

Analysis of Passenger Satisfaction Level of Service And Facilities of Electric Rail Train (KRL) Commuter Line Route Bekasi - Manggarai

Andri Irfan Rifai and Yuditami Iressa Fajriliani

Faculty of Engineering, University Mercu Buana Jakarta, Indonesia
andriirfan@yahoo.com, iressafajr@gmail.com

Abstract

The train is considered to act as strategic public transport because of its ability to reduce congestion in urban areas. Various modes of transportation are in a race - a race to improve the quality of service that requires rail freight also needs to improve in all areas. Service is the main priority which is used as a benchmark in competitive advantages and facilities are factors that affect the services provided by the transport company. This is the underlying researchers to conduct research on passenger satisfaction ratings on the level of service performance and service facilities Commuter Line KRL Bekasi - Manggarai and to determine the factors affecting passenger satisfaction. Data obtained in the form of a survey by questionnaire online delivery methods. Methods of data analysis software used isms. Excel and SPSS software for statistical testing. The conclusions of the research by the method of Customer Satisfaction Index (CSI) obtained a passenger satisfaction index score of 76.11%. It is stated that the passengers very satisfied with the performance of services and facilities service station Commuter Line KRL Bekasi - Manggarai, only for the suitability of the train arrival and departure needs to be improved.

Keywords: Satisfaction, KRL Commuter Line, CSI

1. Introduction

Trains are considered to have several advantages over other public transportation, including the accuracy and speed of travel time, connectivity, compliance seating, ease of buying tickets, as well as the facilities available at the station or the train, KRL (Light rail) Commuter Line is one type of public transport is very desirable communities in Greater Jakarta. In addition to visits from the advantages owned railway, there are other considerations that attract people to use the Commuter Line KRL ie, at affordable rates.

In recent years, various modes of transport are in a race - a race to improve the quality of service which requires the need to improve rail transport in all fields. Service is the main priority which is used as a benchmark in competitive advantages and facilities are factors that affect the services provided by the transport company.

PT Kereta Api Indonesia, which is currently the only company that is engaged in the provision of services rail transport service, along with its subsidiary PT Kereta Commuter Indonesia is required to continue to improve in an effort to improve the delivery of public services and improve operational systems in order to produce the maximum satisfaction to service users or customers.

Based on the above, it is necessary to make a study in the form of thesis entitled "Analysis of Passenger Satisfaction Level Of Service Light rail (KRL) and Commuter Line These amenities Bekasi Station - Manggarai".

Based on the above, can be formulated issues to be used as materials research, among other things:

- a. How ratings passenger satisfaction with services and facilities to the Commuter Line KRL Bekasi - Manggarai?
- b. What are the factors that affect the performance of services and facilities to the Commuter Line KRL Bekasi - Manggarai?

The objectives of this study are as follows:

- a. Knowing the level of passenger satisfaction with the services and facilities the Commuter Line KRL Bekasi - Manggarai.
- b. Identify the factors that affect the performance of services and facilities to the Commuter Line KRL Bekasi - Manggarai.

2. Review of Literature

2.1 Quality of Service

Quality of service is defined as any consumer perceptions about a quality organization as technical or functional, product and services, delivery of services and environmental services, or reliability, responsiveness, empathy, assurance and tangibles incorporated in a service experience. The quality of a service is determined by how consumers view these services in accordance with the perception of each, according to Brady and Cronin. [1]

2.1.1 Model Serviquaal

Other service quality model is a model developed by Parasuraman et. al. (1988) which is also called the SERVQUAL. Parasuraman et. al. (1988) found 10 dimensions evaluating consumer criteria in determining the quality of service that tangibles. Reliability, Responsiveness, Competence, Courtesy, Credibility, Security, Access, Communication, Understanding the customer.

However, after further investigation, 10 of these dimensions into five dimensions. Dimensions tangibles, reliability, and responsiveness is maintained, then the other seven dimensions together and turned into a dimension of assurance and empathy. The fifth dimension then becomes dimensions of SERVQUAL. [2]

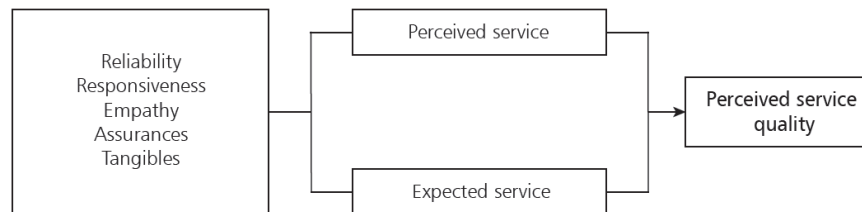


Figure 1. Model Servqual
Source: Polyakova & Mirza, 2015

2.1.2 Nordic Model

At first there were two primary dimensions in service quality. Grönroos (in Franciscus, Sukapto, & Sitompul, 2012) says that the dimensions of service quality consists of the functional quality and technical quality. Grönroos model is then referred to as the Nordic persepective. [2]

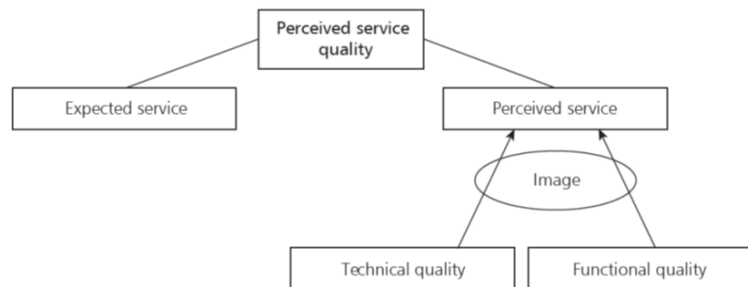


Figure 2. Model Nordic
Source: Polyakova & Mirza, 2015

2.1.3 Model Hierarchy

This method has the attributes are balanced to measure the quality of services at the traditional service company or any company that uses the services of consumer interaction for equipment (Pollack, 2009). Hierarchical Approach excess compared with the method of measuring the quality of other services is that this method also takes into account quality outcome. [2]

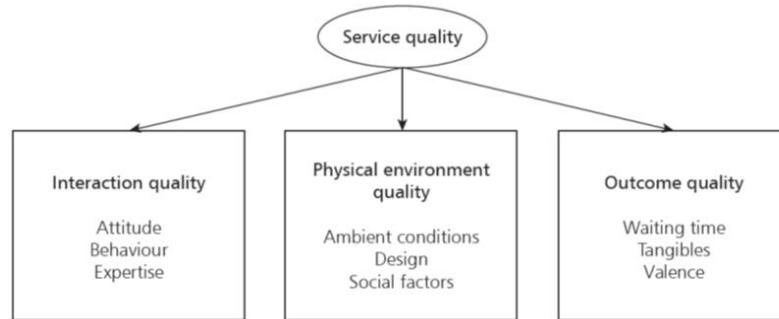


Figure 3. Model Hierarchy
Source: Polyakova & Mirza, 2015

2.1.4 Multilevel Model

Multilevel models introduced many dimensions of service quality perceptions or in other words, the retail service quality is viewed as the highest factor defined in the 2-level attributes. [2]

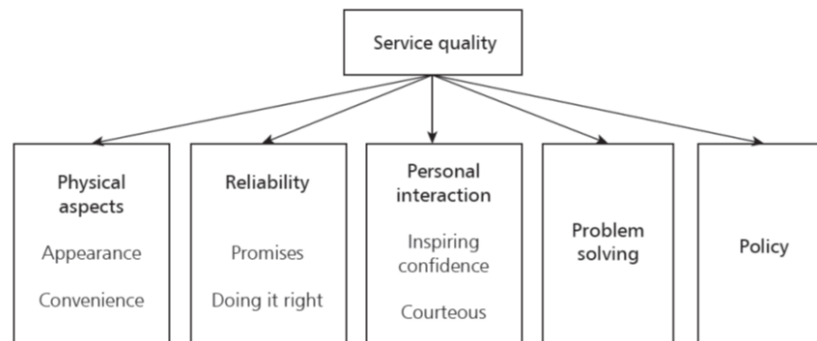


Figure 4. Multilevel Model
Source: Polyakova & Mirza, 2015

2.2 Customer Satisfaction

Satisfaction is the level of one's feelings after comparing the performance or results that he felt with his expectations. If the performance is as expected, then the customer will be satisfied. Conversely, if the performance below expectations, then the customer will be very disappointed. Whereas when performance exceeds expectations, the customer will be very satisfied because customer expectations can be shaped by past experiences, comments from relatives as well as appointments and information from various media.

Based on the description above, it can be concluded that satisfaction is feeling happy or satisfied individuals because between expectations and reality in wear and the services provided are met.

2.3 Understanding Light rail (KRL)

Light rail or abbreviated KRL, a moving train with electric motor propulsion system. In Indonesia, the electric train mainly found in the Greater Jakarta area, and an airport commuter trains.

2.4 Statistical Product and Service Solutions (SPSS)

Tests on this study, carried out using the software Statistical Productions and Service Solutions, commonly known by the SPSS, a processing program of statistical data from the application model descriptive statistics (mean, median, mode, quartiles, percentiles, range, distribution, variance, standard deviation, standard error, the slope value, etc.), statistical parametric (t-test, correlation, regression, aNOVA, etc.), as well as non-parametric statistical (test crosstab, binomial, chi-square, Kolmogorov Smirnov, and etc). After the data obtained in this study through a questionnaire respondents, the data is then tested by using SPSS to test the validity and reliability.

3. Methodology

Here is a flow chart of research that will be done:

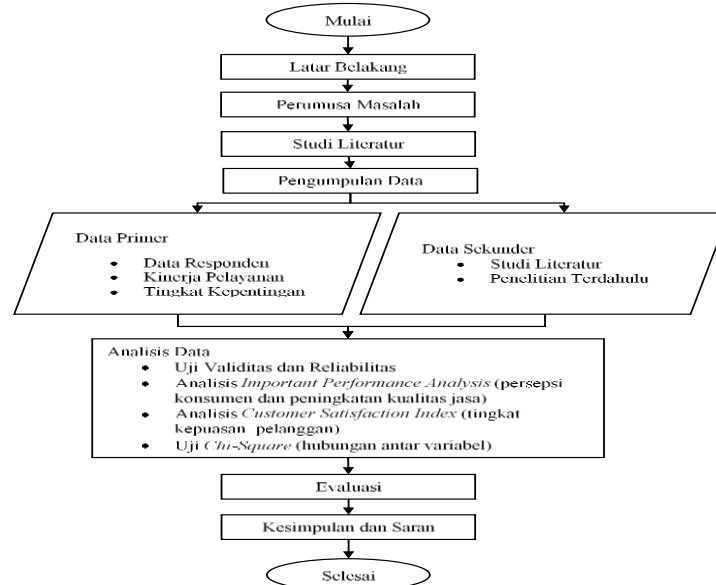


Figure 5. Flowchart research
Source: Processed Data Researcher, 2019

3.1 The location and time of the study

The research location is a place where researchers will conduct their research. This research was conducted at the station and in the Commuter Line KRL Bekasi - Manggarai. Where PT KCI as a service manager and service KRL Commuter Line.

- Where the research conducted along the route Commuter Line Bekasi - Manggarai.
- Research conducted since the month of September 2019 until January 2020.

3.2 Research Instruments

Data needed in this study derived from primary data and secondary data. Secondary data were obtained from literature by studying books and previous research related to the study. While primary data obtained from questionnaires.

3.3 Method of data analysis

3.3.1 Validity

Validity test is done to determine the extent of the measuring instrument (instrument) measure what you want measured. A validity test is used to calculate the value of the correlation (r) between the data on each question with a total score, then the correlation results than the critical value at significance level of 0.05 and 0.01, this calculation is called the product moment correlation calculation. Test the validity of this research is done by using SPSS software. The basis of the decision making in the validity of the test is:

- If the value $r_{hitung} > r_{tabel}$, then the item question or questions in the questionnaire correlated significantly to the total score (meaning an item questionnaire declared invalid).
- If the value $r_{hitung} < r_{tabel}$, then the item question or questions in the questionnaire did not correlate significantly to the total score (meaning the questionnaire item will be invalid).

3.3.2 Test reliability

Reliability testing is testing the accuracy, precision or accuracy ditunjukkan by the measurement instrument. Reliability tests performed to determine the extent to which a measurement tool is reliable and consistent if the measurement is done twice or more in the same population with the same measuring instrument. Reliability testing in this study using Cronbach Alpha method using SPSS software.

The reliability test conditions are as follows:

1. Cronbach Alpha value of < 0.6 indicates that no reliable research instrument
2. Cronbach Alpha value > 0.6 indicate that reliable research instrument

3.3.3 Important performance analysis

Importance Performance Analysis (IPA) is used to measure the relationship between consumer perceptions and priorities for improving the quality of products / services also known as the quadrant analysis. IPA combines measurements of factors importance and satisfaction level in 2-dimensional graphics ease of explanation data. This concordance rate determines the priority order of service affecting passenger satisfaction.

In this research there are two variables, the variables x and y variables which:

- a. Variable X is the level of quality of service
- b. Y is the level of passenger satisfaction

3.3.4 Chi square test

Chi Square test is a non-parametric statistical tests that can be applied to the test data nominal and nominal categorical. Chi Square test is used to examine the relationship between variables.

Basis for a decision:

By comparing the Chi Square count with Chi Square table

1. If the Chi Square count < Chi Square table. H0
2. If the Chi Square test > Chi Square table. H0 is rejected

4. Analysis and Results

Validity testing is done to determine the level of conformity among the items of research instruments, where a decision on an item can be considered valid question if $r_{hitung} > r_{tabel}$. Values obtained from Table Distribution r_{tabel} Value Significance 5% and 1% to the value of N is the number of respondents is 100 people and the significant value of 5%, obtained r_{tabel} 0.195. Testing the validity of using the Pearson product moment in SPSS.

The item questionnaire regarding service performance variable (variable X) is valid or invalid is presented as in the following table.

Table 1. Results of Test Validity Service Performance

No.	variable name	R Count	R Table	Information	No.	variable name	R Count	R Table	Information
1	X1B	.607	0.195	valid	21	X11B	0,745	0.195	valid
2	X1M	.493	0.195	valid	22	X11M	0,702	0.195	valid
3	X2B	.563	0.195	valid	23	X12B	.773	0.195	valid
4	X2M	0.659	0.195	valid	24	X12M	0,747	0.195	valid
5	X3B	0.605	0.195	valid	25	X13K	.609	0.195	valid
6	X3M	0,700	0.195	valid	26	X14K	0.647	0.195	valid
7	X4B	0.665	0.195	valid	27	X15K	.730	0.195	valid
8	X4M	.663	0.195	valid	28	X16K	0,629	0.195	valid
9	X5B	0.567	0.195	valid	29	X17K	.737	0.195	valid
10	X5M	0.506	0.195	valid	30	X18K	.748	0.195	valid
11	X6B	0.634	0.195	valid	31	X19K	0.785	0.195	valid
12	X6M	0.524	0.195	valid	32	X20K	0,646	0.195	valid
13	X7B	.673	0.195	valid	33	X21K	0.685	0.195	valid
14	X7M	0.672	0.195	valid	34	X22K	0.457	0.195	valid
15	X8B	0.593	0.195	valid	35	X23K	0.608	0.195	valid
16	X8M	0,641	0.195	valid	36	X24K	0,622	0.195	valid
17	X9B	0,687	0.195	valid	37	X25K	.561	0.195	valid
18	X9M	.720	0.195	valid	38	X26K	0.658	0.195	valid
19	X10B	.614	0.195	valid	39	X27K	0.683	0.195	valid
20	X10M	0.715	0.195	valid					

Source: Processed Data Researcher, 2019

Based on Table 1 are known from the 39 item questionnaire on the statement of service performance variable (variable X) has a value $r_{hitung} > r_{tabel}$ indicates that the statement items are considered as "valid".

To determine whether an item questionnaire statement on passenger satisfaction variable (Y) is valid or invalid is presented in the following table.

Table 2. Results of Test Validity Importance

No.	variable name	R Count	R Table	Information	No.	variable name	R Count	R Table	Information
1	Y1	0.752	0.195	valid	15	Y15	.903	0.195	valid
2	Y2	0.803	0.195	valid	16	Y16	0.823	0.195	valid
3	Y3	.851	0.195	valid	17	Y17	.863	0.195	valid
4	Y4	.846	0.195	valid	18	Y18	.787	0.195	valid
5	Y5	.684	0.195	valid	19	Y19	.851	0.195	valid
6	Y6	0.813	0.195	valid	20	Y20	0.782	0.195	valid
7	Y7	0.827	0.195	valid	21	Y21	0.831	0.195	valid
8	Y8	0.812	0.195	valid	22	Y22	.810	0.195	valid
9	Y9	0.858	0.195	valid	23	Y23	0.899	0.195	valid
10	Y10	0.822	0.195	valid	24	Y24	0.911	0.195	valid
11	Y11	0.782	0.195	valid	25	Y25	0.831	0.195	valid
12	Y12	.890	0.195	valid	26	Y26	0.886	0.195	valid
13	Y13	.798	0.195	valid	27	Y27	0.883	0.195	valid
14	Y14	.873	0.195	valid					

Source: Processed Data Researcher, 2019

According to the table 2. note of 27 item questionnaire statement on the variable of interest (Y) has a value $r_{hitung} > r_{tabel}$ indicates that the item of the statement can be said to "Valid". Therefore, all items instrument in this study can be used.

4.1 Test Reliability

The test is performed to determine keterandalannya instrument to measure the level of consistency of respondents in answering questions in the questionnaire. Reliability testing is done by comparing the value of Cronbach's Alpha of the data processing, whereby if the value of Cronbach's Alpha > 0.6 , the reliable / consistent and if the value of Cronbach's Alpha < 0.6 , it is not reliable / inconsistent. Results of testing the reliability of research instrument or questionnaire on service performance variable (variable X) can be presented in the following table:

Table 3. Services Performance Test Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
0.963	39

Source: Processed Data Researcher, 2019

Based on table 4.3, note the value of Cronbach's Alpha service performance variable (variable X) of 0963, because the value of Cronbach's Alpha > 0.6 ($0963 > 0.6$) so that the questionnaire is reliable / consistent.

In addition, the results of testing reliability of research instrument or questionnaire on a variable rate of interest (variable Y) are presented in the following table:

Table 4. Results of Test Reliability Importance

Reliability Statistics	
Cronbach's Alpha	N of Items
.979	27

Source: Processed Data Researcher, 2019

Based on table 4.4, note the value of Cronbach's Alpha passenger satisfaction variable (Y) obtained a value of 0979, because the value of Cronbach's Alpha > 0.6 ($0979 > 0.6$) so that the questionnaire is reliable / consistent. Thus, the research instrument used in this study expressed a reliable or trustworthy.

From table 4.3 and table 4.4, it can be deduced as follows:

Table 5. Test Results Rliabilitas

No.	variables	R arithmetic	Information
A	Service performance	$0.963 > 0.6$	Reliable
B	level Kependalan	$0.979 > 0.6$	Reliable

Source: Processed Data Researcher, 2019

4.2 Normality Test

Normality test aims to test whether a regression model, the dependent variable, independent variable, or both have a normal distribution or not. A good regression model is data distribution to normal or near normal. In this study, test for normality using the Kolmogorov-Smirnov test, if the significance value > 0.05 then the data is expressed in normal distribution, whereas if the significance value < 0.05 , the data distribution is not normal otherwise. The following table normality test results are obtained.

Table 6. Normality Test Results
One-Sample Kolmogorov-Smirnov Test

		Residual unstandardized
N		100
Normal Parameters ^a , b	mean	,0000000
	Std. deviation	20.13507914
Most Extreme Differences	Absolute	,139
	positive	,090
	negative	-,139
Kolmogorov-Smirnov Z		1,395
Asymp. Sig. (2-tailed)		,041

a. Test distribution is Normal.

b. Calculated from data.

Source: Processed Data Researcher, 2020

The results of the testing of normality above shows that the test results KolmogorovSmirnov seen that the results obtained for the performance of PE and the level of interest, namely $1.395 > 0.05$, it can be concluded that these data were normally distributed.

4.3 Analysis Method of Customer Satisfaction Index (CSI)

Code	Attribute	Median Score	weighting	Median	weighted
		Importance	Factors	Satisfaction	Score
		MIS	WF	MSS	WS
A. STATION BEKASI					
Physical / Tangibles					
1	The availability of the lounge / seating adequate	5	2,59	3	7,77
2	Availability of facilities prayer rooms for men / women	5	2,59	3	7,77
3	The availability of toilet facilities for men / women	5	2,59	4	10.36
4	The availability of health posts / tool P3K (wheelchair, stretcher, etc.)	5	2,59	3	7,77
5	The availability of charging mobile phones and bins	4	2.07	4	8.29
Reliability / Reliability					
6	Ease of ticket purchase	5	2,59	4	10.36
Reaction / Responsiveness					
7	Availability of Information Service Center (min. 1 person manning)	5	2,59	4	10.36
8	Menginfokan skills of officers in the Audio position in the station wagon	5	2,59	4	10.36
Certainty / Assurance					
9	The availability of information on the schedule board / rail position	5	2,59	4	10.36

Code	Attribute	Median Score	weighting	Median	weighted
		Importance	Factors	Satisfaction	Score
		MIS	WF	MSS	WS
Perceived / Emphaty			-		-
10	The alignment of the platform with the train doors which facilitate access to up / down passenger (lack of gaps between the platform)	5	2,59	4	10.36
11	The suitability of the platform width to accommodate the passengers waiting for the train, at the time of the crowded state	5	2,59	4	10.36
12	And fast response of the security officers in managing incoming and outgoing passenger trains, on crowded state / emergency	5	2,59	4	10.36
B. STATION MANGGARAI			-		-
Physical / Tangibles			-		-
1	The availability of the lounge / seating adequate	5	2,59	3	7,77
2	Availability of facilities prayer rooms for men / women	5	2,59	4	10.36
3	The availability of toilet facilities for men / women	5	2,59	4	10.36
4	The availability of health posts / tool P3K (wheelchair, stretcher, etc.)	5	2,59	3.5	9.07
5	The availability of charging mobile phones and bins	4	2.07	4	8.29
Reliability / Reliability			-		-
6	Ease of ticket purchase	5	2,59	4	10.36
Reaction / Responsiveness			-		-
7	Availability of Information Service Center (min. 1 person manning)	5	2,59	4	10.36
8	Menginfokan skills of officers in the Audio position in the station wagon	5	2,59	4	10.36
Certainty / Assurance			-		-
9	The availability of information on the schedule board / rail position	5	2,59	4	10.36
Perceived / Emphaty			-		-
10	The alignment of the platform with the train doors which facilitate access to up / down passenger (lack of gaps between the platform)	5	2,59	4	10.36
11	The suitability of the platform width to accommodate the passengers waiting for the train, at the time of the crowded state	5	2,59	4	10.36
12	And fast response of the security officers in managing incoming and outgoing passenger trains, on crowded state / emergency	5	2,59	4	10.36
C. WAGON			-		-
Physical / Tangibles			-		-
1	Availability of seats and cabin areas were clean	5	2,59	4	10.36
2	Availability of facilities and safety (fire extinguisher, glass breaker hammer, evacuation instructions, emergency door lever)	5	2,59	4	10.36
3	The presence of a security officer in a prepared train set	5	2,59	4	10.36
4	Availability of handrails for standing passengers	5	2,59	4	10.36
Reliability / Reliability			-		-
5	Incompatibility of arrival and departure schedule	5	2,59	3	7,77
Reaction / Responsiveness			-		-
6	Menginfokan skills of officers in the train and the closest stops via audio	5	2,59	4	10.36
7	P3K availability of equipment carried by security personnel	5	2,59	3	7,77
8	Their audio notification when doors will be open or closed	5	2,59	4	10.36
Certainty / Assurance			-		-
9	Availability of information (such as sticker) that lists telephone numbers and SMS complaint	5	2,59	4	10.36

Code	Attribute	Median Score	weighting	Median	weighted
		Importance	Factors	Satisfaction	
		MIS	WF	MSS	WS
10	Availability of train commuterline route map	5	2,59	4	10.36
Perceived / Emphaty		-		-	
11	Availability of seats in a train commuterline priority	5	2,59	4	10.36
12	Availability of a priority seat mark	5	2,59	4	10.36
13	The availability of surveillance cameras (CCTV) in each train car commuterline	5	2,59	3	7,77
14	The availability of air-conditioning system AC / Fans who keep at room temperature	5	2,59	4	10.36
15	Lights function properly	5	2,59	4	10.36
Total		193			
weighted Total				380.57	
Costumer Satisfaction Index = WT / Score Maximum				76.11	

Source: Processed Data Researcher, 2020

Based on the above calculation, the value of CSI obtained for 76.11% of the value into the customer satisfaction criteria from 0.66 to 0.80. In other words, the Commuter Line KRL passengers Bekasi - Manggarai are satisfied with the performance of services provided by PT KCI.

4.4 Analysis Method Importance Performance Analysis (IPA)

4.4.1 Calculation of Priority

The average value obtained in the table into the middle value or the value of the divider on the Cartesian important performance analysis diagram below.

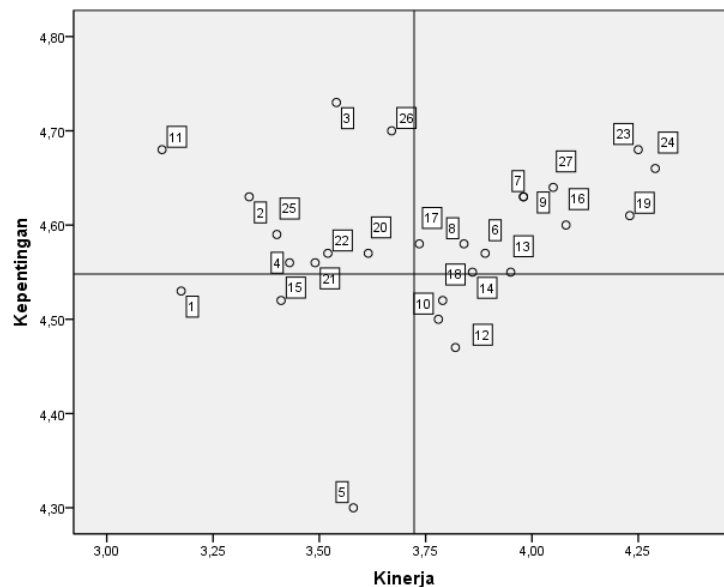


Figure 6. Diagram Cartesian Importance Performance Analysis Services Research on Performance and Importance

Source: Processed Data Researcher, 2020

From the results of the Cartesian diagram Importance Performance Analysis, it can be seen that in Quadrant I are 5 attributes which should soon improve, in Quadrant II, there were eight attributes of the service factor, in Quadrant III are eight attributes of the service factor and Quadrant IV are seven attributes of service factors.

Factors that must be maintained service performance achievement is the service factor are in quadrant II Diagram Cartesian Importance

Performance Analysis, are as follows:

1. Service factor Physical / Tangibles
 - Statement of the 7th, safety facilities (APAR, glass breaker hammer, evacuation instructions, emergency door lever)
 - Statement of the 9th, handrails for standing passengers
2. Service factor Reaction / Responsiveness
 - Statement of the 16th, an audio notification when doors will be open or closed
3. Service factor Assurance / Assurance
 - Statement of the 17th, the board information on the schedule / Train position
 - Statement of the 19th, the train route map commuterline
4. Factors Perceived service / Emphaty
 - Statement of all 23 priority seating in a commuter train line
 - Statement of the 24th, a sign of the priority seats
 - Statement of the 27th, lighting works fine

5. Conclusions and Recommendations

5.1 Conclusion

Based on the results of the study, the conclusions in the analysis penumpang satisfaction on the performance of services and amenities KRL Commuter Line These stations Bekasi - Manggarai, as follows:

1. From the analysis of the data by using Customer Satisfaction Index (CSI) is obtained, it is known that passenger satisfaction index value obtained was 76.11%. This illustrates that the passengers are satisfied with the performance of services and facilities These stations Commuter Line KRL Bekasi - Manggarai.
2. The quality of service is considered important by consumers based on the results of the method Imperformance Performance Analysis (IPA) there are eight attributes that affect passenger satisfaction, among others: safety facilities (APAR, hammer breaking glass, evacuation signs, lever emergency door), handrails for standing passengers , audio notification when doors will be open or closed, information boards regarding the timing / position of the train, the train commuterline route maps, uduk place in one train commuterline priority, priority seats signs and lighting are considered in line with expectations penumpang.ketanggapan security guards in organize incoming and outgoing passenger trains, on crowded state / emergency, considered less important and less satisfying for passengers.

5.2 Suggestions

1. Based on the results obtained, largest recommended to increase the performance of services, because satisfaction is the goal of a service. Therefore, to improve customer satisfaction, PT Kereta Commuter Indonesia as the company that manages the service performance Commuter Line and station facilities, can make improvements optimal and thorough review of all aspects related to quality of service by way of control of the quality of existing services and supplied to customers, especially in the service factor considered high priority and less than satisfactory, especially for the suitability of the arrival and departure Commuter Line KRL.
2. For further research, is expected to use the questionnaire directly or can be made a comparison between the questionnaire online and in person in order to obtain optimal results.

References

- [1] Franciscus, H., Sukpto, P., & Sitompul, C. (2012). Development Dimensions of Service Quality Linked to Consumer Satisfaction and Loyalty Services Airline Ticket Online Sales. Neat National Symposium Xi Ft Ums, 10.
- [2] Polyakova, O., & Mirza, M. (2015). Perceived Service Quality Models: Are They Still Relevant? 24.

Biographies

Andri Irfan, Rifai Engineering Lecturer at Mercu Buana University, Chair of the Bachelor Program in Civil Engineering at the International University of Batam, Project Manager of the Infrastructure Rehabilitation and Reconstruction Project for affected areas in Palu, head of the PJN Region 3 Work Unit of West Java Province.
Specialties: Engineering, Project Management of Transportation

Yuditami Iressa, Fajriliani College Student, University of Mercu Buana Jakarta, Indonesia