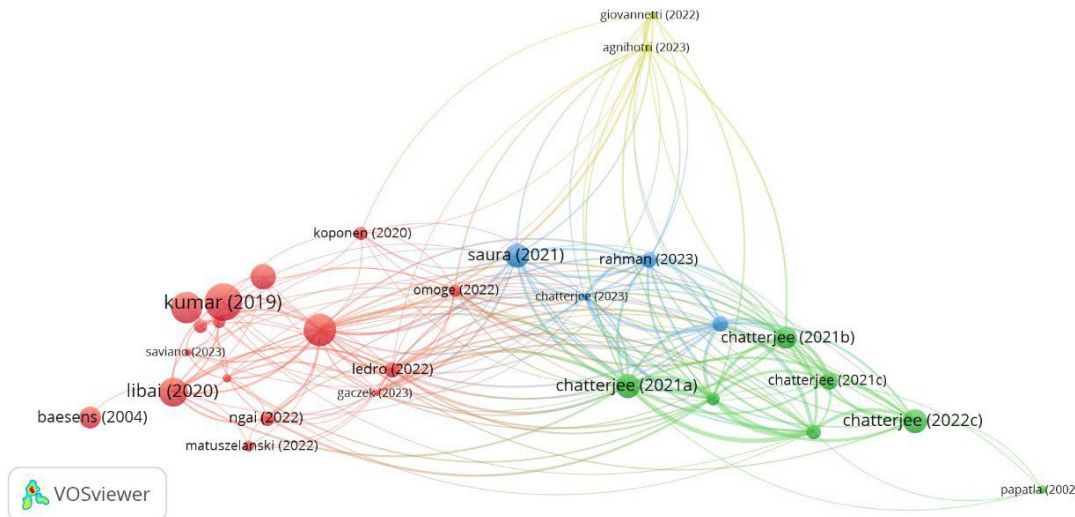


Figure 3. Most cited authors for AI and CRM  
 Source: Vosviewer network visualization of bibliographic coupling for AI and CRM

By the analysis of the different clusters several achievements can be made. Authors on the red cluster highlight AI's role in enhancing personalization and engagement, while also raising ethical concerns around customer segmentation and trust. Kumar et al (Kumar et al., 2019) focus on using AI to tailor marketing messages, while Yin et al. (Yin et al., 2023) show that customers respond positively to these personalized AI interactions in environments where they feel aligned with the AI's approach. Another common thematic is the impact on customer trust and relationship quality, Yin et al.(Yin et al., 2023) and Libai et al.(Libai et al., 2020) both discuss trust in AI environments. Yin et al. explore how trust influences engagement in AI-driven environments, while Libai et al. consider broader implications, such as the ethical concerns surrounding AI's role in CRM, including trust as a potential area of concern in AI-driven prioritization. Libai et al. discuss AI's role in segmenting and prioritizing customers based on value, a practice that could lead to ethical issues if not managed carefully. This aligns with Kumar et al.'s idea that AI-powered CRM can improve customer engagement by predicting preferences but also raises the need for balance in managing customer relationships responsibly.

The authors on the blue cluster collectively illustrate that AI-CRM systems support enhanced customer relationship management, particularly in B2B and family business contexts, AI-based CRMs within Business-to-Business (B2B) digital marketing, focusing on how AI enhances data processing and customer segmentation in digital ecosystems. It emphasizes the benefits of analytical, collaborative, and operational CRMs, which allow firms to make data-driven decisions, automate interactions, and optimize marketing efforts within B2B networks (Saura et al., 2021). Technology readiness in B2B firms influences AI-CRM capabilities and the broader impact on relationship performance and social sustainability. The need for technological infrastructure and ICT capabilities to fully leverage AI-CRM is quite relevant. It connects AI-CRM deployment to sustainable performance, highlighting that B2B firms with high technology readiness can more effectively utilize AI for social and environmental responsibility (Chatterjee, Chaudhuri, Vrontis, et al., 2022; Rahman et al., 2023).

The contribution of Chatterjee (Chatterjee et al., 2021) on the green cluster emphasize that AI-CRM is central to modernizing customer relationship management, offering competitive and strategic benefits through enhanced data processing, personalization, and support in navigating change. Successful implementation relies on strong organizational infrastructure, leadership support, and readiness for digital transformation (Chatterjee et al., 2021; Chaudhuri et al., 2023).

Highlight the challenges and opportunities in adopting sales technologies, emphasizing management's role, customer-driven changes, and the evolving landscape of sales processes, both (Agnihotri et al., 2023; Giovannetti et al., 2022). Salespeople respond to technology adoption, particularly with tools like CRM and sales force automation (SFA). Giovannetti et al. emphasize salespeople's resistance, acceptance, and leadership in customer-driven technological changes, while Agnihotri et al. discuss broader factors impacting technology adoption, including salespeople's acceptance or resistance based on perceived utility and organizational support.

The importance of management's role in successful technology adoption is emphasized by Giovannetti et al. (Giovannetti et al., 2022) find that sales management functions and organizational support are crucial in shaping salespeople's attitudes toward change. Similarly, Agnihotri et al. (Agnihotri et al., 2023) discuss the need for cohesive technology strategies and leadership support to foster positive outcomes and reduce resistance. Both authors (Giovannetti et al., 2022) (Agnihotri et al., 2023) suggest a need for future research on optimizing technology use to enhance performance. Agnihotri et al. propose an agenda focusing on understanding the integration of multiple sales technologies, while Giovannetti et al. identify gaps in knowledge about salespeople's responses to customer-driven technological changes.

The increasing reliance on AI-driven CRM raises critical ethical and regulatory concerns, particularly in areas such as data privacy, compliance, and customer fairness. While AI has the potential to enhance efficiency, it also introduces risks associated with biased decision-making, lack of transparency, and data security (Libai et al., 2020). Regulatory frameworks such as GDPR in Europe and CCPA in California have set precedents for ethical AI adoption, requiring businesses to implement transparent data usage policies and accountability measures (Chatterjee et al., 2022). Additionally, AI-powered customer segmentation strategies must be carefully managed to avoid reinforcing biases, where high-value customers receive preferential treatment while lower-tier customers are deprioritized (Yin et al., 2023). Future research should explore the balance between AI-driven personalization and ethical responsibility in CRM systems.

AI is increasingly being used to analyse customer sentiment and emotional intelligence in CRM applications. Advances in natural language processing (NLP) and deep learning allow AI to assess customer emotions in real-time interactions, helping businesses tailor their responses more effectively (Kumar et al., 2019). Sentiment analysis tools can detect positive, neutral, or negative emotions in customer messages, enabling companies to adjust communication strategies dynamically (Khneyzer et al., 2024). However, challenges persist, particularly in detecting sarcasm, cultural variations, and emotional nuances, which can impact AI's ability to interpret customer intent accurately. Additionally, there is a growing need for businesses to train AI models on diverse datasets to minimize biases in emotion recognition and enhance the accuracy of AI-driven sentiment analysis in CRM.

## **2. Methods**

### **2.1 Research Approach and Framework Development**

This study defines advanced AI-supported CRM systems as those utilizing AI functionalities within organizations. A case study methodology was selected to explore challenges in adoption, focusing on five leading Portuguese banks representing 83% of the sector's financial assets. The aim was to develop a generalizable adoption model.

Semi-structured interviews were conducted with 50 middle and senior managers, to examine motivations, organizational pressures, and training needs related to AI-enabled CRM. The analysis addressed three key research questions:

- Do banks recognize the need for AI-enabled CRM?
- Is data agility essential for effective AI-CRM implementation?
- Is trust a priority when selecting an AI-supported CRM provider?

### **2.2 Semi-Structured Interviews**

Key stakeholders from the selected banks (referred to as Bank A, Bank B, Bank C, Bank D, and Bank E for confidentiality) were interviewed. The purposive sampling method ensured time- and cost-efficiency, targeting individuals with relevant expertise.

Based on a literature review, 20 initial interview questions were designed, later refined with input from five experts (two academics and three industry professionals), resulting in 12 core questions. Additional questions were introduced as needed during interviews conducted between 28 October and 8 November 2024.

### **2.3 Qualitative Design and Analysis**

The qualitative approach ensured representativeness by centring research on key functional areas and customer-focused AI-CRM adoption. Interviews highlighted critical concerns in the adoption process, identifying areas for improvement while ensuring generalizability, reliability, and confirmability of findings. These components are as follows.

**Table 1. Characterization of the five banks involved in the investigation**

Institution Data	Bank A	Bank B	Bank C	Bank D	Bank E	Share
Total consolidated assets (M€)	99,2 M€	94,4 M€	54,6 M€	43,7 M€	38,6 M€	83%
Number of employees	5 590	5 948	4 647	3 920	4 385	55%
Location	Lisbon (Portugal)					-
Property	Public	Private	Private	Private	Private	-
Number of interviews	10	10	10	10	10	-

Source APB (Portuguese Banking Association) Annual statistical bulletin 2023

A qualitative approach was adopted because the concept of AI-supported CRM systems is relatively new. Semi-structured interviews were used to better understand various aspects of this relatively new concept. For the semi-structured interviews, we tried to target key people involved in the different management hierarchies of the five banks. The detailed profiles of the interviewees are presented in Table 2.

**Table 2 Summary of respondent profiles**

Institution Data	Bank A	Bank B	Bank C	Bank D	Bank E
C-level Executive	1	1	1	1	1
Senior Sales Director	1	1	1	1	1
Senior Marketing Director	1	1	1	1	1
Senior IT Director	1	1	1	1	1
Sales Manager	2	2	2	2	2
Marketing Manager	2	2	2	2	2
IT Support Manager	2	2	2	2	2
Total interviews	10	10	10	10	10

Source: Survey carried out by the authors and registered in Google Drive

Senior interviewees were selected to provide diverse perspectives on advanced AI-supported CRM systems. Interviews, lasting 30–45 minutes over 1–2 days at each bank, explored general topics, motivations for adopting AI-CRM, and adoption facilitators and constraints. Responses were recorded with permission, supported by manual notes, and clarified through follow-up phone interviews as needed.

### 3. Results and Discussion

#### 3.1 Do Banking Institutions Recognize the Need for AI-powered CRM?

As AI adoption grows in banking, CRM becomes key to digital transformation, turning unstructured data into insights that improve workflows and customer experience. Key findings include: 89% of respondents prioritize AI in CRM provider selection; over half of institutions already use AI for tasks like campaign analysis and online sales; and within six months, many plan to expand AI in customer service, focusing on personalized recommendations and query routing to enhance customer experience (CX). AI-driven CRM boosts competitiveness, efficiency, and service differentiation.

Table 3. Use cases of the banks surveyed

Use Cases	Already implemented	To be implemented in the next 6 months	To be implemented in the next 12 months	To be implemented within more than 12 months
Personalization of customer service (e.g. chatbot creation, etc.)	56%	24%	10%	10%
Process automation (account opening, credit analysis and decision, etc.)	52%	28%	10%	10%
Reduction of operational costs (reduction of manuality through RPA, etc.)	52%	36%	10%	2%
Execution of complete online banking transactions	52%	36%	10%	2%
Creating dynamic pricing analysis and/or optimizing offers	46%	38%	14%	2%
Elaboration of personalized messages and proposals for customers.	42%	28%	28%	2%
Identification of new sales opportunities (new products, cross-selling and up selling)	40%	28%	28%	4%
Creation of first knowledge content projects (e.g. financial literacy)	38%	24%	26%	12%
Develop hyper-personalization using 1st, 2nd, and 3rd party data for customer-relevant creation and offers	20%	46%	18%	16%
Routing service agent productivity to anticipate customer needs	16%	42%	18%	24%
Increase service agent productivity so you can respond faster and more informed.	14%	38%	18%	30%
Control of the inventory level, with recommendations for reordering and adjustments of quantities in the inventory.	12%	36%	18%	34%
Real-time fraud risk detection and analysis	10%	40%	24%	26%
Automate processes to ensure all transactions are compliant with AML regulations	10%	38%	26%	26%

Source: Survey carried out by the authors and registered in Google Drive

### 3.2 Does CRM Need Agility in Obtaining Data to Successfully Implement AI-powered Capabilities?

Agility in obtaining data is key to successfully integrating AI capabilities into CRM. AI-powered CRM relies heavily on data to make informed predictions, offer personalized recommendations, and automate various tasks, such as capturing and tracking leads and opportunities. Without clean, well-structured, and high-quality data, AI algorithms will face difficulties in providing meaningful insights and results. Respondents understand the importance of agility in obtaining data: 73% believe that a robust data strategy is essential for AI success. However, even with that knowledge, many respondents are accelerating to implement AI before they are properly prepared. Some of the conclusions drawn from this research. The term data agility was applied early by Singh (Singh & Ahlawat, 2023) on the transformative role of data science and AI in the banking and finance industry, emphasizing the importance of data quality, availability, and governance. It highlights challenges such as regulatory compliance and the need for skilled talent, which are crucial for achieving data agility in financial institutions. The three primary conclusions on this topic are as follows.

#### 3.2.1 Data Preparation Practices Are Insufficient

The focus is on enhancing decision-making through advanced data techniques and ensuring responsible AI use. We asked respondents to classify their organisation's level of data agility. The responses were grouped into three categories: Low, Medium and High Agility. As shown by the outcomes:

- 27% reported that their organisation has ad hoc data initiatives and lacks a formal strategy, placing them in the Low Agility category.

- **39%** stated that their organisation has a formal data strategy, but it is not fully integrated across the enterprise, positioning them in the Medium Agility category.
- **Only 34%** indicated that their organisation has a fully integrated formal strategy, placing them in the High Agility category.

Data agility is essential for AI-powered CRM, as without complete and reliable data, AI models can become inaccurate and incomplete, compromising the quality of the results.

### 3.2.2 Data as the Primary Challenge for CRM Systems

Respondents indicated that data-related challenges are the primary technical issues of their organisations when dealing with CRM systems, including data quality problems (48%), reliance on manual processes for data synthesis (44%), dependence on IT for data analysis (40%), and poor integration with third-party data sources (30%). This is not a new challenge, as data has been critical to most digital transformation initiatives, including predictive AI and generative AI (GenAI). GenAI specifically requires significant amounts of data, making it essential to implement robust data management practices before incorporating GenAI functionalities into the organisation’s CRM.

Organisational challenges identified by respondents include the inability to interpret generated data (38%), lack of skills in analytics, data science, and/or machine learning (32%), and a shortage of IT resources to implement new solutions or update existing systems (30%).

### 3.2.3 Higher Data Agility Leads to Better Understanding of AI Concepts

Respondents from organizations with greater data agility exhibit a stronger understanding of AI concepts. Those in the High Agility category are part of the top maturity tier in data acquisition and are more precise in defining AI concepts.

To successfully utilise AI-based CRM systems, it is imperative for both the workforce and customers to be well-informed and confident in AI fundamentals. Educating employees enables them to understand the value of data and use it effectively in their roles. At the same time, educating customers on how their data is handled builds trust. Currently, many remain uncertain about the concepts behind AI-supported CRM software and do not exhibit general confidence in AI. However, these concerns have not prevented respondents from investing in AI-supported CRM software; rather, they are prioritising providers who can address these concerns as they continue adopting AI functionalities. Respondents were asked to match the concepts of Predictive AI and Generative AI to the two provided definitions, and their responses were categorised based on the previously established Classes of High, Medium, or Low Data Agility. Table 4 presents the obtained results.

Table 4. Matching Predictive AI and Generative AI concepts by agility class

Definition	Concept		Generative AI	
	Predictive AI	Generative AI	Predictive AI	Generative AI
	Lower and Middle Class	High Class	Lower and Middle Class	High Class
AI that creates content based on learned patterns.	61%	35%	42%	71%
AI that analyzes existing data to make predictions.	49%	65%	58%	29%

Source: Survey carried out by the authors and registered in Google Drive

The research indicated a lack of understanding surrounding AI concepts. Only half of the respondents were able to correctly identify the definitions of generative and predictive AI, particularly those in the High Data Agility category, which includes organisations with a formal, enterprise-wide integrated data strategy. This suggests an educational opportunity on

the value of AI-supported CRM, the specific use cases enabled by AI, and the business outcomes banks can expect from these use cases prior to implementing AI in their CRMs.

### **3.3 Do Banking Institutions Prioritize Trust in Choosing an AI-powered CRM Vendor Partner?**

Trust is also a primary consideration when adopting AI-driven CRM. Accordingly, 96% of respondents stated that trust is critical or important in selecting an AI provider. Specifically, they seek a provider that offers robust security measures, capabilities for detecting and anonymising confidential data, as well as integrated AI functionalities within their CRM.

This concern remains significant with the adoption of Generative AI (GenAI). Respondents highlighted key barriers to GenAI adoption in their organisations, including security concerns (62%), such as the inadvertent exposure of clients' private data (60%), copyright violations (58%), and non-compliance with data regulatory requirements (40%). They also expressed doubts about the reliability of GenAI's content output, which, while often compelling, can be technically inaccurate. Exposing clients to AI without human review and correction could damage brand reputation, especially in a highly sensitive industry like banking. Moreover, one of the most significant concerns regarding data security is the potential disclosure of personally identifiable information and/or confidential company data-situations that could lead to regulatory penalties and reputational harm.

## **4 Conclusion**

This study effectively addressed three core research questions, providing key insights into the adoption and implications of AI-enabled CRM systems within the banking sector. Through a diagnostic methodology, the research examined the adoption stages across critical organizational functions, including C-Level management, Sales, Marketing, and IT Support, offering both theoretical and practical contributions.

### **4.1 Key Findings**

Banking institutions increasingly recognize the necessity of AI-enabled CRM systems to enhance customer interactions, responsiveness, and personalization, improving customer experience and operational efficiency. Many banks already use AI in marketing and sales, with plans to expand into customer service for tailored recommendations and operational enhancements, reflecting a broader trend of AI-driven engagement and relationship strengthening.

Data agility is critical for effective AI integration, requiring high-quality, accessible data for accurate predictions and automation. Yet only 34% of surveyed institutions demonstrate high data agility, facing challenges like fragmented strategies, manual processes, and inconsistent data quality. Enhanced data practices, employee training, and customer trust are essential for maximizing CRM potential.

Trust in AI-enabled CRM providers is vital, with 96% of institutions prioritizing secure, compliant, and anonymized solutions to protect sensitive data. Concerns about AI accuracy and reliability highlight the need for governance frameworks to mitigate risks and maintain accountability.

### **4.2 Contributions to Theory and Practice**

The study provides a significant theoretical contribution by developing a diagnostic methodology that enables organizations to identify and address specific gaps in their AI-

enabled CRM adoption process. This approach not only accelerates adoption but also strengthens digital transformation efforts. Additionally, it underscores the importance of CRM providers offering secure, reliable, and high-quality services to facilitate seamless integration.

From a practical perspective, the findings highlight actionable strategies for successful AI-enabled CRM adoption:

- **Unified Data Management:** Ensuring clean, accurate, and compliant data is essential for effective AI-driven insights.
- **Governance and Oversight:** Strong governance of AI outputs is critical to mitigating risks and ensuring accountability.
- **Trusted Partnerships:** Collaborating with reliable CRM providers reduces complexity and enhances adaptability.
- **Employee Empowerment:** Ongoing training and support enable staff to maximize the potential of AI tools.

### 4.3 Limitations

This study's case methodology limits its generalizability. Future research should expand the sample size and include diverse banking institutions, such as neobanks and fintech. Additionally, exploring AI-enabled CRM in other industries, such as big tech, could test the model's robustness. Validating the framework across multiple organizations would further confirm its applicability and accuracy.

In conclusion, this study advances theoretical understanding and provides practical strategies for AI-enabled CRM adoption. It reinforces the critical role of AI in driving digital transformation, offering a foundation for banks to enhance customer experiences, operational efficiencies, and trust in a rapidly evolving landscape.

### 4.4 Future Research

The future of AI in CRM is poised for significant advancements, particularly with the rise of Generative AI, hyper-personalization, and predictive analytics (Prasanth et al., 2023). Generative AI models, such as ChatGPT and other conversational AI tools, are transforming how businesses engage with customers, providing real-time, context-aware responses with minimal human intervention (Gaczek et al., 2023). Moreover, AI-powered hyper-personalization is expected to become more sophisticated, allowing businesses to create real-time, individualized customer experiences based on behavioral patterns, preferences, and historical interactions (Vlačić et al., 2021). Another emerging trend is predictive churn analysis, where AI models assess customer engagement patterns to predict attrition risks, enabling proactive intervention to retain customers (Li et al., 2023). These advancements highlight the evolving nature of AI-driven CRM and the need for continuous innovation to stay competitive in a dynamic marketplace.

While this study focuses on AI-CRM adoption in the banking sector, insights from other industries can provide valuable comparative perspectives. E-commerce and retail sectors have leveraged AI for hyper-personalization, where machine learning algorithms analyze purchase history and browsing patterns to recommend products (Salameh et al., 2022). In contrast, telecommunications companies use AI-driven CRM to optimize customer service interactions through automated chatbots and predictive troubleshooting (Pedersen & Ritter, 2024). Additionally, in healthcare, AI-enhanced CRM enables patient engagement through predictive analytics, ensuring timely reminders and personalized care recommendations (Santoro et al., 2019). A broader examination of AI-CRM across industries would enhance

understanding of best practices, industry-specific challenges, and AI-driven customer relationship strategies.

The adoption of AI in CRM is reshaping workforce roles and responsibilities, requiring businesses to rethink training, reskilling, and change management (Giovannetti et al., 2022). While some fear that AI may replace traditional CRM roles, the more realistic scenario is that AI will serve as an augmentative tool, enhancing human capabilities rather than replacing them (Agnihotri et al., 2023). Employees will need to develop skills in data analytics, AI literacy, and strategic decision-making to effectively utilize AI-CRM systems. However, resistance to AI adoption remains a challenge, particularly among employees accustomed to traditional CRM processes. Organizations must implement structured training programs and foster a culture of AI adoption to ensure a smooth transition toward AI-enhanced customer relationship strategies.

## References

- Agnihotri, R., Chaker, N. N., Dugan, R., Galvan, J. M., & Nowlin, E. (2023). Sales technology research: a review and future research agenda. In *Journal of Personal Selling and Sales Management* (Vol. 43, Issue 4, pp. 307–335). Routledge. <https://doi.org/10.1080/08853134.2023.2260108>
- Chatterjee, S., Chaudhuri, R., & Vrontis, D. (2022). AI and digitalization in relationship management: Impact of adopting AI-embedded CRM system. *Journal of Business Research*, 150, 437–450. <https://doi.org/10.1016/j.jbusres.2022.06.033>
- Chatterjee, S., Chaudhuri, R., Vrontis, D., & Jabeen, F. (2022). Digital transformation of organization using AI-CRM: From microfoundational perspective with leadership support. *Journal of Business Research*, 153, 46–58. <https://doi.org/10.1016/j.jbusres.2022.08.019>
- Chatterjee, S., Rana, N. P., Tamilmani, K., & Sharma, A. (2021). The effect of AI-based CRM on organization performance and competitive advantage: An empirical analysis in the B2B context. *Industrial Marketing Management*, 97, 205–219. <https://doi.org/10.1016/j.indmarman.2021.07.013>
- Chaudhuri, R., Chatterjee, S., Kraus, S., & Vrontis, D. (2023). Assessing the AI-CRM technology capability for sustaining family businesses in times of crisis: the moderating role of strategic intent. *Journal of Family Business Management*, 13(1), 46–67. <https://doi.org/10.1108/JFBM-12-2021-0153>
- Gaczek, P., Leszczyński, G., & Mouakher, A. (2023). Collaboration with machines in B2B marketing: Overcoming managers' aversion to AI-CRM with explainability. *Industrial Marketing Management*, 115, 127–142. <https://doi.org/10.1016/j.indmarman.2023.09.007>
- Giovannetti, M., Sharma, A., Cardinali, S., Cedrola, E., & Rangarajan, D. (2022). Understanding salespeople's resistance to, and acceptance and leadership of customer-driven change. *Industrial Marketing Management*, 107, 433–449. <https://doi.org/10.1016/j.indmarman.2022.10.021>
- Khneyzer, C., Boustany, Z., & Dagher, J. (2024). AI-Driven Chatbots in CRM: Economic and Managerial Implications across Industries. *Administrative Sciences*, 14(8). <https://doi.org/10.3390/admsci14080182>
- Kumar Deb, S., Jain Associate Professor, R., & Deb, V. (2018). *Artificial Intelligence-Creating Automated Insights for Customer Relationship Management*.

- Kumar, V., Rajan, B., Venkatesan, R., & Lecinski, J. (2019). Understanding the role of artificial intelligence in personalized engagement marketing. *California Management Review*, 61(4), 135–155. <https://doi.org/10.1177/0008125619859317>
- Li, B., Liu, L., Mao, W., Qu, Y., & Chen, Y. (2023). Voice artificial intelligence service failure and customer complaint behavior: The mediation effect of customer emotion. *Electronic Commerce Research and Applications*, 59. <https://doi.org/10.1016/j.elerap.2023.101261>
- Libai, B., Bart, Y., Gensler, S., Hofacker, C. F., Kaplan, A., Kötterheinrich, K., & Kroll, E. B. (2020). Brave New World? On AI and the Management of Customer Relationships. *Journal of Interactive Marketing*, 51, 44–56. <https://doi.org/10.1016/j.intmar.2020.04.002>
- Pedersen, C. L., & Ritter, T. (2024). Digital authenticity: Towards a research agenda for the AI-driven fifth phase of digitalization in business-to-business marketing. *Industrial Marketing Management*, 123, 162–172. <https://doi.org/10.1016/j.indmarman.2024.10.005>
- Prasanth, A., John Vadakkan, D., Surendran, P., & Thomas, B. (2023). Role of Artificial Intelligence and Business Decision Making. In *IJACSA) International Journal of Advanced Computer Science and Applications* (Vol. 14, Issue 6). [www.ijacsa.thesai.org](http://www.ijacsa.thesai.org)
- Rahman, M. S., Bag, S., Gupta, S., & Sivarajah, U. (2023). Technology readiness of B2B firms and AI-based customer relationship management capability for enhancing social sustainability performance. *Journal of Business Research*, 156. <https://doi.org/10.1016/j.jbusres.2022.113525>
- Salameh, M., Almahairah, Z., Balaji, K., Murugan, A., Rajesh, P., Kumar, H., & Alotoum, J. (2022). A Novel Study On Customer Relationship Management Using Artificial Intelligence In The Retail Sector. *Journal of Pharmaceutical Negative Results* <sup>1</sup>, 13, 2022. <https://doi.org/10.47750/pnr.2022.13.S09.1146>
- Santoro, G., Ferraris, A. & Winteler, D.J. (2019), "Open innovation practices and related internal dynamics: case studies of Italian ICT SMEs", *EuroMed Journal of Business*, Vol. 14 No. 1, pp. 47-61. <https://doi.org/10.1108/EMJB-05-2018-0031>
- Saura, J. R., Ribeiro-Soriano, D., & Palacios-Marqués, D. (2021). Setting B2B digital marketing in artificial intelligence-based CRMs: A review and directions for future research. *Industrial Marketing Management*, 98, 161–178. <https://doi.org/10.1016/j.indmarman.2021.08.006>
- Singh, A., & Ahlawat, N. (2023). A REVIEW ARTICLE:-THE GROWING ROLE OF DATA SCIENCE AND AI IN BANKING AND FINANCE. *Www.Irjmets.Com @International Research Journal of Modernization in Engineering*, 08. [www.irjmets.com](http://www.irjmets.com)
- Stăncioiu, T. S., Spînu, A. E., Sanda, C. M., Sanda, G., & Trifan, V. A. (2023). Customer Relationship Management, Operational Digitization, Production Optimization and Value Creation through Artificial Intelligence in e-Marketing. *Proceedings of the International Conference on Business Excellence*, 17(1), 1148–1157. <https://doi.org/10.2478/picbe-2023-0103>
- Vlačić, B., Corbo, L., Costa e Silva, S., & Dabić, M. (2021). The evolving role of artificial intelligence in marketing: A review and research agenda. In *Journal of Business Research* (Vol. 128, pp. 187–203). Elsevier Inc. <https://doi.org/10.1016/j.jbusres.2021.01.055>
- Yin, D., Li, M., & Qiu, H. (2023). Do customers exhibit engagement behaviors in AI environments? The role of psychological benefits and technology readiness. *Tourism Management*, 97. <https://doi.org/10.1016/j.tourman.2023.104745>