



## The Study of Online and Conventional Transportation in Semarang City

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### Abstract

The aims of this study are; knowing the profile of users of online transportation services, knowing the factors that influence the selection of online transportation and knowing the correlation of online transportation towards the income of conventional transportation drivers in Semarang City. This research used descriptive percentage, multiple linear regression and the correlation with the helped of SPSS program as analysis method. The results show that the users of online transportation services are dominant female in the age range 21-30 with the last education taken is college. For employee, mostly are private employees and college students with dominant status are not married or single. Factors that significantly influence the use of online transportation in Semarang City are price, income, service quality and distance. While the price of other transportation and travel time factors do not have a real influence on the use of online transportation services in Semarang City. Technological variables show a very weak correlation, and the number of online transport fleets variable shows sufficient or moderate correlation. The government is expected to be more careful in setting conventional transportation prices so that the price inequality that occurs between online transportation and conventional transportation is not too high. Because not all consumers use online transportation and able to use internet.

## INTRODUCTION

City is industrial center, trade center, growth center, distribution node, settlement center or capital area (Soesilowati, 2008). Urban areas on the one hand have high economic value as a business center, but on the other hand problems arise as a consequence of the business center, one of them is transportation problems (Pujiati, Sarungu, & Soesilo, 2017).

Semarang City is the capital of Central Java, which has high flow of mobility. A person moves because there is opportunity to get a better job or greater income and the level of wages or salaries earned in the village cannot guarantee the welfare of his family (Maulida, 2013).

As consequences of that move then an area will experience an increase in population which will also increase the mobility or community movement in order to meet their daily needs. The high flow of population mobility in an urban area is caused by the high population density which is a measure of the population divided by the area, bigger population with a narrow area illustrates that there's happened population density (Martini & Sudibia, 2013).

**Table 1.** The Area and the Number of Population in Semarang City Period 2013-2017

Year	Area (Km <sup>2</sup> )	Number of Population (Person)
2013	373,70	1.644.374
2014	373,70	1.672.994
2015	373,70	1.701.114
2016	373,70	1.729.083
2017	373,70	1.757.686

Source: Central Java Statistical Center, processed

Table 1. shows that the number of population in Semarang City period 2013-2017 always increased. The area of Semarang City is 373.70 Km<sup>2</sup> with population which always experience an increase every year causes population density which also continue to increase. With this high population density, the flow of mobility and transportation infrastructure also increased.

Nowadays, transportation service is growing rapidly. Transportation service

companies provide services to help people carry out daily routines in increasing efficiency and solid mobility (Hartatik, 2017). The competition among transportation service companies more is based on the advanced and efficient form of technology for service users. For this reason, companies must follow the development of technology in order to meet customer satisfaction. Technology will continue to grow following the flow of globalization, the developments in technology such as gadget and internet make it easier for people to fulfill their needs. In this modern era, many public transportation phenomena have used application or commonly called as "Online Transportation".

Now, the development of internet technology has changed the lifestyle of Indonesian people to become technology-based. The development of internet also facilitates the work of Indonesian people in terms of traveling. The increasing use of internet access by Indonesian people invites the presence of online transportation both taxi and motorbike which are currently growing rapidly in big cities including Semarang City.

The increasing use of internet access by the Indonesian people causes the existence of online transportation because people want transportation that is easily accessible, comfortable and fast. Application-based transportation service provides opportunities for drivers to get customers at any location without being tied by the station (Mahargiono & Cahyono, 2017).

According to Dianti (2018) the crucial thing for the selection of the use of online transportation for the consumers is price, it cannot be underestimated, because the price competition which occurs in the market will be one of the factors for consumers to decide whether they buy or not, especially there are many online transportation services in Indonesia. Whereas, according to Fajariah (2017) *Ojek online* or online motorbike is still chosen by the users even though the price went up, this because if they switch to other means of transportation it would be more expensive so that users still use ojek online.

Fajariah (2017) income has positive influence on the use of online motorbike service for the past month. If it is seen from the reality that people who have high income do not want to find difficulty in seeking conventional motorbike. And the distance not always affects the demand for online motorbike, even though the distance is far usually the users still use that online motorbike.

Karissa (2011) in this case the demand for railroad services states that the price of other transportation has significant effect on train demand. The price of other transportations such as bus, travel, ship and plane can affect someone in using railroad transportation services. In addition Putra (2013) states that service quality is an important factor, namely security, comfort, standard service and travel time accuracy become consideration by someone in using transportation services.

Besides providing benefits to the community in doing mobility, the existence of online transportation services in urban areas also has an impact on conventional transportation. The existence of this online transportation makes the space of conventional transportation become threatened, both in terms of business sustainability, income and welfare.

Based on preliminary observation on drivers of conventional transportation with three interviewees, namely the drivers of conventional motorbike, taxi and the drivers of public transportation. They said that the existence of online transportation made drivers' income decreased. The development of technology and the growing number of online transport fleets, both online motorbike and taxi has caused a decline in their income which is almost 50%.

The demand for transportation services is indirect or derived demand that is the need for transportation service arises because of the desire to fulfill other real goals, the factor that lies someone uses transportation services is same as someone consuming goods or services (Utari & Nihayah, 2016). The demand for transportation services can be influenced by the physical characteristic, namely the price of transportation,

user's income, the speed of transportation and service quality (Nasution, 2004).

The aims of this research are; knowing the profile of users of online transportation services, knowing the factors that influence the selection of online transportation, and knowing the correlation of online transportation towards the income of conventional transportation drivers in Semarang City.

## RESEARCH METHODS

The type of this research is quantitative research. This research used primary data. The population in this study were all citizens of Semarang City as users of online transportation and the drivers of conventional transportation as much as 1.757.686 people (Central Java Statistical Center, 2018). Then, it's obtained sample as many as 100 respondents for users of online transportation and 100 respondents for drivers of conventional transportation by using incidental sampling technique. This research used questionnaire, interview and documentation as method for collecting the data. Analysis tool used in this study were descriptive percentage, Ordinary Least Square (OLS) regression, and spearman & multiple correlation.

Before testing multiple linear regression analysis, it is necessary to do classic assumption test such as normality test, multicollinearity test, autocorrelation test and heteroscedasticity test. Regression analysis in this study used equation model to simplify the problems studied, namely the use of online transportation (Qd) is influenced by price (X<sub>1</sub>), income (X<sub>2</sub>), the price of other transportation (X<sub>3</sub>), service quality (X<sub>4</sub>), distance (X<sub>5</sub>) and travel time (X<sub>6</sub>).

$$Q_d = f(X_1, X_2, X_3, X_4, X_5, X_6) \dots \dots \dots (1)$$

So that estimation technique used in this study produces regression function as follows:

$$Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \mu \quad (2)$$

Where:

Y = the use of online transportation service

β = constant

- X<sub>1</sub> = price
- X<sub>2</sub> = income
- X<sub>3</sub> = price of other transportation
- X<sub>4</sub> = service quality
- X<sub>5</sub> = distance
- X<sub>6</sub> = travel time
- μ = error

While for correlation analysis, the variables used are the income of conventional transportation drivers, technology, and the number of online transportation fleets.

**RESULTS AND DISCUSSION**

The Characteristics of Online Transportation Users The results showed the users of online transportation service are dominant female in the age range 21-30 years old with the last education taken was college. While, for the employment, most are private employees and students with status predominantly unmarried or single. The majority income of the users is ≤2,500,000 with the distance 101-200 km for the past month.

Then based on the results all classical deviations testing toward the research data can be explained as follows:

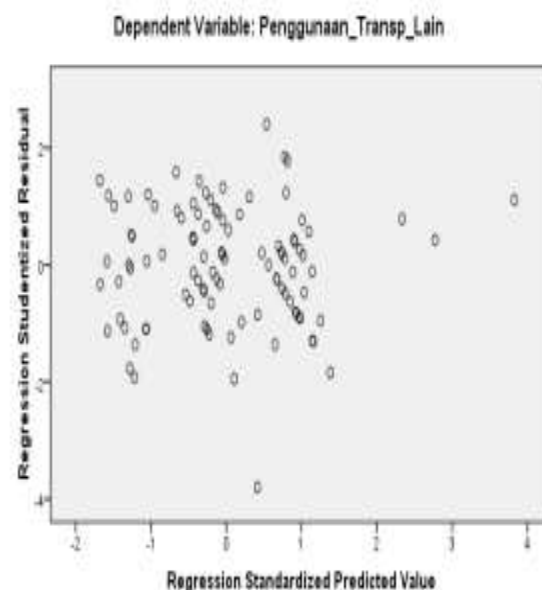
**Table 2.** Multicollinearity Test

Variable	Tolerance	VIF
Price	.525	1.906
Income	.517	1.932
Price of other transportation	.843	1.186
Service Quality	.724	1.381
Distance	.591	1.692
Travel Time	.531	1.885

Source: SPSS Output, processed

From the results of multicollinearity test that has been done, it is known that the value of Variance Inflation Factor (VIF) of the six variables is smaller than 10 and the Tolerance value is more than 0.10 so it can be said that there is no multicollinearity between independent variables in the regression model.

From the results of Durbin-Watson test for the residual regression equation obtained the number of d-count is 1.573. As a general rule Durbin-Watson ranges between 0 and 4. If the value of statistical test is smaller than one or greater than three, then the residual or error of multiple regression model is not independent or there's happened autocorrelation. So based on the value of Durbin-Watson statistical test in this study is above one and under three (1,573) so that autocorrelation does not occur.



**Figure 1.** Heteroscedasticity Test

Source: SPSS Output, processed

Based on the scatterplot graph shows that there are clear patterns and points that spread above and below the number 0 on Y axis. So it can be concluded that there is no heteroscedasticity in the regression model.

**Table 3.** The Result of Regression Analysis

Variable	Coef	T	Prob
		Stat	
Constant	-50,23	-11,346	0,000
Price	-0,295	-2,411	0,018
Income	3,817	13,163	0,000
Price of Other Transportation	0,017	0,086	0,932
Service Quality	0,133	3,559	0,001
Distance	0,007	2,778	0,007
Travel Time	0,232	1,14	0,162
R	0,911		
Adj R-Squared	0,819		
F-Statistics	75,631		
N	100		

Source: Primary Data, processed

Based on table 3., the results of regression can be summarized as follows:

The Influence of price variable (X1), income (X2), price of other transportations (X3), service quality (X4), distance (X5), and travel time (X6) on the use of online transportation services in Semarang City obtained the value of adjusted R2 is 0.819. It means that variations in independent variables, namely price (X1), income (X2), price of other transportation (X3), service quality (X4), distance (X5), and travel time (X6) toward the use of online transportation services in Semarang City is 81.9%, while the rest 18.1% is explained by other variables outside the model (not examined). And obtained a new equation as follow:

$$Y = -50,230 - 0,295X_1 + 3,817X_2 + 0,017X_3 + 0,133X_4 + 0,007X_5 + 0,232X_6 \dots\dots\dots(3)$$

If Y is the use of online transportation, then the regression results on that equation can be interpreted as follows:

The constant value in the regression results can be interpreted if all independent variables have zero value then the number of the use of online transportation is -50.230 in the last month.

The coefficient value of price (X1) is -0.295. It means that if the price increases by 1 rupiah, the use of online transportation will

decrease by 0.295 with the assumption that other variables are fixed. From the results of that test it can be concluded that the price variable has significant negative influence on the use of online transportation in Semarang city. This is in line with the theory which says that the demand for an item and service is influenced by the price and service itself. Thus, the level of transportation's cost is a determining factor in the selection of transportation services. This is because the price of online transportation is indeed relatively cheaper compared to other transportation, so consumers prefer to use online transportation compared to conventional transportation.

The coefficient value of income (X2) is 3.817. It can be interpreted if every increase in consumer income by 1 rupiah, the use of online transportation increased by 3.817 with the assumption that other variables is fixed. From the test results it can be concluded that the income variable has significant positive influence on the use of online transportation in Semarang city. This is in accordance with demand theory which states that the higher the income, the higher the amount of demand for goods / services and vice versa. If it is looked from the income of each community that the higher the income, the mobility activity will also increase, therefore the need for effective and efficient supporting facilities to support this mobility is urgently needed for transportation facilities such as online transportation, supported by adequate technology so that the access of online transportation facilities will be increasingly supportive. People tend to choose online transportation that provides convenience and it has cheaper price compared to conventional transportation.

The coefficient value of price of other transportation (X3) is 0.017. It means that if other transportation prices increases by 1 rupiah, the use of online transportation increases by 0.017 with the assumption that other variables is fixed. From the results of the test it can be concluded that the price of other transportation variable has insignificant positive influence on the use of online transportation in Semarang City. Price of other transportation variable here is the price of

conventional transportation which is goods / replacement service. This is in accordance with the demand theory which states that the price of goods/ replacement service can affect the demand for goods / services that can be replaced. If the price of goods / replacement service increases, then goods / replacement services that are replaced will experience an increase. So it can be concluded that if the price of other transportation increases, the demand for online transportation also increase.

The coefficient value of service quality (X4) is 0.133. It means that if the service quality has increased by 1%, the use of online transportation also has increased by 0.133 with the assumption that other variables is fixed. From the result of the test it was explained that service quality variable has significant positive influence on the use of online transportation in Semarang city. This is in accordance with the demand of transportation service theory which states that consumers will choose transportation mode which can provide good service, requires comfort, accuracy, security and safety on the way. The service quality of online transportation is a factor that determines the level of success and quality of transportation service companies where the company's ability to provide qualified services to consumers and as a strategy of company to achieve success and facing competition.

The coefficient value of distance (X5) is 0.007. It means that if the distance increases by 1%, the use of online transportation also increases by 0.007 with the assumption that other variable is fixed. From the result of the test it can be concluded that distance variable has significant positive influence on the use of online transportation in Semarang city.

This is consistent with location theory which states that location is very influential on the selection of transportation for consumers. The farther the distance from the origin place to the destination, the stronger the consumer determines the means of transportation. So, when consumers want to travel long distances, then the consumers prefer to use online transportation because the price is affordable and

transparent and there is no need to go to the station to get it.

The coefficient value of travel time (X6) is 0.232. It means that if the travel time has increased by 1% then the use of online transportation also has increased by 0.232 with the assumption that other variable is fixed. It can be explained that the travel time variable has insignificant positive influence on the use of online transportation in Semarang city. So, although the travel time used by online transportation to deliver and pick-up to consumers requires a long time, consumers still prefer to use online transportation. This is because of the easy way to order, which is only by accessing via asmartphone connected to the internet, and no need to go to the station.

**F Test**

From the F test (Simultaneous) obtained f count value is 75.631, with significance level  $\alpha = 5\%$ , then obtained the value of F table = 2.20 is obtained. With F-statistic > F-table, this shows that the variables of price, income, price of other transportation, service quality, distance and travel time together influence the use of online transportation in Semarang City.

**Table 4.** Conventional Transport Driver Income Before and After Online Transportation

Income (Rupiah)	Before the existence of online transportation		After Online Transportation	
	Total	%	Total	%
≤ 50.000	2	2%	86	86%
51.000 – 100.000	88	88%	14	14%
101.000 – 150.000	10	10%	0	0%
> 150.000	0	0%	0	0%
Total	100	100%	100	100%

Source: Primary Data, processed

The average driver's income before online transportation is 51,000 - 100,000 per day. Then after the existence of online transportation, the driver's income averagely decreased by 50% of the original income around ≤ 50,000 per day. The

drivers' working hours did not change after online transportation, the average work - + 10 hours every day. But the drivers feel there's change in their income since the existence of

online transportation that has made consumers switch from using conventional transportation to online transportation because the ordering of online transportation is easy.

**Table 5.** Spearman Correlation Test

		Techno	The number of online transportation fleets	The income of conventional transportation drivers
Technology	Correlation coefficient	1.000	.167	.104
	Sig. (2-tailed)	.	.096	.303
	N	100	100	100
The number of online transportation fleet	Correlation coefficient	.167	1.000	.493
	Sig. (2-tailed)	.096	.	.000
	N	100	100	100
The income of conventional transportation drivers	Correlation coefficient	.104	.493	1.000
	Sig. (2-tailed)	.303	.000	.
	N	100	100	100

Source: SPSS Output

The correlation between technology variable and income of conventional transportation drivers has value is 0.104 or 10.4% which can be categorized as very weak relationship. And based on the result of significance test showed a value 0.303 which means that the correlation of the two variables is not significant ( $0.303 > 0.05$ ).

Technological progress is one of the factors in economic growth. Rapid technological development causes each country to be able to compete with the use of technology and apply it in daily activities. The very weak relationship between technology and conventional transportation driver's income is due to the development of technologies such as gadgets and the internet that have transformed people's lifestyles into technology-based, including in terms of travel. Technological advances that bring online transportation have changed people's preferences from using conventional transportation to online transportation. Changing community preferences is part of

technological advances that have an impact on the reduction of conventional transportation consumers so that the income of conventional transportation drivers decreases.

The correlation between the number of online transportation fleets and the income of conventional transportation drivers has a value is 0.493 or 49.3% which can be categorized as moderate / sufficient relationship. And based on the result of significance test showed a value 0.000 which means that the correlation of the two variables is significant ( $0,000 < 0,05$ ).

Changes in the transportation model from conventional to application-based transportation are in great demand by the community and this is a form of social change that requires the ease of use of transportation modes. The increasing number of online transportation fleets shows that people prefer to use online transportation because of affordable and transparent prices according to the distance traveled. The shift of conventional transportation users to online transportation is influenced by the sophistication

of communication tools and the desire of the people who always want convenience. Even though online transportation makes it easy for people to do mobility, not all people use online transportation because not all people control the internet.

For the calculation of F statistic, then obtained F statistic value is 13,373 and the probability value (sig.F change) is 0,000. Because the sig. F value is smaller than 0.05 ( $0.000 < 0.05$ ). It can be interpreted that the technology variable and the number of online transportation fleets relate simultaneously and significantly with conventional transportation drivers.

## CONCLUSION

The users of online transportation service are dominant female in the age range of 21-30 years old with the last education taken is college. For employees, mostly are private employees and college students with dominant status are not married or single. Factors that significantly influence the use of online transportation in Semarang City are price, income, service quality and distance. While the price of other transportation and travel time factors do not have real influence on the use of online transportation services in Semarang City. While the correlation analysis shows that the technology variable shows a very weak correlation, and the number of online transportation fleets variable shows sufficient or moderate correlation..

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