

## Passenger perception of commuter line service quality in Indonesia

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### CHRONICLE

### ABSTRACT

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This research aimed to study the opinion and perspectives of Commuter Line passengers in Indonesia by using 18 attributes of service quality. There still needed to be more understanding about which service attributes were less satisfying and which were more pleasing to the Commuter Line passengers in the area of Jakarta and its surroundings. This research used factor analysis and Principal Component Analysis to select among the 18 Commuter Line service quality variables with the Varimax and Ordered Logit model rotation method. The number of samples used was 384 respondents from Commuter Line passengers in Jakarta and its surroundings. The result of factor analysis stated that the 18 attributes of service quality with three factors were the main attributes of service quality being used, namely the factor of station facilities and passenger behavior, the factor of ticket and security system, and they had reasonably strong correlations. The key finding of this research was that some service quality attributes, such as the crowd or density of trains, station stair facility, station lift facility, station seat facility, and shelter, were perceived as the attributes of service that were less satisfying. This research provided valuable insights into important factors affecting the opinion and perspective of Commuter Line passengers in Jakarta and its surroundings.

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## 1. Introduction

Today, the Commuter Line is becoming a more and more reliable transportation mode for urban people to have secure, comfortable, and free-of-traffic-jam mobility. The mission is to provide Commuter Line service prioritizing safety, service, comfort, punctuality, and environmental insights. The number of Commuter Line passengers in Jakarta and its surroundings has ever decreased drastically in 2020 and 2021 due to the global Covid-19 pandemic, which in 2022 has begun to subside. Therefore, the number of Commuter Line passengers in Jakarta and its surroundings is expected to increase. The increasing number of passengers will indeed affect the service quality, especially the crowd of passengers inside the train and in the station. However, more service performance is needed from the passenger perspective (Ricardianto et al., 2021). There still needs to be more understanding about which service attributes are less satisfying and which are more satisfying to the passengers. One is related to the separation of passenger entrance and exit aimed to reduce the density due to the shared accesses in and out for passengers. Likewise, the additional fleets of Commuter Line and loop line construction are intended to increase the traffic capacity and frequency of train departures to shorten each departure's headway. Kereta Commuter

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Indonesia (KCI) performs an annual survey on customer satisfaction by using several methods, such as the measurements of the Customer Satisfaction Index (CSI), Customer Dissatisfaction Index (CDI), and Hassle-Free Index (HFI) intended to know the customer expectations. The survey result is subsequently reported to the Management for evaluation and improvement. From the 12 attributes that KCI has measured in the survey, there has been no mapping of attributes which is the most important and influential to the satisfaction of Commuter Line passengers in Jakarta, the area, and its surroundings.

In general, the research by Marteache et al. (2015) states that if stress occurs among passengers due to crowds or deteriorating punctuality performance, a negative perception of safety can grow and become a barrier to using public transportation. In their research, Khalid et al. (2014) found that crowded buses impact the increased waiting time and cause delays that can subsequently cause discomfort and influence safety and security. Furthermore, Mandhani et al. (2021) find that male people consider passenger convenience. In contrast, female people consider service availability the most influential factor in explaining service quality. This subsequently contributes to the delivery of effective and healthy public transportation services, which is why it attracts more passengers to the system (Imaz et al., 2015).

Research by Bakti et al. (2020) develops a different model from the model of service quality perceived by the existing train passengers by involving not only utilitarian dimensions but also hedonic dimensions and variables of filter that can affect the perception of service quality. Meanwhile, the research, especially around Jakarta, Dziekan (2008) states that passenger experience-based performance measurements can explain the service quality of Jabodetabek Commuter Line because the service quality of public transportation and passenger satisfaction has a direct relation. In general, De Ona et al. (2015) summarize the evolution of today's research and thoughts on different methodological approaches for service quality evaluation in the public transportation sector for years and discuss the future direction. The performance measurement based on passenger experience is carried out through passenger opinion and perspective as well as their emotional judgment on service, which can be explained by like and dislike or agree and disagree with the attribute (Ricardianto et al., 2023; Dabholkar et al., 2000; De Ona et al., 2015; Jen et al., 2011; Mandhani et al., 2021). Jen et al. (2011) try to improve the understanding of the intention of passenger behavior by proposing an integrated framework of attitude perspective. The research finding by Mandhani et al. (2021) explains that male people consider passenger convenience. In contrast, female people consider service availability the most influential factor in explaining service quality.

This research will explore passengers' opinions, perspectives, and satisfaction with service quality attributes using the Commuter Line in Jakarta and its surroundings as a case study. Furthermore, this research also aims to know the influence of socio-demographic factors and the characteristics of passenger travel against their satisfaction by calibrating the model in which complete satisfaction is considered a dependent variable. The result of this research contributes to fulfilling the literature gap, improves today's service quality, and gives insights into the Commuter Line extension in the area of Jakarta and its surroundings in the future.

Based on the description, this research identifies some problems: (1) KCI still needs to improve its services to reduce waiting time by increasing the frequency, adding more Commuter Line fleet in the area of Jakarta and its surroundings, as well as separating the doors to get in and get off; (2) Commuter Line in the area of Jakarta and its surroundings has not accommodated the need of all passengers yet. The level of satisfaction with service quality attributes varies depending on the social-economic characteristics, travel patterns, and passenger behavior; (3) Commuter Line Services in Jakarta and its surroundings have not considered the characteristics of all passengers. So, in order to improve the service quality and cope with the problems faced by passengers, the provider of Commuter Line Services in the area of Jakarta and its surroundings has to improve the services by reducing the waiting time, minimizing the passenger density, and improving the whole ticket and information system. It is only possible to examine some of the influential factors identified in the problem mentioned above in the research activity. Therefore, it needs problem limitation so that this research will focus on the presumably important variables. Problem limitation needs to be made because if all problems are researched, it will take a fairly long time, relatively high cost, and the researcher's ability to perform the research. In this research, the researchers limit the scope of the problem, that is, defining the attributes of service quality being used to distinguish the level close to the dependent variable used to measure latent variables.

## 2. Literature Review

### 2.1 Service Quality

The increasingly tight business competition makes companies adopt strategies to differentiate themselves, one of which is to provide excellent services (Fatmawatie & Endri, 2022). According to Parasuraman (2010), service quality is a function of the difference between the expected services and customer perception of the actual services delivered. The main objective of understanding public transportation service quality is to help policymakers and service providers increase the attractiveness of service and the number of passengers (De Ona et al., 2015). The Commuter Line's service quality in Jakarta and its surroundings can be understood through a performance measurement based on passenger experience (Dziekan, 2008). According to Tsoukatos and Mastroianni (2010), customers compare the delivery of essential services and their expectations formed by experience, memory, and mouth-to-mouth. Passengers can evaluate whether the service meets their expectations

or not (Eboli & Mazzulla, 2012; Eboli et al., 2016; Parasuraman et al., 2005). Identifying customer perception of public transportation is very important because people use public transportation only if the public transportation system is considered safe and working efficiently (Marache et al., 2015).

## 2.2 Customer Satisfaction

According to Kotler and Caslione (2009), and Zineldin (2000), satisfaction is someone's feeling of pleasure or disappointment resulting from comparing the performance of a product in relation to his expectation. Satisfaction, according to Colquitt et al. (2015), Kotler and Keller (2016), and Oliver (2010), is delightful fulfillment, that is, satisfying passenger expectations. Satisfied passengers with their work will be more innovative and productive than those unsatisfied (Mwesigwa et al., 2020). Customer satisfaction is generally based on the idea that businesses must satisfy their customers to be sustainable and profitable (Pahala et al., 2021; Izogo & Ogba, 2015; Shin & Elliott, 2001). In addition, researchers Cronin and Taylor (2014) agree that the intention of repeat purchases is much related to customer satisfaction. Farris et al. (2010) describe customer satisfaction as the result of customer experience with the company. Park (2007) and Park and De (2015) add that passenger satisfaction is very important in marketing and aims to improve the company's quality. Passenger satisfaction becomes a determining factor in getting new and retaining new passengers (Ricardianti et al., 2022; Javid et al., 2013; Luthans, 2015). Satisfaction can also be measured by surveying customer perceptions about the services delivered (Mansur et al., 2021; Nandan, 2010; Sachdev & Verma, 2004).

## 2.3 Attributes of Service Quality

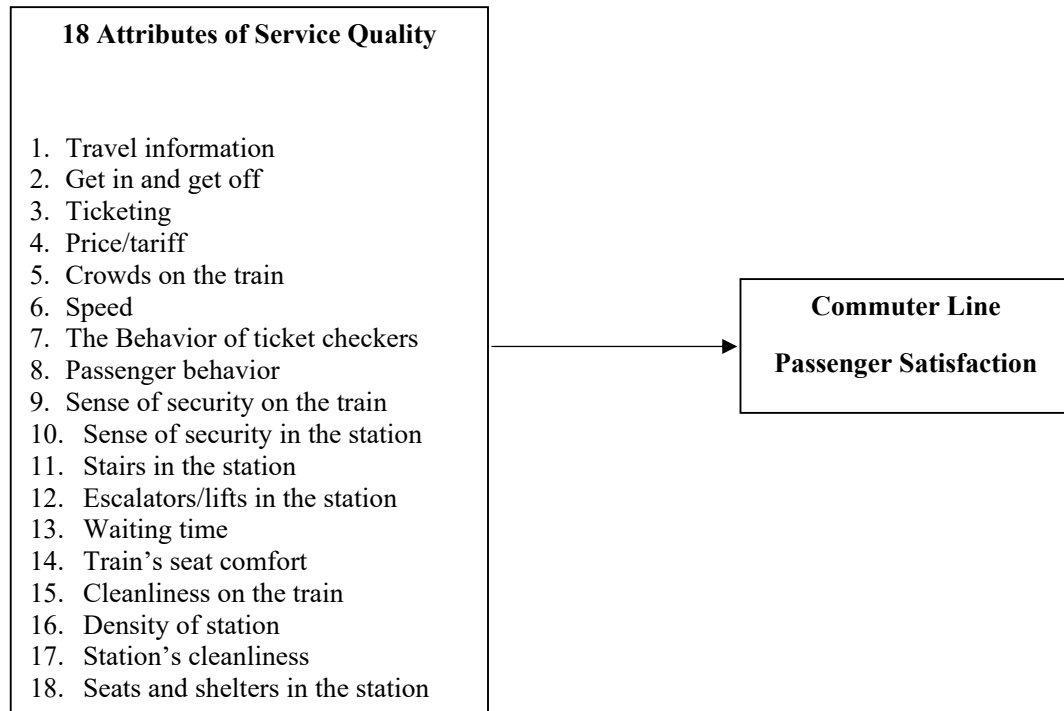
Many types of research show that to measure service quality, and we propose a comprehensive model of ten service quality attributes; (1) physical evidence, (2) reliability, (3) responsiveness, (4) understanding customers, (5) access, (6) communication, (7) credibility, (8) security, (9) competence, and (10) respect. The same model is then simplified and named SERVQUAL (Parasuraman, 2010) and reduced to become five dimensions, namely (1) physical evidence, (2) reliability, (3) responsiveness, (4) guarantee, and (5) empathy. The scale of SERVQUAL has been widely recognized by academicians, researchers, and practitioners in various fields and countries (Butt & de Run, 2010; Wu & Ko, 2013). For example, his research Saputra (2010) explains 20 attributes of service quality, including six factors of service quality attributes for commuter class, seven factors for business class, and seven factors for executive class, which affect Commuter trains, Business trains, and Executive trains.

Another study by Wang et al. (2018) related to the service quality attributes of Malaysian Light Rail Transit (LRT) finds that, in general, passengers are satisfied with its facilities, comfort, information delivery, and service price. Whereas efficiency, staff service, and safety proved to be unsatisfactory factors of the LRT. Likewise, a study by Irfan et al. (2012) identifies the main determiners that affect commuter satisfaction with the service such as responsiveness, security, information, and punctuality. Meanwhile, Khalid et al. (2014) use punctuality, ticket system, delay, train frequency, safety elements, and comfort to study the perception of passengers about train services based on their personal experience and direct interaction with the system. Furthermore, Zhen et al. (2018) explain that their study shows that express train services must keep some attributes of high operational speed performance and frequent services, ticket purchase convenience, easy travel access, and the cleanliness of railway coaches to make passengers happy and satisfied.

The aims of this research are; (1) To obtain practical information on the influence of 18 quality attributes on the passenger satisfaction of Commuter Line in the area of Jakarta and its surroundings through factor analysis; (2) To obtain practical information on the influence of 18 quality attributes on the passenger satisfaction of Commuter Line in the area of Jakarta and its surroundings through the coefficient of correlation; dan (3) To obtain empirical information on the influence of 18 quality attributes on the passenger satisfaction of Commuter Line in the area of Jakarta and its surroundings through ordered logit model.

## 2.4 Framework of Thinking

Research on the Commuter Line in the area of Jakarta and its surroundings still needs to be improved in number, especially those studying the opinion and perspective of passengers of this service by using 18 attributes of quality. Therefore, factor analysis and an ordered logit model are used in this research. The factor analysis, through its main components, is used to extract the most important satisfaction factor among the 18 attributes: (1) travel information, (2) get in and get off, (3) ticketing, (4) price/tariff, (5) crowds in the train, (6) speed, (7) behavior of ticket checkers, (8) passenger behavior, (9) sense of security in the train, (10) sense of security in the station, (11) station stairs, (12) escalators/lifts in the station, (13) waiting time, (14) train's seat comfortability, (15) cleanliness in the railway coach, (16) station density, (17) station cleanliness, and (18) seats and shelters in the station.



**Fig. 1.** Research Flow Chart

### 2.5 Hypotheses

Based on that thinking, hypotheses can be formulated, which are temporary answers to the research questions, as follows:

**H<sub>1</sub>:** *There are influences of the 18 service quality attributes through factor analysis of passenger satisfaction.*

**H<sub>2</sub>:** *There are influences of the 18 attributes of service quality through the coefficient of correlation with passenger satisfaction.*

**H<sub>3</sub>:** *There are influences of the 18 attributes of service quality through the ordered logit model on passenger satisfaction.*

### 3. Research Methods

Data from the Commuter Line in Jakarta and its surroundings in Indonesia during 2019 showed an average daily number of passengers of as many as 979,853 passengers on working days, with the record of the most passengers served in a day, reaching 1,154,080. The number varied monthly, but always more than 900,000 per day. The population was very big. So, to determine the sample to be taken, the formulation of Cochran was used. Thus, the minimum number of samples used in this research was as many as 384 respondents. Using Principal Component Analysis (PCA) with the method of Varimax rotation and Kaiser normalization at the eigenvalue of more than one, the 18 service parameters were minimized, selecting those the most important. Before doing the factor analysis, KMO and Bartlett tests against 18 service attributes were performed first. Such testing is a prerequisite for factor analysis to be able to be done. Then, the Ordered Logit Model was used based on the most critical variable resulting from the factor analysis; the researchers examined the correlation between passengers' social-economic characteristics and satisfaction levels. The passenger perception was modeled based on the responses ranked by the survey of the essential variables of satisfaction screened by the factor analysis. The obtained model needed a significance test by statistical testing through simultaneous tests to wholly check coefficient  $\beta$ 's meaningfulness. Partial tests were also used to show whether a predicting variable was significant or eligible or not for entering the model.

### 4. Results and Discussion

The result of the survey using the Likert scale measurement indicates that respondents feel very satisfied with the service quality attributes of travel information, get in and get off, of which the percentage is higher than 30%. For the attributes of service quality such as train seat comfort, cleanliness in the train, ticket service, and price or tariff, respondents feel very satisfied, of which the percentage is higher than 20%. Whereas for the service quality attribute of train speed, respondents feel very satisfied, of which the percentage is 14.8%. Respondents still feel less satisfied with some service quality attributes, of which the percentage is more than 10%, such as lift facility in the station as high as 19.3%, seat facility and shelter in the station as high as 14.1%, crowd/density in the train as high as 13.3%, and stair facility in the station as high as 12.8%.

#### 4.1 Result of Factor Analysis

Factor analysis is used to reduce the 18 service quality variables to become a small number of essential factors and to identify the variable affecting the satisfaction among Commuter Line passengers in Jakarta and its surrounding areas. The identified influential factors are then related to the social economy variable to understand satisfaction based on passenger characteristics. Thus, all 18 service attributes are performed in the factor analysis by analyzing main components using the method of Varimax rotation and normalization of Kaiser in the eigenvalue higher than one.

**Table 1**  
Anti-Image Correlation

Attribute	Anti-Image Correlation	Remarks
Travel information	0.969	Fulfill
Get in and Get off	0.965	Fulfill
Ticket service	0.973	Fulfill
Price/Tariff	0.971	Fulfill
Crowd/Density of the train	0.962	Fulfill
Train speed	0.973	Fulfill
The Behavior of the ticket checker	0.961	Fulfill
Passenger behavior	0.924	Fulfill
Feeling secure on the train	0.971	Fulfill
Feeling secure in the station	0.963	Fulfill
Stair facility in the station	0.917	Fulfill
The lift facility in the station	0.898	Fulfill
Train waiting time	0.982	Fulfill
Train's seat comfort	0.954	Fulfill
Cleanliness on the train	0.943	Fulfill
Crowd/density of station	0.974	Fulfill
Station cleanliness	0.903	Fulfill
Seat facility and shelter in the station	0.896	Fulfill

**Table 2**  
Communalities

	Initial	Extraction
Travel information	1.000	.831
Get in and get off	1.000	.832
Ticket service	1.000	.808
Price/Tariff	1.000	.797
Crowd/Density of the train	1.000	.627
Train speed	1.000	.762
The Behavior of the ticket checker	1.000	.706
Passenger behavior	1.000	.625
Feeling secure on the train	1.000	.700
Feeling secure in the station	1.000	.614
Stair facility in the station	1.000	.789
The lift facility in the station	1.000	.786
Train waiting time	1.000	.732
Train's seat comfort	1.000	.862
Cleanliness on the train	1.000	.851
Crowd/density of station	1.000	.704
Station cleanliness	1.000	.843
Seat facility and shelter in the station	1.000	.837

Extraction Method: Principal Component Analysis.

**Table 3**  
Rotated Component Matrix

	Component		
	1	2	3
Travel information	.818	.359	.180
Get in. Get off	.828	.340	.174
Ticket service	.839	.296	.127
Price/Tariff	.820	.236	.264
Crowd/Density of the train	.382	.672	.173
Train speed	.777	.223	.328
The behavior of ticket checker	.729	.273	.316
Passenger behavior	.403	.644	.218
Feeling secure on the train	.604	.568	.112
Feeling secure in the station	.574	.460	.271
Stair facility in the station	.342	.800	.179
The lift facility in the station	.201	.819	.274
Train waiting time	.639	.444	.355
Train's seat comfort	.796	.441	.186
Cleanliness on the train	.804	.396	.220
Crowds/density of station	.528	.244	.605
Station cleanliness	.268	.202	.855
Seat facility and shelter in the station	.146	.232	.873

Based on the KMO and Barlett tests, it is found that the value of KMO is 0.954, more significant than 0.5, and the significance value of Bartlett is 0.000, which is less than the level of significance at 0.05. So, this factor analysis is valid to continue. Then, the value of MSA is found from the Anti-Image Correlation table for all the attributes having a value bigger than 0.5. Thus, all the service attributes that have been studied fulfill the requirements for implementing the factor analysis processing (Table 1). Finally, based on the commonality factor analysis, the value of Extraction is found in all attributes bigger than 0.5. So, all the attributes can explain the factors that will be formed (Table 2). Based on the calculation, there are three factors having Eigenvalues bigger than 1. So, the 18 attributes used in factor analysis succeeded in forming three factors that can explain the attributes. Factor 1 has a variance percentage value of 62.911, whereas Factor 2 has a variance percentage value of 7.319, and Factor 3 has a variance percentage value of 5.909. Therefore, these three factors explain 76.140% of the service attributes used. The rotated Component Matrix determines to which factor each service attribute will enter, and the value of the correlation coefficient of each attribute should be more significant than 0.5 (Table 3). The determination is based on the most significant correlation value among the three factors. For example, in the first service attribute, namely travel information, the values of the correlation coefficient in Factor 1, Factor 2, and Factor 3 are as big as 0.818, 0.359, and 0.180, respectively. So, the service attribute of Travel Information enters Factor 1. This applies the same to all the service attributes. Then, from the factor analysis result, the factor formers component can be found (Table 4).

**Table 4**  
Result of Factor analysis toward 18 Attributes of Service Quality

Factors	Loaded Variables	Factor Loading	Eigenvalue	Percentage Variants
Factor 1: Ticket system and security	Ticket service	0.839	11.324	62.911%
	Get in and get off	0.828		
	Tariff	0.820		
	Travel Information	0.818		
	Cleanliness on the train	0.804		
	Train's seat comfort	0.796		
	Train speed	0.777		
	The behavior of ticket checker	0.729		
	Train waiting time	0.639		
	Sense of security on the train	0.604		
	Sense of security in the Station	0.574		
Factor 2: Station facilities and passenger behavior	Lift facility in the Station	0.819	1.317	7.319%
	Stair facility in the Station	0.800		
	Crowd/Density in the train	0.672		
	Passenger behavior	0.644		
Factor 3: Station cleanliness and seat facilities	Seat facility and shelter in the Station	0.873	1.064	5.909%
	Station cleanliness	0.855		
	Crowd/density in the Station	0.605		

Factor 1 includes the attributes related to the ticket system, train cleanliness, and sense of security in the train and the station. Then, factor 1 can be called the perception of the ticket system and security. Factor 1 has eleven variables that are more important for passengers than the other factors, with a variant of 62.911%. Thus, 62.911% of satisfaction variation is affected by the eleven variables under factor 1. The variable of factor 1 is considered the most influential in comparison with the other factors because the eigenvalue is 11.324. In addition, ticket service is a significant and influential variable, with a loading score of 0.836. The eleven variables are the most critical variables that affect the satisfaction of Commuter Line service passengers in the area of Jakarta and its surroundings.

The second factor, labeled as station facilities and passenger behavior, is also essential in affecting satisfaction with the eigenvalue of 1.317 and influence variant of 7.319%. This factor includes four variables, namely the lift facility in the station with a loading score of 0.819, the stair facility in the station with a loading score of 0.800, crowd/density in the train with a loading score of 0.672, and passenger behavior with a loading score of 0.644. Finally, the third factor is related to cleanliness and seat facility in the station, which consists of three variables, namely seat facility and shelter in the station with a loading score of 0.873, station cleanliness with a loading score of 0.855, and crowd/density in the station with a loading score of 0.605.

#### 4.2 This resulted in a Coefficient of Correlation.

Based on the significance value Sig. (2-tailed), three factors, namely (1) Ticket system and security, (2) Station facilities and passenger behavior, and (3) Station cleanliness and seat facility have an inter-variable correlation connected by Sig. (2-tailed) < 0.05. Based on the value of  $r_{\text{statistic}}$  (Pearson Correlations): the three factors have an inter-variable correlation connected by  $r_{\text{statistic}} > r_{\text{table}}$  (0.10; 384). The three factors show the correlation at the significance of 5% or 0.05 in the value of Pearson Correlation. So, there is a correlation among the variables analyzed. Based on the analysis of the correlation coefficient, it can be concluded that the three factors have a correlation with the results; (1) The factor of station facilities and passenger behavior and the factor of station cleanliness and seat facilities have a reasonably strong correlation with the factor of the ticket system and security; (2) The factor of the ticket system and security and the factor of station cleanliness and seat facilities have a reasonably strong correlation with the factor of station facilities and passenger behavior; and (3) The factor of the ticket system and security, and the factor of station facilities and passenger behavior have a reasonably strong correlation with station cleanliness and seat facilities.

#### 4.3 Results of Ordered Logit Model

Ordered logit model is based on the three factors of satisfaction identified by the process of factor reduction. The value of variables in each factor is averaged to be the dependent variable and nine predictors as explanatory/independent variables are used in the analysis. In order to analyze the assumption of parallel lines, it is possible to distribute the log using the chi-square test.

##### 4.3.1 Factor 1. Ticket System and Security

Based on the results of analysis through the parallel lines test, it is found that the  $p_{\text{-value}}$  is less than the level of significance at 0.05, which is 0.013. From the output, the  $p_{\text{-value}}$  of Deviance Chi-Square is found as 0.878, which is bigger than the significance level at 0.05. So, this model is appropriate to be used for analysis. Based on the result of analysis through a simultaneous test, it is found that the  $p_{\text{-value}}$  is less than the level of significance at 0.05, which is 0.000. Based on the model determination

coefficient analysis, the value of  $R_{\text{Square}}$  Nagelkerke is 0.586. This means that the independent variables contribute to explaining the dependent variable, as many as 58.6% and 41.4%, and the other variables outside this model explain the rest.

#### 4.3.2 Factor 2. Station Facilities and Passenger Behaviour

Based on the result of analysis through the parallel lines test, the  $p_{\text{-value}}$  is less than the significance level at 0.05, which is 0.001. Based on the calculation of Goodness-of-Fit, the  $p_{\text{-value}}$  of Deviance Chi-Square is found to be as many as 1, bigger than the significance level at 0.05. Therefore, this model is appropriate for analysis. Based on the analysis result through the simultaneous tests, the  $p_{\text{-value}}$  is less than the significance level at 0.05, which is 0.000. It can be concluded that, simultaneously, the significance of the independent variable affects the dependent variable. Based on the model determination coefficient analysis, the value of  $R_{\text{Square}}$  Nagelkerke is 0.375. This means that independent variables contribute to explaining the dependent variable, as many as 37.5%.

#### 4.3.3 Factor 3. Station Cleanliness and Seat Facilities

Based on the analysis result through the parallel lines test, the  $p_{\text{-value}}$  is less than the significance level at 0.05, which is 0.000. Based on the Goodness of Fit Test, the  $p_{\text{-value}}$  of Deviance Chi-Square is as big as 1, more significant than the significance level at 0.05. So, it fails to reject  $H_0$ . Therefore, this model is appropriate for analysis. Based on the result of analysis through simultaneous tests, the  $p_{\text{-value}}$  is less than the significance level at 0.05, which is 0.000. At least the significance of independent variables simultaneously affects the dependent variable. Based on the model determination coefficient analysis, the value of  $R_{\text{Square}}$  Nagelkerke is obtained as big as 0.375. This means that independent variables have contributions in explaining the dependent variable, as many as 40.9%.

#### 4.4 Discussion

The result of this research shows that the attributes of travel information, get in and get off, cleanliness in the train, train's seat comfort, ticket service, tariff, and train speed are the attributes of service quality that somewhat satisfy the passengers of Commuter Line in the area of Jakarta and its surroundings. However, these variables are listed in the bottom position in the factor analysis, indicating that their influence on passenger perception has decreased because the respondents were satisfied with these attributes. On the other hand, the station lift facility, the crowd in the train, station seat facility and shelter, as well as the station stair facility, are the attributes of service quality of the Commuter Line in the area of Jakarta and its surroundings which are not so satisfying, which affect the whole passenger perception of the service. The Commuter Line's long waiting time in Jakarta and its surroundings, along with the high demand in the rush hours, make it higher density. Inappropriate density and passenger behavior generate more attention to safety and security and make people reluctant to use commuter lines in the area of Jakarta and its surroundings.

This research aligns with the study by Parasuraman et al. (2005). Public transportation service quality and customer satisfaction have a direct relation. This research is in line with the study by some researchers like (Dabholkar et al., 2000; De Ona et al., 2015; Jen et al., 2011; Mandhani et al., 2021; Hailuddin et al., 2022) stating that the relationship is measured through passenger opinion and perspective as well as their emotional judgment on the service. Customer satisfaction, as the main intermediary goal in a service operation, is a performance evaluation for public transportation service to succeed (Ranaweera & Prabhu, 2003; Shin & Elliott, 2001). Consequently, if the delivered service is as expected by the customers, then the service provider is considered as providing quality service and contributing to positive perception (Indrasari et al., 2022; Joewono & Kubota, 2007; Lai & Chen, 2011). So, this research is in line with their studies. Furthermore, this research is in line with the study (Saputra, 2010) that six service quality attributes significantly affect customer satisfaction with the services of Kereta Api Indonesia for commuter class, business class, and executive class.

Likewise, Marteache et al. (2015) identify that a negative perception of safety can increase passenger stress because of density. It worsens the on-time performance and becomes a barrier to using public transportation. If the waiting time decreases, then the density can be reduced. Likewise, safety and security can be improved. For example, Fan et al. (2016) show that waiting is frequently considered a negative and significant obstacle for mode switching to transit. Longer waiting times will make the higher density of passengers. This affects the perception of public transportation safety, causing fear of criminal actions. Crime, if occurs, makes passengers more afraid of using transit services (Collins et al., 2013; Currie et al., 2013).

Ticket system and security, station facilities and passenger behavior, and station's cleanliness and seat facility are essential variables affecting passenger satisfaction. This finding is in line with the study (Karlsson & Larsson, 2010) as the leading indicator of public transportation service quality from the passenger perspective. This is also supported by the finding of Marinov et al. (2014). The study reveals that satisfaction factors such as the cleanliness of the train and station, ticket services, information availability, safety and security, price, and travel time affect satisfaction with light train transportation. Moreover, Susilo et al. (2010) show in their study in Jakarta, Bandung, and Yogyakarta, Indonesia, that passengers consider all the quality attributes. However, the most important are safety and security, comfort and cleanliness, frequency, and convenience ticket system.

As the passengers get older, negative perceptions of the Commuter Line in the area of Jakarta and its surroundings are more likely to form, so this research supports the finding (Haustein et al., 2013; Wong et al., 2017, 2018), stating that free of crime is "very important" for people above 65 years old. In their opinion, elderly passengers are considered to have limited transportation choices, and they depend on public transportation. Therefore, it needs public transportation policies to enhance the mobility of this type of passenger. In addition, density and the unavailability of seats contribute to negative perceptions. So, this research is in line with the study by Karlsson and Larsson (2010), stating that travel time is perceived to be longer, and it is considered as negative when there is no seat or when passengers must stand up during the travel. Besides that, travel time becomes a factor that affects the selection of transportation modes. This research prioritizes 18 attributes of service quality which have been in line with previous studies, namely: (1) travel information (De Ona et al., 2015); (2) get in and get off (Sultana et al., 2020); (3) ticketing; (Shen et al., 2016); (4) price/tariff (Mahmoud & Hine, 2013); (5) crowd in the train (Yanik et al., 2017); (6) speed (Shen et al., 2016), (7) behaviour of ticket checker (Shen et al., 2016); (8); passenger behaviour (De Ona et al., 2015), (9) sense of security in the train (De Ona et al., 2015), (10) sense of security in the station (De Ona et al., 2015); (11) station stairs (Chou & Kim, 2009); (12) station escalator/lift (Chou & Kim, 2009); (13) waiting time (Yanik et al., 2017); (14) train's seat comfort (Shen et al., 2016); (15) cleanliness in the train (De Ona et al., 2015), (16) station density (Yanik et al., 2017); (17) station cleanliness (De Ona et al., 2015); and (18) station seat and shelter (Shen et al., 2016).

## 5. Conclusion

The result of factor analysis states that 18 attributes of service quality succeed in forming three factors, namely the factor of station facilities and passenger behavior, the factor of ticket system and security, including the main attribute of service quality being used as many as 76.140%. Based on the correlation coefficient analysis, the factors of station facilities, passenger behavior, cleanliness, and station seat facility correlate reasonably strongly with the ticket system and security factor. The factors of the ticket system and security, cleanliness, and station seat facility have a reasonably strong correlation with the factor of station facilities and passenger behavior. The factor of the ticket system and security and the factor of station facilities and passenger behavior also has a reasonably strong correlation with the factor of cleanliness and station seat facility. With the method of the ordered logit model, the three factors are considered dependent variables, and nine independent variables are used for analysis. From the resulting analysis, for the factor of station facilities and passenger behavior, the independent variables have a contribution to explain the dependent variable as many as 58.6%; for the factor of station facilities and passenger behavior, the independent variables have a contribution to explain the dependent variable as many as 37.5 %; for the factor of cleanliness and station seat facility, the independent variables have a contribution to explaining the dependent variable as many as 40.9%.

From the resulting analysis, the independent variables explain the dependent variable as much as 58.6% for the factor of station facilities and passenger behavior. Also, the independent variables contribute to explaining the dependent variable, as many as 37.5 %. The factor of cleanliness and station seat facilities, the independent variables, have contributed to explaining the dependent variable by as many as 40.9%. This research also mentions that the Commuter Line in Jakarta and its surroundings have yet to fulfill the needs due to the density and frequency of the Commuter Line in the area of Jakarta and its surroundings. Some attributes of service quality, such as density in station lift facilities, station seat facilities, and shelters, are perceived as less satisfying service attributes. This research gives valuable insights into the critical factors affecting the opinion and perspective of Commuter Line passengers in Jakarta and its surroundings.

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