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Comparative Study of the Passenger's Satisfaction with Regional Rail Transport in Indonesia and Malaysia

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Abstract. This research aims to look for significant service attributes so that they can be used to improve services for the customer. With the increasing development of the city, transportation is needed for the activities of residents, both for work, school, or other business activities. The development of railway transportation for urban and suburban transportation has various advantages, including reducing congestion and air pollution, so it is expected to reduce the cost of externalities. The railway is an environmentally friendly, cheap, fast, and safe mode of transportation compared to road transportation. One mode of transportation in Greater Jakarta is the Jabodetabek Commuter Train, which until December 2019 (before the Covid 19 pandemic) the number of passengers has reached 1,1 million people per day. To find out the proposed improvement of the Commuter Train in Jabodetabek services, research is needed to compare it with the Kuala Lumpur regional train.

This research was conducted as an effort to analyze passenger perceptions about the quality of Jabodetabek commuter urban transport services compared to the Kuala Lumpur regional train. The research methodology used the Customer Satisfaction Index (CSI) while the research conducted in Kuala Lumpur used SERVQUAL. The study was initiated by conducting a direct survey by distributing questionnaires to train users and to find out the opinions of service users about the interest and performance of the train.

The results of the study in the Greater Jakarta area showed that the value of Customer Satisfaction (CS) is 63,07 which means that customers are satisfied with the services provided by PT Kereta Commuter Indonesia, however, several service items must be improved. The conclusion of the research carried out on the Kuala Lumpur commuter train shows that there are three objectives have been achieved and the nine hypotheses developed were accepted through this study. The passengers' satisfaction has a significant strong relationship with reliability, responsiveness, empathy, vibration, and design layout. Therefore, the findings of this study could help PT KCI and KTMB to improve their train comfort. The findings were also aligned with the complaints and previous findings.

Keywords: Customer Satisfaction Index, Jabodetabek Commuter Train, Kuala Lumpur regional train, public transport, SERVQUAL

Introduction

The railway is one of the mass transportation modes that are quite efficient and effective because it can carry passengers in relatively large numbers, has its lane so that it does not recognize traffic jams, and uses non-fossil fuels that are environmentally friendly. To make the Commuter Line the main transportation in the Greater Jakarta area and Kuala Lumpur, the service factor must get attention. Service is the main priority which is used as a benchmark in the competitiveness and facility advantages and is a factor that affects the services provided by the company. PT Kereta Commuter Indonesia (PT KCI) and Kereta Tanah Melayu Bersepadu are required to continue their efforts to improve their services to the community and improve

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their operating system to produce maximum satisfaction with service users or customers (Abd Aziz et al., 2018).

Transportation is the activity of moving goods (cargo) and passengers from one place to another. In transportation, there are two most important elements, namely the movement and physically changing the place of goods and passengers to other places (Isradi et al., 2020). Transportation is said to be good if the travel time is fast enough and does not have an accident, the frequency of service is sufficient, and survivors are free from possible accidents and comfortable service conditions. Factors that become components of transportation to achieve ideal conditions are the condition infrastructure, network systems, and conditions facilities (Dwiatmoko, 2020).

The mode of transportation is very influential in supporting fast, safe, and integrated traffic movements. The means of transportation are flexible, that is, develop according to the times and adapted to the needs of consumers, but the determination of the type of transportation mode chosen must be appropriate to prevent traffic congestion, waste of energy and space, and air pollution. Therefore, appropriate policies and handling are needed to minimize these undesirable factors (Isradi et al., 2020).

Rail transportation modes have advantages compared to road transport, including greater transport capacity, saving energy use, and low air pollution. Rail-based urban transport can provide benefits for a city, for example, a large transport capacity so that it can shift passengers from road transport to railroad mode. In the end, it will reduce congestion, road accidents, and road damage and reduce air pollution in urban areas (Fan et al., 2020).

In providing services to users of commuter transport services, a minimum service standard has been established. Minimum service standards are minimum services that must be met by service providers in providing services to service users which is a reference for the operators of railway infrastructure that operate train stations in providing services to service users, which must be equipped with benchmarks used as guidelines for service delivery and reference to assessing service quality as an obligation and promise of service providers to the community in the context of quality, fast, easy, affordable and measurable services (Chang, 2017). The minimum service standard consists of two types, namely the minimum service standard at the station and the service standard on the train (Setiawan et al., 2021).

The services at the station include clear and easy to read information about the appearance of the station and audio that is heard by the service user, passenger service facilities; ticket counter, waiting room, boarding room, praying place, space for nursing mothers, toilet, facility to ease up / down passengers, people with disabilities, health and safety and security facilities (Isradi et al., 2021). The services on the train include the availability of doors, window, seating with fixed construction that has a backrest, train lighting, air circulation regulator, standing passenger handrail facilities, station information to be visited or passed in sequence, special facilities, and facilities for persons with disabilities, pregnant women, sick people, and the elderly, medical facility, facilities and security, information on safety and evacuation instructions in an emergency, train name and train serial number, information on train travel disruptions and accuracy of train schedules (Dwiatmoko et al., 2020).

This study aims to make a comparison of customer satisfaction for the Jabodetabek and ETS commuter trains in Kuala Lumpur.

Problem Formulation

Jakarta and Kuala Lumpur are big cities that attract people to carry out their daily activities, so they need transportation. With the increasing movement and the impact on congestion on the road, a mass transportation facility is needed that will serve passengers both in the cities of Jakarta and Kuala Lumpur with the surrounding regional areas. Mass

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transportation that is already operating in the Greater Jakarta and Kuala Lumpur areas needs to be evaluated whether it has met the needs of the community.

Urgency Research

The urgency and target of the Research are to find out the level of service of Jabodetabek Commuter Train passengers compared to Kuala Lumpur to arrange the improvement of transportation services in Jakarta and Kuala Lumpur.

Methodology

One of the government's tasks is to provide services to the community (public service) including the procurement of transportation equipment. Public transportation is one of the public services that must be provided by the government (Brage-Ardao et al., 2015). The availability of transportation services is positively correlated with economic activities and community development. The large volume of public vehicles on the highway causes congestion to continue to increase from day to day, especially during the rainy and flood seasons, so congestion is now difficult to overcome (Wangai et al., 2020). Most people who are reluctant to traffic jams can switch to using public transportation, one of which is the train (Liu et al., 2020). The train is one type of land transportation available to the public, rail transportation is a type of transportation that moves on rails. Train as a means of transportation that is cheap, land-saving, energy-efficient, and low-pollution due to its mass nature is expected to meet the transportation needs of the community.

Public services are defined as service providers for the needs of people or the community, who have an interest in the organization by the basic rules and procedures that have been set (Menteri Perhubungan Republik Indonesia, 2016). Minimum service standards at train stations based on the regulation of the Minister of Transportation of the Republic of Indonesia No. 63 of 2019, among others: a) Parking lots, clear and easy-to-read information regarding Station layout plans, train numbers, train names, and service classes, departing train stations, train stations destination train stops and stations and their timetable, train fares, map of the train network, Availability of seat information for intercity trains at stations that serve ticket sales (passenger service facilities, counters, waiting rooms, boarding rooms, places of worship, lounges) breastfeeding mothers, toilets, facilities for getting on and off passengers, facilities for persons with disabilities, health facilities, safety, and security facilities) (Firdaus et al., 2022). According to Zeithaml, there are five SERVQUAL indicators (service quality indicators), including:

- 1. *Tangible* namely the ability of a company to show its existence to external parties. The ability of facilities, infrastructure, and the condition of the surrounding environment is tangible evidence of the services provided by the company which includes physical facilities, and equipment.
- 2. *Reliability*, namely the ability of the organization to provide services as promised. Performance must be to customer expectations which include timeliness, equal service to all customers, a sympathetic attitude, and high accuracy.
- 3. *Responsiveness* which is an ability to help and provide fast (responsive) and appropriate service to customers by delivering clear information.
- 4. *Assurance*, namely the knowledge, courtesy, and ability of company employees to foster trust in customers within the company, which includes communication, credibility, security, competence, and courtesy.
- 5. *Empathy*, namely giving sincere and personal attention to customers by trying to understand customer desires.

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According to Kotler and Gary (2014: 150), customer satisfaction is a feeling of pleasure or disappointment that arises after comparing the performance (outcome) of the product thought to the expected performance (or result). The measure of a successful service implementation is determined by the level of satisfaction of the service recipient. Service recipient satisfaction is achieved when service recipients receive services as needed and expected. This includes satisfaction in terms of public services provided by the government (Prasetijo et al., 2018). Likewise, trained service users will feel satisfied if their needs, desires, and expectations for service are met accordingly. Satisfied customers tend to have longer levels of loyalty. Customer satisfaction raises the quality of service to a particular service experience will lead to an evaluation or overall attitude towards service quality over time. Thus, to be able to provide quality services, you should always pay attention to the level of user satisfaction in receiving services (Prasetijo et al., 2020).

Customer Satisfaction Index (CSI)

The Customer Satisfaction Index (CSI) is a method used to obtain the level of satisfaction of service users, for a service provided as a whole (Rifai et al., 2021). The results of the CSI method are percentage values ranging from 0% to 100%, with the following categories:

Table 1. Customer Satisfaction Index

0.00% - 34.99%	Not Satisfied		
35.00% - 50.99%	Less Satisfied		
51.00% - 65.99%	Quite Satisfied		
66.00% - 80.99%	Satisfied		
81.00% - 100.00%	Very Satisfied		

The following is the equation used to obtain the CSI value:

$$MIS = \Sigma Y/n \tag{1}$$

Where:

MIS = Mean Importance Score ΣY = Total value of interest n = Number of respondents

$$MSS=\Sigma X/n \tag{2}$$

Where:

MSS = Mean Satisfaction Score ΣX = Total value of performance n = Number of respondents

WF=MIS/
$$\Sigma$$
MIS x 100 (3)

Where:

WF = Weight Factor

MIS = The average value of the importance of the i-th question/statement

 Σ MIS = Average total value of interest

$$WS = WF \times MSS \tag{4}$$

Where:

WS = Weight Score WF = Weight Factor

MSS = Mean Satisfaction Score

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 $WT = \Sigma WS$ (5)

Where:

WT = Total Weight

CSI=WT/(Likert Scale) (6)

Where:

CSI = Customer Satisfaction Index

WT = Total Weight

Likert scale = 5 (not satisfied until very satisfied

Passenger Service Variables

Following the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 63 of 2019 concerning Minimum Service Standards for the Transportation of People by Train, there are 6 (six) indicators of passenger service at stations and on trains, namely: safety, security, reliability/regularity, comfort, convenience, and equality which can be described in the questionnaire as follows:

- 1. The ability of officers to provide information to electric train users in easy-to-understand language.
- 2. Officers provide clear information on Evacuation Procedures.
- 3. The user's exit or entry door works fine.
- 4. The alertness of security officers in assisting electric train users at stations.
- 5. The officers in the commuter line circuit are neatly dressed.
- 6. Availability of security officers in every series of commuter line trains.
- 7. Availability of departure information or disruption to the electric train at the station.
- 8. The arrival of the commuter line train came on time.
- 9. The commuter line train leaves on time.
- 10. Availability of toilets at the station.
- 11. Air conditioning facilities in the commuter line circuit when running a maximum of 27°C.
- 12. The condition of the commuter line circuit is clean.
- 13. Easy to find directions signage at station.
- 14. Information on stations to be stopped/passed by is clear/easy to understand.
- 15. Clear train travel disruption information.
- 16. The availability of prioritized seats for the elderly, disabled, pregnant women, and mothers carrying toddlers at the station.
- 17. Availability of prioritized seats for the elderly, disabled, pregnant women, and mothers carrying toddlers on the train.
- 18. Availability of a special room intended for passengers who use wheelchairs.

Result and Discussion

Result of the Research in Jabodetabek

This study aims to determine the customer satisfaction of the Jabodetabek electric train service users, especially across Jakarta Kota – Bogor, with several respondents as many as 100 people. Data collection was carried out by distributing questionnaires.

Validity Test

This validity test is carried out by looking for the Product Moment correlation value, with a significance level (α) = 5% and a degree of validity (DK = n-2). Validity testing was carried out using SPSS for Windows 25.0, with the following results:

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Table 2. Service Validity Test Results and Interests

No.	Service Attributes	Service	Interest	Validity
A	Tangible			
1.	Vehicle Parking Space	0.389	0.357	Valid
2.	Station Cleanliness	0.519	0.267	Valid
3.	Clean and Comfort Waiting Room	0.578	0.433	Valid
4.	Clean and Comfort Toilet and Musholla	0.415	0.274	Valid
5.	Information on Train Services	0.643	0.373	Valid
В	Reliability			
6.	Ease of reaching the station location	0.584	0.443	Valid
7.	Availability of information related to the train schedule	0.393	0.466	Valid
8.	Accuracy of train travel schedule	0.563	0.393	Valid
9.	Ease of going up and downstairs, lifts, and escalators	0.596	0.362	Valid
10.	Availability of adequate train ticket purchase counters	0.544	0.262	Valid
C	Responsiveness			
11.	Readiness of officers in providing services for	0.572	0.326	Valid
	customers			
12.	Accuracy in providing the information customers need	0.568	0.427	Valid

Based on the results of the analysis in Table 2, it can be seen that each item of service and interest questions shows that each question item has an r count > from the r table (0.195). Therefore, it can be concluded that the results of the validity test on services and interests are declared valid.

Analysis of the Customer Satisfaction Index (CSI) Test Method

Satisfaction or dissatisfaction is a person's feelings of pleasure and disappointment that come from a comparison between his impressions of the expected performance, the Customer Satisfaction Index (CSI) is an analytical tool that can show the level of satisfaction of respondents with the Jakarta City - Bogor Electric Rail Train facilities. The calculation of the Customer Satisfaction Index (CSI) is carried out in the following stages:

- 1. Determining meaningful questions of expectations/interests and perceptions/performance
- 2. Determining the Mean Importance Score (MIS)
- 3. Determining the Mean Satisfaction score (MSS)
- 4. Determining the Weight Factor (WF)
- 5. Determining the Weight Score (WS)
- 6. Determining the Customer Satisfaction Index (CSI) Expectations/Interests and Perceptions/Performance questions are as follows:
- 1. Availability of toilets at the station.
- 2. Easy to find directions signage at station.
- 3. Air conditioning facilities in the commuter line circuit when running a maximum of 27°.
- 4. The condition of the station is always clean and controlled during the operating hours of the commuter line train.
- 5. The condition of the commuter line circuit is clean.
- 6. The availability of prioritized seats for the elderly, disabled, pregnant women, pregnant women, and mothers carrying toddlers at the station.
- 7. The availability of prioritized seats for the elderly, disabled, pregnant women, and mothers carrying toddlers on the train.
- 8. Availability of a special room intended for users who use wheelchairs.

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- 9. The user's exit or entry door works fine.

 Perception/performance questions are as follows:
- 1. The ability of officers to provide information to electric train users in easy-to-understand language.
- 2. The alertness of security officers in assisting electric train users at stations.
- 3. Officers provide clear information on Evacuation Procedures.
- 4. Availability of security officers in every series of commuter line trains.
- 5. The arrival of the commuter line train came on time.
- 6. Availability of departure information or disruption to the electric train at the station.
- 7. Information on stations to be stopped/passed by is clear/and easy to understand.
- 8. The commuter line train leaves on time.
- 9. Clear train travel disruption information.

Determining the Customer Satisfaction Index (SCI)

The Mean Importance Score (MIS) is the average value of the respondent's expectation level for each variable or attribute. Based on these 100 respondents, the average value or Mean Importance Score (MIS) was obtained.

Determining the Weight Factor (WF), this score is the percentage of the MIS value of the attribute to the total MIS of all attributes. The total Mean Importance Score (MIS) is 28.23. Determining the Weight Score (WS), this score is the multiplication of the Weight Factor (WF) with the average level of satisfaction felt by respondents as the Mean Satisfaction Score (MSS).

The consumer satisfaction scale commonly used in index interpretation is a scale of zero (0) to one (1) or zero (0) to one hundred (100). Based on Weight Score (WS), obtained total the value of Weight Score (WS) is 315.36. So that the value of customer satisfaction obtained is 63.07% or can be declared satisfied. Based on the level of customer satisfaction, it is stated that the percentage of satisfaction is at 60% < CSI 80%. The results obtained are 63.07% so it is following the indicators of the level of customer satisfaction which is still in the range of 60% < CSI 80%.

Results of the Research in Kuala Lumpur

The G-Power analysis is used to estimate the efficiency of the sample size and the minimum difference of respondents that would be considered important by researchers. The effect size calculation is 0.2251670 if the sample size is 204. According to Cohen (1988), an effect size of more than 0.2 can be considered a small effect size which indicates the sample size is sufficient for this research in a small group population.

Based on the results, the correlation of all relationships between the 5 dimensions of service quality towards passengers' satisfaction was significant (p-value<0.01 between the data sets. The test shows that empathy had the strongest relationship (rs=0.732) with passengers' satisfaction. While the second and third stronger relationships were responsiveness and assurance with the correlation coefficient values of 0.721 and 0.702. Moreover, the lowest correlation coefficient value (rs=0.575) was tangibility, and the reliability was the second-lowest value (rs=0.649) with moderate correlation.

From the test, the relationship between train comfort including noise, vibration, design layout, and speed towards passengers' satisfaction was significant (p-value<0.01). The highest correlation coefficient value was vibration (rs=0.740), while the second-highest was design layout (rs=0.723). Noise and speed had a moderate correlation of relationship with the correlation coefficient value were 0.617 and 0.665. In summary, vibration and design layout showed a strong correlation with passenger satisfaction thus noise and speed displayed had a moderate relationship to the strength of correlation.

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Discussion

Based on the expectations/interests of users of the Jakarta Kota – Bogor Electric Rail Train they are satisfied with the services provided by PT. KCI has fulfilled the perception/performance, it can be stated by the level of customer satisfaction reaching 63.07% or satisfied. There are 36.93% dissatisfied customers, therefore PT KCI needs to improve performance and maintain existing performance. Several items that indicate customer dissatisfaction can be found in the questions of hope/interest with a Mean Importance Score (MIS) of 2.86, namely the state of the clean commuter line circuit and the availability of places, priority seating for the elderly, disabled, pregnant women, and mothers carrying toddlers in the train. Meanwhile, items that indicate customer dissatisfaction can be found in perceptual/performance questions with a Mean Satisfaction Score (MSS) of 2.81, namely the commuter line train departs on time.

Based on several items that indicate customer dissatisfaction, it is necessary to make improvements such as increasing the frequency schedule for the Jakarta Kota – Bogor Electric Rail Train, increasing timeliness with a predetermined schedule, and increasing the number of circuits in a series of Jakarta Kota Electric Rail Train. Bogor, which still has 8 or 10 units, becomes 12 units and minimizes travel disturbances.

Meanwhile, several items that become the main priority in improving service performance are the punctuality of arriving according to schedule, the speed and response of the officers, the certainty of the time of delivery of information, and the friendliness of the officers. Items that must be maintained in its performance are the cleanliness of trains and stations, security, and courtesy of officers. There are also service items that have a low priority that must be improved, including the completeness of the facilities, the follow-up to the complaint process, the skills of the officers, the care of the officers, and the attention of the officers.

The research result in Kuala Lumpur shows that the three objectives have been achieved and the nine hypotheses developed were accepted through this study. The passengers' satisfaction has a significant strong relationship with H2 (reliability), H3 (responsiveness), H4 (empathy), H7 (vibration), and H8 (design layout). Therefore, the findings of this study could help the KTMB to improve their train comfort. The findings were also aligned with the complaints and previous findings. This research used the SERVQUAL model that is aligned with previous theories which are useful to evaluate the service quality of the rail transport system. The study showed that the relation between the SERVQUAL model and the level of satisfaction can be determined by the level of overall service quality and train comfort. Lastly, ETS should be evaluated in a wider context, not only focusing on the service quality and train comfort dimensions that were used in the current study.

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