



# The Role of Customer Relationship Management on Customer Satisfaction at PT KAI (Persero) Through the Customer Experience Quality in the Access by KAI Application

Shiffa Tasya Azzahra<sup>1\*</sup>, Nanda Ravenska<sup>2</sup>, Susi Susanti Tindaon<sup>3</sup>, Putri Wulandari Atur Rejeki<sup>4</sup>, Euis Nurmalia<sup>5</sup>

<sup>1,2,3,4</sup>Public Sector Business Administration, Politeknik STIA LAN Bandung, Indonesia

<sup>5</sup>Human Resource Management Appratus, Politeknik STIA LAN Bandung, Indonesia

Corresponding Author: shiffatasyaa@gmail.com

Received: 10-08-2025 Accepted: 13-08-2025 Published: 30-09-2025

## Abstract

This study aims to examine the effect of Customer Relationship Management (CRM) on customer satisfaction and to analyze the mediating role of Customer Experience Quality of the Access by KAI application developed by PT KAI (Persero). A quantitative approach was employed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Data were collected through an online questionnaire distributed to users of the Access by KAI application at Bandung Station. The analysis was conducted using SmartPLS 4.0 to test the direct and indirect relationships among variables. The results reveal that Customer Relationship Management has a positive and significant effect on both Customer Experience Quality and Customer Satisfaction. Furthermore, Customer Experience Quality also has a significant effect on Customer Satisfaction and acts as a mediating variable in the relationship between CRM and Customer Satisfaction. These findings highlight the importance of enhancing CRM practices and improving the digital experience quality to increase customer satisfaction. PT KAI (Persero) can use these insights to strategically optimize the technical and functional aspects of its Access by KAI application, ensuring responsiveness, reliability, and efficiency in service delivery.

**Keywords:** Customer Relationship Management, Customer Experience Quality, Customer Satisfaction

## 1. Introduction

The railway transportation industry in Indonesia is an integral part of the nation's transportation infrastructure. Amid increasing urbanization and public mobility, PT KAI (Persero) holds a significant responsibility in ensuring the availability of reliable transportation services and supporting accessibility for all societal segments. Consequently, PT KAI (Persero) has become a key pillar in mass movement and connectivity. Furthermore, the company plays a strategic role in supporting sustainable economic growth by facilitating the movement of goods and people, which in turn stimulates trade and investment activities across various regions.

However, as a public service provider, PT KAI (Persero) faces various challenges in maintaining service quality standards and ensuring optimal customer satisfaction. In the face of continuously evolving customer needs, the company must proactively seek strategies to meet expectations and deliver satisfactory experiences. Customers are satisfied when a company or brand provides products, services, or experiences that align with their expectations and desires. This satisfaction is based on positive perceptions of product and service quality, pricing, customer service, purchasing experience, and the company's ability to meet or exceed customer expectations. Customer satisfaction and dissatisfaction are measured by examining the alignment between customer expectations and the actual services received (Bagasworo, 2016).

To meet customer expectations, companies need strategies that promote strong and sustainable customer relationships. This approach is known as Customer Relationship Management (CRM), which involves managing interactions with both internal and external customers (Juandy et al., 2020). Kotler & Keller (2016) describe CRM as a strategic effort to build and maintain positive

customer relationships to enhance loyalty and value. Additionally, CRM includes the processes of acquiring, retaining, and strengthening customer relationships to achieve mutual benefits (Pratiwi & Dermawan, 2021).

As part of its customer relationship management (CRM) strategy, PT KAI introduced the Access by KAI mobile application to enhance user access to information and streamline railway service transactions. Despite this initiative, customer experiences with the application have varied considerably. While some users perceive it as a convenient and independent service platform, many report technical issues such as failed transactions, inaccurate seat displays, unresponsive QR codes, and frequent system errors. These complaints contrast with the results of the Customer Satisfaction Index (CSI), which recorded a score of 4.15 classified as “good” in the second semester of 2024. This divergence indicates a gap between quantitative satisfaction metrics and actual customer experience, suggesting that CSI alone may not adequately represent the overall service quality perceived by users. This phenomenon indicates that although the Access by KAI application is part of the company’s CRM strategy, there are aspects that need further evaluation concerning user experience and its impact on customer satisfaction. Therefore, based on this background, this study aims to assess the influence of Customer Relationship Management (X) on customer satisfaction (Y), involving the role of the quality of user experience with the Access by KAI application (Z) as a mediating variable in the relationship.

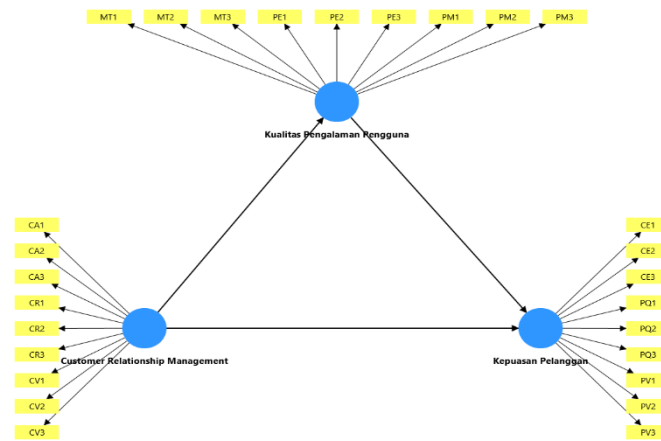
## 2. Methods

This research was conducted at Bandung Station, located at Kebon Jeruk, Andir District, Bandung City, West Java. The study period spanned from May to July 2025. The research employed accidental sampling, a non-probability sampling technique that selects individuals encountered during data collection and relevant to the research topic (Sugiyono, 2023). This technique was chosen due to its convenience in reaching service users present at the data collection site. However, this method lacks representativeness, as it excludes randomization and specific selection criteria, leading to context-specific findings that cannot be generalized to the broader population. The research instrument was systematically designed in the form of a questionnaire consisting of closed-ended statements using a Likert scale, along with several open-ended questions. An associative method was applied to analyze relationships among two or more variables, aiming to identify both correlations and causal effects (Sugiyono, 2023). A total of 400 respondents, as users of the Access by KAI application, were selected as the sample for this study. The collected data were analyzed using Partial Least Squares (PLS) based on the Structural Equation Modeling (SEM) approach.

Variable	Indicator	Code
Customer Relationship Management Kotler & Keller (2016)	Customer Retention	CR1, CR2, CR3
	Customer Value	CV1, CV2, CV3
	Customer Acquisition	CA1, CA2, CA3
Customer Experience Quality Maklan dan Klaus (2011)	Product Experience	PE1, PE2, PE3
	Moment Of Truth	MT1, MT2, MT3
	Peace of Mind	PM1, PM2, PM3
Customer Satisfaction (Fornell, Johnson, Anderson, Cha, & Bryant, 1996)	Perceived Value	PV1, PV2, PV3
	Customer Expectation	CE1, CE2, CE3
	Perceived Quality	PQ1, PQ2, PQ3

**Table 1.** Operational Variable  
Source: Research Results (2025)

### Hypothesis



**Figure 1.** Structural Equation Modeling (SEM) Framework  
Source: Hair et al. (2022)

The hypotheses used in this study consist of the null hypothesis ( $H_0$ ) and the alternative hypothesis ( $H_1$ ). The null hypothesis states that the variables under investigation have no relationship or influence on each other (Mustafa et al., 2022, as cited in Hidayat et al., 2024).

- $H_{01}$ : Customer Relationship Management has no influence on Customer Satisfaction at PT KAI (Persero).
- $H_{11}$ : Customer Relationship Management has an influence on Customer Satisfaction at PT KAI (Persero).
- $H_{02}$ : Customer Relationship Management has no influence on the Customer Experience Quality by KAI application.
- $H_{12}$ : Customer Relationship Management has an influence on Customer Experience Quality in the Access by KAI application.
- $H_{03}$ : Customer Experience Quality in the Access by KAI application has no influence on Customer Satisfaction at PT KAI (Persero).
- $H_{13}$ : Customer Experience Quality in the Access by KAI application has an influence on Customer Satisfaction at PT KAI (Persero).
- $H_{04}$ : Customer Experience Quality in the Access by KAI application does not mediate the influence of Customer Relationship Management on Customer Satisfaction at PT KAI (Persero).
- $H_{14}$ : Customer Experience Quality in the Access by KAI application mediates the influence of Customer Relationship Management on Customer Satisfaction at PT KAI (Persero).

### 3. Results and Discussion

#### 3.1 Results

##### Measurement Outer Model Analysis

##### Construct Validity

Convergent validity is represented by the loading factor value, which indicates the extent to which each indicator is able to measure its corresponding variable. A loading factor value between 0.50 and 0.60 is considered valid (Ghozali, 2023). This is consistent with the view of Haryono (2016), stating that a loading factor value of  $\geq 0.50$  is still acceptable. Another measure of convergent validity is the average variance extracted (AVE) value. According to Ghozali (2023), a minimum AVE value of 0.50 is recommended to indicate a good level of convergent validity.

Indicator	Customer Relationship Management (X)	Customer Satisfaction (Y)	Customer Experience Quality (Z)	Result
CA1	0,671			Valid
CA2	0,715			Valid
CA3	0,684			Valid
CE1		0,872		Valid
CE2		0,848		Valid
CE3		0,855		Valid
CR1	0,804			Valid
CR2	0,785			Valid
CR3	0,851			Valid
CV1	0,609			Valid
CV2	0,769			Valid
CV3	0,805			Valid
MT1			0,831	Valid
MT2			0,830	Valid
MT3			0,780	Valid
PE1			0,859	Valid
PE2			0,601	Valid
PE3			0,758	Valid
PM1			0,801	Valid
PM2			0,858	Valid
PM3			0,769	Valid
PQ1		0,865		Valid
PQ2		0,847		Valid
PQ3		0,854		Valid
PV1		0,734		Valid
PV2		0,596		Valid
PV3		0,734		Valid

**Table 2.** Loading Factor

Source: Research Results (2025)

Based on Table 2, all indicators have loading factor values above 0.50. This indicates that all indicators are considered valid in terms of convergent validity.

	AVE
Customer Relationship Management (X)	0,558
Customer Satisfaction (Y)	0,649
Customer Experience Quality (Z)	0,626

**Table 3.** Average Variance Extracted (AVE)

Source: Research Results (2025)

The AVE results for each construct (Table 3) show values greater than 0.5. This result aligns with the recommendation by Ghozali (2023), stating that an AVE value of at least 0.5 indicates an acceptable level of convergent validity.

### Discriminant Validity

Discriminant validity is used to assess whether there are differences between one construct and another. These differences are measured using the cross loading factor, in which each indicator must have the highest loading on its corresponding construct. The loading value of an indicator on its original construct must be higher than its loading values on other constructs.

	<b>Customer Relationship Management (X)</b>	<b>Customer Satisfaction (Y)</b>	<b>Customer Experience Quality (Z)</b>
CA1	0,671	0,397	0,491
CA2	0,715	0,410	0,529
CA3	0,684	0,418	0,549
CE1	0,562	0,872	0,572
CE2	0,496	0,848	0,523
CE3	0,509	0,855	0,545
CR1	0,804	0,627	0,673
CR2	0,785	0,574	0,643
CR3	0,851	0,669	0,769
CV1	0,660	0,609	0,589
CV2	0,769	0,498	0,657
CV3	0,805	0,526	0,761
MT1	0,736	0,652	0,831
MT2	0,662	0,570	0,830
MT3	0,691	0,678	0,780
PE1	0,720	0,599	0,859
PE2	0,541	0,601	0,721
PE3	0,696	0,545	0,758
PM1	0,663	0,600	0,801
PM2	0,692	0,599	0,858
PM3	0,655	0,563	0,769
PQ1	0,541	0,865	0,601
PQ2	0,494	0,847	0,535
PQ3	0,503	0,854	0,549
PV1	0,714	0,766	0,734
PV2	0,617	0,652	0,596
PV3	0,654	0,734	0,720

**Table 4.** Discriminant Validity

Source: Research Results (2025)

Based on Table 4 it can be concluded that all indicators exhibit the highest loading factor on their respective constructs. This indicates that each construct demonstrates good discriminant validity, with no indication of overlap among the constructs. Therefore, the requirement for discriminant validity is considered fulfilled.

### Reliability Assessment

A questionnaire is considered reliable when respondents' answers remain consistent under various conditions. The methods used in this reliability test are Composite Reliability and Cronbach's Alpha. A construct meets the reliability criteria if both methods show values above 0.70, indicating that the indicators within the variable demonstrate a good level of consistency (Ghozali, 2023). This aligns with Haryono (2016), stating that a threshold value of  $\geq 0.70$  is acceptable, and a value of  $\geq 0.80$  is considered highly satisfactory.

	<b>Composite reliability</b>	<b>Cronbach's alpha</b>	<b>Results</b>
Customer Relationship Management (X)	0,919	0,900	Reliable
Customer Satisfaction (Y)	0,943	0,931	Reliable
Customer Experience Quality (Z)	0,937	0,924	Reliable

**Table 5.** Composite Reliability and Cronbach's Alpha  
Source: Research Results (2025)

The results of the Composite Reliability and Cronbach's Alpha tests indicate that all values exceed 0.70, suggesting a good level of consistency. Accordingly, based on Table 5, all constructs in the model demonstrate high reliability, as values  $\geq 0.80$  are considered highly satisfactory.

#### Mean of Variables

The mean value illustrates the tendency of respondents' perceptions toward the statements arranged in the questionnaire instrument and reflects the level of agreement or assessment of each indicator in every research variable.

CRM (X)	Mean	CS (Y)	Mean	CEQ (Z)	Mean
CR1	2,85	PV1	3,02	PE1	3,50
CR2	3,02	PV2	3,60	PE2	2,73
CR3	2,96	PV3	3,12	PE3	3,78
CV1	2,80	CE1	2,48	MT1	3,14
CV2	3,70	CE2	2,44	MT2	3,35
CV3	3,54	CE3	2,39	MT3	2,83
CA1	3,72	PQ1	2,28	PM1	3,14
CA2	3,80	PQ2	2,42	PM2	3,29
CA3	3,86	PQ3	2,40	PM3	3,47
Mean = 3,36		Mean = 2,68		Mean = 3,25	

**Table 6.** Mean Value of Variables  
Source: Research Results (2025)

The analysis of mean scores shows that within the Customer Relationship Management (X) variable, CA3 recorded the highest mean (3.86) and CR1 the lowest (2.85), with an overall mean was 3.36, placing it in the fairly good category. For Customer Satisfaction (Y), the highest mean was observed in PV2 (3.60) and the lowest in PQ1 (2.28), resulting in a lower overall mean of 2.68, indicating a fairly poor level of satisfaction. In the Customer Experience Quality (Z) variable, PE3 achieved the highest mean (3.78) and PE2 the lowest (2.73), with an mean of 3.25, falling into the fairly good category.

#### Measurement Inner Model Analysis

##### Path Coefficients

These relationships indicate the connection between independent and dependent variables analyzed in the study (Ghozali, 2023). Hypothesis testing is conducted to assess the strength of the relationship by examining the t-statistics value ( $\geq 1.96$ ) and p-values ( $\leq 0.05$ ). When these criteria are met, the null hypothesis ( $H_0$ ) is rejected, indicating a significant relationship (Haryono, 2016).

Effect	Original sample (O)	T statistics ( O/STDEV )	P values	Results
CRM -> CS	0,221	4,389	0,000	Accepted
CRM -> CEQ	0,855	58,506	0,000	Accepted
CEQ -> CS	0,591	12,663	0,000	Accepted

**Table 7.** Relationships Between Variables  
Source: Research Results (2025)

Based on the path analysis results in Table 7, all relationships between variables have a p-value of 0.00, indicating a significant influence. The influence of Customer Relationship Management (X) on Customer Satisfaction (Y) shows a positive and significant effect. This suggests that the better the implementation of Customer Relationship Management, the higher the level of customer satisfaction will be. Furthermore, the influence of Customer Relationship Management (X) on the Customer Experience Quality of the Access by KAI application (Z) also shows a positive and significant effect. Therefore, Customer Relationship Management plays a role in shaping users' perceptions of the quality of their experience when using the application. Lastly, the Customer Experience Quality of the Access by KAI application (Z) on Customer Satisfaction (Y) has a positive and significant influence. A

good user experience has an impact on increasing customer satisfaction, meaning that a positive user experience contributes to satisfaction with the service provided. Although some indicator-level relationships in Tables 9 and 10 are not statistically significant, the overall structural model remains valid. According to Hair et al. (2022), in PLS-SEM, construct validity is maintained as long as key indicators demonstrate strong reliability and the structural paths between constructs are significant.

Effect	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values	Results
CR1 -> PV1	0,481	0,481	0,043	11,268	0	H1 Accepted
CR2 -> CE1	0,275	0,275	0,056	4,867	0	
CR3 -> PQ1	0,295	0,296	0,054	5,519	0	
CV1 -> PV2	0,26	0,26	0,048	5,385	0	
CV2 -> CE2	0,482	0,481	0,051	9,375	0	
CV3 -> PQ2	0,465	0,464	0,048	9,723	0	
CA1 -> PV3	0,154	0,155	0,046	3,347	0,001	
CA2 -> CE3	-0,12	-0,119	0,045	2,679	0,007	
CA3 -> PQ3	-0,14	-0,139	0,042	3,325	0,001	

**Table 8.** Path Analysis Results of the Effect of Customer Relationship Management (X) on Customer Satisfaction (Y)

Source: Research Results (2025)

H<sub>11</sub>: Customer Relationship Management has an influence on Customer Satisfaction at PT KAI (Persero).

Table 8 shows that Customer Relationship Management (X) has a positive and significant effect on Customer Satisfaction (Y) ( $p < 0.05$ ), so the alternative hypothesis is accepted. This supports the view that improving CRM, especially in long-term relationship building, increases satisfaction by fostering trust and reinforcing service quality perceptions.

However, one negative yet significant relationship was found CA2 negatively affects CE3 with a path coefficient of  $-0.12$  ( $p = 0.007$ ). This suggests that promotions raise user expectations that are not always matched by actual system performance, particularly in terms of speed and efficiency. This situation reflects expectation-disconfirmation, as explained by Hapsari et al. (2017), in which promotional claims fail to align with real user experience.

A similar negative relationship was also observed between CA3 and PQ3 with a coefficient of  $-0.14$  ( $p = 0.001$ ). Although social media introduces the application, trust in service reliability may decrease due to exposure to negative content. According to Ladhari & Michaud (2015), and Moe & Schweidel (2017), customer complaints shared on social media generate stronger emotional impact than promotional content, potentially weakening trust in service quality.

Effect	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values	Results
CR1 -> PE1	0,149	0,148	0,034	4,339	0	H1 Accepted
CR2 -> MT1	0,536	0,535	0,039	13,8	0	
CR3 -> PM1	0,328	0,327	0,044	7,485	0	
CV1 -> PE2	0,649	0,649	0,04	16,331	0	
CV2-> MT2	0,332	0,332	0,044	7,54	0	
CV3 -> PM2	0,467	0,468	0,049	9,471	0	
CA1 -> PE3	0,1	0,101	0,046	2,158	0,031	

<b>CA2 -&gt; MT3</b>	<b>0,037</b>	<b>0,038</b>	<b>0,043</b>	<b>0,853</b>	<b>0,394</b>
<b>CA3 -&gt; PM3</b>	<b>0,056</b>	<b>0,057</b>	<b>0,046</b>	<b>1,231</b>	<b>0,218</b>

**Table 9.** Path Analysis Results of the Effect of Customer Relationship Management (X) on Customer Experience Quality (Z)

Source: Research Results (2025)

H<sub>12</sub>: Customer Relationship Management has an influence on Customer Experience Quality in the Access by KAI application.

Customer Relationship Management significantly influences the Customer Experience Quality of the Access by KAI application, as evidenced by the acceptance of the alternative hypothesis (rejection of H<sub>0</sub>). Nevertheless, the relationship between the CA2 construct and MT3, as well as between CA3 and PM3, demonstrates statistically insignificant effects.

The relationship between indicator CA2 and MT3 shows a p-value of 0.394, indicating no significant effect. While promotional activities may encourage initial user engagement, they do not sufficiently influence perceptions of post-transaction service quality, particularly regarding responsiveness and timeliness. This finding supports Kotler & Keller (2016) view that promotion primarily serves to attract interest rather than shape post-purchase evaluations.

The relationship between CA3 and PM3 shows a p-value of 0.218, indicating no significant effect. This suggests that social media is less effective in building trust related to application security, particularly in protecting personal data. Social media can serve to disseminate information and promotions. This finding supports Lemon and Verhoef (2016), who emphasize that social media is effective for generating awareness and engagement but plays a limited role in building trust.

<b>Effect</b>	<b>Original sample (O)</b>	<b>Sample mean (M)</b>	<b>Standard deviation (STDEV)</b>	<b>T statistics ( O/STDEV )</b>	<b>P values</b>	<b>Results</b>
PE1 -> PV1	0,136	0,135	0,045	2,993	0,003	H1 Accepted
PE2 -> CE1	0,594	0,596	0,056	10,674	0	
PE3 -> PQ1	0,556	0,557	0,053	10,513	0	
MT1 -> PV2	0,426	0,427	0,061	6,93	0	
MT2 -> CE2	0,134	0,136	0,067	1,987	0,047	
MT3 -> PQ2	0,183	0,184	0,066	2,782	0,005	
PM1 -> PV3	0,357	0,357	0,055	6,444	0	
PM2 -> CE3	-0,06	-0,063	0,055	1,095	0,274	
PM3 -> PQ3	-0,058	-0,061	0,053	1,078	0,281	

**Table 10.** Path Analysis Results of the Effect of Customer Experience Quality (Z) on Customer Satisfaction (Y)

Source: Research Results (2025)

H<sub>13</sub>: Customer Experience Quality in the Access by KAI application has an influence on Customer Satisfaction at PT KAI (Persero).

The Customer Experience Quality of the Access by KAI application has a positive and significant influence on Customer Satisfaction, indicating that the alternative hypothesis is accepted (rejection of H<sub>0</sub>). However, the relationship between the construct PM2 and CE3, as well as between PM3 and PQ3, shows no significant effect.

The relationship between PM2 and CE3 shows a p-value of 0.274, indicating no significant effect. This suggests that users' perceived assurance in booking and travel is insufficient to shape perceptions of service reliability. As outlined in the SERVQUAL model (Parasuraman et al., 1988), assurance relates to trust and security, while reliability depends on consistent service delivery highlighting that assurance alone does not strongly influence reliability perceptions without actual performance.

The relationship between PM3 and PQ3 shows a p-value of 0.281, indicating no significant effect. This suggests that although users feel confident about data protection, this confidence does not directly strengthen perceptions of service consistency and reliability. As explained by Setiono & Hidayat (2022), assurance and reliability are distinct dimensions, assurance relates to feelings of safety and trust, while reliability concerns the consistent fulfillment of service promises. Therefore, trust alone is insufficient to establish perceptions of reliability when service delivery lacks consistency.



### Mediation Analysis

Mediation analysis was conducted to determine whether the variable Customer Experience Quality (Z) mediates the relationship between Customer Relationship Management (X) and Customer Satisfaction (Y) in the context of the Access by KAI application.

Effect	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )
CRM -> CEQ ->CS	0,505	12,460	0,000	H1 Accepted

**Table 11.** Mediation Test Results  
Source: Research Results (2025)

H<sub>14</sub>: Customer Experience Quality in the Access by KAI application mediates the influence of Customer Relationship Management on Customer Satisfaction at PT KAI (Persero).

Customer Experience Quality of the Access by KAI application significantly mediates the effect of Customer Relationship Management on Customer Satisfaction. Therefore, the alternative hypothesis is accepted (rejection of H<sub>0</sub>). This indicates that the better the implementation of Customer Relationship Management, the higher the perceived experience quality by users of the Access by KAI application, which ultimately leads to increased customer satisfaction.

### Model Fit

Model fit was assessed using the Goodness of Fit (GoF) index to evaluate the alignment between the measurement model and the structural model. The GoF values range from 0 to 1, with thresholds indicating small (0.1), moderate (0.2), and large (0.36) fit levels (Haryono, 2016). A higher GoF value suggests a better model fit. Additionally, the Normed Fit Index (NFI) is used to assess the model's overall fit, where values closer to 1 indicate a stronger degree of model fitness.

	AVE	R <sup>2</sup>
Customer Relationship Management (X)	0,558	
Customer Satisfaction (Y)	0,649	0,621
Customer Experience Quality (Z)	0,626	0,731
Average	0,611	0,676
Gof		0,643

**Table 12.** Goodness of Fit

Source: Research Results (2025)

The GoF value falls into the large category (0.643), indicating that the model demonstrates a high level of fit. This suggests that the measurement model in this study aligns well with the data, supporting the validity and reliability of the subsequent analysis and conclusions. The following section presents the results of the Normed Fit Index (NFI) evaluation.

	Saturated model	Estimated model
NFI	0,724	0,724

**Table 13.** Normed Fit Index (NFI)

Source: Research Results (2025)

The Normed Fit Index (NFI) value presented in Table 13 indicates that the closer the value is to 1, the better the model fit. The NFI result of 0.724 suggests that the model has a good and acceptable level of fit.

### R Square

R Square (R<sup>2</sup>) is used to assess the extent to which the variability of an endogenous variable can be explained by exogenous variables. According to Haryono (2016), the interpretation of R<sup>2</sup> values is categorized as strong (0.67), moderate (0.33), and weak (0.19).

	R-square	R-square adjusted
Customer Satisfaction (Y)	0,621	0,619
Customer Experience Quality (Z)	0,731	0,730

**Table 14.** R Square

Source: Research Results (2025)

The R Square results show that 62.1% of the variability in Customer Satisfaction is explained by exogenous variables, which falls into the moderate category. Meanwhile, 73.1% of the variability in Customer Experience Quality is explained by exogenous variables, indicating a strong category.

### 3.2 Discussion

#### a. Hypothesis 1 Customer Relationship Management has an influence on Customer Satisfaction at PT KAI (Persero)

The results indicate that effective implementation of Customer Relationship Management contributes to improved customer perceptions of service quality provided by PT KAI (Persero). Better CRM practices, such as enhanced communication, ease of access, effective complaint handling, and responsive, personalized service, lead to higher customer satisfaction. This finding aligns with Kotler & Keller (2016), stating that Customer Relationship Management is a strategy to build and maintain long-term customer relationships, ultimately increasing satisfaction and loyalty. Furthermore, Sima Magatef et al. (2023) also emphasize that Customer Relationship Management has a significant impact on customer loyalty through the enhancement of customer satisfaction, both from a functional perspective (such as ease of access and service speed) and a personal dimension (including emotional connection and service personalization). Rosady et al. (2024) found that user satisfaction is significantly influenced by responsiveness, user friendliness, and efficiency. These dimensions highlight that implementing Customer Relationship Management through ease of use, speed, and quality of digital interaction serves as a foundation for enhancing app-based services.

This implies that Access by KAI should not only serve as a transaction platform but also as a tool for building long-term customer relationships. Responsiveness ensures the app can quickly and accurately address user needs and issues, such as booking errors or system failures. User-friendliness refers to intuitive navigation and feature design that aligns with user expectations. Meanwhile, efficiency highlights the speed of services, including ticket booking, payment processes, and access to information. Overall, PT KAI must position Access by KAI as a relational platform that delivers fast, simple, and user-centered digital services to enhance customer satisfaction and trust.

#### b. Hypothesis 2 Customer Relationship Management has an influence on Customer Experience Quality in the Access by KAI application

Customer Relationship Management contributes to enhancing user experience quality through various aspects, including Product Experience, which focuses on how users interact with and perceive the digital services offered by the Access by KAI application. This includes ease of use, clarity of features, and service suitability to user needs. CRM also shapes positive experiences across multiple touchpoints, such as information search, purchase, post-purchase service, and problem resolution, which are essential in building customer trust. In the Peace of Mind aspect, effective CRM fosters a sense of security through system reliability, information transparency, and trusted service guarantees. Strategic and customer-oriented CRM not only strengthens long-term relationships but also improves users' overall perception of digital interaction quality. These findings are in line with Lemon & Verhoef (2016), emphasizing that managing customer experience throughout the service journey creates meaningful interactions that influence service quality perception and customer satisfaction. Al-Dmour et al. (2019) highlight that customer engagement driven by CRM strategies directly enhances users' sense of security and trust in digital services, fostering positive customer experience. Similarly, Magatef et al. (2023) emphasize that electronic CRM, by integrating functional (accessibility, service speed) and personal (emotional connection, service personalization) dimensions, significantly improves customer loyalty through increased satisfaction and customer experience quality.

The implications of these findings highlight the role of Customer Relationship Management (CRM) within Access by KAI not merely as a transactional support tool, but as a central strategy in shaping users' digital experience. Each user interaction ranging from ease of information access and clarity in booking procedures to issue resolution contributes to the overall perception of service quality. When the company successfully fosters open communication, delivers prompt solutions, and

provides features aligned with user needs, trust and user comfort are likely to emerge organically. By leveraging CRM strategies, Access by KAI has the potential to evolve beyond a functional booking platform into a relational digital space where users feel secure, valued, and understood, thereby facilitating not only transactional but also emotional engagement.

**c. Hypothesis 3 Customer Experience Quality in the Access by KAI application has an influence on Customer Satisfaction at PT KAI (Persero)**

The results show that better customer experience quality while interacting with the Access by KAI application leads to higher overall customer satisfaction with PT KAI (Persero). Positive experiences are reflected in ease of access to travel information, clarity of ticket booking features, system speed, and responsive support during service disruptions. When users feel supported and assisted throughout the digital process, their perception of the company improves. A consistent and pleasant experience not only affects immediate satisfaction but also builds trust and loyalty toward the service. These findings align with Yu et al. (2020), stating that user experience in mobile applications directly contributes to customer satisfaction in digital transportation services. Park and Le (2022) also highlight that ease of use, clear information, and service speed are key drivers of user satisfaction, encouraging comfort, appreciation, and loyalty, which enhance positive perceptions of both service and provider.

The implications of these findings indicate that customer experience quality plays a critical role in shaping customer satisfaction with PT KAI (Persero)’s services. User interactions within the Access by KAI application serve not only as transactional functions but also as reflections of how the company builds digital relationships with its customers. When the experience offers ease of access, process clarity, and a sense of comfort, it directly fosters a more favourable perception of the overall service. Thus, customer experience within the application is not merely a technical component, but a strategic approach to delivering value that is tangibly experienced by customers.

**D. Hypothesis 4 Customer Experience Quality in the Access by KAI application mediates the influence of Customer Relationship Management on Customer Satisfaction at PT KAI (Persero)**

Customer Experience Quality in the Access by KAI application significantly mediates the relationship between Customer Relationship Management (CRM) and customer satisfaction. CRM efforts do not directly increase satisfaction but first influence how customers perceive their interaction with the application. Consistent CRM implementation, including clear communication, understanding customer needs, and providing responsive and personalized service, enhances digital interaction quality. This improved experience becomes the basis for customer satisfaction. This finding is supported by Zahida et al. (2023), indicating that customer satisfaction significantly mediates the link between CRM and customer loyalty. Effective CRM shapes positive perceptions and experiences, which lead to satisfaction and ultimately foster loyalty. Emotional engagement and positive experiences formed through service interactions are essential for translating CRM into loyalty. Demirel (2022) finds that digital service quality, as part of CRM implementation, indirectly influences customer satisfaction. Dimensions such as trust, enthusiasm, and service sensitivity contribute positively, with customer experience quality serving as a key factor shaping service perception.

These implications suggest that customer experience quality serves as a mediating link between the influence of Customer Relationship Management (CRM) and customer satisfaction. The experience perceived during the use of the application is not merely the outcome of technical interaction, but rather a reflection of how the company implements a relational approach toward its customers. When CRM is consistently applied through targeted communication, timely responsiveness, and a clear understanding of user needs, the quality of digital interaction is significantly enhanced.

**Recommended Strategies to Enhance Customer Satisfaction Based on Research Findings**

Based on the analysis of research findings, Customer Relationship Management has a positive and significant impact on customer satisfaction. However, the persistence of technical and functional issues suggests that key CRM principles such as responsiveness, reliability, and efficiency remain underimplemented. To address these shortcomings, strategic improvements are recommended using the PIECES Framework to enhance the system performance of the Access by KAI application.

PIECES	Overview of Identified Issues	Strategic Recommendations
--------	-------------------------------	---------------------------

Performance	The application frequently experiences errors, slow performance, and unresponsiveness, particularly during peak hours when booking tickets.	Implement load balancing and server auto-scaling to manage user surges, as well as utilize caching and data preloading to accelerate access to the booking page.
Information	Booking information, seat availability, and QR codes are not always displayed accurately.	add tooltips and brief descriptions at each transaction step to enhance user guidance, and to provide real-time status updates for seat availability and ongoing transactions.
Economy	Transaction failures and slow refund processes reduce customer satisfaction	Implement a Service Level Agreement (SLA) for refund and cancellation systems to ensure timely and consistent service delivery.
Control	Slow response to complaints despite available channels.	Implement AI-powered chatbots to filter minor complaints, thereby reducing the workload on customer service representatives.
Efficiency	Inefficient booking process and frequent failures.	Adopt auto-scaling servers or load balancing mechanisms to maintain application stability during high traffic periods, particularly during national holidays.
Service	Low user perception due to frequent service disruptions.	Introduce proactive system disruption notifications to keep users informed in real time. Add a live agent escalation feature within the in-app help center to provide direct assistance when needed.

**Table 15.** Strategic Recommendations Based on the PIECES Framework  
Source: Research Results (2025)

## 4. Conclusion

Based on the findings of this study, it can be concluded that Customer Relationship Management has a significant influence on Customer Satisfaction, both directly and indirectly through the mediating role of Customer Experience Quality in the use of the Access by KAI application. The results confirm that effective CRM practices contribute not only to enhancing satisfaction but also to shaping a positive user experience, which in turn strengthens overall customer satisfaction. In light of these findings, efforts to improve satisfaction should emphasize both technical and functional enhancements of the Access by KAI application. This includes optimizing the ticket booking system by improving backend performance, enhancing data validation accuracy, and ensuring real-time seat synchronization, particularly during peak usage periods. Furthermore, ensuring application stability through real-time bug monitoring and rigorous system testing prior to updates is essential to minimize disruptions such as blank screens or unresponsive behavior. Finally, customer feedback should be utilized as a strategic component of CRM implementation, where complaints are treated as valuable input for service evaluation. Prioritizing responsiveness, reliability, and efficiency in digital service delivery will ensure the sustainable application of CRM principles within PT KAI (Persero).

## References

- Abdullah, M. F., & Khan, N. R. M. (2022). Exploring the influence of SERVQUAL dimensions of reliability, responsiveness and assurance towards consumers loyalty: The mediating effect of commitment-trust. *International Journal of Academic Research in Business and Social Sciences*, 12(1), 181–198.

- Aisah, N., & Sudaryanto, B. (2022). Analisis pengaruh customer relationship management dan kepercayaan terhadap loyalitas pelanggan melalui kepuasan pelanggan (Studi pada pengguna gopay pada aplikasi gojek di Kota Semarang). *Diponegoro Journal of Management*, 11(5).
- Alalwan, A. A., Rana, N. P., Dwivedi, Y. K., & Algharabat, R. (2017). Social media in marketing: A review and analysis of the existing literature. *Telematics and Informatics*, 34(7), 1177–1190.
- Al-Dmour, H. H., Khalil Ali, W., & Al-Dmour, R. (2019). The relationship between customer engagement, satisfaction, and loyalty in mobile banking. *International Journal of Customer Relationship Marketing and Management*, 10(2), 1–20. <https://doi.org/10.4018/IJCRMM.2020100105>
- Anindira, R. A., & Imran, A. I. (2021). Strategi dan implementasi customer relationship management melalui aplikasi KAI Access dalam meningkatkan kepuasan pelanggan PT KAI. *e-Proceeding of Management*, 8(4).
- Anshari, M., Almunawar, M. N., Lim, S. A., & Al-Mudimigh, A. (2019). Customer relationship management and big data enabled: personalization & customization of services. *Applied Computing and Informatics*, 15(2), 94–101. <https://doi.org/10.1016/J.Aci.2018.05.004>
- Bagasworo, W. (2016). Pengaruh customer relationship management dan customer experience quality terhadap loyalitas pelanggan melalui kepuasan pelanggan (Studi pada konsumen di Sisha Cafe Kemang). *Jurnal Ekonomi, Manajemen dan Perbankan*, 2(3), 110–118.
- Bagasworo, W. (2017). Pengaruh customer relationship management dan customer experience quality terhadap customer loyalty melalui customer satisfaction (Studi pada konsumen di Tanamera Cafe Jakarta). *Jurnal Ekonomi, Manajemen dan Perbankan*, 3(2), 89–99.
- Bintarto, A., & Nurwati, E. K. (2021). Pengaruh customer relationship management terhadap kepuasan dan loyalitas pelanggan hotel. *Jurnal Ilmiah MEA (Manajemen, Ekonomi, dan Akuntansi)*, 5(1), 1322–1338.
- Boateng, H., & Okoe, A. F. (2015). Consumers' attitude towards social media advertising and their behavioural response: The moderating role of trust. *Journal of Research in Interactive Marketing*, 9(4), 299–312.
- Cahyaran, B., & Astuti, S. R. T. (2022). Analisis pengaruh e-customer relationship management (E-CRM) dan e-service quality terhadap e-loyalty dengan e-WOM sebagai variabel intervening (Studi pada pengguna aplikasi MAPCLUB di Kota Semarang). *Diponegoro Journal of Management*, 11(3).
- Demirel, D. (2022). The effect of service quality on customer satisfaction in digital age: customer satisfaction based examination of digital CRM. *Journal of Business Economics and Management*, 23(3), 507–531. <https://doi.org/10.3846/jbem.2022.15328>
- Elisa, Winarno, A., & Dewi, T. S. (2023). Effect of ease of use and consumer experience on repurchase intention of train tickets through KAI access with satisfaction as a mediation variable. *Economic and Business Journal*, 1(4).
- Ghozali, I. (2023). *PLS: konsep, teknik, dan aplikasi menggunakan SmartPLS 4.0*. Semarang: Badan Penerbit Universitas Diponegoro.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage.
- Hapsari, R., Clemes, M., & Dean, D. (2017). *The impact of service quality, customer engagement and selected marketing constructs on airline passenger loyalty*. *International Journal of Quality and Service Sciences*, 9(1), 21–40. <https://doi.org/10.1108/IJQSS-07-2016-0048>
- Haryono, S. H. (2016). *Metode SEM untuk penelitian Manajemen dengan AMOS, LISREL, PLS (Edisi 3-in-1)*. Semarang: PT Intermedia Personalia Utama.
- Hidayat, A., Supardin, L., Trisninawati, & Alhempri, R. (2024). *Metode penelitian kuantitatif*.

Kota Padang, Sumatera Barat: Takaza Innovatix Labs.

- Homyamyen, P., Kulachai, W., & Benchakhan, K. (2024). Decoding digital loyalty: How service quality, platform performance, and menu diversity shape trust, satisfaction, and retention in online platforms. *Journal of E-Commerce Management and Information Technology*, 2(4), 215–226. <https://doi.org/10.61552/JEMIT.2024.04.007>
- Ijomah, T. I., Nwabekee, U. S., Agu, E. E., & Abdul-Azeez, O. Y. (2024). The Impact of customer relationship management (CRM) tools on. *International Journal of Management &*
- Iriqat, R. A. M., & Daqar, M. (2018). The mediating role of customers' satisfaction on the effect of CRM on long-term customers loyalty in the banking sector in the Palestinian territory. *Asian Social Science*, 14(5), 120–133.
- Juandy, J., Rompas, L., Mananeke, L., & Worang, F. G. (2020). Customer relationship management dan customer value pengaruhnya terhadap kepuasan nasabah serta implikasinya terhadap loyalitas nasabah pada nasabah kredit komersil PT. Bank Sulutgo Kantor Cabang Utama Manado. *Jurnal Ilmiah Manajemen Bisnis dan Inovasi Universitas Sam Ratulangi*, 7(3), 368–378.
- Juliansyah, Noor. (2017). *Metodologi penelitian skripsi, tesis, disertasi, dan karya ilmiah*. Jakarta: Kencana.
- Kennedy, E. N., & Kundu, G. K. (2022). The impact of new e-retailer's policy information on post-purchase services towards customer satisfaction. *International Journal of Electronic Marketing and Retailing*, 13(2), 149–168.
- Kotler, P., & Keller, K. L. (2016). *Marketing Management* (15th ed.). Boston, MA: Pearson.
- Ladhari, R., & Michaud, M. (2015). eWOM effects on hotel booking intentions, attitudes, trust, and website perceptions. *International Journal of Hospitality Management*, 46, 36–45. <https://doi.org/10.1016/j.ijhm.2015.01.010>
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding Customer Experience Throughout The Customer Journey. *Journal of Marketing*, 80(6), 69–96.
- Lemon, M. H. A., Nilu, M. K., & Hossain, S. Z. (2024). The impact of usability, security, and service quality on user satisfaction and experience in digital platforms: A correlation study. *Journal of Marketing and Consumer Research*, 91, 1–12.
- Lestari, S. (2023). Customer Relationship Management (CRM) Sebagai Strategi Dalam Menjaga Loyalitas Pelanggan. *Journal Majalah Ilmiah Manajemen STIE Aprin Palembang*, 12(03), 32–41.
- Magatef, S., Al-Okaily, M., Ashour, L., & Abuhussein, T. (2023). The impact of electronic customer relationship management strategies on customer loyalty: A mediated model. *Journal of Business Research*, 161, 113880. <https://doi.org/10.1016/j.jbusres.2023.113880>
- Mahendri, W., & Sholiha, M. A. (2022). Pengaruh e-Service quality dan customer relationship management terhadap kepuasan pelanggan pengguna aplikasi dana. *Jurnal Administrasi Kantor*, 10, 265–275.
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research*, 13(3), 334–359.
- Moe, W. W., & Schweidel, D. A. (2017). *Social media intelligence*. Cambridge University Press.
- Nabilla, S. D., Dermawan, R., & Ariescy, R. R. (2023). The effect of customer experience, word of mouth, and price perception on repurchase intention of special fare train tickets. *Indonesian Journal of Business Analytics (IJBA)*, 3(5), 1471–1480.
- Navarro, V. G., Gomez, H. G., Badenes, R. O., & Acosta, S. P. (2024). Customer relationship management and its impact. *International Entrepreneurship and Management Journal*, 20, 507–547.
- Nilashi, M., Abumalloh, R. A., Ahmadi, H., Samad, S., Alrizq, M., Abosaq, H., & Alghamdi, A. (2023). The nexus between quality of customer relationship management. *Heliyon*. <https://doi.org/10.1016/j.heliyon.2023.e21828>

- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40.
- Park, J., & Le, H. T. P. M. (2023). A shared-transportation mobile app continuance model: The moderating effects of brand awareness. *Journal of Consumer Behaviour*, 22(4), 987–1004. <https://doi.org/10.1002/cb.2111>
- Pavlou, P. A., & Gefen, D. (2004). Building effective online marketplaces with institution-based trust. *Information Systems Research*, 15(1), 37–59.
- Perez Vega, R., Hopkinson, P., Singhal, A., & Mariani, M. M. (2022). From CRM to social CRM: A bibliometric review and research agenda for consumer research. *Journal of Business Research*, 151, 1–16. <https://doi.org/10.1016/J.Jbusres.2022.06.028>
- Pratiwi, A. R., & Dermawan, D. A. (2021). pengaruh customer relationship management (crm) terhadap loyalitas pelanggan dengan kepuasan pelanggan sebagai variabel intervening (Studi pelanggan shopeepay pada aplikasi shopee di Kota Surabaya). *Journal of Emerging Information Systems and Business Intelligence*, 2(3), 87–93.
- Rafiah, K. K. (2019). analisis pengaruh kepuasan pelanggan dan kepercayaan pelanggan terhadap loyalitas pelanggan dalam berbelanja melalui e-commerce di Indonesia. *Al Tijarah*, 5(1), 46. <https://doi.org/10.21111/tijarah.v5i1.3621>
- Setiono, B. A., & Hidayat, S. (2022). Influence of service quality with the dimensions of reliability, responsiveness, assurance, empathy and tangibles on customer satisfaction. *International Journal of Economics, Business and Accounting Research*, 6(2), 1197–1206.
- Sharafuddin, M. A., Madhavan, M., & Wangtueai, S. (2024). Assessing the effectiveness of digital marketing in enhancing tourist experiences and satisfaction: A study of Thailand's tourism services. *Administrative Sciences*, 14(11), 273. <https://doi.org/10.3390/admsci14110273>
- Siregar, Sofyan. (2016). *Statistika deskriptif untuk penelitian dilengkapi perhitungan manual dan aplikasi SPSS versi 17*. Jakarta: PT Raja Grafindo Persada.
- Sugiyono. (2023). *Metode penelitian kuantitatif, kualitatif, dan R&D* (Edisi terbaru). Bandung: Alfabeta.
- Suharto, S., & Yuliansyah, Y. (2023). The influence of customer relationship management and customer experience on customer satisfaction. *International Journal of Business and Economics*, 7(1), 403–417. <https://doi.org/10.33019/ijbe.v7i1.641>
- Susanto, R. (2021). Pengaruh customer relationship management (CRM) terhadap kepuasan nasabah pinjaman pada PT. Bank Pembangunan Daerah Sumatera Barat Cabang Painan. *Jurnal Pundi*, 5(1), 181–194. <https://doi.org/10.31575/jp.v5i1.348>
- Yu, M., Zhou, R., Cai, Z., Tan, C. W., & Wang, H. (2020). Unravelling the relationship between response time and user experience in mobile applications. *Internet Research*, 30(6), 1733–1754.
- Zahida, H., Febrilia, I., & Rahmi. (2023). Pengaruh customer relationship management (CRM) terhadap customer loyalty dengan customer satisfaction sebagai variabel intervening (Studi kasus pada konsumen Mixue di Jabodetabek). *Jurnal Pemasaran Kompetitif*, 7(1), 71–80. <https://doi.org/10.32493/jpkpk.v6i2.32117>