

Effectiveness and Efficiency on Transit Passenger Satisfaction in Facility Use in Soekarno Hatta Airport

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Abstract. Presence of sky train facility in Soekarno Hatta Airport is seen to be effective and efficient. The researcher in this case took 54 passengers as the samples. From results of the research, it is obtained that effectiveness (X1) influences positively and significantly on passenger satisfaction (Y) in Soekarno Hatta Airport. With significance value by 0,010 this score is less than $\alpha = 0,1$ and tarithmetic by 2,660 greater than ttable by 1,675. Further result of research is obtained that efficiency (X2) influences positively and significantly on passenger satisfaction (Y) in Soekarno Hatta Airport. With significance value by 0,006, this score is less than $\alpha = 0,1$ and arithmetic by 2,889 greater than ttable by 1,675. And the final result of the research, it is obtained that effectiveness (X1) and efficiency (X2) influence positively and significantly on passenger satisfaction (Y) in Soekarno Hatta Airport. With significance value by 0,001, this score is less than $\alpha = 0,1$ and farithmetic by 7,978 greater than ftable by 2,19.

1. Introduction

The airport sky train was started its operations on November 18th, 2017 with PT Railink as the operator, it is a subsidiary of PT Kereta Api Indonesia and PT Angkasa Pura II (Persero). Sky train is the first mode transportation of unmanned train in Indonesia using a system with Automated People Mover System (APMS) concept.

2. Theoretical

2.1. Materials

The revealed preference data is collected using questionnaire survey based on the Likert scale choices [4, 6, 8]. The study was conducted in 2018 with the targeted area is line 1 of Trans Koetaradja. This line is the first line connected city center of Banda Aceh to the oldest university in Aceh, that is the Syiah Kuala University. Banda Aceh city and the first line of the bus system as an area of study can be seen in Figure 1.

2.1 Effectiveness and Efficiency

According to Tantri [1], effectiveness is a result of a company that is seen from its ability to create tangible outputs in the forms of beneficial goods and services. So, definition of effective emphasizes on targets (objectives or results), namely to obtain maximum results, by no increasing costs. Meanwhile, efficient according to Tantri [1] is defined as economic activities that are centered on the aspect of sacrifice, namely reducing costs to minimum one, but not reducing any planned results. So, there will be effective and efficient activities in one unit. Transportation efficiency is a measure of the cost level (in rupiah, time, energy or other additions) to move something in this case can be (passengers and goods) from one place to another. This transportation efficiency depends on characteristics of used transportation mode, for example: a ship will be more efficient if ship's size is getting bigger for long distance travel and the demand is large.

2.2 Customer Satisfaction

According Yamit [2] customer satisfaction is a post-purchase evaluation or evaluation result comparing what is perceived and expectation. According Nasution in [3], customers are ones demanding us or company to meet specific quality standard, and since it will give effects on our or company performance.

2.3 Airport

Airport according to Mastra [4] is a plot of land, above it, there are a number of installation building and equipment to air, land, and move on land for airplanes along with supporting facilities and infrastructure. Airport main function is to serve departures and arrivals of aircraft and passengers, as the main activities. Air transportation activities include air traffic flow and passengers traffic flow.

2.4 Sky train

Sky train is means of transportation at Soekarno Hatta Airport, in the form of a Light Rail Transit (LRT). But there is a major difference, sky train is run automatically or without using drivers. [5]: In accordance with Act of Aviation No. 1 of 2009, airport facilities are provided to serve appropriate airport services in terms of safety, comfort and regularity (smoothness). Since airport facilities are very relevant in determining by free WIFI/internet facilities provided by airport managers in order to provide comfort for passengers at the airport. Internet access is a necessity for people to learn about increasingly sophisticated technological and information developments.

2.5 Conceptual Framework

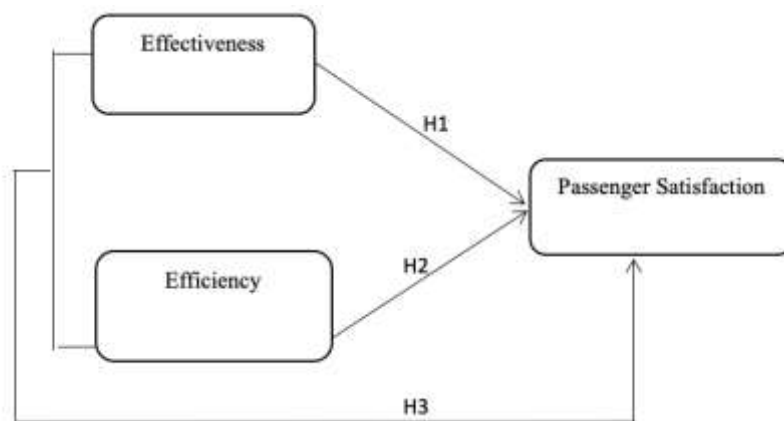


Figure 1: Conceptual Framework

2.6 Effectiveness on Passenger Satisfaction

Effectiveness has positive and significant effect on passenger satisfaction. H1: Effectiveness has a positive effect on passenger satisfaction.

2.7 Efficiency on Passenger Satisfaction

Efficiency has positive and significant effect on passenger satisfaction. H2: Efficiency has a positive effect on passenger satisfaction.

2.8 Effectiveness and Efficiency on Passenger Satisfaction

Subekti [6]: Passenger satisfaction plays an important role in the air freight business. Airport terminals are an important to assess aircraft passenger satisfaction. This research was conducted to find out how characteristics of airport, service users, how perceptions of airport service user satisfaction and different perceptions of service satisfaction in terms of gender, age, education, income, and service user jobs at Terminal Airport of Adi Sucipto, Yogyakarta. Results of this study show no differences in passenger satisfaction based on gender, age, and education aspects. On the contrary, there are differences in perception of passenger satisfaction with service in the terminal regarding income and employment aspects. Effectiveness and Efficiency have positive and significant effect on passenger satisfaction. H3: Effectiveness and Efficiency have a positive effect on passenger satisfaction.

3. Method

This study is quantitative research. The population of this study were all users of the passenger of sky train at Soekarno Hatta Airport. The number of samples was 54 respondents. The data used in this study were primary data obtained directly from concerned parties by distributing questionnaires. Secondary data obtained from other sources were also used. The method employed was non-probability sampling. The non-probability sampling technique chosen for this study was purposive sampling. This study used correlation and multiple linear regression, with the help of SPSS software.

4. Result and Discussion

4.1 Analysis of effectiveness level of sky train use in Soekarno Hatta Airport

Table 1. Recapitulation of respondents' answer results on effectiveness of sky train use

No	Statements	Answer					Total of weight	Avrg	Criteria
		VA	A	Do ubtful	Dis agree	VD			
1	Departure time of sky train is on schedule	27	24	3	0	0	240	4.44	Very Good
2	Arrival time of sky train is on schedule	18	33	3	0	0	231	4.28	Very Good
3	Sky train can be used well	12	31	11	0	0	217	4.01	Good
4	Sky train can be operated at any time	14	39	1	0	0	229	4.24	Very Good
5	Sky train takes less time and run faster than shuttle buses	22	32	0	0	0	238	4.4	Very Good
6	Sky train takes smoother trip than shuttle buses	13	35	6	0	0	223	4.12	Good
Amount		106	194	24	0	0	1,378	25.49	
Average								4,2	Very Good

Source: Questionnaire data processing results

Based on the recapitulation data above, it can be seen that the respondents' answer concerning effectiveness of the sky train use show that there are 106 respondents with Very Agree (VA) answer; there are 194 respondents with Agree (A) answer, it can be seen that the majority answer is Agree (A), namely by 194 respondents. So, this shows effectiveness of sky train use is categorized in the good category with an average of 4.2 showing its ability to provide a very good influence on passenger satisfaction at Soekarno Hatta Airport.

4.2 Analysis of efficiency level of sky train use in Soekarno Hatta Airport

Table 2. Recapitulation of respondents' answer results efficiency of sky train use

No	Statements	Answer					Total of weight	Avrg	Criteria
		VA	A	Do ubtful	Dis agree	VD			
1	Sky train takes many more passengers than shuttle buses does	50	4	0	0	0	266	4.92	Very Good

2	The waiting time for the sky train arrival is faster than the shuttle buses	43	11	0	0	0	259	4.79	Very Good
3	Terminal transfer time are more efficient than shuttle buses	50	4	0	0	0	266	4.92	Very Good
4	Sky train is easy to use by airport passengers	47	7	0	0	0	281	5.2	Very Good
5	Sky train location that is easily accessible by airport passengers	38	16	0	0	0	254	4.7	Very Good
6	Sky train schedule can be seen through the Indonesia airport application	14	26	14	0	0	216	4	Good
Amount		242	68	14	0	0	1,542	28.53	
Average								4,7	Very Good

Source: Questionnaire data processing results

From the table above, it can be seen that the respondents' answers on efficiency of sky train user show that there are 242 respondents with Very Agree (VA) answers; then there are 68 respondents with Agree (A) answers; and there are 14 respondents with Doubtful answers. Out of all respondents' answers, it indicates that the majority of respondents answers is Very Agree (VA), namely by 242 people. So, this shows that the level of efficiency given by sky train is included in the excellent category with an average of 4.7 showing its ability to provide satisfaction to airport passenger in using sky train.

4.3 Analysis Passenger Satisfaction at Soekarno Hatta Airport

Table 3. Recapitulation of respondents' answer results on passenger satisfaction at Soekarno-Hatta Airport

No	Statements	Answer					Total of weight	Avrg	Criteria
		VA	A	Doubtful	Disagree	VD			
1	Availability of seats on the shuttle sky train	25	29	0	0	0	241	4.46	Very Satisfied
2	Shuttle sky train provides a cool and comfortable atmosphere	10	44	0	0	0	226	4.18	Satisfied
3	Availability of free charging at shuttle sky train	14	35	5	0	0	225	4.17	Satisfied
4	Clarity of sky train departure and arrival information on the information screen	8	37	9	0	0	215	3.98	Satisfied

5	Polite and friendly service from officers and customer service	0	30	16	6	0	186	3.4	Satisfied
6	Tidiness of officers and customer service in appearance	3	43	8	0	0	211	3.91	Very Satisfied
Amount		60	218	40	0	0	1,304	24.1	
Average								4	Satisfied

Source: Questionnaire data processing results

4.4 Validity and Reliability Tests

Table 4. Validity Test of Effectiveness

Statements	R count	R table	Results
Instrument_1	0,554	0,226	Valid
Instrument_2	0,704	0,226	Valid
Instrument_3	0,374	0,226	Valid
Instrument_4	0,584	0,226	Valid
Instrument_5	0,344	0,226	Valid
Instrument_6	0,513	0,226	Valid

Source: SPSS v.24 processed data

From the data above, for the effectiveness variables, it is stated that all items of the statements are declared to be valid because R count is greater than R table 0.266.

Table 5. Validity Test of Efficiency

Statements	R count	R table	Results
Instrument_1	0,402	0,226	Valid
Instrument_2	0,434	0,226	Valid
Instrument_3	0,402	0,226	Valid
Instrument_4	0,298	0,226	Valid
Instrument_5	0,520	0,226	Valid
Instrument_6	0,679	0,226	Valid

Source: SPSS v.24 processed data

From the data above, for the efficiency variables, it is stated that all items of the statements are declared to be valid because R count is greater than R table 0.266.

Table 6. Validity Test Variabel Satisfaction

Statements	R count	R table	Results
Instrument_1	0,377	0,226	Valid
Instrument_2	0,313	0,226	Valid
Instrument_3	0,724	0,226	Valid
Instrument_4	0,518	0,226	Valid
Instrument_5	0,564	0,226	Valid
Instrument_6	0,464	0,226	Valid

Source: SPSS v.24 processed data

From the data above, for the satisfaction variables, it is stated that all items of the statements are declared to be valid because R count is greater than R table 0.266.

Table 7. Reliability Data Test

Variable	Cronbach's Alpha	R table	Results
Effectiveness	0,422	0,226	Reliable
Efficiency	0,269	0,226	Reliable
Satisfaction	0,405	0,226	Reliable

Source: SPSS v.24 processed data

It can be seen from the data above that the statements can be said to be reliable because Cronbach's Alpha for each effectiveness variable is 0.422, efficiency is 0.269, and satisfaction is 0.405 which is greater than R table 0.266.

Table 8. Exams Multiple Linear Regression Results

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,169	5,344		,593	,556
	Effectiveness	,305	,115	,325	2,660	,010
	Efficiency	,467	,162	,353	2,889	,006

a. Dependent Variable: Satisfaction

Source: SPSS v.24 processed data

From table 8 of results of computerized data processing calculations using IBM SPSS Statistics V.24, the regression equation is obtained as follows:

$$Y = 3.169 + 0.305X_1 + 0.467X_2$$

Coefficients of multiple linear regression equations above can mean as follow:

- 1) $\alpha = 3.169$ has meaning if the effectiveness and efficiency = 0 (zero) then satisfaction value will show a level or by 3.169 or in another meaning if there is no effectiveness and efficiency variable, then the satisfaction is 3.169 point.
- 2) $\beta_1 = 0.305$ shows that regression coefficient of effectiveness variable has positive regression, in which each 1 (one) point increase in effectiveness, then satisfaction will increase by 0.305 point.
- 3) $\beta_2 = 0.467$ shows that regression coefficient of effectiveness variable has positive regression, in which each 1 (one) point increase in efficiency, then satisfaction will increase by 0.467 point.

Table 9. Value Analysis Multiple Correlation

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,488 ^a	,238	,208	1,43986

a. Predictors: (Constant), Effectiveness, Efficiency
b. Dependent Variable: Satisfaction

Source: SPSS v.24 processed data

Based on results of the above table, effectiveness and efficiency and satisfaction variables have positive relationship with strong level that is shown by R value by 0,488. This means that

relationship between effectiveness and efficiency is positively or in the same direction meaning that level of effectiveness and efficiency will create satisfaction.

Table 10. Analysis Coefficients Determination Value

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.488 ^a	.238	.208	1,43986
a. Predictors: (Constant), Effectiveness, Efficiency				
b. Dependent Variable: Satisfaction				

Source: SPSS v.24 processed data

Based on the outputs using the IBM SPSS V.24 Statistics program, results of the determination coefficient test above show the R2 value by 0.238. The results show that the satisfaction is influenced by the effectiveness and efficiency by 0.238 or 32.8%, thus, 67.2% (100% - 32.8%) is determined by other variables excluded in this study. So, that it can be concluded that effectiveness and efficiency influence on the satisfaction.

Table 11. Exams t statistic results

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.169	5.344		.593	.556
	Effectiveness	.305	.115	.325	2.660	.010
	Efficiency	.467	.162	.353	2.889	.006
a. Dependent Variable: Satisfaction						

Source: SPSS v.24 processed data

From the calculation of the f test above, it can be seen that $t_{arithmetic} > t_{table}$ ($2.660 > 1.675$) with a significant value of the effectiveness variable of 0.010 which is smaller than 0.1 or 10% and has positive coefficient direction. Then, it can be concluded that H_0 is rejected and H_a is accepted, meaning that the effectiveness variable has significant effects on satisfaction.

Partial testing is conducted by t statistic test to determine whether the efficiency variable partially has significant effects on satisfaction. From the calculation of the t test above, it can be seen that $t_{arithmetic} > t_{table}$ ($2.889 > 1.675$) with a significant value of the efficiency variable of 0.006 which is smaller than 0.1 or 10% and has a positive coefficient direction. Then, it can be concluded that H_0 is rejected and H_a is accepted, meaning that the efficiency variable has significant effects on satisfaction.

Table 12. f Statistic tests

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	33.082	2	16.541	7.978	.001 ^b
	Residual	105.733	51	2.073		
	Total	138.815	53			
a. Dependent Variable: Satisfaction						
b. Predictors: (Constant), Efficiency, Effectiveness						

From results of the calculation of the f test above, it can be seen that $f_{arithmetic} > f_{table}$ ($7.978 > 2.19$) with a significant value of 0.001 which is smaller than 0.1 or 10%. Then, it can be

concluded that H_0 is rejected and H_a is accepted, meaning that the effectiveness and efficiency together (simultaneously) has positive and significant effects on satisfaction. From the overall results, it can be concluded that the effectiveness variable in multiple regression has a positive relationship and from the results of the t test partially, it influences on the satisfaction. This means to describe that effectiveness is the main issue to be considered by airport managers in satisfaction assessment. The efficiency variable by multiple regression has a positive relationship and the results of the t test partially, it influences on the satisfaction. This means to describe that efficiency is the main issue to be considered by airport managers in satisfaction assessment.

5. Conclusion

It can be seen that the effectiveness of the sky train use has positive and significant effects on the satisfaction of passengers at Soekarno Hatta Airport. The dominant indicator at the level of effectiveness is regarding timeliness, because the timely departure and arrival of sky train makes sky train users not wait too long and move quickly between terminals. It can be seen that the efficiency of the sky train use has positive and significant effects on the satisfaction of passenger at Soekarno Hatta Airport. The dominant indicator is an easy-to-use indicator, because airport passengers desire a facility that makes it easy for passengers to transfer between terminals. It can be seen that effectiveness and efficiency have positive and significant effects on the satisfaction of passengers at Soekarno Hatta Airport. So, the effectiveness and efficiency variables have effects on the passenger satisfaction at Soekarno Hatta Airport.

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