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TRENDS AND CHALLENGES OF AI IMPLEMENTATION IN CRM: SYSTEMATIC LITERATURE REVIEW (SLR)

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Abstract

Customer Relationship Management (CRM) plays a crucial role in strengthening customer loyalty and satisfaction. The integration of Artificial Intelligence (AI) into CRM offers significant benefits such as personalization of customer interactions, prediction of customer needs, and increased operational efficiency. AI enables predictive analysis, automation of repetitive tasks, and 24/7 customer support, all of which contribute to improved service quality and more effective sales strategies. Nonetheless, implementing AI in CRM faces technical, organizational, ethical, and economic challenges, including issues of data privacy, system integration, and user adoption of the technology. This research adopts the Systematic Literature Review (SLR) method to analyze the latest trends, implications, and main challenges in AI-CRM integration. The results show that AI-CRM increases competitiveness and business growth by providing deep insights into customer behavior and preferences. However, successful implementation requires a holistic approach that comprehensively considers strategic, ethical, and economic challenges.

Keywords: Artificial Intelligence, CRM, Customer Support Automation

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INTRODUCTION

Customer Relationship Management is a fundamental aspect for companies because it plays a role in building strong relationships with customers, which have the potential to increase customer loyalty and satisfaction (Ng et al., 2020). This is supported by the utilization of predictive analytics to anticipate customer needs, helping companies make more accurate decisions (McGregor, 2019). In addition, CRM systems can integrate customer data from various sources, thereby enabling the creation of more personalized experiences as well as the implementation of more effective marketing campaigns (Rusthollkarhu et al., 2022). Thus, CRM has significant potential to improve profitability and business sustainability through a focus on customer relationships (Krafft et al., 2021). Many studies show that effective CRM implementation can increase customer satisfaction and commitment (Mudjahidin et al., 2024), reduce operational costs (Suoniemi et al., 2022), and increase company revenue (Wymer & Casidy, 2019). Furthermore, by prioritizing customer satisfaction and reducing churn rates, CRM not only increases revenue but also reduces customer acquisition costs (D'Arco et al., 2019).

However, although CRM plays a very important role for companies, it also faces major challenges that form **the urgency of this study**. Globally, CRM implementation encounters several issues, including data privacy concerns, system integration difficulties, and user engagement challenges (Ledro et al., 2023). Concerns about data privacy continue to increase alongside regulations such as the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA), with 72% of consumers expressing concern about how companies use their personal data (Statista 2023). In addition, balancing marketing personalization with customer data protection remains a significant challenge in CRM systems (Ledro et al., 2022). Moreover, integration problems are widespread, as companies often struggle to connect CRM platforms with other business systems, leading to data fragmentation and operational inefficiencies (Bai & Li, 2022). The effective use of CRM across organizations also remains challenging, with about 47% of CRM projects failing due to resistance to change and insufficient training (Gartner, 2021). These challenges are further intensified by the rapid growth of digital interactions and increasing data volume (IDC, 2022). Therefore, addressing CRM challenges has become increasingly urgent. Organizations need strong data governance, better system integration, and comprehensive change management to reduce risks and optimize CRM effectiveness.

Companies must be able to design effective CRM implementation strategies in line with current developments. Referring to Bouckenooghe et al. (2021), in today's rapidly evolving market, where customer preferences continuously change, the use of

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technology-driven CRM strategies has become essential to enhance competitiveness and business growth. The findings of Chatterjee et al. (2021) explain that companies that do not adopt the latest technologies in CRM systems tend to experience decreased operational efficiency, as manual processes are time-consuming and prone to errors. Therefore, AI represents an appropriate solution for CRM implementation by offering various benefits. These include improving customer experience through personalized interactions and accurately predicting customer needs (Youn & Jin, 2021), enhancing operational efficiency by automating repetitive tasks such as data entry (Gartner, 2021; Krafft et al., 2021), supporting data-driven decision-making through real-time analysis of large volumes of customer data (Costa et al., 2020), helping companies identify at-risk customers through predictive analytics while recommending proactive retention strategies (Engström & Strimling, 2020), improving service quality by accelerating response time and resolving customer issues more effectively through technologies such as chatbots (Feng et al., 2024), and strengthening sales strategies by identifying potential prospects and optimizing sales processes based on historical data and customer behavior analysis (Zechiel et al., 2024). Thus, AI enriches CRM implementation by providing deeper insights into customer behavior and preferences, enabling companies to build stronger and more personalized relationships with customers (Kumar et al., 2024). Based on the discussion above, **the urgency of this study** lies in examining the application of AI in CRM for companies to develop customer relationships, enhance satisfaction, and strengthen loyalty in response to rapid technological advancement and increasingly complex consumer behavior. In the digital era, where data volume and digital interactions continue to grow rapidly, the ability to address these challenges has become crucial for companies to remain competitive and achieve sustainable growth (Rusthollkarhu et al., 2022).

In SLR studies on the application of AI in CRM, more research is still needed that directly links the technical, organizational, ethical, and economic challenges faced with their concrete impacts on the use of AI in CRM. Existing studies remain limited in providing in-depth analysis of how specific challenges, such as system integration or data privacy policies, influence organizational decisions to adopt AI in order to improve customer service and operational efficiency. Therefore, further research is necessary to provide a more comprehensive understanding of how AI can be effectively utilized within CRM strategies while simultaneously minimizing risks and maximizing its long-term economic benefits.

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LITERATURE REVIEW

AI and CRM

CRM is a business strategy that focuses on understanding, anticipating, and fulfilling customer needs in order to enhance customer satisfaction, retention, and company profitability. Buttle & Maklan (2019) define CRM as a strategic approach that integrates processes, people, and technology to understand customer behavior and deliver sustainable added value. It also involves organizational cultural change aimed at placing customers at the center of all business activities (Payne & Frow, 2013), while supporting service innovation and new product development through more effective utilization of customer data (Dobbe et al., 2021).

Meanwhile, AI is a branch of computer science that develops systems and algorithms capable of simulating human intelligence to perform various tasks. Russell & Norvig (2021) define AI as the study and design of intelligent agents that can perceive their environment and take actions to achieve goals effectively. AI encompasses fields such as machine learning, natural language processing, and computer vision, all of which aim to replicate specific human capabilities. Recent research by Brandão et al. (2020) emphasizes that AI also includes ethical and social dimensions, such as fairness and its impact on employment. Thus, AI represents a complex discipline that integrates technology and theoretical foundations to create systems capable of intelligent thinking and action.

AI-CRM Implication

The integration of AI into CRM has various important implications, including improvements in customer experience, operational efficiency, and data-driven decision-making. According to Kumar et al. (2019), AI-enabled CRM allows more precise service personalization, automation of routine tasks, and predictive analytics that enhance the effectiveness of business strategies. AI contributes to improving customer retention by proactively identifying and addressing potential problems, while also enhancing service quality through 24/7 customer support. In the sales context, AI provides personalized product recommendations and in-depth market analysis, making sales strategies more effective. Overall, AI-CRM improves customer relationship management by providing the necessary tools to better understand and respond to customer needs, thereby enhancing organizational performance and competitiveness (Youn & Jin, 2021; Huang & Rust, 2021).

The Challenges of AI in CRM

The integration of AI into CRM introduces several significant challenges, including technical, organizational, ethical and regulatory, as well as economic aspects.

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Technically, AI implementation in CRM requires advanced technological infrastructure to manage and analyze large volumes of customer data efficiently and accurately (Bose & Sugumaran, 2020; Chatterjee et al., 2021). Organizational challenges involve cultural and structural adjustments within companies to support the adoption of new technologies and maximize their contribution to CRM strategies (Nguyen et al., 2021; Gaczek et al., 2023). From an ethical and regulatory perspective, AI use in CRM raises concerns related to data privacy, information security, and fairness in decision-making toward customers (Martin & Freeman, 2020). Economically, the costs of implementation, maintenance, and employee training required to operate AI-CRM systems can be challenging, especially for small and medium-sized enterprises (Chatterjee et al., 2024). Therefore, to fully benefit from AI in CRM, companies need to address these challenges through a holistic approach that considers strategic, ethical, and economic factors. Accordingly, this article focuses on the following aspects:

(RQ1) What CRM trends integrated with AI are identified in the current literature?
(RQ2) What are the implications of AI-CRM?
(RQ3) What are the main challenges faced in the implementation of AI-CRM?

This study begins with the Introduction section, which presents a comprehensive overview of AI and CRM, including their definitions, importance, objectives, and challenges. The Materials and Methods section describes the data collection procedures and the level of analysis employed. The Results section presents the findings across different levels of analysis along with their justification. Subsequently, the Discussion section elaborates on the findings and explains the relationship between AI and CRM. Finally, the Conclusion summarizes the main findings, research implications, recommendations for future research or practice, and the limitations of the study.

RESEARCH METHOD

This study employs SLR method to analyze, synthesize, and draw conclusions (Yong et al., 2019; Tranfield et al., 2003) from existing literature on the application of AI in CRM. The objective of this study is to analyze and categorize existing literature related to AI in CRM into different levels of research areas, as well as to identify opportunities for future research. The methodology applied in this study combines the approaches proposed by Hohenstein et al. (2014) and Alreahi et al. (2023). This review approach consists of four stages: determining the research time frame, selecting databases, screening and classifying articles, and categorizing studies based on levels of analysis.

Time Horizon on Journal Selection

For the review and assessment process, the publication date of the journal articles considered was between early 2010 to early 2024. The year 2010 was chosen because

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the implementation of AI in CRM occurred significantly around the mid to late 2010s, along with advances in machine learning, language processing natural, and data analytics (Kumar & Reinartz, 2018). Early 2024 was chosen as the endpoint for including recent academic journal publications given the increase in articles discussing this very significant topic.

Database Selection

This research uses several online databases to identify current literature on AI in CRM. The research was conducted in English and the online database source was Scopus using Harzing's Publish or Perish (PoP) software. Scopus is the largest reliable literature library and covers all the details of the records with an easy and distinctive search interface (Ng et al., 2020). Although efforts have been made to include as many articles as possible, this study does not claim that the database is complete or exhaustive.

Article selection and Article Classification

This study follows a systematic review procedure as illustrated in Figure 1 and described below. First, keywords were defined as search criteria in online databases. The keywords included *"Artificial Intelligence"*, *"AI"*, *"Customer Relationship Management"*, and *"CRM"*, which were searched in article titles and throughout the full text in the selected databases. Articles published in leading academic journals between 2010 and 2024 were then collected.

Next, the search was conducted within the "Title, Abstract, and Keywords" fields to ensure relevance to AI and CRM topics. A total of 350 research articles were retrieved from the Scopus database. These articles then went through two screening stages and one organizing stage. The screening process involved removing duplicate articles and selecting studies that matched the research objectives. In the organizing stage, the articles were grouped into two categories: the implications and challenges of AI in CRM. Finally, the articles were classified into 63 journals using an Excel worksheet, and the results were analyzed.

Analysis Levels

The extracted data was subjected to three main levels of analysis, namely basic information, basic content analysis, and in-depth content analysis [*see Table 2*]. First, the basic level of information analysis focuses on answering the first research question mentioned previously (RQ1) by identifying the state of publica-tions with respect to AI and CRM, including year of publication, research method, type of article, and source of publication. The second level of analysis, namely basic content, also focuses on answering (RQ1) by identifying the concepts and relationships between AI and CRM, including the main AI technology in CRM, AI-CRM user industries, and Keyword

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Analysis. The third level, in-depth content analysis, focuses on (RQ2) the implications of AI for CRM, and focuses on (RQ3) the challenges of AI-CRM [*see Table 1*].

Table 1.
Systematic review levels of analysis and units of analysis

Level of Analysis	Unit of Analysis
Basic Information Analysis	Year Publication
	Research Method
	Article Type
	Publication Journal
Basic Content Analysis	Main Technology in AI-CRM
	AI-CRM user Industry
	Keyword Analysis
Deep Content Analysis	AI-CRM Implication
	AI-CRM Challenges

Source: Adapted from Alreahi et al. (2022)

RESULTS AND DISCUSSION

To deepen the analysis of AI and CRM, a total of 63 articles were analyzed and classified into three levels of analysis. Table 1 summarizes the main findings from the 63 articles based on these levels of analysis. The key dimensions are discussed in the following section:

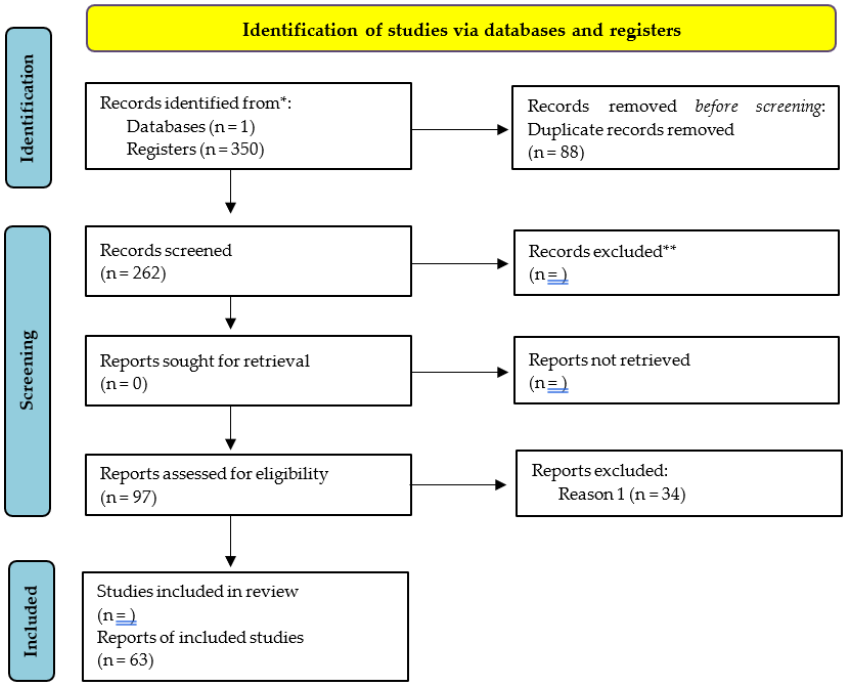

Figure 1.
Adapted from Alreahi et al. (2022)

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Basic Information Analysis

Publication Year

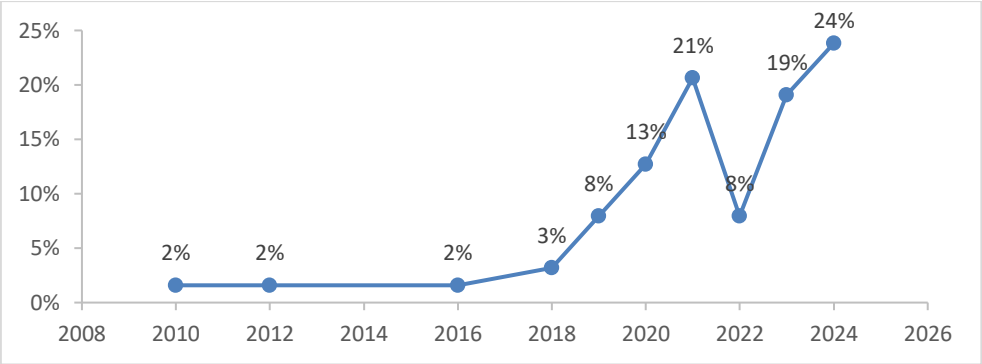

Figure 2.
Publication Year

The data in **Figure 2** show a growing trend in publications on the application of AI in CRM from 2010 to 2024. In 2010, 2012, and 2016, only one publication was recorded each year (2%). Research interest began to increase in 2018 with two publications (3%) and continued to grow in 2019 with five publications (8%). A significant rise occurred in 2020 with eight publications (13%), reaching a peak in 2021 with thirteen publications (21%). Although publications decreased to five (8%) in 2022, the trend increased again in 2023 with twelve publications (19%) and reached the highest level in 2024 with fifteen publications (24%). According to Malikireddy & Tadanki (2022), this growth is driven by AI's ability to analyze big data, provide deeper insights into customer behavior, and improve service personalization, which are essential for modern CRM strategies. Increasing awareness of AI benefits and rapid technological development have also supported this trend.

Research Method

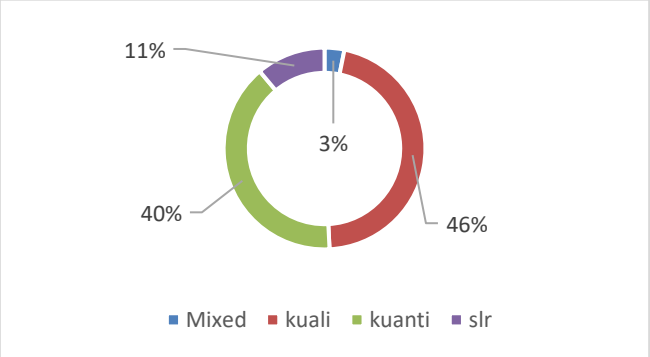

Figure 3.
Research Method

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Based on **Figure 3**, most studies employed a qualitative approach (46%), focusing on gaining an in-depth understanding of AI applications in CRM. Corbin & Strauss (2008)argue that qualitative research is highly effective for exploring complex and multidimensional processes, which is particularly relevant in AI–CRM studies. Quantitative research accounted for 40%, emphasizing statistical and data analysis. SLR represented 11%, concentrating on synthesizing existing research. Meanwhile, mixed methods, which combine qualitative and quantitative approaches, were the least frequently used at 3%. This distribution indicates a relatively balanced methodological approach, with a strong emphasis on deeply understanding the complex application of AI in CRM through both exploratory and data-driven studies.

Article Type

Table 2.
Article Type

Article	Amount	Percentage
CHAP	1	2%
CONF	3	5%
JOUR	59	94%
Total	**63**	**100%**

Table 2 presents an analysis of article types focusing on the application of AI in CRM. The data show that journal articles dominate the research landscape, accounting for 94% (59 out of 63) of the total publications. Conference papers represent 5% (3 out of 63), while book chapters are the least common type, comprising only 2% (1 out of 63). These findings indicate a strong preference for disseminating AI–CRM research through reputable academic journals, which are considered the most comprehensive and credible sources for both academic and practical insights in this field.

Journal Publication

Table 3.
Top 10 Journal Publications

Journal Publication	Number of Unit	SJR	*Best Quartile*	H-index
Business Horizons	3	2443	Q1	118
IEEE Access	2	0.96	Q1	242
Industrial Marketing Management	6	2705	Q1	177
Information Systems Frontiers	2	1577	Q1	85
International Journal of Information Management	3	5775	Q1	177

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International Journal of Information Management Data Insights	2	2137	Q1	34
Journal of Interactive Marketing	2	3355	Q1	126
Journal of Retailing	2	3915	Q1	159
Bottom Line	2	1.01	Q1	25
Technology in Society	2	2249	Q1	88

Based on **Table 3**, several journals addressing AI in CRM demonstrate strong reputations within academic literature. For example, the *International Journal of Information Management* shows a significant impact with a high SJR score. All journals included in the dataset belong to the top quartile (Q1), such as *Business Horizons*, *IEEE Access*, and *Journal of Retailing*, indicating that these journals are recognized as leading sources in this field. The H-index values further highlight their influence; for instance, *Industrial Marketing Management*, with an H-index of 177, indicates that articles published in the journal are frequently cited, confirming its substantial contribution to the development of AI technologies in CRM. Overall, these data illustrate the important role of these journals in advancing research and supporting the application of AI to enhance customer relationship management. As noted in an article published in the *International Journal of Information Management*, "AI in CRM has revolutionized business–customer interactions by improving personalization and predictive capabilities" (Kumar et al., 2024).

Basic Content Analysis

Main Technologies of AI-CRM System

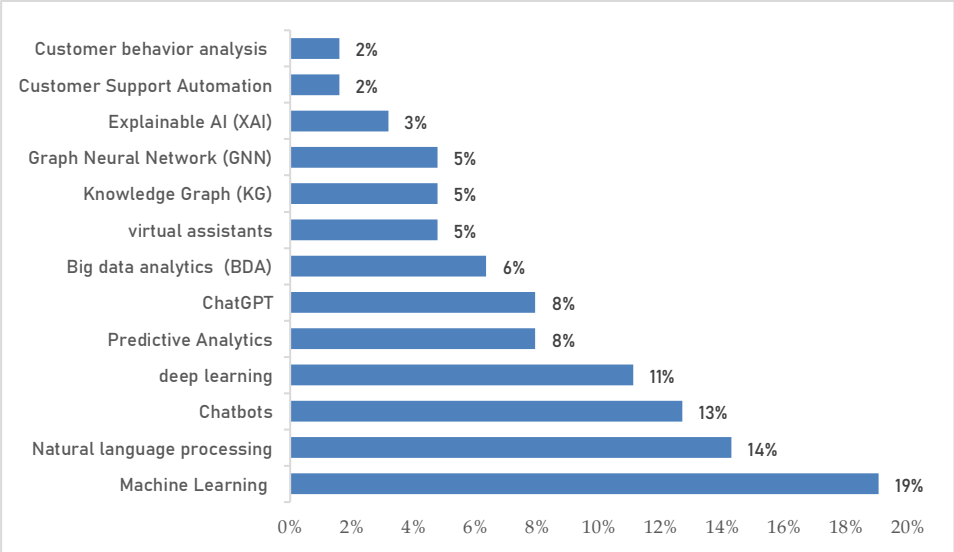

Figure 4.
Main AI Technologies of AI-CRM

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Based on **Figure 4**, Machine Learning (ML) shows the highest percentage at 19%, followed by Natural Language Processing (NLP) at 14% and Chatbots at 13%. Deep Learning also demonstrates a significant contribution of 11%, followed by Predictive Analytics and ChatGPT, each accounting for 8%. Big Data Analytics and Virtual Assistants contribute 6% and 5%, respectively. Meanwhile, Knowledge Graphs, Graph Neural Networks (GNN), and Explainable AI (XAI) account for 5%, 5%, and 3%, respectively. Customer Support Automation and customer behavior analysis each represent 2%.

These findings indicate that ML plays a highly significant role based on the analyzed articles. This result aligns with Gaczek et al. (2023), who state that ML is capable of analyzing big data, predicting customer behavior, enabling service personalization, automating processes, and improving scalability and efficiency. Therefore, the application of AI in CRM aims not only to enhance operational efficiency but also to deliver more personalized and predictive customer experiences, as highlighted in previous studies (Chatterjee et al., 2021), (Rahman et al., 2023), and (Libai et al., 2020).

AI-CRM user Industry

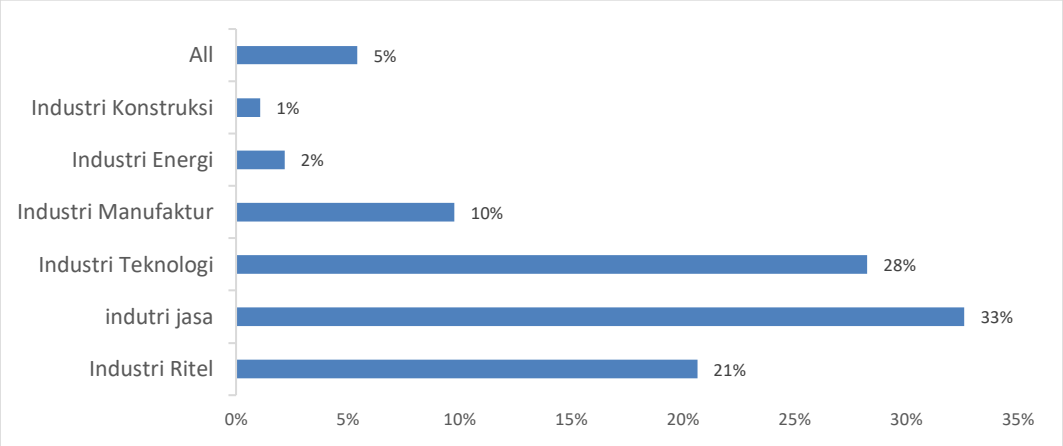

Figure 5.
Industry

Figure 5 indicates that AI implementation in CRM is most prevalent in the service industry (33%), followed by the technology sector (28%) and retail (21%). The manufacturing industry shows an adoption rate of 10%, while the energy and construction sectors account for only 2% and 1%, respectively. The general category represents 5% of total AI–CRM implementations. Overall, 92 AI applications in CRM across various industries were identified within the 63 analyzed articles. The high adoption rate in the service and technology sectors is driven by the need for personalization, operational efficiency, and advanced analytical capabilities

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(Chatterjee et al., 2021). In contrast, the lower adoption in the energy and construction industries may be attributed to challenges in integrating new technologies and a continued reliance on traditional methods. These findings indicate that AI adoption in CRM varies depending on industry needs and readiness, with strong potential for future growth as technology continues to develop.

Analisis Keyword

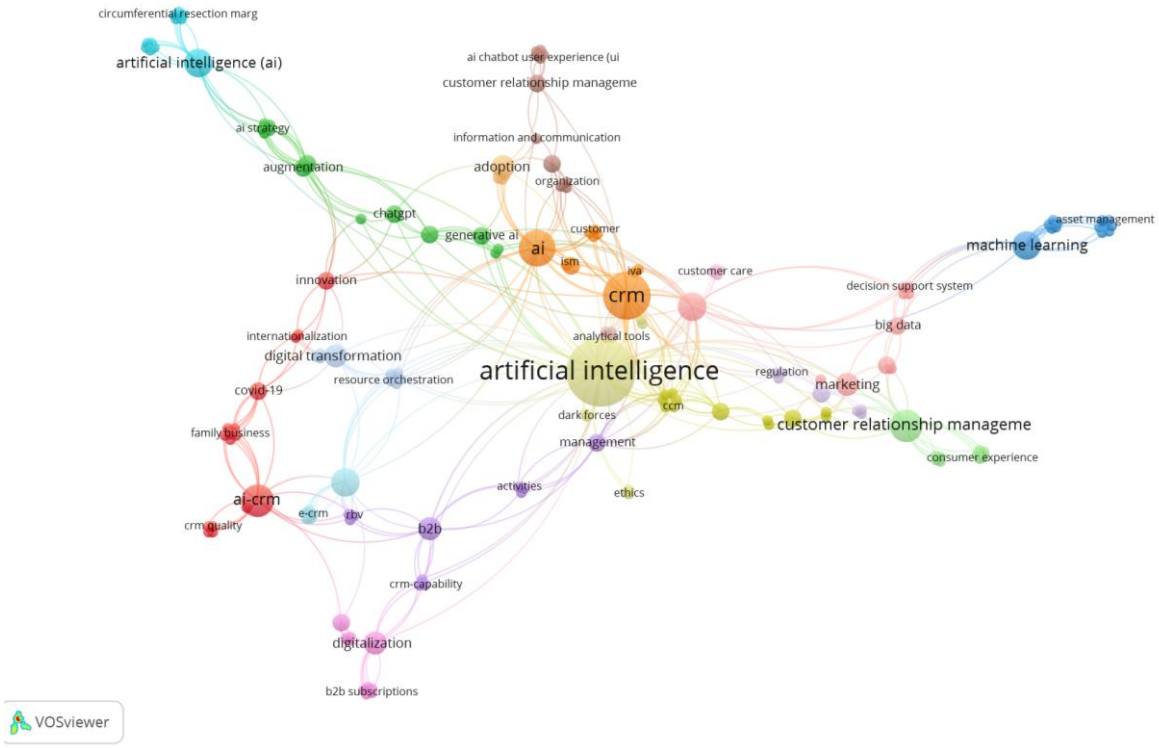

Figure 6.
Network Visualization

Figure 6 presents a network visualization generated using VOSviewer, illustrating the relationships among various concepts in the context of AI in CRM. Large nodes such as "Artificial Intelligence" and "CRM" represent the most common and dominant topics. The strong connections between these nodes indicate that both concepts are frequently discussed together in the literature. The colored clusters represent specific themes, with "Artificial Intelligence" and "CRM" grouped in orange, while "machine learning" and "asset management" appear in blue. Keywords such as "AI chatbot," "customer experience," "digital transformation," and "marketing" reflect the diverse applications of AI within CRM. Overall, the visualization demonstrates that

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AI plays an important role in improving efficiency, enhancing customer experience, and supporting digital transformation and marketing activities in CRM.

Deep Content Analysis

AI-CRM Implication

Table 4.
AI-CRM Implication

Focus	Author
Improved Customer Experience	Ferraro et al. (2024), Kowalkowski & Ulaga (2024), Rosário & Dias (2023), Gupta et al. (2024), Krafft et al., (2020), Verma et al. (2021), Ledro et al. (2023), Krafft et al. (2021), Kumar et al. (2024), Scholdra et al. (2023), Kumar et al. (2019), Nunna (2018), Holmström & Carroll (2024).
Operational Efficiency	Ferraro et al. (2024), Jaruwanakul (2024), Lin et al., (2024), Krafft et al. (2021), Kumar et al. (2024), Feng et al. (2024), Chatterjee, Rana, et al. (2021), Holmström & Carroll (2024), Stolze et al. (2021), S. Khan & Iqbal (2020)
Data-Based Decision Making	Dastjerdi et al. (2023), Q. Wang & Zhang (2021), Engström & Strimling (2020).
Increase Customer Retention	Libai et al. (2020), Kumar et al. (2019), Georgiou & Chasapis (2022), Verma et al. (2021), Rusthollkarhu et al. (2022), Krafft et al. (2021), S. Khan & Iqbal (2020), Roussinov & Leon Zhao (2010),
Improved Service Quality	Ferraro et al. (2024), Roussinov & Leon Zhao (2010), Frangos & O'Shea (2022), Bai & Li (2022)
More Effective Sales Strategy	Huang (2020), Chatterjee et al. (2022), Holmström & Carroll (2024), Libai et al. (2020), S. Khan & Iqbal (2020), Hung et al. (2023).
Better Customer Relationship Management	Kumar Deb et al. (2018), Ledro (2021), Nguyen et al. (2021), Nunna (2018), Rahman et al. (2023), Huang, (2020), Pramono et al. (2019), Youn & Jin (2021), Chatterjee et al. (2022), Libai et al. (2020), Arco et al. (2019), S. Khan & Iqbal (2020), Roussinov & Leon Zhao (2010).

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The Challenges of AI-CRM Implementation

Table 5. AI-CRM Challenges

Author & Year	T	O	E&R	E
Aladawi & Ahmad (2023)	√	√	√	√
Alshawawreh et al. (2024)	√	√	√	√
Bai & Li (2022)	√	√	√	√
Berkowitz (2024)	√	√	√	√
Chatterjee, Chaudhuri, et al. (2021)	√	√	√	√
Chatterjee, Ghosh, et al. (2020)	√	√	√	√
Chatterjee, Ghosh, et al. (2021)	√	x	√	x
Chatterjee et al. (2019)	√	√	√	√
Chatterjee et al. (2022)	√	√	√	√
Chatterjee, Nguyen, et al. (2020)	√	√	√	√
Chatterjee et al. (2023)	√	x	√	x
Chatterjee, Rana, et al. (2021)	√	√	√	√
Chaudhuri et al. (2023)	√	√	√	√
Chen (2012)	√	√	√	√
Costa et al. (2020)	√	√	√	√
Arco et al. (2019)	√	√	√	√
Dastjerdi et al. (2023)	√	√	√	√
Engström & Strimling (2020)	√	√	√	√
Feng et al. (2024)	√	√	√	√
Ferraro et al. (2024)	√	√	√	√
Frangos & O'Shea (2022)	√	√	√	√

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Friess et al. (2024)	√	√	√	√
Gaczek et al. (2023)	√	√	√	√
Georgiou & Chasapis (2022)	√	√	√	√
Gupta et al. (2024)	√	√	√	√
Holmström & Carroll (2024)	√	√	√	√
Huang (2020)	√	√	√	√
Hung et al. (2023)	√	√	√	√
Ivančić et al. (2024)	√	√	√	√
Jaruwanakul (2024)	√	√	√	√
Keegan et al. (2023)	√	√	√	√
M. R. Khan & Sarkar (2024)	√	√	√	√
Kowalkowski & Ulaga (2024)	√	√	√	√
Krafft et al. (2021)	√	√	√	√
Krafft et al. (2020)	√	√	√	√
Kumar Deb et al. (2018)	√	√	√	√
Kumar et al. (2024)	√	√	√	√
Kumar et al. (2019)	√	√	√	√
Ledro (2021)	x	√	√	X
Ledro et al. (2023)	√	√	√	√
Libai et al. (2020)	x	x	√	√
Lin et al. (2024)	x	x	x	√
Mazaev et al. (2023)	√	√	√	√
Mori et al. (2016)	√	√	√	√
Nair et al. (2021)	√	x	x	X
Nguyen et al. (2021)	√	√	√	√

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Nunna (2018)	√	√	√	√
Papadopoulos et al. (2021)	√	√	√	√
Peretz-Andersson et al. (2024)	√	x	x	x
Pramono et al. (2019)	√	√	√	√
Rahman et al. (2023)	√	√	√	√
Rosário & Dias (2023)	√	√	√	√
Roussinov & Leon Zhao (2010)	√	√	√	√
Rusthollkarhu et al. (2022)	√	√	√	√
Saura et al. (2021)	√	√	x	x
S. Khan & Iqbal (2020)	√	x	√	x
Scholdra et al. (2023)	√	√	√	√
Shollo et al. (2022)	√	√	√	√
Stolze et al. (2021)	√	√	√	√
Verma et al. (2021)	x	√	X	x
Q. Wang & Zhang (2021)	√	√	√	√
Xu et al. (2019)	x	√	x	x
Youn & Jin (2021)	√	√	√	√

NOTES: *Technical Challenges* (T), *Organizational* (O), *Ethical and Regulatory (R&G), Economic* (E).

Based on **Table 5**, the literature from the 63 journals generally discusses various challenges in implementing AI in CRM. This indicates the presence of significant issues that need to be addressed, highlighting the need for alternative solutions to support the future integration of AI with CRM. Consequently, companies are expected to operate more effectively while optimally meeting customer needs and expectations in the digital era.

Discussion

The rapid development of technology has transformed the traditional CRM landscape into modern CRM, which integrates internet technology and predictive data analytics to understand customer behavior and personalize customer experiences. This

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has attracted researchers' interest in examining CRM integrated with modern technologies, namely AI, over the last decade [*see Table 2*], as published in reputable journals [*see Table 3*]. These findings indicate a highly significant increase in research interest, as well as the implementation of AI-CRM across various industrial sectors [*see Figure 5*], which also demonstrates a strong relationship between AI and CRM [*see Figure 6*]. This condition confirms that AI has become one of the key factors for the success of modern CRM strategies (Doe, 2022). A number of academic studies explain the implications of AI for CRM. **First**, the enhancement of customer experience through personalized interactions and the ability to anticipate customer needs, which ultimately increases customer satisfaction and loyalty (Ferraro et al., 2024; Gupta et al., 2024; Kumar et al., 2024). AI technologies relevant in this context include chatbots, Natural Language Processing, Virtual Assistants, and ChatGPT. **Second**, the improvement of operational efficiency through the automation of routine tasks and process optimization, such as Customer Support Automation and Predictive Analytics, thereby reducing manual workloads and lowering overall operational costs (Jaruwanakul, 2024; Stolze et al., 2021).

Third, AI provides actionable insights through the support of Big Data Analytics and Predictive Analytics, enabling businesses to make decisions based on data predictions and trends (Dastjerdi et al., 2023; C. Wang et al., 2020). **Fourth**, AI technologies such as Predictive Analytics, Deep Learning, and ChatGPT are capable of enhancing customer retention by predicting customer behavior and preferences, as well as identifying at-risk customers and subsequently implementing proactive retention strategies that reduce churn rates (Libai et al., 2020; Rusthollkarhu et al., 2022). **Fifth**, AI improves service quality by ensuring faster response times supported by Virtual Assistants (VA) and Chatbots, as well as personalized support and service consistency across channels with the assistance of Natural Language Processing. (Bai & Li, 2022; Ferraro et al., 2024). **Sixth**, AI technologies such as Predictive Analytics, Machine Learning, and Deep Learning provide predictive analysis for sales forecasting, lead scoring, and personalized recommendations, thereby optimizing sales strategies and improving conversion rates (Huang, 2020; Hung et al., 2023).

Finally, AI enables better customer relationship management by providing deep insights into customer behavior and preferences, facilitating personalized marketing campaigns, and fostering the development of long-term customer relationships (Kumar Deb et al., 2018; Rahman et al., 2023). Relevant AI technologies in this context include Chatbots, NLP, and VA [*see Figure 3*]. Overall, the implementation of AI in CRM provides broad and profound benefits, ranging from improved customer experience and retention to greater operational efficiency and more effective sales strategies. However, the implementation of AI in CRM identified in the literature [*see*

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Table 5] presents various challenges that can be categorized into technical, organizational, ethical and regulatory, as well as economic aspects. From a technical perspective, the complexity of AI implementation requires specialized skills (Saura et al., 2021). Another challenge involves data quality and integration, where difficulties arise in accessing high-quality data (Ledro et al., 2023) and integrating data from multiple sources (Dastjerdi et al., 2023). In addition, the development of reliable algorithms becomes a key factor (Chatterjee, Nguyen, et al., 2020; Papadopoulos et al., 2021), while also ensuring that AI models are able to adapt to changing customer needs and provide accurate predictions (Feng et al., 2024; Huang, 2020).

From an **organizational** perspective, the main challenges include developing new skills among staff to manage AI (Libai et al., 2020; Chaudhuri et al., 2023), as well as building an organizational culture and infrastructure that support AI adoption (Xu et al., 2019; C. Y. Lin et al., 2024). Effective collaboration between information technology teams and business teams also becomes a key factor (Costa et al., 2020; Gaczek et al., 2023). In terms of ethical and regulatory aspects, it is important to ensure that AI does not violate customer privacy and complies with data protection regulations (Chatterjee, Ghosh, et al., 2020; Nair et al., 2021). Transparency in AI-based decision-making and the prevention of algorithmic bias are also major concerns (Chatterjee, Ghosh, et al., 2021; Ledro et al., 2023).

From an **economic** perspective, the challenges faced include managing the costs associated with AI implementation and operations (Chatterjee, Nguyen, et al., 2020; Chen, 2012), as well as ensuring that investments in AI generate adequate returns (Chatterjee, Ghosh, et al., 2020; Pramono et al., 2019). In addition, **technical** challenges include expertise and data integration, organizational challenges involve skill development and collaboration, ethical challenges concern privacy and transparency, while economic challenges include cost management and return on investment (ROI). All of these aspects need to be considered in order to achieve long-term success in the implementation of AI in CRM. Based on the discussion of the implications and challenges of AI-CRM above, there are contradictory values involved. In much of the literature, AI is positioned as a supporting tool, including within CRM, aimed at understanding, anticipating, and fulfilling customer needs more effectively in order to enhance customer satisfaction, retention, and company profitability in the digital era.

Therefore, this knowledge enables organizations to design more effective AI integration strategies by considering the various improvements that AI can provide, such as operational efficiency, service personalization, and data-driven decision-making, while simultaneously identifying and addressing potential obstacles that may arise during the implementation process. Saura et al. (2021) and Ledro et al. (2023) For example, emphasize the importance of technical expertise and data quality in

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determining the success of AI implementation. In addition, staff skill development and collaboration between information technology teams and business teams are also identified by (Libai et al., 2020) and Costa et al. (2020) as key factors in overcoming organizational challenges. By understanding these relationships, organizations can mitigate risks related to data privacy and regulations as outlined by Nair et al. (2021), while ensuring transparency and avoiding algorithmic bias as identified by Chatterjee, Ghosh, et al. (2021). Overall, this understanding helps organizations make more accurate and rational AI investment decisions, while ensuring that the benefits obtained are proportional to the costs incurred, as stated by Chen, (2012), Pramono et al. (2019), Chatterjee, Chaudhuri, et al. (2021) Hung et al. (2023), and Friess et al. (2024).

CONCLUSION

Technological developments have transformed traditional CRM into modern CRM integrated with the internet and data analytics, particularly over the last decade. AI is utilized in the form of chatbots, Natural Language Processing, and virtual assistants to improve efficiency and service personalization. In general, AI is capable of enhancing customer experience, operational efficiency, and data-driven decision-making. In addition, AI also helps improve customer retention, service quality, and the effectiveness of sales strategies. However, its implementation still faces various challenges, such as technical complexity, limited human resources, data quality and integration issues, as well as ethical, regulatory, and investment cost concerns.

The research implications indicate that AI-based CRM can improve customer loyalty, satisfaction, and business performance through more personalized services. Practically, AI supports automation, data analytics, and customer interaction, while theoretically enriching studies related to CRM and technology. Nevertheless, challenges such as data privacy and algorithmic bias remain, making clear policies and ethical AI usage essential. This study employs a Systematic Literature Review method and is therefore conceptual in nature, with limitations including the absence of empirical testing and quantitative analysis. Therefore, future research is recommended to conduct empirical studies in order to obtain a deeper understanding that better reflects real-world conditions. In addition, future studies may focus specifically on one of the issues related to ethics, regulation, and economics in AI-CRM, while also narrowing the scope of analysis to a single country.

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