

Sustainable Customer Relationship Management in Electronic Banking Services

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Abstracts

The banking industry in India has witnessed a profound shift towards customer-centric activities, emphasizing the importance of managing and retaining customers. Electronic Customer Relationship Management (e-CRM) has emerged as a pivotal strategy for banks to meet customer needs and enhance satisfaction in the digital era. This paper explores the concept of Sustainable e-CRM, which integrates environmental and social considerations into customer relationship management strategies. By aligning e-CRM practices with sustainability goals, banks can mitigate environmental impacts, foster social responsibility, and build long-term relationships with customers. The study investigates the adoption, drivers, challenges, and best practices of sustainable e-CRM in Indian banking, aiming to contribute to knowledge in this field. Furthermore, it examines the impact of sustainable e-CRM on customer satisfaction, loyalty, and business performance, offering insights for banking institutions navigating digital transformation and sustainability imperatives. The research highlights the importance of balancing economic growth with environmental protection and social responsibility to ensure the long-term viability and resilience of the banking sector in India.

Keywords: e-CRM, Loyalty, Business performance.

Introduction

Managing and retaining customers are strategic priorities for the banking industry, where customers are paramount. The twin objectives of retail banking are to meet customer needs and satisfy their expectations. There has been a complete shift from bank-centric to customer-centric activities. With the advent of technology, banks have developed new strategies to attract new customers and retain existing ones. In the rapidly evolving landscape of banking services in India, the adoption of Electronic Customer Relationship Management (e-CRM) stands as a pivotal strategy for sustainable growth and enhanced customer satisfaction. With the advent of digital technologies, banking institutions are leveraging e-CRM to personalize customer interactions, streamline processes, and deliver seamless services across multiple channels. This paradigm shift towards electronic CRM not only promises greater efficiency but also poses significant challenges and opportunities for banks operating in the Indian market.

As India embraces digitalization and witnesses a surge in online banking transactions, the importance of sustainable e-CRM practices becomes increasingly evident. Sustainable e-CRM entails not only the effective utilization of digital tools and platforms but also the integration of environmental and social considerations into customer relationship management strategies. By aligning electronic CRM practices with sustainability goals, banks can mitigate environmental impacts, foster social responsibility, and build long-term relationships with customers. This research article aims to explore the concept of sustainable e-CRM in the context of banking services in India. Through an in-depth analysis of existing literature, case studies, and empirical research, this study seeks to identify the key drivers, challenges, and best practices associated with sustainable e-CRM implementation. Furthermore, it aims to examine the impact of sustainable e-CRM on customer satisfaction, loyalty, and overall business performance within the Indian banking sector.

By shedding light on the importance of sustainable e-CRM and offering insights into its practical implementation, this research endeavors to contribute to the growing body of knowledge in the field of electronic customer relationship management. Ultimately, the findings of this study can serve as a valuable resource for banking institutions in India seeking to navigate the complexities of digital transformation while promoting environmental sustainability and social responsibility in their customer-centric initiatives.

Importance

This research study holds paramount importance in the contemporary banking sector, particularly amidst the growing emphasis on sustainability and digital transformation. Firstly, by investigating Sustainable Electronic Customer Relationship Management

(e-CRM) practices in banking services, this study addresses a critical need for aligning business strategies with sustainability objectives. As banks grapple with environmental and social challenges, understanding how e-CRM can support sustainability initiatives becomes imperative for ensuring long-term viability and resilience in the face of changing market dynamics. Secondly, the study explores how Sustainable e-CRM can enhance the overall customer experience. By leveraging digital technologies to personalize services and promote environmentally responsible practices, banks can strengthen customer relationships and foster loyalty. Additionally, the research delves into the role of Sustainable e-CRM in driving operational efficiency and cost reduction. Through the automation of routine tasks, optimization of resources, and adoption of eco-friendly practices, banks can improve efficiency and realize significant cost savings. Furthermore, the study sheds light on how Sustainable e-CRM promotes environmental sustainability by reducing paper usage, energy consumption, and carbon emissions associated with traditional banking operations. Finally, the research underscores the importance of social responsibility in banking services and explores how Sustainable e-CRM enables banks to demonstrate their commitment to supporting financial inclusion, promoting financial literacy, and engaging in community development initiatives.

E-CRM Techniques used by Banks in India

Banks in India have increasingly adopted Electronic Customer Relationship Management (e-CRM) techniques to enhance customer satisfaction, streamline operations, and drive sustainable growth. Several e-CRM techniques are employed by banks in India to cater to the diverse needs and preferences of customers in the digital age.

Personalized Communication: Banks utilize customer data and analytics to personalize communication with clients. This includes targeted email campaigns, personalized offers, and notifications tailored to individual customer preferences and behaviors.

Multi-channel Integration: Indian banks integrate multiple channels such as websites, mobile apps, social media platforms, and chatbots to provide seamless and consistent customer experiences across various touchpoints. This enables customers to interact with the bank through their preferred channels at their convenience.

Customer Segmentation: Banks segment their customer base into distinct groups based on demographic, behavioral, and transactional data. This allows banks to tailor their products, services, and marketing efforts to specific customer segments, thereby improving relevance and effectiveness.

Data Analytics and Insights: Banks leverage advanced analytics and business intelligence tools to gain valuable insights into customer behavior, preferences, and

trends. This data-driven approach enables banks to anticipate customer needs, identify cross-selling opportunities, and optimize service delivery.

24/7 Customer Support: Many banks in India offer round-the-clock customer support through chatbots, virtual assistants, and interactive voice response (IVR) systems. This ensures prompt assistance and resolution of customer queries and issues at any time of the day.

Self-service Options: Banks provide self-service options such as online account management, bill payments, fund transfers, and loan applications through their digital channels. This empowers customers to perform transactions and access banking services conveniently without the need for branch visits.

Feedback Mechanisms: Banks solicit feedback from customers through surveys, ratings, and reviews to gauge satisfaction levels and identify areas for improvement. This feedback loop enables banks to continuously enhance their products, services, and customer experiences.

Security Measures: Banks implement robust security measures such as two-factor authentication, encryption, and biometric authentication to protect customer data and transactions conducted through digital channels. This instills trust and confidence among customers regarding the security of their financial information.

Customer Relationship Management (CRM) Platforms: Banks invest in CRM software and platforms to centralize customer data, automate workflows, and facilitate seamless interactions between customers and bank representatives. This enables banks to manage customer relationships more effectively and efficiently.

Value-added Services: In addition to core banking services, banks offer value-added services such as financial planning tools, educational resources, and rewards programs to add value and foster long-term relationships with customers.

Operational Definitions

Sustainable Electronic Customer Relationship Management (e-CRM): Sustainable e-CRM refers to the strategic use of digital technologies and platforms to manage customer relationships in a sustainable and environmentally responsible manner. It involves leveraging data analytics, automation, and digital channels to personalize customer interactions, drive loyalty, and promote sustainability.

Sustainability: Sustainability in the context of banking services encompasses environmental, social, and governance (ESG) considerations. It involves balancing economic growth with environmental protection, social equity, and ethical business practices to ensure long-term viability and resilience.

Customer Experience: Customer experience refers to the overall perception and interaction that customers have with a bank throughout their journey, encompassing every touchpoint and interaction across various channels. Sustainable e-CRM aims to enhance the customer experience by delivering personalized, seamless, and environmentally responsible services.

Operational Efficiency: Operational efficiency refers to the ability of a bank to optimize its internal processes, resources, and workflows to achieve maximum output with minimal input. Sustainable e-CRM practices can improve operational efficiency by automating routine tasks, reducing manual interventions, and streamlining workflows.

Environmental Sustainability: Environmental sustainability involves minimizing adverse environmental impacts and promoting conservation of natural resources. In the context of banking services, environmental sustainability encompasses efforts to reduce paper usage, energy consumption, and carbon emissions associated with banking operations.

Social Responsibility: Social responsibility refers to the ethical obligation of banks to contribute positively to society and address social challenges. Sustainable e-CRM enables banks to demonstrate social responsibility by supporting financial inclusion, promoting financial literacy, and engaging in community development initiatives.

Statement of the Problem

In the domain of Indian public and private banking services, the integration of Sustainable Electronic Customer Relationship Management (e-CRM) practices emerges as a crucial yet complex undertaking. This research endeavors to explore the opportunities and challenges associated with the adoption of Sustainable e-CRM in the Indian banking sector. Central to the investigation is the recognition of a multifaceted problem landscape. Firstly, there exists a notable dearth of comprehensive understanding regarding the implementation and efficacy of Sustainable e-CRM practices in Indian public and private banks. This knowledge gap impedes the optimal utilization of digital tools to promote sustainability while concurrently nurturing robust customer relationships. Moreover, Indian banks grapple with the intricate task of harmonizing customer expectations with sustainability objectives. The rising demand for personalized digital experiences confronts banks with the imperative of ensuring that these interactions align with sustainability principles. Another critical facet of the problem pertains to the integration of sustainability considerations into e-CRM strategies. This necessitates a deeper examination of the extent to which banks prioritize sustainability metrics in their customer relationship management initiatives. Furthermore, the evaluation of the impact of Sustainable e-CRM on customer satisfaction and loyalty remains notably underexplored within the Indian banking context. Understanding how sustainable practices shape customer perceptions and behaviors is pivotal for banks to tailor their strategies effectively. Additionally, while studies on Sustainable e-CRM in Indian banking may exist, they often fail to differentiate between public and private sector banks. Given the divergent organizational structures, regulatory frameworks, and customer demographics, a comparative analysis is essential to grasp the nuances of Sustainable e-CRM practices across these sectors and their implications for sustainability and customer outcomes. Addressing these intricacies and research gaps

is fundamental for advancing our comprehension of Sustainable e-CRM in Indian public and private banking services and for guiding strategic decision-making in the banking landscape.

Research Design

The present study covers Erode and Tirupur districts in Tamil Nadu are significant economic hubs, known for their vibrant textile and garment industries. Erode, often referred to as the "Turmeric City," is a major center for agriculture and turmeric trade. Tirupur, dubbed the "Knitwear Capital of India," is a leading exporter of knitted garments, contributing significantly to India's textile exports. Both districts play crucial roles in the state's economy, making them ideal locations for studying banking practices.

The study investigates the opinions and perceptions of bank customers regarding the Customer Relationship Management (CRM) practices of both public and private sector banks. To ensure consistency and enable comparison, three public sector banks and three private sector banks were selected. The public sector banks included in the study are the State Bank of India (SBI), Canara Bank, and Indian Bank, while the private sector banks are ICICI Bank, Axis Bank, and HDFC Bank. Branches of these six banks were chosen from Erode and Tirupur districts in Tamil Nadu state. For a comprehensive analysis of customer opinions on the CRM practices of these banks, 300 customers were selected using a convenient sampling method, with 150 customers from public sector banks and 150 from private sector banks.

Validity and Reliability

Cronbach's alpha is a measure used to assess the reliability of a given measurement, indicating the extent to which it consistently measures a concept. It evaluates the strength of this consistency, providing a quantifiable way to determine the reliability of the measurement. Cronbach's alpha is a function of the number of items in a test, the average covariance between pairs of items, and the variance of the total score. This α coefficient of reliability ranges from 0 to 1, providing an overall assessment of a measure's reliability. If the scale items are entirely independent of each other, α equals 0. Conversely, if the items have high covariance, α approaches 1 as the number of items increases. A higher coefficient indicates that the items share more covariance, likely measuring the same underlying concept. While the standards for an acceptable α coefficient are somewhat arbitrary and depend on the theoretical context of the scale, many methodologists recommend a minimum α coefficient between 0.65 and 0.8 (or higher in some cases); coefficients below 0.5 are generally considered unacceptable, particularly for scales intended to be one-dimensional.

Table 1.0 Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on Standardized items	N of Items
0.946	0.944	28

The present study is conducted using a sample of 300 customers. The sample size was determined using Cronbach's Alpha, which indicated a high level of consistency with a calculated value of 0.946, well above the acceptable threshold of 0.7 ($\alpha = 0.944$). This suggests that the questionnaire and scale used are both acceptable and reliable.

Results and Discussions

Factor Analysis is a set of techniques that analyze correlations between variables to reduce their numbers into fewer factors, thereby more economically describing most of the original data. Although the output of a factor analysis can be subjectively interpreted, this technique often provides valuable insights into significant psychographic characteristics and results in a more efficient use of data collection efforts. The subjective component of factor analysis can be minimized by randomly partitioning the sample into two sections and extracting factors from each separately. If similar factors emerge, the analysis is considered accurate or reliable.

Table 2.0

Factors influenced Customer Relationship Management in E-Banking Services

Sl.No	Factors	Mean	Std. Deviation
1	Personalization of services	3.60	1.161
2	Customer satisfaction levels	3.09	1.208
3	Responsiveness of customer support	3.37	1.024
4	Availability of selfservice options	3.51	1.017
5	System uptime and reliability	3.78	1.055
6	Speed and performance of banking platforms	3.44	1.139
7	Integration of advanced technologies	2.98	1.141
8	Scalability of the banking system	3.30	1.153
9	Encryption standards used	3.43	1.094
10	Frequency and thoroughness of security audits	3.30	1.113
11	Incidence of data breaches	3.47	1.027
12	Compliance with data protection laws	3.62	1.079
13	Service availability (24/7 access)	3.78	1.015
14	Error rates in transactions	3.68	1.097

15	Customer service response times	3.74	1.069
16	Quality of service delivery	3.54	1.169
17	Frequency and quality of communication with customers	3.55	0.999
18	Use of social media for customer interaction	3.67	1.025
19	Effectiveness of digital marketing campaigns	3.57	0.963
20	Availability of multichannel communication	3.43	1.114
21	Mechanisms for collecting feedback	3.87	0.928
22	Regularity of feedback analysis	3.60	1.012
23	Implementation rate of feedbackbased improvements	3.82	0.912
24	Customer satisfaction scores postimplementation	3.29	1.226
25	Availability of services across multiple devices	3.87	0.940
26	Number of ATMs and branches	1.94	0.987
27	Ease of navigation on digital platforms	2.92	0.620
28	Accessibility features for differentlyabled users	2.38	0.562

Table 2.0
KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.843
Bartlett's Test of Sphericity	Approx. Chi-Square	3598.224
	df	378
	Sig.	.000

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity are essential tests to determine the suitability of data for factor analysis. In the provided table, the KMO value is 0.843, which is considered very good as it is close to 1. This high value indicates that the patterns of correlations are relatively compact, suggesting that the factor analysis will yield distinct and reliable factors.

Additionally, Bartlett's Test of Sphericity shows an approximate Chi-Square value of 3598.224 with 378 degrees of freedom, and a significance level (Sig.) of 0.000. The

significance level being less than 0.05 indicates that the correlations between variables are sufficiently large for factor analysis. Together, these results confirm that the data is suitable for factor analysis, with the KMO value indicating a high degree of sampling adequacy and Bartlett's Test of Sphericity supporting the factorability of the correlation matrix.

Table 3.0
Communalities

Factors	Initial	Extraction
Personalization of services	1.000	.684
Customer satisfaction levels	1.000	.690
Responsiveness of customer support	1.000	.775
Availability of self-service options	1.000	.800
System uptime and reliability	1.000	.799
Speed and performance of banking platforms	1.000	.695
Integration of advanced technologies	1.000	.706
Scalability of the banking system	1.000	.789
Encryption standards used	1.000	.653
Frequency and thoroughness of security audits	1.000	.768
Incidence of data breaches	1.000	.762
Compliance with data protection laws	1.000	.734
Service availability (24/7 access)	1.000	.739
Error rates in transactions	1.000	.702
Customer service response times	1.000	.819
Quality of service delivery	1.000	.788
Frequency and quality of communication with customers	1.000	.734
Use of social media for customer interaction	1.000	.628

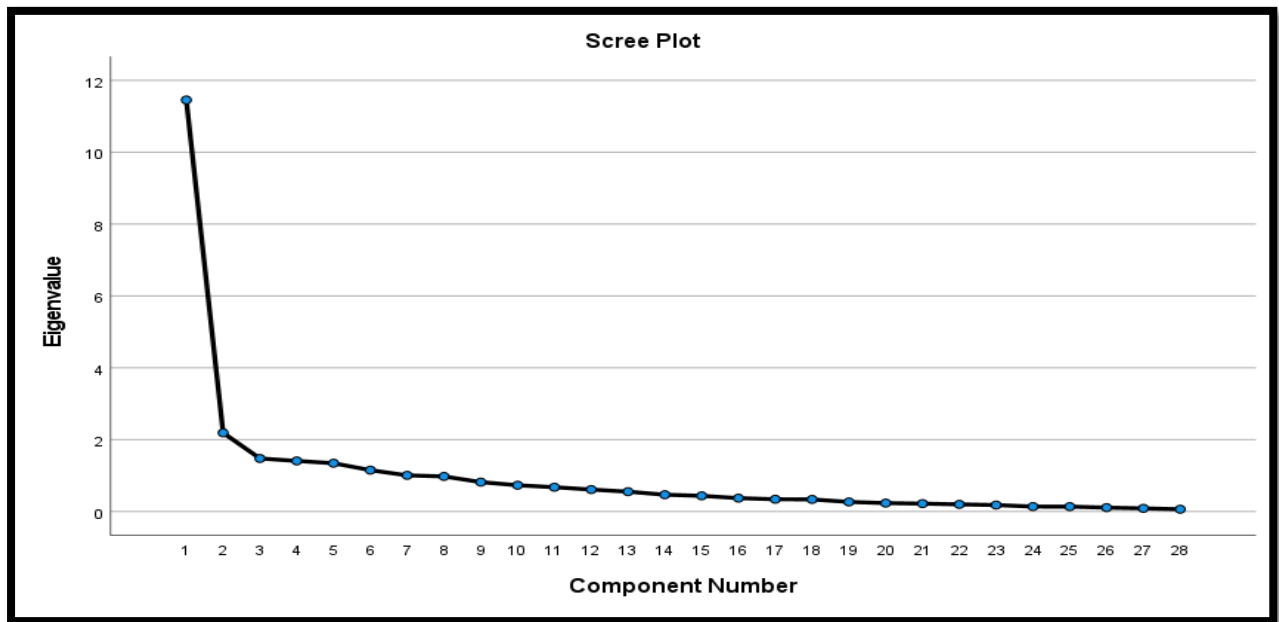
Effectiveness of digital marketing campaigns	1.000	.722
Availability of multichannel communication	1.000	.594
Mechanisms for collecting feedback	1.000	.708
Regularity of feedback analysis	1.000	.770
Implementation rate of feedback based improvements	1.000	.772
Customer satisfaction scores postimplementation	1.000	.832
Availability of services across multiple devices	1.000	.699
Number of ATMs and branches	1.000	.664
Ease of navigation on digital platforms	1.000	.565
Accessibility features for differently abled users	1.000	.444
Extraction Method: Principal Component Analysis.		

Table 4.0
Total Variance Explained\

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.456	40.913	40.913	11.456	40.913	40.913	3.381	12.075	12.075
2	2.190	7.823	48.736	2.190	7.823	48.736	3.244	11.585	23.660
3	1.477	5.274	54.010	1.477	5.274	54.010	3.144	11.228	34.889
4	1.409	5.031	59.041	1.409	5.031	59.041	3.126	11.164	46.052
5	1.345	4.803	63.844	1.345	4.803	63.844	2.853	10.188	56.240
6	1.152	4.113	67.957	1.152	4.113	67.957	2.803	10.009	66.249
7	1.007	3.596	71.553	1.007	3.596	71.553	1.485	5.304	71.553
8	.977	3.490	75.043						
9	.819	2.924	77.967						
10	.732	2.613	80.580						
11	.677	2.418	82.997						
12	.612	2.185	85.182						
13	.553	1.974	87.156						

14	.468	1.673	88.829						
15	.437	1.561	90.390						
16	.373	1.332	91.722						
17	.342	1.221	92.944						
18	.337	1.205	94.148						
19	.267	.955	95.103						
20	.235	.840	95.943						
21	.220	.786	96.729						
22	.199	.712	97.440						
23	.181	.645	98.085						
24	.138	.494	98.579						
25	.137	.489	99.068						
26	.109	.389	99.457						
27	.088	.316	99.773						
28	.064	.227	100.000						

Extraction Method: Principal Component Analysis.



The "Initial Eigenvalues" in the table provide the Eigenvalues for each factor, representing the "Total Variance" assigned to each factor. It is important to note that the "initial six factors" can be identified using prior knowledge to characterize the relationship between variables. Exhibit 1 presents the scree plot associated with this analysis, which shows a distinct break at 7 factors. The cumulative percentage of variance accounted for indicates that the seven components together explain 71.553 percent of the total variance. Specifically, the first factor accounts for 40.913 percent, the second factor for 7.823 percent, the third factor for 5.274 percent, the fourth factor for 5.031 percent, the fifth factor for 4.083 percent, the sixth factor for 4.113 percent, and the seventh factor for 3.596 percent. Adding these seven factors together results in an overall percentage of variance explained of 71.553 percent.

Table 5.0

Rotated Component Matrix

Rotated Component Matrix ^a	Component						
	1	2	3	4	5	6	7
Service availability (24/7 access)	0.682						
Customer service response times	0.658						
Personalization of services	0.629						
Compliance with data protection laws	0.587						
Mechanisms for collecting feedback	0.541						
Regularity of feedback		0.751					

analysis							
Speed and performance of banking platforms		0.671					
Encryption standards used		0.537					
Frequency and thoroughness of security audits		0.528					
Availability of multichannel communication		0.521					
Availability of selfservice options			0.806				
Responsiveness of customer support			0.759				
Integration of advanced technologies			0.714				
Customer satisfaction levels			0.668				
Use of social media for customer interaction				0.810			
Frequency and quality of communication with customers				0.739			
Error rates in transactions				0.731			
Quality of service delivery				0.636			
Scalability of the banking system					0.778		
Incidence of data breaches					0.695		
System uptime and reliability					0.553		
Customer satisfaction scores postimplementation						0.813	
Implementation rate of feedback based improvements						0.687	
Availability of services across multiple devices						0.604	
Effectiveness of digital marketing campaigns						0.561	
Number of ATMs and branches							0.764

Ease of navigation on digital platforms							0.715
Accessibility features for differently abled users							-0.581
Extraction Method: Principal Component Analysis.							
Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 14 iterations.							

The Rotated Component Matrix presents the factor loadings for various variables across seven components, identified through Principal Component Analysis and Varimax rotation. Each variable significantly loads onto one of the components, reflecting its primary association.

Component 1 is characterized by variables related to service availability (24/7 access), customer service response times, personalization of services, compliance with data protection laws, and mechanisms for collecting feedback. Component 2 encompasses the regularity of feedback analysis, speed and performance of banking platforms, encryption standards used, frequency and thoroughness of security audits, and availability of multichannel communication.

Component 3 is defined by the availability of self-service options, responsiveness of customer support, integration of advanced technologies, and customer satisfaction levels. Component 4 includes the use of social media for customer interaction, frequency and quality of communication with customers, error rates in transactions, and quality of service delivery.

Component 5 consists of scalability of the banking system, incidence of data breaches, and system uptime and reliability. Component 6 highlights customer satisfaction scores post-implementation, the implementation rate of feedback-based improvements, the availability of services across multiple devices, and the effectiveness of digital marketing campaigns. Lastly, Component 7 features the number of ATMs and branches, ease of navigation on digital platforms, and accessibility features for differently-abled users. Each component represents a cluster of related variables, indicating distinct factors underlying the data.

Component Transformation Matrix							
Component	1	2	3	4	5	6	7
1	.432	.443	.368	.422	.396	.383	.000
2	-.368	.232	.748	-.292	.073	-.327	-.233
3	.340	-.161	.335	-.265	-.125	-.097	.807
4	-.723	.267	-.108	.119	.149	.324	.503
5	-.012	-.438	.001	-.475	.675	.344	-.093
6	-.102	-.347	.016	.541	.468	-.579	.148

7	.174	.584	-.426	-.366	.353	-.423	.104
Extraction Method: Principal Component Analysis.							
Rotation Method: Varimax with Kaiser Normalization.							

Conclusion and scope for further research

The study highlights the crucial link between E-CRM and customer experience in E-banking, emphasizing that effective E-CRM is essential for superior customer satisfaction. Communication and access to information were found to significantly impact customer experience, while moderate technology adoption also plays a role. Banks need to address customer complaints and errors promptly to enhance satisfaction. Recommendations include leveraging E-CRM to understand customer needs better, providing multiple communication channels, and developing user-friendly mobile applications. Security and privacy concerns remain paramount, requiring banks to prioritize enhancing security measures. Establishing dedicated customer service departments and moving away from traditional frameworks for addressing errors are also advised for improved customer satisfaction and efficiency in E-banking services. Further research could explore the specific strategies and technologies within E-CRM that most positively impact customer experience in E-banking. Additionally, investigating the effectiveness of different communication channels and their impact on customer satisfaction would be valuable. Understanding how to address security and privacy concerns effectively while maintaining user-friendly experiences is also a promising area for future study. Finally, exploring the role of personalized services and AI-driven solutions in enhancing E-banking customer experiences warrants investigation.

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