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E-TOLL EFFECTIVENESS ON TOLL ROAD USERS IN DKI JAKARTA

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Abstract: The purpose of this study is to determine whether or not there is a significant impact of the effectiveness of e-toll on toll road user satisfaction. Measurement of effectiveness can be seen from users' perceptions about the ease of using e-toll and knowing whether the e-toll system makes transactions easier. The respondents in this study are toll road users in the Jakarta. The research was conducted using a non-probability sampling method with a purposive sampling technique. Data collection in this study was carried out by distributing questionnaires to 150 respondents. The results of data processing indicate that there is a positive effect of e-toll on toll road user satisfaction.

Keywords : effectiveness, satisfaction, e-toll

Introduction

As the capital city of Indonesia, DKI Jakarta Province is still the center of the country's economy, so it is not surprising that DKI Jakarta Province has a high population density, both natives and people who migrate. This has an impact on traffic in DKI Jakarta, which is very familiar with congestion, high accident rates and air pollution caused by one of them by vehicles, including private cars, motorcycles, public transportation, pick-ups and small to large cargo trucks, which which is more prone to accidents. Therefore, the DKI Jakarta Provincial Government continues to strive to reduce this risk by diverting four-wheeled vehicles, pick-ups and large vehicles such as buses and trucks to use expressways or what we know as toll roads. By using toll roads, business trips and economic activities in DKI Jakarta will be smoother than if only relying on arterial roads. On the other hand, it will also reduce air pollution caused by motorized vehicles, especially if there are traffic jams and at the same time reduce the number of accidents.

For these benefits, until now, not a few people in DKI Jakarta have used toll roads as an option for road access to a destination. Due to the high number of toll road users, the DKI Jakarta government continues to strive so that the toll road remains a barrier-free

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road so that there is no accumulation of vehicles on the toll road, therefore the government has implemented a policy related to the use of toll roads that are required to use e-toll which is expected to make it easier for road users. tolls and speed up transactions. But according to the implementation of this system, there are pros and cons because there are still difficulties in using e-toll that cause an accumulation of vehicles at automatic toll gates. There are also some complaints from e-toll users that their e-toll balance was reduced twice while tapping on the machine, and they also had problems while topping up their e-toll. Not only that, but the card tapping process is also difficult. For example, there is a toll road user who is 150 cm tall, he finds it hard to tap his card on the e-toll machine and has to remove his seat belt for there are no officers to help, so according to him, there needs to be the consideration to overcome these obstacles. Not only private cars, but truck drivers also have difficulty in the process of tapping the card because the machine often fails to detect the e-toll card with one touch but has to do it repeatedly.

Based on the observations, several other problems are receipts that are often difficult to get out while it is needed for the workers to get reimbursement from their offices. Besides that, many toll road users run out of balance, so they have to borrow e-toll cards from other drivers who are queuing up. Some of these obstacles must be overcome immediately because it refers to the toll road users satisfaction so that users of toll roads still follow the government program which is using the e-toll and does not move to the arterial road and causing many negative impacts, as described above, because customer satisfaction is the main thing in every economic activity. If customers or toll road users are not satisfied with the system implemented by the government, it will affect the effectiveness of the implementation of the e-toll system. This is what underlies the researcher to conduct a research entitled **"E-Toll Effectiveness on Toll Road Users in DKI Jakarta".**

The literature review used in this study is as follows:

Effectiveness

According to Mardiasmo (2009:132) in research (Sumenge 2013), effectiveness is related to the goals that have been achieved and policy objectives. Effectiveness is a carrier of two interests between the output and the desired goal. An operating activity can run effectively if it succeeds in achieving the policy objectives (spending wisely). According to Sutrisno (2007) in research (Git and HA 2017), indicators in measuring

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effectiveness in this study are program understanding, right on target, on time, goal achievement, real change.

Technology Acceptance Model (TAM)

In adapting technology we need Technology Acceptance Model (TAM) which is the development of Theory of Reasoned Action (TRA) developed by Martin Fishbein and Icek Ajzein (1975, 1980). (Fatmawati 2015), TAM is one type of theory that uses a behavioral theory approach that is widely used to examine the process of adopting information technology. Based on the literature review, TAM has a focus on Perceived Ease of Use (the ease of using the system), Perceived Usefulness (the system can make it easier for individuals from their work) (Davis, 1989).

Customer Satisfaction

Kotler (2005) in (Dwi and Sudarwanto 2014) customer satisfaction is an expression of happiness or disappointment someone who appears after making a comparison between the performance (outcome) of the product that is thought to be the performance (result) of the product that is expected. (Tjiptono 2015) suggests that satisfaction is defined as an effort to fulfill something or make something adequate. Customer satisfaction is the key in retaining consumers, this can be seen from the company's efforts to see the shifting needs and desires of customers which can change at any time. According to Kotler & Keller (2012) in research (Annishia and Setiawan 2018), the dimensions of satisfaction consist of: staying loyal, buying the products offered, recommending the products purchased, being willing to pay more, and providing input.

Framework and Hypothesis

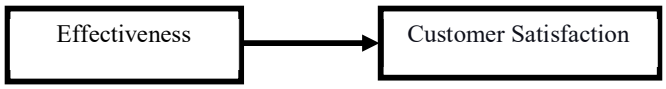

Figure 1. ***Conceptual Frame Work***

H0 : There is no effect between the effectiveness of e-toll on user satisfaction

H1 : There is an effect between the e-toll effectiveness variables on user satisfaction

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Method

The research method used for this research is quantitative. The sampling method used is non-probability sampling because the number of toll road users continues to move, the data fluctuates, which means it is not known for sure how many populations per unit time are because they are constantly changing. Therefore, the sampling technique used is purposive sampling. Where the sample must match the predetermined characteristics, which is toll road users in DKI Jakarta. In taking the number of samples, the researchers used the Roscoe theory, which according to Sugiyono (2013) in the research of (Ridwan, Solihat, and Trijumansyah 2018) if the research in sampling uses the Roscoe theory, the appropriate size in this study is 30-500 and this sample size has met the ideal sample requirements. That must be met in the multiple regression analysis tools if the population size is not known. Based on these suggestions, the researchers set the number of respondents in this sampling to be 150 respondents with the details of 30 respondents per region (North Jakarta, Central Jakarta, South Jakarta, East Jakarta, and West Jakarta).

The data used to support the research being conducted are primary data and secondary data. Primary data was obtained from the distribution of questionnaires, secondary data was obtained from journals similar to the object under study and previous research. In determining the results of the study, the authors use statistical tools, while the tests that will be carried out for this research are validity and reliability tests, classical assumption tests (while still fulfilling the requirements of normality test, linearity test, and heteroscedasticity test), simple regression test, coefficient test correlation, r2 adjustment test. In this study, the authors use a significance level of 0.05 as to whether or not the items used are appropriate.

Results and Discussions

Validilty Test

The validity test according to Ghozali (2006) in the research (Wahyuni 2014) is aimed to measure the validity of a questionnaire. A questionnaire can be valid if the questions can reveal something that can be measured by the questionnaire.

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Table 1. The Result of Validity Test

Variable/ dimension		Indicator	R Count	Average
Effectiveness	X1	I don't need more effort to reach the machine (On Board Unit)	0.539	3.04
	X2	I have no trouble checking my e-toll card balance	0.422	2.82
	X3	I feel the e-toll system is now advanced	0.558	3.37
	X4	The e-toll machine does not experience any problems when used	0.543	3.22
	X5	E-toll card is quickly detected on the machine (On Board Unit)	0.653	3.11
	X6	It didn't take me long to learn how to use the e-toll system	0.638	3.07
	X7	I think e-toll is able to keep up with today's developing technology	0.515	2.68
	X8	I feel that using e-toll increases my productivity	0.586	3.06
	X9	I think the government is right on target in implementing the e-toll system	0.638	2.95
	X10	I feel that the government has been able to realize the implementation of e-toll	0.576	3.08
Satisfaction	Y1	I will use e-toll regularly	0.595	3.07
	Y2	I will use e-toll continuously	0.701	2.79
	Y3	I will support the innovations made by e-toll	0.674	2.83
	Y4	I will buy products offered by e-toll	0.423	3.25
	Y5	I will tell people about my good experience when using e-toll	0.688	2.94
	Y6	I will recommend e-toll to others	0.590	3.01
	Y7	I am willing to pay more for e-toll	0.688	3.06

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Y8	I feel that the price given for the benefits of e-toll is in line with my expectation	0.671	2.99
Y9	I hope e-toll can innovate more	0.675	3.12
Y10	I hope that e-toll will not experience any problems in the future	0.920	3.09

Source: Processed by the researchers using SPSS 24.00

The data is valid because it has matched the validation test requirements, it is R count > R table. With 150 respondents (N) then df = N-2 ; 150-2 = 148. So, the R table is 0.1603.

Reliability test

According to Ghozali 2009 in the research (Wahyuni 2014), the reliability test is to find out that the instruments used in the research to obtain the information used can be trusted as a data collection tool and can reveal information that happened.

Table 2. The Result of Reliability test

Reliability Statistics	
Cronbach's Alpha	N of Items
0,887	20

Source: Processed by the researchers using SPSS 24.00

All items can be said to be reliable because they have matched the provisions, namely the croncah's alpha value of 0.887 > 0.6

Normality Test

Ghozali (2011) in the research (Ayuwardani and Isroah 2018) argues that the normality test is to test whether in a regression model, the confounding variable has a normal distribution.

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Graphic 1. The Result of Normality Test

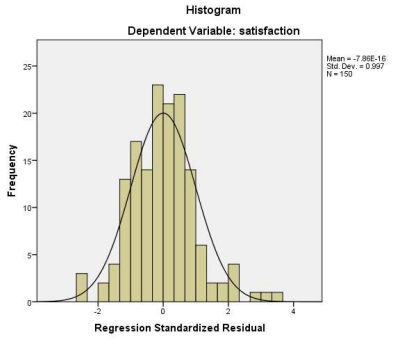

Figure 1. (Histogram)

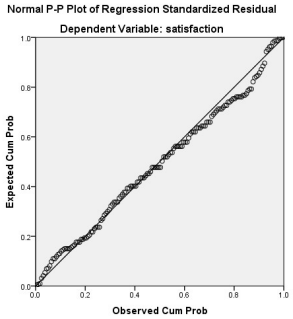

Figure 2. (Normal P-P Plot)

Source: Processed by the researchers using SPSS 24.00

Figure 1 and Figure 2 above show that the data has been normally distributed because the histogram shows a bell shape and the p-p norm plots the data following a diagonal line.

Linearity Test

The linearity test is to determine whether the two variables have a linear relationship by looking for the regression line equation of the independent variable (X) to the dependent variable (Y).

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Table 3. The Result of Linearity Test

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
satisfaction * effectiveness	Between Groups	(Combined)	1313.160	19	69.114	8.778	0.000
		Linearity	1205.348	1	1205.348	153.080	0.000
		Deviation from Linearity	107.811	18	5.990	0.761	0.742
	Within Groups		1023.614	130	7.874		
	Total		2336.773	149			

Source: Processed by the researchers using SPSS 24.00

The table above shows the value of sig. at deviation from linearity 0.742 > 0.05 and the calculated F value 0.761 < F table 3.905 so, it can be concluded that there is a linear association between the independent variable effectiveness and the dependent variable satisfaction

Heteroscedasticity Test

According to Ghozali (2011) in the research (Ayuwardani and Isroah 2018), he argues that the heteroscedasticity test is to test whether in a regression there is an inequality of variance from the residuals from one study to another.

Table 4. The Result of Heteroscedasticity Test

Coefficients[a]							
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	0.810	1.122		0.722	0.472		
	effectiveness	0.042	0.037	0.093	1.140	0.256	1.000	1.000

Dependent Variable: ABS_RES

Source: Processed by the researchers using SPSS 24.00

Table 4 data shows the significant value of the independent variable effectiveness with absolute residual 0.256 > 0.05 so that it can be stated that there is no heteroscedasticity.

Simple Linear Regression Test Results of Effectiveness and Customer Satisfaction

T-Test

According to (Ghozali, 2011) in the research (Ayun 2015), The T-test is used to show how far one independent variable individually explains the variation of the

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independent variable. Simple linear regression analysis is used to determine the linear relationship between one independent variable (X) and the dependent variable (Y).

Table 5. The Result of T-Test

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	8.683	1.724		5.036	0.000		
	effectiveness	0.706	0.056	0.718	12.557	0.000	1.000	1.000

a. Dependent Variable: satisfaction

Source: Processed by the researchers using SPSS 24.00

The equation obtained from the table above is Y = 8.683 + 0.706X + e. In other words, satisfaction will increase depending on the increase in the effectiveness of e-toll with a guideline value of constant 8.683 and beta 0.706 and due to the value of sig. on the effectiveness of 0.000 <0.05 then, the effectiveness has a significant effect on customer satisfaction (H0 is rejected).

F-Test

Table 6. The Result of F-Test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1205.348	1	1205.348	157.670	.000[b]
	Residual	1131.425	148	7.645		
	Total	2336.773	149			

a. Dependent Variable: satisfaction

b. Predictors: (Constant), effectiveness

Source: Processed by the researchers using SPSS 24.00

The F test in this simple linear regression is intended to support the T test. F count 157.670 > f table 3.905 and sig. 0.000 < 0.05 means that there is an effect of the effectiveness of e-toll on toll road user satisfaction.

Coefficient of determination and coefficient correlation

According to Ghozali (2005) in the research (Putro and Kamal 2013) the coefficient of determination (R2) test is used to measure how far the model's ability to explain variations in the dependent variable is. The correlation coefficient is an analysis used to

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measure whether the influence of independent variables on the dependent variable is strong or not. The Interval Coefficient interpretation according to Sugiyono (2014) in the research (Halin, Wijaya, and Yusilpi 2017) Coefficient of Relationship 0.00 – 0.199 Very Low 0.20 – 0.399 Low 0.40 – 0.599 Medium 0.60 – 0.799 Strong 0.80 – 1.000 Very Strong.

Table 7. The Result Of Coefficient of determination and coefficient correlation

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.718[a]	0.516	0.513	2.765	1.801

a. Predictors: (Constant), effectiveness

b. Dependent Variable: satisfaction

Source: Processed by the researchers using SPSS 24.00

Table 7 shows the R-value of 0.718 which means that the effectiveness of e-toll has a moderate association to customer satisfaction and R square of 0.516, the effectiveness variable as the variable studied has an influence of 51.6% on toll road user satisfaction and 48.4% is influenced by other variables not examined.

Conclusion

Based on the results of the study, it can be concluded that:

1. Respondent data with two variables has been carried out a simple linear regression test, the result of which is that there is an effect of the effectiveness of e-toll on the satisfaction of DKI Jakarta toll road users, where the following equation is obtained Y = 8.683 + 0.706X + e in other words, satisfaction will increase depending on increasing the effectiveness of e-toll with guideline constant values of 8.683 and beta 0.706.
2. The effect of the effectiveness of e-toll on the satisfaction of DKI Jakarta toll road users is 51.6%, there are 48.4% of the influence of other variables not examined. And the relationship between the effectiveness of e-toll on toll road users is strong, which is 0.718.

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