

Optimizing Passenger Satisfaction in Public Transportation: The Role of Service Innovation and Accessibility

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Abstract

Purpose: This study aims to analyze the mediation of trust on the influence of innovation and accessibility on the satisfaction of DAOP IX economy class railway service passenger.

Research Methodology: This study aimed to analyze how trust bridges the influence of innovation and accessibility on the satisfaction of DAOP IX economy class train passengers. Using a quantitative approach with 108 respondents, the data were processed through descriptive analysis and Structural Equation Modelling (SEM) using AMOS software.

Results: Based on SEM analysis using AMOS software, this research model met the criteria for a good goodness of fit. All hypotheses were answered and proven with significance values below 0.05, both directly and indirectly. These results support the satisfaction theory proposed by the experts.

Conclusions: This study proves that trust is the key that transforms innovation and accessibility into passenger satisfaction in the DAOP IX region. PT KAI's digital transformation not only facilitates travel but also builds public trust that underpins service satisfaction profoundly.

Limitations: This research has limitations in terms of the minimum sample size of 108 respondents and the narrow coverage area of DAOP IX, making it difficult to generalize the results. In addition, data collection was limited to the year-end holiday period, and the variables focused only on innovation, accessibility, trust, and passenger satisfaction.

Contributions: This research provides a theoretical contribution to the development of satisfaction and service marketing management, particularly in strengthening the mediation model of trust that links technical (innovation) and operational aspects with passenger satisfaction in trains.

Keywords: *Accessibility, Innovation, Passenger Satisfaction, Trust*

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1. Introduction

Trains are a pillar of mobility in Indonesia and are highly sought after because of their time efficiency and affordability. To meet the demands of the times, PT Kereta Api Indonesia (Persero) is undergoing a comprehensive transformation, particularly by improving the standard of economy class services, which are known to have limited facilities. Transportation serves as a social connector and facilitates the movement of goods, playing a central role in human survival (Nur et al., 2021; Profillidis, 2017). Rail transport in Indonesia has rapidly developed in recent years. PT Kereta Api Indonesia (KAI)

continues to strive to improve innovation and accessibility to meet the needs and expectations of the community. PT Kereta Api Indonesia (Persero) (KAI) recorded a positive trend with a significant increase in passenger numbers throughout 2024. Nationally, the volume of long-distance and local train passengers grew by 6.9%, reaching 51.8 million passengers compared to the previous year's total of 48.5 million ([Badan Pusat Statistik, 2025](#); [Hayat, 2025](#)).

In line with this upward trend, the East Java region, particularly the DAOP IX Jember working area, has also contributed significantly to community mobility. Based on data from the Central Statistics Agency [Badan Pusat Statistik \(2025\)](#), the number of passengers in this region reached 1,933,922 for long-distance or mainline trains and 1,127,247 for local ones. The success of PT Kereta Api Indonesia (KAI) can be measured by passenger satisfaction. Satisfied passengers will return to using the train service and become promoters of the service ([Primasari, Elmas, & Hermawan, 2024](#); [Rosales et al., 2025](#)). Satisfaction is a post-purchase evaluation in which passengers assess how well a product or service meets or exceeds their expectations ([Kotler & Keller, 2016](#)). It is not just about a single transaction but about the overall customer experience with a brand. Consumers feel satisfied or disappointed after comparing what they receive from a product with what they expect (Kotler et al. [\(Kotler, Keller, Ang, Tan, & Leong, 2022\)](#)). Identifying the factors that shape passenger satisfaction is important.

Within the scope of economy-class train services in DAOP IX, trust serves as the main psychological pillar connecting passengers with service providers. Trust here is not only a matter of punctuality but also the willingness of passengers to entrust the fulfilment of their expectations entirely to the credibility of PT KAI. A strong level of trust has been proven to reduce perceptions of risk, such as concerns about delays or inadequate facilities, thereby triggering positive emotional responses that increase passenger appreciation of service innovations and strengthen consumer satisfaction ([Kotler & Keller, 2016](#)).

In theoretical terms, passengers feel satisfied if what they receive is in line with or exceeds their expectations ([Kotler & Keller, 2016](#)). Trust plays an important role in proving that the modernization of economy-class trains is not just a promise but a reality ([Ahmed, Khan, Pattal, Rana, & Khan, 2024](#)). When passengers trust the capabilities of DAOP IX, they tend to be more understanding of minor disruptions during their journey. This shows that trust can reinforce the impact of modern facilities and easy access to creating an enjoyable homecoming or travel experience ([Alpu, 2015](#)).

Trust plays a crucial role in relationship marketing because it determines long-term satisfaction ([Kotler & Keller, 2016](#)). This is also true in the railway industry, where passenger trust is greatly influenced by the extent to which their security and safety are guaranteed ([Jamei, Chan, Chau, Gaisie, & Lättman, 2022](#)). If this trust is not established, ease of access and sophisticated facilities will not be sufficient to provide deep satisfaction ([Malihah et al., 2024](#)). Therefore, the key for DAOP IX lies in service consistency; what is promised and what passengers experience in the field must be aligned to maximize the level of satisfaction in the economy class.

Consumer trust, reflected in their willingness to rely on a product or brand, is an important factor in creating satisfaction. This includes consumers' belief that the product or brand is capable of meeting their expectations ([Oliver \(2014\)](#); [Waly et al. \(2021\)](#)), as well as their willingness to rely on exchange partners who are believed to have integrity and virtue ([Wulandari, Elmas, & Andrianata, 2024](#)). Consumer trust is essential for the success of a business. Consumers who trust a brand are more likely to make repeat purchases, recommend the brand to others, and become satisfied or loyal passengers ([Deryana, 2024](#)).

Passenger satisfaction is defined as the result of a post-service evaluation when the performance received meets or exceeds initial expectations ([Oliver, 2014](#)). In the context of railways [Oliver \(2014\)](#), this satisfaction is cumulative; it is built from a series of interactions (touchpoints), including the ticket reservation process, comfort in the station area, and the moment passengers arrive at their final destination ([Kotler et al., 2022](#)). This description is in line with research [Ana \(2025\)](#); [Susanti and Wahyuni \(2017\)](#) which states that trust influences satisfaction, and research [Tamayo-Fajardo,](#)

[Fernández-Martínez, and Nuviala Nuviala \(2025\)](#); [Wilis and Nurwulandari \(2020\)](#) which states that trust has an impact on satisfaction.

The trust of railway service passengers is built on innovations related to the services and accessibility provided by PT Kereta Api Indonesia (KAI). Innovations that have been and are being implemented by the railway company include the use of the KAI Access application, electronic ticketing systems (e-ticketing), self-check-in facilities, and other innovations ([Didin & Valentino, 2020](#); [Frizni & Adnan, 2024](#); [Pradina, Elmas, & Nafis, 2024](#)). This proves that innovation has an impact on the trust and satisfaction of railway passengers ([Karta, 2023](#); [Pradina et al., 2024](#); [Sarwito, Sanosra, & Thamrin, 2022](#)). Similarly, the accessibility provided by PT Kereta Api Indonesia (KAI) includes accessibility for passengers with disabilities, information accessibility, payment accessibility, and other forms of accessibility ([Malihah et al., 2024](#); [Nengsi, Hak, & Stiawan, 2025](#); [Pradina et al., 2024](#)). This proves that accessibility influences trust and satisfaction ([Mulyati & Triyanto, 2023](#); [Nengsi et al., 2025](#); [Pradina et al., 2024](#)). In this context, this study comprehensively investigates and analyzes passenger satisfaction with railway services in terms of innovation and accessibility, with trust as a mediating variable.

2. Literature Review and Hypotheses

2.1 Marketing and Consumer Behavior Theory

Marketing is a social and managerial process in which individuals or groups obtain what they need and want through the creation, offering, and exchange of valuable products ([Kotler & Keller, 2016](#); [Ranasinghe, Vidarshika, & Dayapathirana, 2025](#); [Viana, Faria, Nogueira, & Lima Rua, 2026](#)). Consumer behavior is the study of how individuals, groups, and organizations select, purchase, and use goods, services, ideas, or experiences to satisfy their needs and desires ([Güngördü Belbağ, 2025](#); [Khan, Rehman, & Kashif, 2025](#); [Kotler & Keller, 2016](#)). Consumer behavior theory aims to understand, explain, and predict consumer behavior ([Kotler & Keller, 2016](#); [Kotler et al., 2022](#)). The goal of many consumer behavior theories is to provide a comprehensive theory for understanding, explaining, and predicting consumer behavior. Many competing and complementary consumer behavior theories are being developed further ([Y. Han, Zhang, & Zhu, 2025](#); [Kotler et al., 2022](#)).

2.2 Passenger Satisfaction

Passenger satisfaction is a situation demonstrated by passengers when they realize that their needs and desires are in line with their expectations and are being met properly ([Tjiptono, Yang, & Setyawan, 2025](#)). Satisfaction is the consumer's response to fulfilment. It is an assessment that the features of a product or service, or the product/service itself, provide a level of fulfilment related to enjoyable consumption ([Oliver, 2014](#)). If performance falls short of expectations, consumers become dissatisfied. If the performance meets expectations, consumers are satisfied. If performance exceeds expectations, consumers are highly satisfied or delighted ([Kotler & Keller, 2016](#); [Wahab, Hamzah, Suki, Chong, & Kua, 2025](#)). Other experts state that satisfaction is the customer's evaluation of a product or service in terms of whether it has met the needs and expectations of train passengers ([Bezerra & Gomes, 2020](#); [Li, Ma, Nguyen-Phuoc, & Fu, 2025](#)).

2.3 Trust

The willingness of one party to be sensitive to the actions of another party is based on the expectation that the other party will take certain actions that are important to the trustor, regardless of the ability to monitor that party ([Mayer, Davis, & Schoorman, 1995](#)). Trust is the development of confidence that another party has the ability to fulfill its promises, which involves a cognitive process of evaluating the credibility and good intentions of a company ([Kotler et al., 2022](#)). Passengers trust that DAOP IX departure schedules will be accurate (reliable) and that staff will act honestly and professionally (integrity) [Wang, Fang, and Bao \(2025\)](#) and the belief that railway providers have the technical competence to operate train services ([Flores et al., 2025](#)).

2.4 Innovation

Innovation is a specific tool for entrepreneurs, a means by which they exploit change as an opportunity for different businesses and services. In marketing, innovation means creating new value and satisfaction for passengers through unique means ([Drucker & Maciariello, 2014](#)). Marketing innovation is a continuous process of identifying new market opportunities and developing creative solutions that exceed current industry standards to meet unmet passenger needs ([Kotler & Keller, 2016](#)). Innovation is a “new combination” of various product factors which, in the context of railways, can be realized through service system upgrades such as automatic boarding to market expansion ([S. Han, Xiang, Huang, Xu, & Zhang, 2025](#); [Tsiachtsiras, Yin, Miguelez, & Moreno, 2025](#)).

2.5 Accessibility

Accessibility is a measure of the ease with which a person can reach a destination from a specific location, emphasizing that accessibility is influenced by distance, travel time and cost ([Arai, Kusakabe, Niwa, & Honma, 2022](#); [Cheng et al., 2025](#)). Accessibility is a company's ability to ensure that products are available in the right place and at the right time when consumers require them. This includes market coverage, physical location and distribution channels ([Armstrong, Adam, Denize, & Kotler, 2018](#)). Accessibility refers to the ease of contacting and meeting someone, including short waiting times, convenient locations, and operating hours that are convenient for passengers ([Kotler & Keller, 2016](#)).

2.6 The effect of innovation on railway service passenger satisfaction through consumer trust

Railway service innovation is the process of implementing new ideas aimed at improving the efficiency, effectiveness, and service of railways ([Frizni & Adnan, 2024](#); [Yulianto & Awan, 2024](#)). The essence of innovation is to introduce something new, which can be an idea, product, method, or form of service that has never existed ([Curtis, 2019](#); [Widyawati & Faeni, 2021](#)). Innovation can increase trust in various contexts, including business, technology, and public services, thereby encouraging satisfaction among railway service passengers ([Kotler et al., 2022](#); [Yulianto & Awan, 2024](#)).

Innovation is essential for improving quality and efficiency. Innovation often results in better, more efficient products or services that are more suited to passenger needs ([Citra, Mustika, Thya, & Yulita, 2021](#); [Yulianto & Awan, 2024](#)). Furthermore, through innovation, PT Kereta Api Indonesia (KAI) can build its corporate reputation and demonstrate its competence and commitment to progress, which are important factors in building trust and satisfaction among railway service passengers ([Didin & Valentino, 2020](#); [Oliver, 2014](#); [Pramana, Harahap, & Lubis, 2019](#); [Yulianto & Awan, 2024](#)). Previous research has shown that innovation influences trust and satisfaction ([Pradina et al., 2024](#); [Sarwito et al., 2022](#)). Therefore, the following hypothesis is proposed:

H₁: The effect of innovation on railway service passenger satisfaction through consumer trust

2.7 The effect of accessibility on railway service passenger satisfaction through consumer trust

Accessibility is a broad concept, and experts from various fields have provided different definitions of it. However, in general, accessibility refers to the ease of access to something, be it information, services, products, or the environment ([Fadilah, Fitri, Sembiring, & Pratama, 2024](#)). Accessibility plays a crucial role in building and maintaining trust ([Citra et al., 2021](#); [Jayanti, Joewono, & Rizki, 2021](#)). When information, services, or products are easily accessible, they create a sense of openness, reliability, and comfort ([Didin & Valentino, 2020](#); [Jayanti et al., 2021](#)). Good accessibility signifies openness and transparency of the data. When information or services are easily accessible, people feel that nothing is hidden ([Kotler & Keller, 2016](#)). This is important for building trust, especially in the context of governments, public organizations, and businesses.

Good accessibility creates an easy and comfortable experience for passengers. When people can easily access what they need, they feel satisfied ([Oliver, 2014](#)). Accessibility also allows people to achieve their goals efficiently and effectively. This increases satisfaction because people feel that their time and effort are valued ([Jayanti et al., 2021](#); [Pradina et al., 2024](#); [Waly et al., 2021](#)). This is in line with previous studies that state that accessibility affects the trust and satisfaction of railway service

passengers ([Mulyati & Triyanto, 2023](#); [Nengsi et al., 2025](#); [Pradina et al., 2024](#); [Waly et al., 2021](#)). Therefore, the following hypothesis is proposed:

H_2 : The effect of accessibility on railway service passenger satisfaction through consumer trust

3. Research Method

This study uses a quantitative method with a causal approach that aims to test the cause-and-effect relationship between variables through statistical methods to measure the strength of the relationship and predict changes in the dependent variable ([Creswell & Creswell, 2017](#)). The object of this research is PT Kereta Api Indonesia (Persero) DAOP IX Jember, the main railway operator in the ‘Tapal Kuda’ region, which stretches from Pasuruan to Ketapang Station, Banyuwangi.

Data collection was conducted by distributing questionnaires to passengers of economy-class train services in the DAOP IX region from December 2025 to January 2026. The sampling technique used was simple random sampling, in which each member of the population had an equal chance of being selected as a respondent. Based on the theory of [Hair, Black, Babin, and Anderson \(2014\)](#), a representative sample size for SEM analysis ranges from five to ten times the number of observed indicators. In this study, there were 12 indicators; therefore, the sample size was set at 108 respondents (the result of 9 multiplied by 12 indicators), which met the minimum threshold required.

Data analysis was conducted in two stages ([Hair et al., 2014](#)). First, a descriptive analysis was conducted to describe the respondents and data profiles’ characteristics. Second, inferential analysis using Structural Equation Modelling (SEM) was processed using the AMOS program. The SEM analysis stages included validity and reliability testing (measurement model), normality and outlier assumption testing, and model fit testing (goodness of fit) before the hypothesis testing (structural model).

4. Results

4.1 Descriptive Analysis

Descriptive analysis is a statistical procedure used to process, simplify, and present raw data to make them easier to understand and more meaningful ([Sugiyono, 2019](#)). In the context of quantitative research, this analysis serves as the foundation for describing the characteristics of the collected data. The following is a description of the respondents’ characteristics based on the collected demographic data.

Table 1. Summary of respondent descriptions

Respondent Descriptions			Percentage
Age	18 - 27 years	39	36.11%
	28 - 37 years	32	29.63%
	38 - 47 years	24	22.22%
	> 47 years	13	12.04%
Gender	Men	57	52.78%
	Women	51	47.22%
Job	Students	26	24.07%
	Entrepreneurs	22	20.37%
	Private sector	20	18.52%
	Civil servants	18	16.67%
	Others	13	12.04%
	Police/Army	9	8.33%
Name of the Railway	Probowangi	35	32.41%
	Sri Tanjung	28	25.93%
	Pandanwangi	25	23.15%
	Tawangalun	20	18.52%

The table shows that the age range of respondents at the time of the study was 18-27 years old (36.11%), 28-37 years old (29.63%), 38-47 years old (22.22%), and above 47 years (12.04%). This indicates that the respondents were predominantly young people who enjoy barrier-free travel, young people who often have limited budgets, and those who can travel without depleting their savings. Based on gender, 52.78% were men and 42.77% were women. This shows that men tend to prioritize travel time efficiency with train punctuality, which is a significant advantage for men with busy schedules. There are no strict baggage restrictions, and the lively and interactive atmosphere in economy-class trains can be an opportunity for men to socialize and meet new people.

Based on occupation, it was found that 24.07% were students, 20.37% were entrepreneurs, 18.52% were private sector employees, 16.67% were civil servants, 12.04% were others, and 8.33% were police/army personnel. This indicates that most train passengers are students and entrepreneurs. Students often have limited budgets. The affordable price of economy-class train tickets allows them to travel without straining their finances. For entrepreneurs, especially those who are just starting their businesses, saving on operational costs is important.

4.1.1 Validity Test

Validity testing provides an overview of the extent to which research instruments can measure the concepts or variables being examined (Sugiyono, 2019). The results of the instrument validity testing are presented in the following table:

Table 2. Instrument validity test results

Variables	r _{count}	Variables	r _{count}	r _{table}	Result
X ₁₁	0.501	Y ₁₁	0.593	0.1891	Valid
X ₁₂	0.578	Y ₁₂	0.619	0.1891	Valid
X ₁₃	0.527	Y ₁₃	0.630	0.1891	Valid
X ₁₄	0.604	Y ₁₄	0.592	0.1891	Valid
X ₁₅	0.612	Y ₁₅	0.565	0.1891	Valid
X ₁₆	0.586	Y ₁₆	0.585	0.1891	Valid
X ₂₁	0.609	Y ₂₁	0.600	0.1891	Valid
X ₂₂	0.581	Y ₂₂	0.621	0.1891	Valid
X ₂₃	0.619	Y ₂₃	0.624	0.1891	Valid
X ₂₄	0.624	Y ₂₄	0.588	0.1891	Valid
X ₂₅	0.638	Y ₂₅	0.579	0.1891	Valid
X ₂₆	0.615	Y ₂₆	0.592	0.1891	Valid

Based on the total item correlation analysis, it was found that each question item in the variables innovation (X₁), accessibility (X₂), trust (Y₁), and passenger satisfaction (Y₂) had a calculated r-value that exceeded the table r-value of 0.1891 at a significance level of 0.05. This indicates that all the questions in this study were valid.

4.1.2 Reliability Test

The results of the construct reliability test provide evidence that the research instrument is capable of producing consistent and reliable results over time, thereby increasing confidence in the overall research results (Sugiyono, 2019). The results of the construct reliability test are presented in the following table:

Table 3. Reliability test results

Variables	Item statements	CR _{count}	cut off	Result
Innovation (X ₁)	6	0.989	0.6	Reliable
Accessibility (X ₂)	6	0.990	0.6	Reliable
Trust (Y ₁)	6	0.963	0.6	Reliable

Passenger Satisfaction (X_2)	6	0.905	0.6	Reliable
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Based on the analysis output, the calculated CR values for innovation (X_1), accessibility (X_2), trust (Y_1), and passenger satisfaction (Y_2) were 0.989, 0.990, 0.963, and 0.905, respectively. Because all these values exceed the threshold of 0.60, it can be stated that the research instrument has good reliability and that the data collected are consistent.

4.1.3 Normality Test

To ensure the validity of the research data, a normality test was conducted to determine the data distribution. Normally distributed data indicate that the data are suitable for analysis (Hair et al., 2014). The results of the data normality test are presented in the following table:

Table 4. Data normality test results

Variables	skew	c.r.	kurtosis	c.r.
X_{11}	-0.539	-2.289	-0.679	-1.441
X_{12}	-0.53	-2.249	-0.754	-1.6
X_{13}	-0.527	-2.236	0.155	0.33
X_{21}	-0.517	-2.192	-0.646	-1.37
X_{22}	-0.236	-1.002	-0.728	-1.544
X_{23}	-0.192	-0.814	-0.922	-1.955
Y_{11}	-0.193	-0.817	-0.766	-1.625
Y_{12}	-0.502	-2.128	-0.769	-1.631
Y_{13}	-0.42	-1.782	-0.754	-1.6
Y_{21}	-0.56	-2.375	-0.34	-0.722
Y_{22}	-0.322	-1.365	-0.699	-1.483
Y_{23}	-0.389	-1.65	-0.713	-1.513
Multivariate			6.048	1.714

Data normality was evaluated to validate that the data distribution, both at the univariate and multivariate levels, met the modelling requirements. Based on the AMOS output, normality criteria were determined through the Critical Ratio (c.r.) values for the skewness and kurtosis parameters with a critical threshold of ± 2.58 at a 1% significance level. Univariately, all indicators representing the variables of Innovation, Accessibility, Trust, and Passenger Satisfaction showed consistent c.r. values below 2.58. This condition indicates that each variable manifestation does not have an extreme skewness or kurtotic tendency. Meanwhile, at the multivariate level, the c.r. value of 1.714 (with a kurtosis of 6.048) was within the required range. The fulfilment of this normality assumption provides a theoretical justification for the use of the Maximum Likelihood (ML) estimation method in the SEM analysis in this DAOP IX research.

4.2 Inferential Analysis

4.2.1 Results of Goodness of Fit Testing for Structural Equation Models

Inferential analysis enables researchers to draw conclusions that apply to the entire population by analyzing data taken from a small portion of that population, namely the sample (Hair et al., 2014). In general, inferential analysis is used to test hypotheses and determine whether there is a significant relationship between the variables in the research. The results of causality testing using Structural Equation Modelling (SEM) processed with the AMOS programme are as follows:

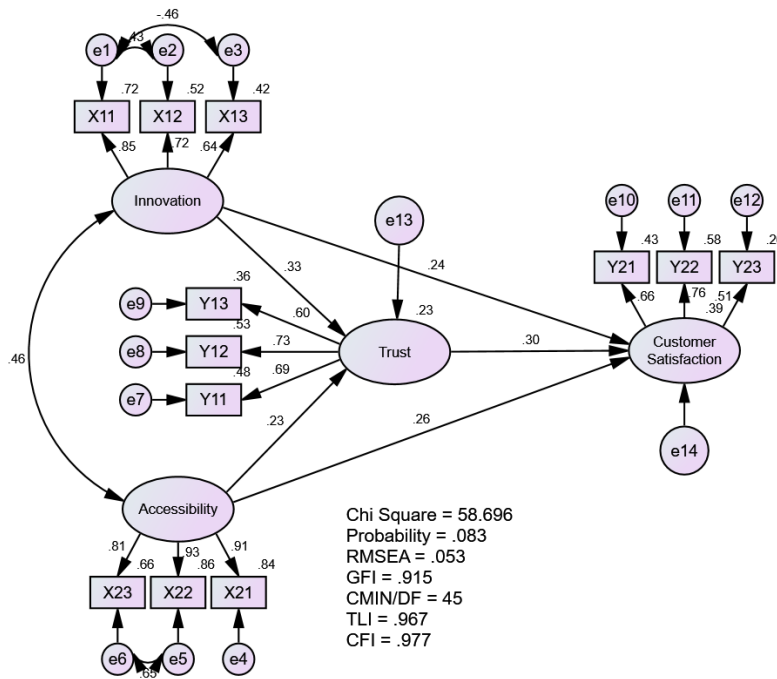


Figure 1. Conceptual framework model

Table 5. Goodness of Fit test results

Goodness of fit index	Result	Cut off	Result
X ² Chi-Square (df = 45, α = 0,05)	58.696	<i>Chi-Square</i> _{table} (df = 45, α = 0,05) = 61.66	Good
Probability (p)	0.083	≥ 0,05	Good
CMIN/DF	1.304	≤ 2,00	Good
RMSEA	0.053	≤ 0,08	Good
GFI	0.915	≥ 0,90	Good
TLI	0.967	≥ 0,95	Good
CFI	0.977	≥ 0,95	Good

Based on Structural Equation Modelling (SEM) analysis using AMOS software, this research model was found to meet the criteria for a good fit. This was evidenced by the probability value (0.083 > 0.05) and RMSEA (0.053), which indicated a minimal level of error. The consistency of the model's validity is also reinforced by the GFI (0.915), TLI (0.967), and CFI (0.977) indicators that exceed the threshold.

The inter-variable test results confirm that innovation and accessibility are strategic pillars in shaping the trust of economy class passengers in DAOP IX, with estimated values of 0.33 and 0.23, respectively. Furthermore, passenger satisfaction does not only stem from technical aspects and is significantly influenced by the emotional dimension of trust (path coefficient = 0.30). This study found a partial mediation effect, which shows that although innovation and accessibility have a direct impact on satisfaction, their influence is more optimal if it is through the strengthening of trust. Therefore, the synergy between facility quality and service credibility is key for PT KAI to achieving sustainable passenger satisfaction.

4.2.2 Hypotheses Testing

The next step after fulfilling the data quality testing was to test the formulated hypotheses. The results of each hypothesis test are presented below.

Table 5. Results of the influence between variables

Variables Effects	Standardised Coefficient	Prob	α	Result
Innovation (X_1) \rightarrow Trust (Y_1)	0.33	0.016	0.05	accepted
Innovation (X_1) \rightarrow Passenger Satisfaction (Y_2)	0.24	0.045	0.05	accepted
Accessibility (X_2) \rightarrow Trust (Y_1)	0.23	0.035	0.05	accepted
Accessibility (X_2) \rightarrow Passenger Satisfaction (Y_2)	0.26	0.028	0.05	accepted
Trust (Y_1) \rightarrow Passenger Satisfaction (Y_2)	0.30	0.044	0.05	accepted

Table 6. Hypothesis testing results

Variables Effects	Standardised Coefficient of Direct Effect	Standardised Coefficient of Indirect Effect	Standardised Coefficient of Total Effect	Result
Innovation (X_1) \rightarrow Trust (Y_1) \rightarrow Passenger Satisfaction (Y_2)	0.241	0.105	0.346	accepted
Accessibility (X_2) \rightarrow Trust (Y_1) \rightarrow Passenger Satisfaction (Y_2)	0.265	0.075	0.34	accepted

Based on the results of the inter-variable testing, all inter-variable relationships in this study were proven to have a positive and significant effect. Innovation significantly increased the trust and satisfaction of economy class train service passengers in DAOP IX, with respective effects of 0.33 and 0.24. A similar finding was observed for the accessibility variable, where ease of access to services contributed significantly to an increase in trust (0.23) and passenger satisfaction (0.26). In addition, trust had a strong direct effect on passenger satisfaction, with a coefficient of 0.30, confirming that consumer confidence in the reliability of services is a crucial factor in creating a positive travel experience.

Furthermore, the mediation analysis results show that trust plays an important role in bridging the influence of innovation and accessibility on the satisfaction of railway service passengers. The indirect influence of innovation on satisfaction through the mediation of trust was 0.105, thus cumulatively providing a total impact of 0.346. In contrast, the indirect influence of accessibility on satisfaction through trust was 0.075, with a total influence of 0.34. Because all direct and indirect influence paths were significant, trust in this model was categorized as a partial mediation variable. These findings indicate that although innovation and accessibility can create satisfaction independently, the presence of trust strengthens passengers' positive perceptions, making the satisfaction felt more optimal and profound.

4.3 Discussion

4.3.1 The effect of innovation on railway service passenger satisfaction through consumer trust

Digital modernization at PT KAI DAOP IX, such as the KAI Access platform, has proven to be a major driver in shaping passenger perception. Based on the findings, innovation has the most dominant impact on building trust compared with other variables. This indicates that economy class passengers, the majority of whom are of productive age and accustomed to digital technology, greatly appreciate the transparency of schedule information and the ease of making reservations. Psychologically, this innovation strengthens public confidence in PT KAI's competence in fulfilling its service promise. The main implication is that investing in technological feature updates is far more effective in winning passengers' hearts than simply maintaining standard physical facilities.

Trust plays a crucial role as a bridge between travel experience and passenger satisfaction. Although the physical accessibility of stations remains important, the findings show that the direct influence of accessibility on satisfaction is the smallest among other variable relationships. This indicates that for passengers in the Tapal Kuda region, ease of access to station locations is taken for granted, but a sense of security and emotional assurance of reliable service are far more decisive in determining their level of satisfaction. High trust reduces passengers' concerns about travel risks, thereby creating deeper satisfaction than mere physical comfort on board.

Strategically, passenger-oriented innovation integration provides a competitive advantage through social capital formation. These findings confirm that all hypotheses in this study are positively and significantly accepted, with trust as a mediator that strengthens long-term satisfaction. The respondent profile, which is dominated by regular users, shows that they are not only looking for cheap transportation but also expect service integrity. This is in line with previous research emphasizing that trust management is a key foundation in the railway sector ([Citra et al., 2021](#); [Kumar R., 2026](#); [Mbango, 2019](#); [Pradina et al., 2024](#); [Sarwito et al., 2022](#)). This implies that PT KAI DAOP IX must continue to maintain the consistency of its digital innovations, as even a minor system failure could undermine the trust that is the mainstay of passenger satisfaction.

4.3.2 The effect of accessibility on railway service passenger satisfaction through trust

Accessibility to DAOP IX economic services has proven to be an important dimension that combines physical convenience and information transparency. Based on the research findings, the effect of accessibility on trust has the smallest coefficient value compared to the effect of innovation on trust. This indicates that for economy-class passengers in the Tapal Kuda region, physical access to stations and timetable information are viewed as minimum service standards (basic needs) that must be available but are not yet a major factor in boosting trust on a massive scale compared to digital innovation. Nevertheless, consistent information disclosure remains a crucial factor in building the public's perception of PT KAI's integrity.

Travel efficiency through an intuitive system has been proven to reduce psychological barriers for passengers traveling with pets. When linked to the profile of respondents, the majority of whom are of productive age and regular users, ease of access is key to time and energy efficiency for those with high mobility. The main implication is that optimal accessibility reinforces the competence of DAOP IX management in the region. However, because the total impact of accessibility on satisfaction (through trust) is lower than that of innovation, the company cannot rely solely on ease of access to information. Passengers accustomed to fast mobility tend to take accessibility for granted; therefore, their satisfaction is more influenced by how access is managed credibly.

Trust derived from ease of access acts as a mediator that strengthens the overall passenger satisfaction. The findings show that indirect pathways (through trust) successfully mediate the relationship between accessibility and satisfaction in a positive and significant manner. This implies that when accessibility expectations are met, the resulting satisfaction becomes more stable and not merely transactional. Economy class passengers who feel that their access has been facilitated tend to have a stronger intention to repurchase because they believe in the reliability of the services along the Pasuruan to Banyuwangi route. These results support previous research findings that state that service integration and inclusive accessibility are key elements in creating holistic passenger satisfaction ([Didin & Valentino, 2020](#); [Guo, Zhang, & Xia, 2023](#); [Mulyati & Triyanto, 2023](#); [Nengsi et al., 2025](#); [Pradina et al., 2024](#)).

5. Conclusions

5.1 Conclusion

These findings provide empirical evidence that trust is a significant bridge connecting innovation and accessibility to passenger satisfaction in the DAOP IX Region. Although the analysis results show that innovation and accessibility have direct influence values that are almost equivalent to their indirect influence (each in the range of 0.24–0.26), the role of trust remains a crucial

strategic element. These nearly equal influence values indicate that while technical facilities and ease of access can independently increase satisfaction, the presence of trust acts as a booster that enhances passenger experience.

These results explain this phenomenon as a form of ‘satisfaction stability.’ Without the trust variable, innovation and accessibility do indeed increase customer satisfaction by almost the same amount, but this satisfaction tends to be transactional and vulnerable to disruption in the event of technical issues. Conversely, through the mediation of trust, the satisfaction felt by passengers transforms into a deeper and more sustainable manifestation of emotional assurance. Thus, the integration of physical facility improvements and trust management is not merely about adding statistical value but about fostering post-purchase behavior that keeps passenger satisfaction stable in the face of service dynamics in the railway sector.

5.2 Research Limitations

This research has limitations in terms of the sample size of 108 respondents, which is the minimum limit; therefore, it is not fully representative of the diversity of the passenger population across the entire DAOP IX operational area. In addition, the limited coverage of the study area to one operational area makes it difficult to generalize the findings to other areas with different social characteristics. Data collection was only conducted during the year-end holiday period (December–January), which also has the potential to cause perception bias owing to station congestion that does not reflect normal conditions. Finally, this model focuses only on the variables of innovation, accessibility, and trust, without considering other external factors such as price comparisons or the influence of competing modes of transportation.

5.3 Suggestions and Directions for Future Research

Future research should expand the number of respondents and geographical coverage to include other operational areas (DAOPs) in Indonesia to strengthen the validity and accuracy of the research findings. In addition, future researchers may add new variables, such as corporate image or price, and consider using mixed methods through in-depth interviews to explore the reasons behind the almost equal direct and indirect influence values.

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Author Contributions

MSHE was responsible for the conceptualization, study design, data collection, manuscript drafting, revision, supervision, and final approval. MDS contributed to data collection, analysis, manuscript drafting, and revision. IH contributed to the methodology, data analysis, manuscript revision, and final approval.

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