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The Role of Customer Relationship Management (CRM) in Enhancing Public Satisfaction with Smart City Services

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ABSTRACT

This study aims to explore the role of Customer Relationship Management (CRM) in enhancing public satisfaction with smart city services. A literature review method was employed by analyzing 10 previous studies from 2015 to 2025 that are relevant to the implementation of CRM in smart city service applications. The findings reveal that CRM contributes to three key aspects: (1) CRM improves responsiveness to public complaints, (2) CRM encourages public engagement, and (3) CRM facilitates access to public service information. Despite its many benefits, the study also identifies several challenges in CRM implementation, such as technological readiness, limited human resources, and the level of digital literacy among citizens. Therefore, the successful implementation of CRM in smart city applications requires appropriate strategies, including public education and strengthening of technological infrastructure. This study is expected to provide insights for governments and stakeholders in optimizing CRM to improve the quality of public services in smart city applications.

1. INTRODUCTION

With the development of ICT, people's lifestyles have also changed, and various services are now available in the form of mobile applications [1]. From transactions and learning to social networking. This phenomenon is closely linked to increasingly easy and affordable internet access [2]. According to research from the social media management platform HootSuite and the social marketing agency We Are Social, titled "*Global Digital Reports 2020*", nearly 64 percent of Indonesia's population is connected to the internet, reaching 175.4 million users. However, the number of mobile internet users is significantly higher, almost twice as many [3]. The combination of these two factors has shaped a society that is always online. The digital era, in turn, has also influenced the relationship between the government and its citizens. The adoption of mobile government is no longer negotiable [4].

Smart city or e-government applications have become the primary solution for improving the quality of life with information and communication technology [5]. Smart city applications for urban public services are one of the indicators of an ongoing evolution, namely "ubiquitous government" or "smart government." A smart city application is an information technology-based platform developed to improve the efficiency of city services, such as integrating various services like public transportation, security, environment, street CCTV, healthcare, commodity prices, public administration, and more into a single application. Examples include Jakarta Kini (JAKI) owned by the Jakarta city government and Bandung Sadayana Super App owned by the Bandung city government. With these applications, it is hoped that local governments can manage cities more effectively, while citizens can benefit from faster, more transparent, and easily accessible services, thereby improving the quality of life and supporting local governments in data-driven decision-making. Therefore, the government needs a more progressive response to adapt to the changes occurring in the digital era [6]. A bureaucratic structure is needed to accommodate new technologies and their utilization. However, implementing this application in society is not easy; digitization comes with its own challenges in enhancing public engagement and user satisfaction [7].

This can be caused by many factors, one of which is the suboptimal use of smart city applications among the public. Therefore, Customer Relationship Management (CRM) is needed in this case. CRM is a strategy that can be implemented to address this issue [8],[9]. CRM is an approach that focuses on managing relationships with customers or service users to enhance public satisfaction and loyalty toward the use of smart city applications. When linked to the concept of smart cities, the implementation of CRM plays a crucial role in improving interactions between the government and the public [10]. Therefore, this

study aims to explore how the implementation of CRM strategies can improve the performance and effectiveness of smart city application services. It is hoped that this study will provide evidence-based recommendations to enhance the user experience.

2. LITERATURE REVIEW

2.1 Smart City Application

Currently, smart cities have become a common term aimed at improving urban service efficiency, public administration, and the quality of life for its inhabitants, not only by introducing new concepts but also by making existing processes more efficient. There are several formal definitions related to smart cities, a city becomes smart when investments in human and social capital, as well as in traditional (transportation) and modern (ICT) communication infrastructures, drive sustainable economic growth and a high quality of life, with wise management of natural resources, through participatory governance [5]. The concept of a smart city is certainly driven by the abundance of technology, such as the emergence of various applications. Smart city applications are present in this concept to improve urban service efficiency, enhance the quality of life for citizens, and support data-driven decision-making. The effectiveness of these smart city applications and others greatly depends on data collection, interconnectivity, and scalability [11].

Digitization through smart city applications will enhance sustainable efficiency by enabling citizens to participate and improve decision-making through the increased availability of information within the applications. Smart city applications cover several key areas, including mobility, utilities, buildings, environment, public services, governance, economy, healthcare, and community [12],[13]. These areas are integrated into a single application, forming a network that allows the government, citizens, and various stakeholders to interact digitally.

2.2 Customer Relationship Management

Customer Customer Relationship Management (CRM) is a strategy and technology used to manage all interactions between an organization and its current and potential customers. The goal of CRM is to improve relationships to develop business processes, enhance customer loyalty, and increase satisfaction. CRM helps organizations stay connected with customers, streamline processes, and boost profitability [7]. CRM not only refers to software that helps track every interaction with prospects or customers but also a business approach focused on understanding customer needs, improving satisfaction, and building long-term loyalty. It can include sales calls, customer service interactions, marketing emails, and more. In the context of smart city applications, CRM is used to manage relationships with citizens, businesses, and other stakeholders, with a focus on enhancing interactions between local governments and the public through digital technology. This includes managing public responses quickly, handling public complaints, preventing slow bureaucracy with automated systems that distribute complaints directly to the responsible agencies, and more. CRM in the context of smart city applications serves as a bridge between local governments and citizens, enabling more effective communication with faster responses related to various issues within the city [14]. CRM can help a city become smarter, more efficient, and more focused on meeting the needs of its citizens [11].

2.3 User Satisfaction

User satisfaction is the best "omnibus" measure of the success of an information system; user satisfaction is considered one of the most important criteria in measuring the success or failure of an information system [15]. User satisfaction can be defined to [12] the extent to which users believe that the information system available to them meets their information requirements based on each user's standards. In the literature, the construct of user satisfaction is referred to as "perceived needs," "system acceptance," "perceived usefulness," "feelings about the information system," "perceptions," and "beliefs." The concept of user satisfaction is based on Cyert and March's suggestion that if an information system meets the users' requirements, user satisfaction with the information system will increase. Conversely, if the information system does not provide the needed information, users will feel dissatisfied [14]. In the context of smart city applications, user satisfaction is based on how satisfied citizens feel with their experience using the application launched by local governments to provide various public services, communication, reporting, and more. This satisfaction is influenced by several factors, such as system quality, ease of use, availability of information, system responsiveness, and other elements related to the application's ability to process a service effectively [4]. Moreover, the lack of socialization and digital literacy among citizens will also affect user satisfaction in using the application, becoming one of the challenges in enhancing user satisfaction with smart city applications [16].

3. RESEARCH METHODS

This study employs a narrative literature review approach to analyze and synthesize findings from previous research related to smart city applications and CRM implementation. This method allows the author to explore patterns, highlight trends, and identify research gaps in the existing body of knowledge [17]. Data was obtained by collecting and examining 10 relevant studies published between 2015 and 2025, focusing on the application of CRM in public services and smart cities. Sources were

selected from academic databases and research repositories based on relevance to the themes of CRM, customer satisfaction, and public service. Although inclusion and exclusion criteria were applied, the review was conducted in a non-systematic manner, aiming to provide a general understanding rather than a formal meta-analysis.

Next, the author performed a quality assessment of each selected study. This involved examining the methodology, results, and conclusions of each research to ensure the validity and reliability of the data collected. After the quality analysis, data from each study were gathered and synthesized to gain a comprehensive understanding of how CRM contributes to improving public satisfaction. Once the data was collected, the author summarized the key findings from the literature analyzed, identified emerging patterns and trends, and provided recommendations for future practices and research. The keywords used in searching for sources in this study included: "Customer Relationship Management (CRM), user satisfaction, service satisfaction, smart city".

4. DISCUSSION AND RESULT

Based on the results of the search for similar studies, this research found 10 related studies, which can be seen in Table 1 below:

Table 1. Previous studies

Code	Title	Literature Review Findings	Ref	Journal
SLR-001	Customer Relationship Management (CRM) in Enhancing Public Satisfaction	The implementation of CRM has successfully increased the number of students and communication between schools, students, and parents through technology such as WhatsApp and home visits. Annual evaluations are used to analyze the effectiveness of CRM.	[14]	Edusaintek: Jurnal Pendidikan, Sains dan Teknologi
SLR-002	Electronic citizen relationship management (e-CiRM) modeling towards Serang as a smart city	The e-CiRM model helps the government of Serang City in managing relationships with the public, improving satisfaction, and providing a comprehensive view of the system through Zachman Frameworks.	[13]	International Journal of Computer Applications
SLR-003	Analysis of Citizens' Satisfaction and Participation Intention toward Citizen-centric Smart City Initiatives	The level of public satisfaction with smart city initiatives remains low (58.19%). PLS-SEM analysis indicates that satisfaction significantly influences the intention to participate, while public awareness positively moderates the relationship.	[12]	Seoul National University Journal
SLR-004	The effect of service quality on customer satisfaction in digital age: customer satisfaction-based examination of digital CRM	The quality of digital services positively contributes to customer satisfaction and trust in digital CRM. High satisfaction improves company performance, but credibility support is necessary.	.[18]	Journal of Business Economics and Management
SLR-005	Data analytics to improve citizen-centric smart city services	Data analysis can enhance smart city services by understanding the characteristics of services that most benefited from the application of analytical CRM.	[19]	25th Americas Conference on Information Systems (AMCIS)
SLR-006	Key factors in customer relationship management strategy success in the local government authorities	The success of CRM in local governments is influenced by implementation strategies, change management, and evaluation metrics. Improper implementation can hinder CRM effectiveness.	[20]	Applied Economics and Finance
SLR-007	How to Improve the Quality of Living in Smart Cities: Recommendations for a Citizen-centric Strategic Approach for Msheireb?	Public awareness of smart city services remains low, leading to minimal service usage. A citizen-centric CRM strategy is necessary to increase public engagement and satisfaction.	[21]	QScience Connect
SLR-008	Customer satisfaction assessment coffee roaster restaurant using SERVQUAL: Utilization of customer relationship management (CRM) application	CRM is used to enhance customer experiences in the food industry, focusing on more personalized services and higher customer retention.	[22]	Proceedings of the 2021 4th International Conference on Data Storage and Data Engineering
SLR-009	The Effect of Applying Customer Relationship Management (CRM) on	CRM in the public sector in Egypt increases public engagement and satisfaction with the services provided by	[23]	Journal of Politics and

	Improving Citizens' Satisfaction with Public Services in Egypt	the government.		Economics Volume 22, Issue 21
SLR-010	Implementation of Citizen Relation Management (CRM) applications in the public services of the city of North Jakarta in 2023	CRM in North Jakarta makes it easier for citizens to submit complaints through various communication channels but still face challenges in implementation.	[11]	ARISTO

Based on Table 1 above, it can be concluded that there are several roles, namely: (1) complaints can be responded to in real-time, (2) it can increase user or public trust, and (3) it can improve the ease of accessing information. For further clarification on the role of CRM in improving public service satisfaction with smart city services, this can be seen in Table 2 below:

Table 2. Research Findings

No	CRM Role	LR Code	Key Findings
1	Improvement in Complaint Response	SLR-009	CRM in North Jakarta facilitates citizens in submitting complaints through various communication channels, though challenges in implementation still persist.
		SLR-002	e-CiRM Model assists the government in managing relationships with the community and addressing complaints more effectively.
		SLR-008	CRM in the public sector in Egypt enhances community engagement and satisfaction with government services.
2	Enhancing Community Engagement	SLR-003	Citizen satisfaction with smart city services affects participation, with community awareness acting as a moderate factor.
		SLR-007	Awareness of smart city services remains low, highlighting the need for CRM to boost engagement and satisfaction among citizens.
		SLR-006	The success of CRM in local government is influenced by implementation strategies, change management, and evaluation metrics.
		SLR-001	CRM implementation improves communication between schools, students, and parents through digital technology.
3	Improving Accessibility to Information	SLR-005	Data analysis in CRM helps to understand the characteristics of services that benefit the most from a smart city system.
		SLR-004	Digital service quality based on CRM enhances customer satisfaction and trust in public services.
		SLR-010	CRM improves customer experience by offering more personalized services and fostering higher customer retention.

Based on the results of the literature review analysis in Tables 1 and 2 from the 10 previous studies, it was found that Customer Relationship Management (CRM) plays an important role in improving public satisfaction with smart city application services. The implementation of CRM in technology-based public services can assist the government or stakeholders in managing relationships with their citizens. This can help the government improve communication and provide more responsive solutions to public needs. CRM has proven to accelerate the government's response to public complaints by providing systems that allow real-time monitoring and problem resolution. These systems help improve the transparency of public services, which can ultimately increase public trust in local governments. For example, research conducted on the Customer Relationship Management system in North Jakarta shows that CRM enables citizens to submit complaints through various digital communication channels such as applications, social media, and service portals.

However, this study also identifies challenges in the implementation of CRM, such as technological readiness and the capacity of human resources to manage the system effectively [23]. In addition, the Electronic Customer Relationship Management (e-CRM) model in Serang City also demonstrates the effectiveness of CRM in handling public complaints more systematically [13]. With the presence of e-CRM, incoming complaints can be processed more quickly and integrated into the regional management system, allowing each relevant unit to take immediate action. As a result, CRM not only improves the government's response to complaints but also enhances public satisfaction in receiving public services. The implementation of CRM in the public sector is also used in Egypt, where the Egyptian government utilizes CRM for decision-making processes related to public services.

Customer Relationship Management (CRM) also plays a role as a tool used to build active citizen engagement, through various mechanisms such as satisfaction surveys, online forums, and integration with social media. Research conducted on smart city initiatives in several cities has found that the level of public satisfaction is closely related to their engagement in smart city services. Studies using PLS-SEM (Partial Least Squares Structural Equation Modeling) analysis show that high satisfaction will encourage active public participation [12]. In addition, another study found that citizen-centric CRM strategies can improve the public's understanding of city services, which ultimately encourages citizens to be more active in using and providing feedback on the services offered [21]. On the other hand, research on smart city services in Msheireb, Qatar, shows that low public awareness or digital literacy regarding the availability of smart city services is a major barrier to increasing citizen engagement [20].

Therefore, an effective CRM strategy should include more active education and communication campaigns to help the public understand the benefits of the services provided by the government.

In addition to these roles, CRM also functions as an information system that enables citizens to obtain public service information more quickly, accurately, and transparently [14]. The communication that is created becomes more efficient and can be accessed by citizens at any time, thereby increasing their satisfaction with the services [19]. In the context of smart city applications, data analysis in CRM also contributes to improving the government's understanding of the patterns of service needs most frequently used by citizens. With the use of data analytics technology, the government can tailor services based on user preferences, thus enhancing the comfort and satisfaction of citizens in accessing public services [18]. In addition, the quality of CRM-based digital services also plays a crucial role in enhancing customer satisfaction in both the public and private sectors. This principle can also be applied in smart city-based public services, where service personalization can improve the experience of citizens when interacting with the government [11].

5. CONCULUSSION

Based on the results of the research analysis, it can be concluded that Customer Relationship Management (CRM) has a significant impact on improving public satisfaction with smart city application services. CRM helps the government in managing relationships with citizens more effectively through:

1. CRM enables faster and more transparent complaint handling, increasing public trust in city services.
2. CRM helps build more active interactions between the community and the government, thus enhancing participation in decision-making related to public services.
3. CRM assists smart city application platforms in making it easier for citizens to access information about city services, thereby improving user comfort and satisfaction.

However, several challenges still need to be addressed, such as technological readiness, public digital literacy, and the quality and availability of information in smart city applications. Therefore, the effective implementation of CRM must consider these factors to achieve optimal results in improving the quality of public services based on smart city applications.

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