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The Effect of Service Quality, Intermodal Effectiveness, and Customer Satisfaction at Halim Station on Passenger Loyalty for the Jakarta-Bandung High-Speed Train

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Abstract— *This study is to determine the effect of service quality, effectiveness of intermodal, customer satisfaction on customer loya lty. The subjects in this study are consumers who have used Kereta Cepat Jakarta Bandung (KCJB). Number of samples of this research were 267 respondents. The technique used for sample collection was random sampling. By using the application of smartPLS ver4, researc her can gather quantitative descriptive data, SEM PLS result also the result hypothesis test. The research results indica te that service quality, effectiveness of intermodal, customer satisfaction have a positive and significant influence on customer loyalty. The test of the effect of th e service quality variable on passenger loyalty produced a T-Statistic value of 2.115 (> 1.96) or P-values of 0.034 (< 0.050) and an original sample value of 0.155 which is positive. The test of the effect of the intermodal effectiveness variables on passenger loyalty produced a T-Statistic of 3.424 (> 1.96) or a P-value of 0.001 (< 0.050) and an original sample value of 0.284 which is positive. The test of the effect of customer satisfaction variables on passenger loyalty produced a T-Statistic of 4.143 (> 1.96) or a P-value of 0 (< 0.050) and an original sample value of 0.349, which is positive. This result indicates that the hypothesis test on the the service quality, intermodal effectiveness, customer satisfaction variables has a positive and significant effect on passenger loyalty.*

Keywords— *Service Quality; Effectiveness of Intermodal; Customer Satisfaction; Customer Loyalty*

I. INTRODUCTION

The author is interested to measure customer loyalty on the Jakarta-Bandung High-Speed Train (KCJB). As we know, the inauguration of the Jakarta-Bandung High-Speed Train was held on October 2, 2023, at Halim Station. This train connects Halim Station in Jakarta and Tegal Luar Station in Bandung. During the journey from Jakarta to Bandung, this train has variable speeds with a maximum speed of 350 km/h, a travel time of 45 minutes, and a distance of 142 km (Dina et al. 2021).

The development requires a significant cost, so the management must think about how to accelerate the return rate by increasing the profit of the Company. Company profit could be obtained from price increases that could come from an increase in the number of passengers (Dwiatmoko et al. 2022; Ibrahim et al. 2020). The number of passengers could be increased by enhancing passenger satisfaction with the KCJB Train services (Yamin and Windymadaksa 2017).

There are many factors that make passengers of the KCJB feel comfortable, including comfort at the station and on the train, such as the speed of the train, access to and from the station, service quality, and customer satisfaction. All of these factors can encourage passengers of the KCJB to re-use the train service, not only for the euphoria of trying a new mode of transportation available in Indonesia (Kadarisman 2018).

From the discussion above, the author will examine how the service quality and intermodal effectiveness can affect passenger satisfaction for the Jakarta-Bandung High-Speed Train with the title " The Effect of Service Quality, Intermodal Effectiveness, and Customer Satisfaction at Halim Station on Passenger Loyalty for the Jakarta-Bandung High-Speed Train".

II. RESEARCH METHODOLOGY

The statement of the problem in this research include: How is the quality of service at Halim Station in relation to the loyalty of passengers of the KCJB?; How effective is intermodality at Halim Station in relation to the loyalty of passengers of the KCJB?; How is customer satisfaction at Halim Station related to the loyalty of passengers of the KCJB?

This research will measure the influence of service quality, intermodal effectiveness, and customer satisfaction at Halim Station on the loyalty of KCJB passengers. The service quality aspect is taken from the Service Guide High Speed Rail – MTR China publication about the facility standards available on Chinese High-Speed Trains. The study was conducted by distributing questionnaires to respondents who have used KCJB (Rachmadina et al. 2023). The questionnaire contains 19 questions and was distributed to 267 respondents (Firdaus et al. 2022; Yusman et al. 2025).

Customer satisfaction analysis is conducted using the Structural Equation Model (SEM) method (Ismael and Duleba 2021; Nova et al. 2025). Data is processed using Partial Least Square (PLS). The study uses a Likert scale and process by smart PLS application (Mat et al. 2019; Zhang et al. 2019).

Here is a list of Statements in the questionnaire (Farooq et al. 2018; Mandhani, Nayak, and Parida 2020).

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TABLE 1. List of Questionnaire Statements

Code	Statements
QUAL 1	I recognize that there is free Wi-Fi at Halim station.
QUAL 2	I recognize that there is free Charging Station at Halim station.
QUAL 3	I recognize that there is automated teller machine (ATM) at Halim station.
QUAL 4	I recognize that there is baby changing room at Halim station.
QUAL 5	I recognize that there is elevator at Halim station.
QUAL 6	I recognize that there is accessible toilet at Halim station.
QUAL 7	I recognize that there is architectural elements at Halim station.
INTR 1	I recognize that the pedestrian access at Halim Station has met my expectations.
INTR 2	I recognize that the bicycle access at Halim Station has met my expectations.
INTR 3	I recognize that the feeder access at Halim Station has met my expectations.
INTR 4	I recognize that the drop-off access at Halim Station has met my expectations.
INTR 5	I recognize that the parking access at Halim Station has met my expectations.
SATF1	I recognize that the facilities at Halim Station are fairly good.
SATF2	I recognize that the KCJB is able to provide accurate service without any errors.
SATF3	I recognize the staff the staff provides service to the passengers quickly.
SATF4	I recognize there are security officers at several points in Halim Station.
SATF5	I recognize that i could receive additional facilities related to extra needs beyond what has been prepared or related to special needs.

Code	Statements
LOYL1	I am willing to provide positive word-of-mouth feedback to the company.
LOYL2	I am willing to repurchase without being influenced by price changes.

TABLE 2. Respondent's Respond

KODE	STS	TS	N	S	SS	Total	Average Index
QUAL1	1	8	65	110	83	267	4
QUAL2	0	4	38	117	108	267	4,23
QUAL3	0	0	31	119	117	267	4,32
QUAL4	1	22	78	91	75	267	3,81
QUAL5	0	4	21	118	124	267	4,36
QUAL6	0	5	21	129	112	267	4,3
QUAL7	1	10	59	108	89	267	4,03
INTR1	1	13	43	127	83	267	4,04
INTR2	4	14	101	91	57	267	3,69
INTR3	1	12	60	121	73	267	3,95
INTR4	0	6	37	148	76	267	4,1
INTR5	1	12	49	125	80	267	4,01
SATF1	0	5	28	140	94	267	4,21
SATF2	0	4	23	135	105	267	4,28
SATF3	0	4	22	122	119	267	4,33
SATF4	0	2	21	125	119	267	4,35
SATF5	0	5	55	117	90	267	4,09
LOYL1	0	5	36	135	91	267	4,17
LOYL2	7	20	56	109	75	267	3,84

Notes: STS=Strongly Disagree; TS= Disagree; N= Neutral; S= Agree; SS=Strongly Agree

III. Results And Discussion

According to the data released by the Central Statistics Agency (BPS Indonesia), the number of passengers for the Jakarta-Bandung Fast Train from January 2024 to February 2025 is 6.06 million passengers. From this population, a sample is taken using the average daily passenger data, as follows: Average daily population = data for 1 year / 365 days = 6,057,000 / 365 = 16,595 data. Based on the total population, using the Krejcie method, the sample taken is 267 data.

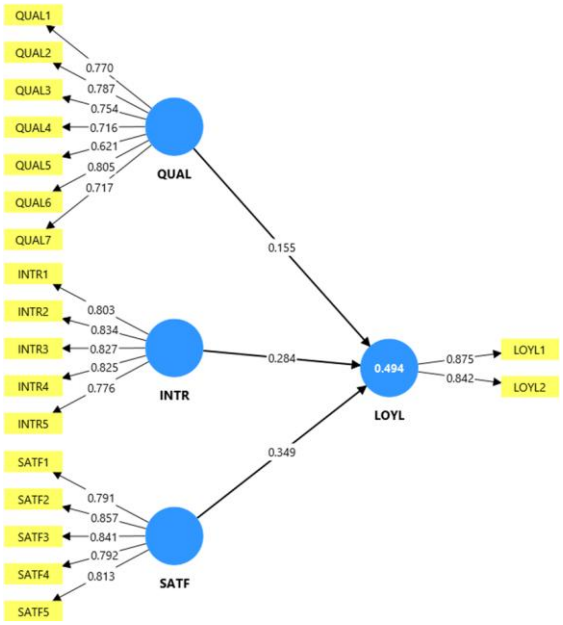

Figure 1. Structure Equation Model PLS

TABLE 3. Nilai Convergent Validity

Variables	Indicator	Loading Factor	AVE	Results
Service Quality	QUAL1	0,77	0,549	Valid
	QUAL2	0,787		Valid
	QUAL3	0,754		Valid
	QUAL4	0,716		Valid
	QUAL5	0,621		Valid
	QUAL6	0,805		Valid
	QUAL7	0,717		Valid
Intermodal Effectiveness	INTR1	0,803	0,662	Valid
	INTR2	0,834		Valid
	INTR3	0,827		Valid
	INTR4	0,825		Valid
	INTR5	0,776		Valid
Customer Satisfaction	SATF1	0,791	0,671	Valid
	SATF2	0,857		Valid
	SATF3	0,841		Valid
	SATF4	0,792		Valid
	SATF5	0,813		Valid
Passanger Loyalty	LOYL1	0,875	0,738	Valid
	LOYL2	0,842		Valid

Based on the data processing from the respondent responses, it can be stated that according to Table 3 Convergent Validity Values, the loading factor value > 0.5 and AVE > 0.5 indicate that the indicators can be considered valid.

TABLE 4. Nilai Cross-Loading

Indicator	Service Quality	Intermodal Effectiveness	Customer Satisfaction	Passanger Loyalty
QUAL1	**0,77**	0,474	0,495	0,473
QUAL2	**0,787**	0,414	0,516	0,366
QUAL3	**0,754**	0,43	0,541	0,355
QUAL4	**0,716**	0,447	0,482	0,45
QUAL5	**0,621**	0,375	0,438	0,309
QUAL6	**0,805**	0,491	0,622	0,482
QUAL7	**0,717**	0,52	0,523	0,477
INTR1	0,504	**0,803**	0,534	0,506
INTR2	0,528	**0,834**	0,535	0,532
INTR3	0,465	**0,827**	0,564	0,469
INTR4	0,52	**0,825**	0,645	0,528
INTR5	0,48	**0,776**	0,574	0,496
SATF1	0,593	0,686	**0,791**	0,527
SATF2	0,57	0,598	**0,857**	0,589
SATF3	0,554	0,489	**0,841**	0,5
SATF4	0,524	0,427	**0,792**	0,463
SATF5	0,621	0,643	**0,813**	0,587
LOYL1	0,52	0,532	0,617	**0,875**
LOYL2	0,463	0,54	0,505	**0,842**

Based on the data processing from the respondent responses, according to Table 4 Cross-Loading Values, the cross-loading values are > 0.5 and the highest value is when connected with the latent variable. This proves that the variables in the study are valid and suitable in explaining the latent variables.

TABLE 5. Nilai R-Square

Variable	R-Square	Adj R-Square
Passanger Loyalty	0,492	0,486

Based on the data processing from the respondent responses, according to Table 5 R-Square value, the R-Square value of the passenger loyalty variable is 0.492 or 49.2%, which proves that this variable is strong as it approaches 0.67 or 67%.

TABLE 6. Q-Square Value

Variable	*R-Square*	*Adj R-Square*	Q^2 (=1-SSE/SSO)
Passanger Loyalty	0,492	0,486	=1 – (1-R12) =1 – (1-0,9592) 0,92

Based on the data processing from the respondent responses, according to Table 6 Q-Square Value, the Q-Square of the dependent variable is 0.92 (> 0), thus this research is considered feasible with good observations because Q-Square > 0 and is regarded as having predictive relevance.

From the image above, it can be concluded:

1. The Effect of Service Quality on Passenger Loyalty

Based on the hypothesis testing results, the service quality on passenger loyalty has an original sample value of 0.155, which is positive, and a T-Statistic result of 2.115 (> 1.96) or a P-value of 0.034 (< 0.050). Therefore, it can be concluded that the first hypothesis (H1) is accepted and the effect of service quality on passenger loyalty is positive and significant.

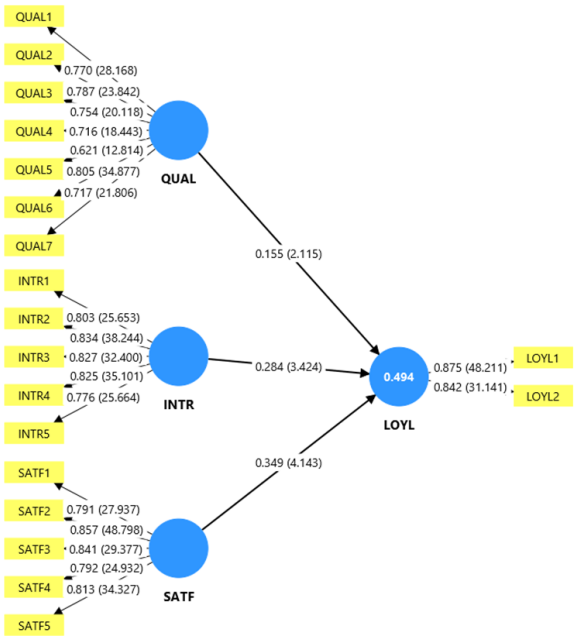

Figure 2. Path Coefficient

This indicates that the better the service quality provided by the KCJB Train, the more loyal the passengers will be. Conversely, if poor service quality is provided to the passengers, it will reduce the loyalty of KCJB passengers.

2. The Effect of Intermodal Effectiveness on Passenger Loyalty

Based on the hypothesis testing results, the intermodal effectiveness on passenger loyalty has an original sample value of 0.284, which is positive, and a T-Statistic result of 3.424 (> 1.96) or a P-value of 0.001 (< 0.050). It may be concluded that the second hypothesis (H2) is true and that the impact of intermodal efficacy on passenger loyalty is both positive and substantial.

This indicates that the better the intermodal effectiveness provided by the KCJB, the more loyal the passengers will be. Conversely, if poor intermodal effectiveness is provided to the passengers, it will reduce the loyalty of KCJB passengers.

3. The Effect of Customer Satisfaction on Passenger Loyalty

Based on the hypothesis testing results, the customer satisfaction on passenger loyalty has an original sample value of 0.349, which is positive, and a T-Statistic result of 4.143 (> 1.96) or a P-value of 0 (< 0.050). Therefore, it can be concluded that the third hypothesis (H3) is accepted and the effect of customer satisfaction on passenger loyalty is positive and significant.

This indicates that the better the customer satisfaction provided by the KCJB, the more loyal the passengers will be. Conversely, if poor customer satisfaction is provided to the passengers, it will reduce the loyalty of KCJB passengers.

IV. Conclusion And Suggestions

1.1 Conclusions

Based on the analysis of data and discussion regarding the Influence of Service Quality, Intermodal Effectiveness, and Customer Satisfaction at Halim Station on the Loyalty of Passengers of the KCJB, the following conclusions are:

1. The test of the effect of service quality variables on passenger loyalty resulted in a T-Statistic value of 2.115 (> 1.96) or P-values of 0.034 (< 0.050) and an original sample amounting to 0.155, which has a positive value. These results indicate that the hypothesis testing on the service quality variable positively and significantly affects passenger loyalty. Thus, the better the quality of service provided by the KJCB at Halim Station, the higher the level of passenger loyalty, which has the potential to retain passengers to continue using the KCJB service.
2. The test of the effect of the intermodal effectiveness variables on passenger loyalty resulted in a T-Statistic of 3.424 (> 1.96) or P-values of 0.001 (< 0.050) and an original sample value of 0.284 which is positive. These results indicate that the hypothesis testing on the intermodal effectiveness variable has a positive and significant effect on passenger loyalty. Thus, the better the intermodal effectiveness provided by the KJCB at Halim Station, the higher the level of passenger loyalty, which has the potential to retain passengers to continue using the KJCB service.
3. The test of the effect of customer satisfaction variables on passenger loyalty resulted in a T-Statistic of 4.143 (> 1.96) or P-values of 0 (< 0.050) and an original sample value of 0.349 with a positive value. These results indicate that the hypothesis test on the customer satisfaction variable has a positive and significant effect on passenger loyalty. Thus, the higher the level of customer satisfaction, the higher the level of passenger loyalty, which has the potential to keep passengers using the Jakarta-Bandung High-speed Train service.

1.2 Suggestions

Based on the results of the data analysis and discussion regarding the Influence of Service Quality, Intermodal Effectiveness, and Customer Satisfaction at Halim Station on Passenger Loyalty to the Jakarta-Bandung High-Speed Train, the author suggests the following points. This suggestion is made considering that this research still has many limitations from several aspects. It is hoped that the author's suggestions can provide benefits and improvements for future research. The suggestions include:

1. Recommendations for the Jakarta-Bandung High-Speed Train:
   a. In the service quality variable, the highest number of disagreements is found in the statement "I know there is a baby changing room at Halim Station," with 22 respondents. Therefore, service quality improvement can be made by equipping Halim Station with a baby changing room along with clearly visible signage.
   b. In the intermodal effectiveness variable, the highest number of disagreements is found in the statement "I feel that bike access at Halim Station has met my expectations," with 14 respondents. Therefore, service quality improvement can be made by enhancing bike access at Halim Station.
2. Recommendations for Future Research
   a. The scope of this research is limited to the services provided at Halim Station, so future research can be conducted at other High-Speed Train stations or on services provided during journeys.
   b. Future research can also develop studies on the determination of other modes of transportation that can connect to the KCJB.

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