

Perception of User Satisfaction with Online Taxibike Service Quality with Structural Equation Modeling Method

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Abstract

Advances in information and communication technology have an influence in the field of transportation, namely online application-based transportation that can be accessed using a smart phone. Every user of ojek transportation can now easily use online ojek transportation by using a cellphone with a special application to access online ojek. The purpose of this study was to determine the characteristics of online ojek users in Palu City and to determine the perception of user satisfaction with the quality of online ojek services in Palu City using the Structural Equation Modeling (SEM) method. Analysis of the relationship between the effect of service quality on the satisfaction of online ojek users with the help of the Structural Equation Modeling (SEM) method with the LISREL 8.80 software program. From the analysis results, the relationship between indicators and service quality dimensions generally has a strong influence with a coefficient of determination value > 0.60 , and the relationship between service quality and satisfaction is able to explain satisfaction is 0.75. This shows that service quality has a strong influence on satisfaction and service quality is able to explain satisfaction by 75%.

Keywords:- Service Quality taxibike, Structural Equation Modeling, Lisrel 8.80.

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I. INTRODUCTION

Advances in information and communication technology have had an impact in the field of transportation, including in Indonesia. Technology is also a means towards a sustainable transport system. With the advancement of technology, innovation emerged in the field of transportation that's transportation is based on an online application that can be accessed using a smart phone. Every user of transportation taxibike can now easily access transportation taxibike online by using a mobile phone with a special application to be able to access it online. There has been an increase in users and the presence of various online transportation companies in Kota Palu, among them Go-Jek, Grab and Maxim show that the services provided online are in line with the expectations of the users or provide user satisfaction. The increasing number of users of online transportation or online traffic in Kota Palu will surely give users a perception of the quality of online traffic services in kota Palu.

The purpose of this research is to know the characteristics of online users in Kota Palu and to find out the perception of user satisfaction to the quality of online services in kota Palu. using the method Structural Equation Modeling (SEM).

II. MATERIAL AND METHOD

2.1 Study Location

The research was carried out in Palu, which is one of the cities with a significant rate of development of the use of online transportation. The analytical approach used is the user's perception of the quality of service perceived directly by the user from the online audience. Data collection is done with surveys, data is taken with questionnaires and interviews with respondents of users. This research is done by collecting data carried out by way of filling in questionnaires and interviews to respondents of online taxibike users in Kota Palu. User data is collected with questionnaire and direct interviews with users at home, in the office and school/campus.

The level of service analysis of perception methods is based on the concept of satisfaction model with the method of structural equation modeling (SEM) that's a model of satisfaction based on respondent data as a whole. To determine the level of user satisfaction with the quality of online taxibike services.

2.2 Literature Review

In this study the customer satisfaction dimension adopted several aspects of previous research and paid attention to the characteristics of online service and operation.

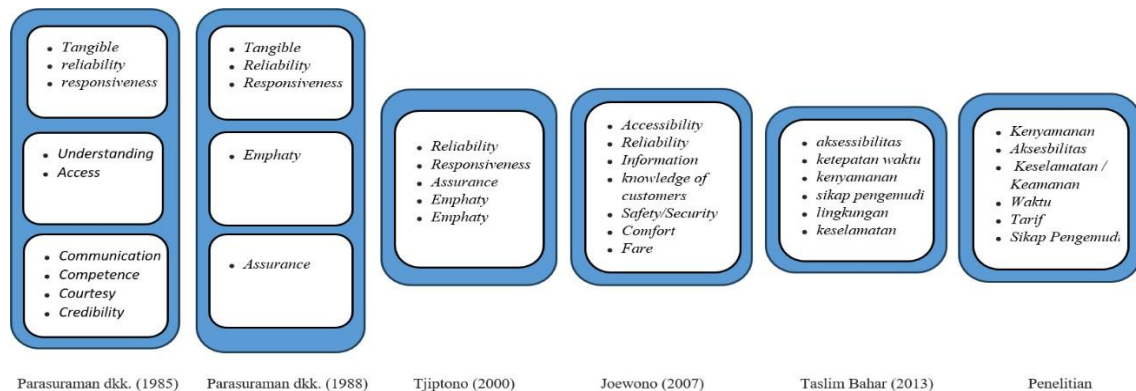


Figure 1: Quality and Service Satisfaction Dimensions

Taking into consideration the characteristics of the online taxibike services above and the results of the service performance study of the previous research methods of perception, then in this study the dimensions and indicators of service performance.

Table 1: Dimensions and Indicators of Service Quality and Satisfaction

No.	Dimensions	Indicators
1	Comfort	a. Seating and luggage position as long as above the vehicle b. Freedom / obstacles on the road
2	Availability/ Accessibility	a. Fleet availability b. Ease of getting a taxibike
3	Safety / Security	a. Disruption of criminal activity b. Traffic disruption while waiting for taxibike
4	Time	a. Time to get a taxibike b. Travel time to destination
5	Tariff	a. Compatibility of Tariffs with Services b. Tariff system in line with expectations
6	Driver Behavior	a. Discipline b. Polite attitude and good response
7	Satisfaction	a. Overall satisfaction b. Continue to use the taxibike

2.3 Sample

The sample used in this study is based on rescoe which states that if in the study will perform analysis with multivariate (correlation or double regression for example), then the number of members of the sample is at least 10 times the amount of variables. In this study the number of independent variables is 14 and dependent is 7 then the number of samples $(14+7) \times 10 = 210$ sampel.

2.4 Analisis Data

Analyze the relationship of the influence of the quality of service on the satisfaction of online users with the help of SEM method with LISREL 8.8 program software. As for the relationship to be tested, the quality of service has a positive and significant influence on satisfaction. Diagram of the concept model of the relationship between quality of service and satisfaction in this study as in Figure 1.

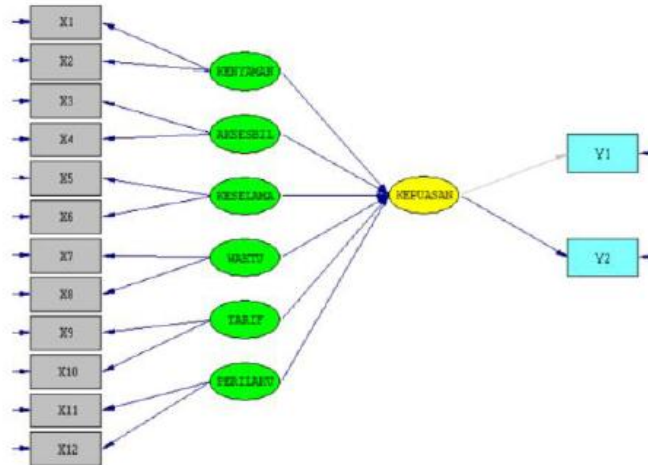


Figure 2: Concept of Quality-Satisfaction Relationship

The influence relationship between variables in this study is constructed with the concept of influence relation which is:

a. Indicators of service quality consist of five dimensions: Comfort, Accessibility, Safety/Security, Time, Tariffs, and Driver Behavior. Represented by 12 indicators with operating variables X1 – X12 as outlined in the following table.

Table 2: Service Quality Dimension Indicator

Dimensions	Indicators	
Comfort	Seating and luggage position as long as above the vehicle	(X1)
	Freedom / obstacles on the road	(X2)
Availability/Accessibility	Fleet availability	(X3)
	Ease of getting a taxibike	(X4)
Safety / Security	Disruption of criminal activity	(X5)
	Traffic disruption while waiting for taxibike	(X6)
Time	Time to get a taxibike	(X7)
	Travel time to destination	(X8)
Tariff	Compatibility of Tariffs with Services	(X9)
	Tariff system in line with expectations	(X10)
Driver Behavior	Discipline	(X11)
	Polite attitude and good response	(X12)

b. Indikator kepuasan terdiri dari Y1 dan Y2

Table 3 : Satisfaction Dimension Indicator

Dimensions	Indicators	
Satisfaction	Overall satisfaction	(Y1)
	Continue to use the taxibike	(Y2)

III. RESULTS AND DISCUSSIONS

3.1 Research Data

This survey was conducted on users of Ojek online in Kota Palu. The survey was carried out by distributing questionnaires on respondents who have travelled using Ojek Online passengers.

Table 4 : Questionnaire Result Data Perception of User Satisfaction with Online Taxibike Services

Dimensions	Indicators	Alternatif Jawaban					Total
		1	2	3	4	5	
Comfort	Seating and luggage position as long as above the vehicle (X1)	4	17	83	83	30	217
	Freedom / obstacles on the road (X2)	2	19	64	92	40	217
Availability/ Accessibility	Fleet availability (X3)	2	6	44	104	61	217
	Ease of getting a taxibike(X4)	1	7	37	108	64	217
Safety / Security	Disruption of criminal activity (X5)	9	18	75	77	38	217
	Traffic disruption while waiting for taxibike (X6)	5	19	70	85	38	217
Time	Time to get a taxibike (X7)	1	12	57	104	43	217
	Travel time to destination (X8)	3	5	46	119	44	217
Tariff	Compatibility of Tariffs with Services (X9)	4	3	71	98	41	217
	Tariff system in line with expectations (X10)	4	4	62	109	38	217
Driver Behavior	Discipline (X11)	3	7	47	112	48	217
	Polite attitude and good response (X12)	4	2	48	103	60	217
Satisfaction	Overall satisfaction (Y1)	3	3	33	127	51	217
	Continue to use the taxibike (Y2)	3	3	55	107	49	217

Source: Survey data results

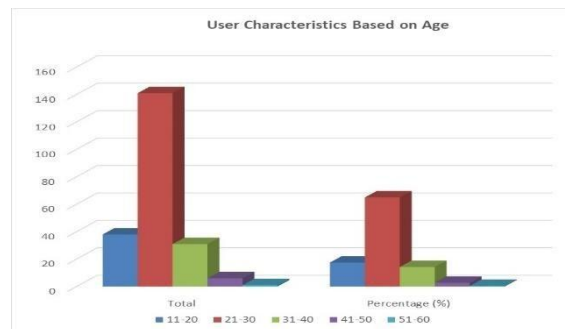
3.2 User Characteristics Online Taxibike

The characteristics of the online user are the identities of online users who respond to the objectivity of this study.

1. User Characteristics Based on Age

Table 5: User Characteristics Based on Age

No.	Age (Years)	Total	Percentage (%)
1	11 – 20	38	17.51 %
2	21 – 30	141	64.98 %
3	31 – 40	31	14.29 %
4	41 – 50	6	2.76 %
5	51 – 60	1	0.46%
Total		217	100%



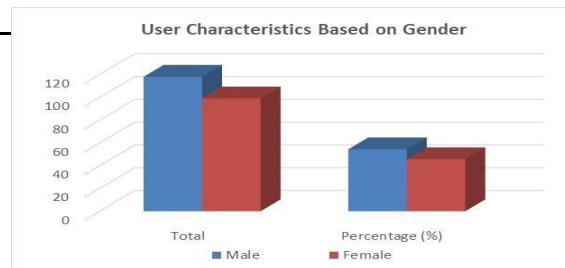
Source: Survey data results

Figure 3: User Characteristics Based on Age

2. User Characteristics Based on Gender

Table 6: User Characteristics Based on Gender

No.	Gender	Total	Percentage (%)
1	Male	118	54.38 %
2	Female	99	45.62 %
Total		217	100%



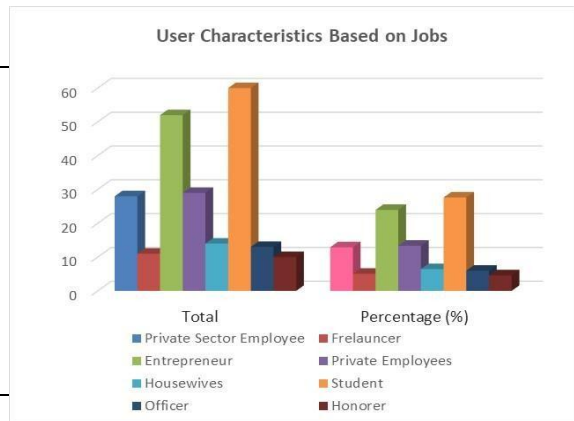
Source: Survey data results

Figure 4: User Characteristics Based on Gender

3. User Characteristics Based on Jobs

Table 7: User Characteristics Based on Jobs

No.	Jobs	Total	Percentage (%)
1	Private Sector Employee	28	12.90 %
2	Freelance	11	5.07 %
3	Entrepreneur	52	23.96 %
4	Private Employees	29	13.36 %
5	Housewives	14	6.45 %
6	Student	60	27.65 %
7	Officer	13	5.99 %
8	Honoror	10	4.61 %
Total		217	100%

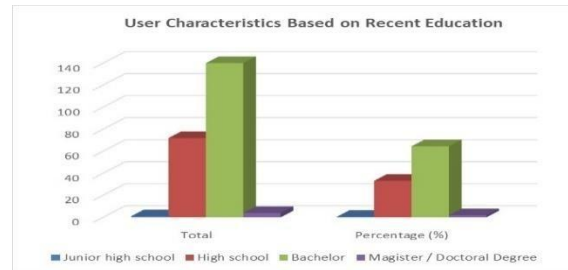


Source: Survey data results

Figure 5: User Characteristics Based on Jobs

4. User Characteristics Based on Recent Education Table 8: User Characteristics Based on Recent Education

No.	Recent Education	Total	Percentage (%)
1	Junior high school	1	0.46 %
2	High school	72	33.18 %
3	Bachelor	140	64.52 %
4	Magister / Doctoral Degree	4	1.84 %
Total		217	100%

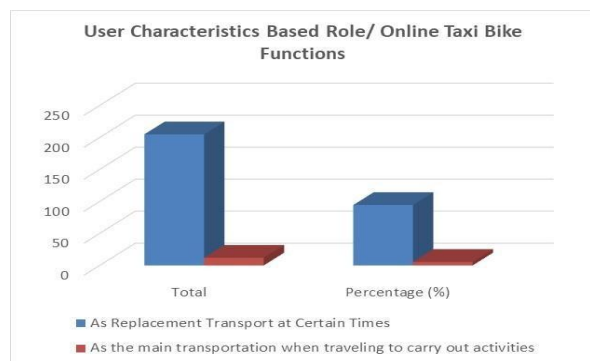


Source: Survey data results

Figure 6: User Characteristics Based on Recent Education

5. User Characteristics Based on Online Taxi Bike Role/ Online Taxi Bike Functions Table 9: User Characteristics Based on Online Taxi Bike Role/ Online Taxi Bike Functions

No.	Role / Fungtions Online	Total	Percentage (%)
1	As Replacement Transport at Certain Times	205	94.47 %
2	As the main transportation when traveling to carry out activities	12	5.53 %
Total		217	100%



Source: Survey data results

Figure 7: User Characteristics Based Role/ Online Taxi Bike Functions

6. User Characteristics Based on the Main Reason for Using Online Taxibike

Table 10: User Characteristics Based on the Main Reason for Using Online Taxibike

No.	main reason to use Online taxibike	Total	Percentage (%)
1	There is no other public transportation (Taxi/Bus)	21	9.68 %
2	More Practical / Fleksibel	125	57.60 %
3	Safer	3	1.38 %
4	Faster	41	18.89 %
5	It's more comfortable	7	3.23 %
6	Cheaper	15	6.91 %
7	Other	5	2.3 %
	Total	217	100%

Source: Survey data results

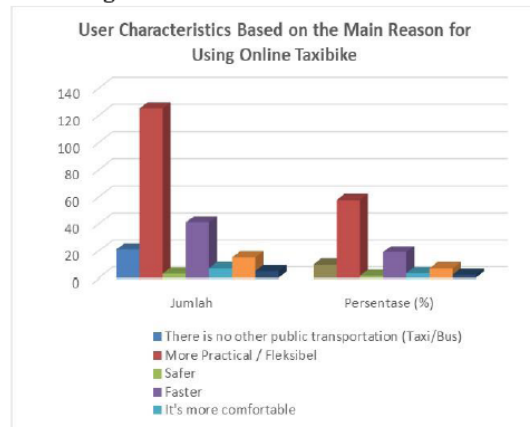


Figure 8: User Characteristics Based on the Main Reason for Using Online Taxibike

7. User Characteristics Based on Purpose of Travel

Table 11: User Characteristics Based on Purpose of Travel

No.	Purpose of Travel	Total	Percentage (%)
1	School	12	5.53 %
2	Social activities / Worship	36	16.59 %
3	Workplace	44	20.28 %
4	Shopping	40	18.43 %
5	Home	29	13.36 %
6	Other	56	25.81 %
	Total	217	100%

Source: Survey data results

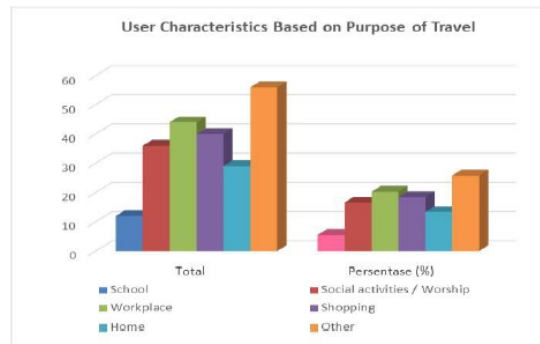


Figure 9: User Characteristics Based on Purpose of Travel

a. Validity and Reliability Test

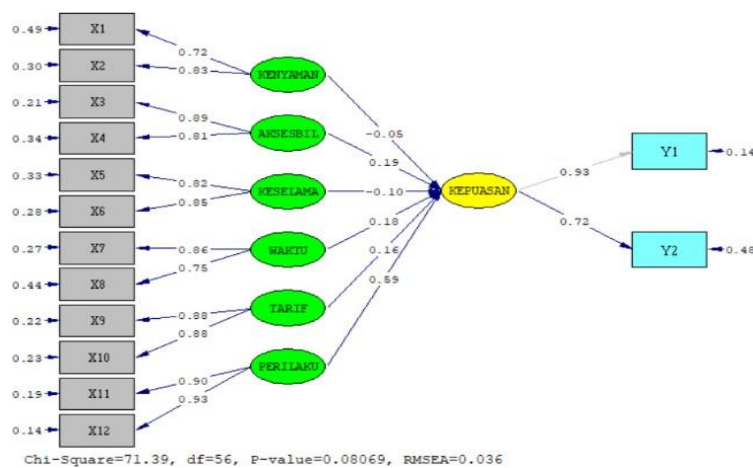


Figure 10: Output Lisrel Standardized Solution

To find out the validity and reliability test of variables that can be used as indicators can be seen from the factor loading values resulting from lisrel can be found in Figure 4.10 and presented in Table 4.10.

Table 12: Loading Factors

Dimensions	Indicators	Loading Factors ≥ 0.70	Error	Construct Reliability(CR) ≥ 0.70	Variance Extracted(VE) ≥ 0.50
Comfort	X1	0.72	0.49	0.753	0.604
	X2	0.83	0.30		
Availability/ Accessibility	X3	0.89	0.21	0.840	0.725
	X4	0.81	0.34		
Safety / Security	X5	0.82	0.33	0.821	0.696
	X6	0.85	0.28		
Time	X7	0.86	0.27	0.785	0.647
	X8	0.75	0.44		
Tariff	X9	0.88	0.22	0.873	0.775
	X10	0.88	0.23		
Driver Behavior	X11	0.90	0.19	0.910	0.835
	X12	0.93	0.14		

Based on Table 4.10, a loading factor greater than 0.7 is obtained for all indicators which means that the question item in the study instrument is valid. From these figures it can be indicated that the research instruments used have a good level of reliability. Thus the research instrument can be used for analysis using Structural Equation Modeling (SEM).

3.3 Normality Test

From the results of analysis using Lisrel 8.80 seen in Table 4.11 Value Skewness and Kurtosis Normality Testing obtained undistributed normal data where there are P-value skewness values and P-Value kurtosis < 0.05 To overcome this Lisrel program provides a normal score feature to transform the data back to normal.

Table 13: Normality Test Skewness dan Kurtosis Value

No	Dimensions	Indicators	Skewness		Kurtosis		Skewness dan Kurtosis	
			Z-Score	P-value	Z-Score	P-value	Chi-Square	P-value
1	Comfort	X1	-1.646	0.100	0.268	0.788	2.783	0.249
		X2	-2.167	0.030	-0.754	0.451	5.265	0.072
2	Availability/ Accessibility	X3	-3.899	0.000	1.781	0.075	18.374	0.000
		X4	-3.896	0.000	1.541	0.123	17.554	0.000
3	Safety / Security	X5	-2.656	0.008	0.079	0.937	7.063	0.029
		X6	-2.450	0.014	-0.080	0.936	6.009	0.050
4	Time	X7	-2.465	0.014	0.053	0.958	6.079	0.048
		X8	-4.369	0.000	3.052	0.002	28.406	0.000
5	Tariff	X9	-2.887	0.004	2.015	0.044	12.396	0.002
		X10	-3.708	0.000	2.653	0.008	20.790	0.000
6	Driver Behavior	X11	-4.181	0.000	2.452	0.014	23.490	0.000
		X12	-4.502	0.000	2.848	0.004	28.384	0.000
7	Satisfaction	Y1	-5.272	0.000	4.093	0.000	44.551	0.000
		Y2	-3.549	0.000	2.318	0.020	17.969	0.000

From the results of analysis using Lisrel 8.80 using the feature normal score obtained P-value skewness and P-Value kurtosis > 0.05 indicates that the data is distributed normally. Can be seen in table 4.12

Table 14: Transformation Of The Normality Test Skewness dan Kurtosis Value

No	Dimensions	Indicators	Skewness		Kurtosis		Skewness dan Kurtosis	
			Z-Score	P-value	Z-Score	P-value	Chi-Square	P-value
1	Comfort	X1	-0.581	0.561	-0.612	0.540	0.712	0.700
		X2	-1.011	0.312	-1.135	0.256	2.311	0.315
2	Availability/ Accessibility	X3	-1.707	0.088	-1.318	0.187	4.651	0.098
		X4	-1.849	0.064	-1.110	0.267	4.653	0.098
3	Safety / Security	X5	-0.836	0.403	-1.485	0.138	2.903	0.234
		X6	-0.940	0.347	-1.167	0.243	2.246	0.425
4	Time	X7	-1.127	0.260	-0.827	0.408	1.953	0.377
		X8	-1.221	0.222	-0.169	0.866	1.520	0.468
5	Tariff	X9	-0.568	0.570	-1.253	0.210	1.893	0.388
		X10	-0.812	0.417	-0.585	0.559	1.001	0.606

6	Driver Behavior	X11	-1.360	0.174	-0.583	0.560	2.189	0.335
		X12	-1.484	0.138	-1.763	0.078	5.308	0.070
7	Satisfaction	Y1	-1.357	0.175	0.126	0.900	1.856	0.395
		Y2	-1.070	0.285	-1.172	0.241	2.519	0.284

Source: Data Processing Results

3.4 Analysis Goodness of Fit Model

The model formed should start with a goodness of fit analysis, the aim of which is to find out whether the structural model and its measurement can be said to be good or not.

Table 15: Evaluation of Goodness of Fit

No.	Goodness of Fit	Cut-Off Value	Hasil	Match level
1	Adjusted Goodness of Fit Index (AGFI)	≥ 0.90	0.92	Baik
2	Akaike Information Index (AIC)	< AIC Saturated dan Independence Model	*M = 169.39 *S = 210 *I = 3411.13	Baik
3	Chi Squares	Diharapkan Kecil (P > 0.05)	72.57 (P=0.067)	Baik
4	Comparative Fit Index (CFI)	> 0.90 ; >0.95	0.99	Baik
5	Consistent Akaike Information Index (CAIC)	< CAIC Saturated dan Independence Model	*M = 384.00 *S = 669.89 *I = 3472.45	Baik
7	Expected Cross Validation Index (ECVI)	< ECVI Saturated dan Independence Model	*M = 0.78 *S = 0.97 *I = 15.79	Baik
8	Goodness of Fit Index (GFI)	> 0.90	0.95	Baik
9	Incremental Fit Index (IFI)	> 0.90 ; >0.95	1.00	Baik
11	Normed Fit Index (NFI)	> 0.90 ; >0.95	0.98	Baik
14	Probability	≥ 0.05	0.081	Baik
15	P Value For RMSEA	> 0.05	0.84	Baik
16	Relative Fit Index (RFI)	> 0.90 ; >0.95	0.97	Baik
17	Root Mean Square Error Approximation (RMSEA)	< 0.05 sangat baik 0.05 – 0.08 cukup baik	0.036	Baik
18	Root Mean Aquare Residual (RMSR)	< 0.08	0.021	Baik

Source: Data Processing ResultsKet : *M = Model

*S = saturated

*I = Independence

3.5 Service Quality and Satisfaction Relationship

a. Dimensional Indicator Quality Relationship

The scale of the impact of the relationship Indicators - indicators on the quality of service such as comfort, accessibility, safety, time, rates, and driver behavior can be seen in table 4.16

Table 16: Scale of influence of the relationship Indicators - indicators on the quality of service

No	Dimensions	Indicators	Coefficient Determinasi (R ²)	Relationship levels
1	Comfort	X1	0.51	Moderate
		X2	0.70	Strong
2	Availability/Accessibility	X3	0.79	Strong
		X4	0.66	Strong
3	Safety / Security	X5	0.67	Strong
		X6	0.72	Strong
4	Time	X7	0.73	Strong
		X8	0.56	Moderate
5	Tariff	X9	0.78	Strong
		X10	0.77	Strong
6	Driver Behavior	X11	0.81	Very Strong
		X12	0.86	Very Strong

Source: Data Processing Results

b. Service Quality Relationship with Satisfaction

In this analysis will be tested the structural relationship between factors according to the concept of Quality of Service – Satisfaction as in Figure 4.8 which consists of:

- 1) The exogenous variable is the quality of service (Comfort, Availability/ Accessibility, Availability/ Accessibility, Time, Tariff, Driver Behavior)
- 2) The endogenous latent variable is satisfaction

The relationship between the impact of quality of service on customer satisfaction can be described in a structural relationship model in the form of the equation:

= - 0,046	+ 0.19	– 0.10	+ 0,18	+ 0.16	+ 0.59
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Figure 11 Output Lisrel Structural Equations

From the above structural equations we can conclude that the driver's behavioral factors are the most significant influencing factors on satisfaction, the second one that has a significant influence on the satisfaction is the accessibility factor, the third one that significantly affects the satisfaction is the time factor and the last one that is significantly influential on the content is the tariff factor. The comfort and safety factors do not significantly affect the user's satisfaction.

From the results and seen in Figure 4.11 obtained determination coefficient value (R²) structural model relationship quality service – satisfaction is 0.75 this means the quality of service (comfort, accessibility, safety, time, tariff, driver behavior) can explain satisfaction of 75%. As for the value of determination factor (R²), it serves to show how far each independent variable can affect the dependent variable.

From the result obtained structural equations equations in Figure 4.15 above can be explained that:

- a) Comfort has a negative influence on satisfaction with a coefficient value -0.046, no significant influence, with T-Values value = -0.44 < 1.96.
- b) Accessibility has a positive influence on satisfaction, with a coefficient value of 0.19, and a significant influence, with T-Values = 2.20 > 1.96.
- c) Safety has a negative influence on satisfaction, with a coefficient value of -0.10 and a non-significant influence, with T-Values value = -1.34 < 1.96.
- d) Time has a positive influence on satisfaction, with a coefficient value of 0.18, and significant, with T-Values value = 2.06 > 1.96.
- e) The rate has a positive influence on satisfaction, with a coefficient value of 0.16, and a significant value, with T-Values = 2.29 > 1.96.
- f) Driver behavior has a positive influence on satisfaction, with a coefficient value of 0.59, and significant, with T-Values value = 7.66 > 1.96.

VI. CONCLUSION

Through the results of research and discussion regarding the characteristics of online motorcycle taxi users in Palu City and perceptions of user satisfaction with the quality of online motorcycle taxi services in Palu City, it can be concluded as follows:

1. The characteristics of online motorcycle taxi users in Palu City were 54.38% men and 45.62% women. The highest percentage is in the 21 – 30 year age group at 64.98%, with the highest user occupation being students with a percentage of 27.65%. The highest user's highest level of education was D3/S1 level at 64.52%. The role/function of online motorcycle taxis among users is that online motorcycle taxis are the highest as replacement transportation at certain times, amounting to 94.47% and the main reason why users use online motorcycle taxis is that they are more practical/flexible. The user's travel destination when using an online motorcycle taxi is 25.81%.
2. The relationship between indicators and service quality dimensions generally has a strong influence with a coefficient of determination value > 0.60, and the relationship between service quality and satisfaction is able to explain satisfaction is 0.75. This shows that service quality has a strong influence on satisfaction and service quality is able to explain satisfaction by 75%.

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