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Promoting Product Service System for Motorcycle: A Study of Ridesharing Program Intention for University Students

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Abstract. *The need to reduce air pollutions produced by motor vehicle and traffic congestion is prominent as it improves human health and environmental destruction mitigation. Ridesharing program is an effort to reduce traffic congestion without preventing people from doing mobility and prohibiting them from buying a motor vehicle. This paper addresses to investigate the determinant of university students to the ridesharing program. Four variables with discrete items were provided t respondents to be self-selected. Those are home address status, type of driving license, student's travel behavior to university, and intention of student to ridesharing program. Those variables are analyzed into three models. By using Logistic Regression statistical analysis, this study shows that ridesharing program intention is influenced by the behavior of the student to travel to university. Meanwhile, student travel behavior is influenced by home address status and the ownership of the driving license of students.*

Keywords. *ridesharing, product service system; motorcycle, sustainable transportation, university student*

I. INTRODUCTION

It was recorded by Statistics Indonesia that the number of motorcycle in 2018 was 119 million units (BPS, 2019). This means the number of motorcycles in Indonesia was about 60.7% of Indonesia's population aged more than 20 years old. According to Environmental Behavior Survey conducted by Statistics Indonesia, about 37% of Indonesian in 2012 tend to use the motorcycle for working, dropping to and picking children up at school, and daily life activities, but only 15% of them were public transport users (BPS, 2012).

A motor vehicle is important for improving the effectiveness of mobilization. However, motor vehicle contributes to environmental hazards. IEA (2016) reported that the highest contributor of air pollution was a motor vehicle. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen (NO_x), hydrocarbon (HC), polycyclic aromatic hydrocarbon (PAH), carbon dioxide (CO_2) are pollutants produced from motorcycle (Chang & Chen, 2008; Lin et al., 2006; Wang et al., 2008). About 50% of NO_2 was produced from a motorcycle (IEA, 2016). Ministry of Energy and Natural Resource, the Republic of Indonesia, had made an estimation of CO_2 in 2010 in Indonesia was 95.92 million tones, and it increased to 126.56 million tones in 2014 (BPS, 2016). A motorcycle produces more VOC and PAH than other vehicles (Wang et al., 2008).

The hazard of air pollution influences human health. Likhvar et al. (2015) study show that $PM_{2.5}$ is the main cause of the death of respiratory diseases. The previous study shows that most people with respiratory diseases living near the main road (Brunekreef et al., 2002). This study is supported by Zhang and Batterman (2013), who proved that the increase in air pollution significantly improves the health risk of humans. A recent study conducted by Eze et al. (2014) found that PM_{10} and NO_2 have a relation to diabetes. PM2.5 contributes to the development of atherosclerosis, which type of cardiovascular disease (Bai & Sun, 2016).

In this circular economy era, the pressure to companies for providing environmentally benign products and services has increased. The idea of servitization, where the company is encouraged to provide a functional product such as Product Service System (PSS) and eco-efficiency, is the answer to deal with the call of eco-product

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orientation. However, there is limits response to the call, either from companies and customers. Conflict of interest from the company to reduce the product volume (Mont, 2002) and the limited ability of the company to design and implement PSS business (Reim et al., 2015) are the reasons from company perspectives. Meanwhile, reaching social acceptance may hinder PSS implementation (Mont, 2002).

Apart from all those implementation barriers, there are some succeed of PSS models provided by the vehicle company. Maintenance, sharing, renting, and pooling has successfully practiced for a vehicle. In Indonesia, vehicle maintenance provided by vehicle companies has attracted a vehicle owner. It is because the original spare part and professional engineer provided by vehicle companies are believed to be able to guarantee the quality of a vehicle. In terms of PSS, maintenance is a PSS model to expand the product life cycle. Meanwhile, vehicle leasing is one of a popular scheme to have a vehicle.

Since 2010, vehicle pooling through ridesharing start-up business has attracted Indonesian society. This is because this business provides easier, cheaper, and more flexible movement for the consumer. Previously, traditional ridesharing business, which is known as 'ngojek' is popular for society. However, far before the emergence of the ridesharing business, voluntary ridesharing is common in society. The study of Kocur and Hendrickson (1983) for voluntary ridesharing reduced travel cost 22%. Ride Ridesharing also contributes to reducing the number of private vehicle ownership (Li et al., 2017). It also contributes to the reduction of traffic congestion (Alexander & González, 2015; Dewan & Ahmad, 2007; Tsao & Lin, 1999), since the occupancy of vehicle improved. Ridesharing may influence fuel reduction (Fellows & Pitfield, 2000). Thus, pollution caused by high traffic could be reduced as well.

Ridesharing has traditionally practiced by most people worldwide sing a long time ago. It was previously operated casually until now it has been developed by using information technology. It has been attracting researchers to be studied since the 1970s (Hwang & Guiliano, 1990). It was viewed from very wide perspectives such as transportation management and policy (Brownstone & Golob, 1992), environmental sciences (Levofsky & Greenberg, 2001), computer sciences (Bruglieri et al., 2011; Schreieck et al., 2016), system engineering (Xu et al., 2015), demography (Ferguson, 1997) and behavioral studies (Bachmann et al., 2018).

Koppleman et al. (1993) found that people with an additional trip beyond their usual trip had less likely to rideshare. The study also found that a woman was less likely to rideshare — meanwhile, age and household income influence ridesharing (Burris & Winn, 2006). Flexible trips are one of the determinants of ridesharing (Guan et al., 2018). Ridesharing is commonly chosen by those who have fewer income people (Hwang & Guiliano, 1990) and less access to public transport (Jiang et al., 2018). Brownstone & Golob (1992) study found that longer commuter tends to ridesharing. This study strengthens Levin (1982) experiment with university students. Later, the study on ridesharing propensity related to residential distance has been found by many researchers such as Erdoğan et al. (2014). Cost efficiency is the dominant reason among other reasons as high cost due to long transportation could be shared. Collura (1994) study in Massachusetts shows that ridesharing habit is preferred by family and friend, in addition to carpool provided by the company.

The project of ridesharing has been implemented in some universities, such as the University of Washington, in collaboration with the Bellevue Transportation Management Association in 1993-1994 (Levofsky & Greenberg, 2001). It also implemented in Universitá Statale and Politecnico di Milano, Italy, through its system called PoliUniPool (Bruglieri et al., 2011).

There are some universities in Solo Raya where ridesharing is commonly applied by students, staff, and lecturers. However, there are no studies related to ridesharing behavior. The most common research study on ridesharing was related to ridesharing business in Indonesia that has considerably well developed. Based on those abovementioned fundamental backgrounds, hence this paper is studying of ridesharing

Behavior in the university. This study addresses to investigate the determinant of a student on the intention of ridesharing of university student motorcyclists as the proposed model PSS scheme in the university.

II. RESEARCH METHOD

The study was conducted in IAIN Surakarta. This university is located in Pucangan Village, Kartasura Sub District, District of Sukoharjo, Central Java (see Figure 1). This university is the near center of the Kartasura Kingdom, which located in the west of Surakarta city. It is about 30 minutes by car from Surakarta.

Public transport doesn't pass through IAIN Surakarta. The nearest public transportations are passing through artery road (red line), Jl. Raya Solo – Jogja, which is 750 meters far from IAIN Surakarta and collector road (orange line), Jl. Slamet Riyadi, which is 1.2 km far from IAIN Surakarta. Public transports which passes through Jl. Raya Solo-Jogja is bus, van and motorcycle ridesharing (*ojek*). Meanwhile, public transport such as city bus and minivan pass through Jl. Slamet Riyadi. As the distance from the main road to the university more than a half kilometer, more IAIN Surakarta students and staffs prefer to go to university by a private vehicle such as a motorcycle and car.

This research is a survey of university students of Institut Agama Islam Negeri (IAIN) Surakarta from 5 July to 15 July 2019. It was recorded by the university administration, before July 2019, IAIN Surakarta has 12,504 undergraduate students. In this study, 454 respondents have agreed to participate in this research study. By using this sample size, this sample achieves 2.95% with a confidence interval is about 96.8% (Table 1).

The variables that will be used in this study are status of the home address of student (x_{ha}), type driving license of a student (x_{dl}), transport vehicle to the university (x_{tv}), student travel behavior to university (x_{btu}) and intention to ride-sharing program (x_{irsp}). Those variables are measured by self-selected by the respondent.

The items in every variable in this study were provided by the researcher. First variable, home address status is divided into four categories

Figure 1. Location of study (a) IAIN Surakarta in Central Java, (b) the detail IAIN Surakarta location. The blue line is IAIN Surakarta. The yellow line is a local road in Pucangan Village. The orange line is a collector road. The red line is an artery road.

Table 1. Margin error calculation using Minitab 17

Normal method	Nonparametric method	Achieved confidence	Achieved error probability
2.12%	2.95%	96.8%	0.05

boarding house provided by the university, rent house, rent room, and parent's or family's house. Second, driving license is divided into four groups: no driving license, motorcycle driving license, car driving license, and both motorcycle and car driving license. Meanwhile, the third variable is the travel behavior of students to university. This variable is classified into seven categories: walking, cycling, public transport user, ridesharing with a friend, ridesharing with family/parent, using rideshare company provider, and the last is a motorcyclist. For the analysis, ridesharing with friends and family/parents is grouped into two one, which is renamed by voluntary ridesharing. This name is chosen as this is not a business-like start-up ridesharing companies which are operated for business purpose. The last variable is the intention of ridesharing. It is self-measured by the respondent by selecting one of three alternatives: not intent, undivided, and intent to ridesharing program in the university.

As all variables are nominal and ordinal data, the model will be used in this study will be analyzed by implementing logistic regression for a multinomial response (Agresti, 2013) where the

equation is as follows:

$$\text{logit}[P(Y \le j|\boldsymbol{x})] = \log\frac{P(Y \le j|\boldsymbol{x})}{1 - P(Y \le j|\boldsymbol{x})}, \quad j = 1, \ldots, J-1 \qquad (1)$$

Three models will be analyzed in this study are as follows:

a. *Model 1* (x_{ha}, x_{dl}, x_{btu}): the influence of home address status (x_{ha}) and type of driving license (x_{dl}) to student travel behavior to university (x_{btu}). The model is:

$$\text{logit}[P(x_{btu} \le j|\boldsymbol{x})] = \alpha + \beta_1 x_{ha} + \beta_2 x_{dl} \qquad (2)$$

In this model, the hypothesis is:
Ho: $\beta_i = 0$ where, i = 1, 2

b. *Model 2* ($x_{\text{btu}}, x_{\text{irsp}}$): the influence of travel behavior to university (x_{btu}) to the intention of the ridesharing program in university (x_{irsp}). The model is:

$$\text{logit}\left[P\left(x_{irsp} \le j|\boldsymbol{x}\right)\right] = \alpha + \beta_1 x_{irsp} \qquad (3)$$

The hypothesis for this model is:
Ho: $\beta_1 = 0$

c. *Model 3* (x_{d}, x_{tv}): the influence of residential distant (x_{d}) to student intention to ridesharing program. The model is:

$$\text{logit}[P(x_{tv} \le j|\boldsymbol{x})] = \alpha + \beta_1 x_d \qquad (4)$$

In this model, the hypothesis is:
Ho: $\beta_i = 0$ where, i = 1, 2

Those models are estimated by using logistic regression, which is calculated in Minitab version 17.

III. Result and Discussion

The answers of respondents related to four variables are presented in Figure 2. From those figures, it is obvious that students were living with a parent/family, having a motorcycle driving license, using motorcycle alone to university, and intent to ridesharing program are dominant.

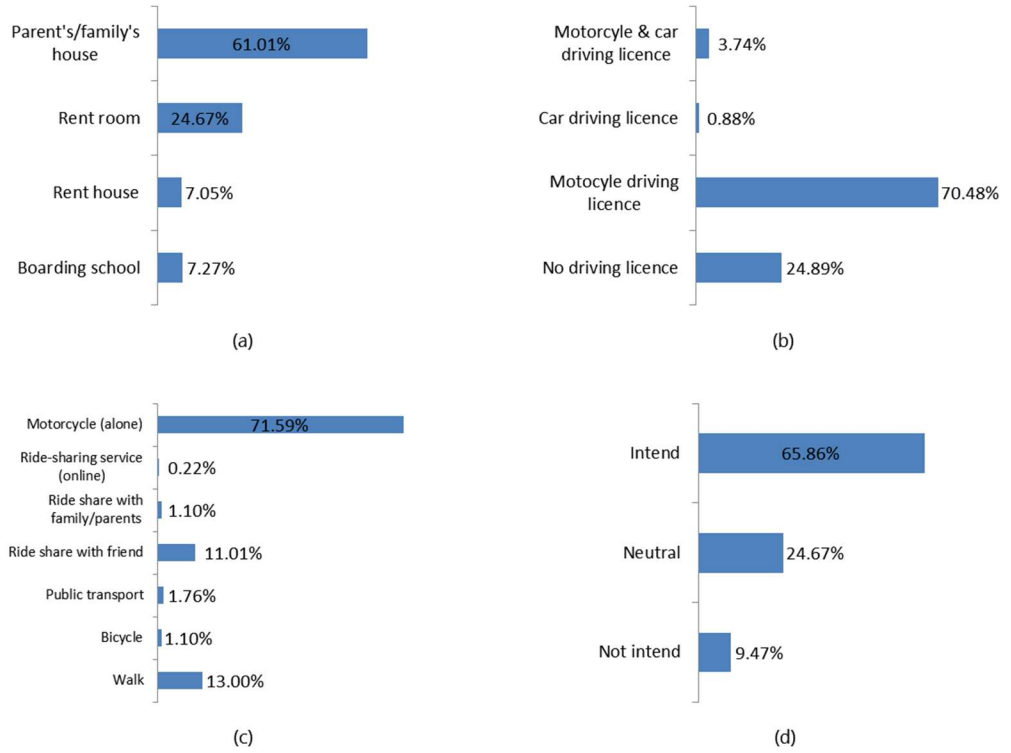

Figure 2. The number of university students under the survey based on (a) status of home address, (b) driving license, (c) travel behavior to university, (d) intention to ride-sharing program in the university.

Figure 2.a shows that most of the respondents in this study were living in parent or family house. From this study, it is estimated that 76% of 97% of students who lived in Solo Raya (Surakarta, Boyolali, Sukoharjo, Wonogiri, Sragen, Klaten), are living with parents. It is also found that about 68.7% of students who live in Solo Raya and they decided to live with parent or family house stated that they have the willingness to join with the ridesharing program in the university. However, this percentage is smaller than those who live in Solo Raya but decided to rent a house (75%), rent room (68.75%, and boarding school (80%).

In this study, 70.5% of students had a motorcycle driving license (Figure 2.b). From the figure which is depicted from Figure 3 states that the percentage of students without driving license who intend to ridesharing is higher than students with driving license. In contrast, students with a driving license who was cycling, using public transportation, voluntary ridesharing, and motorcycling to university are higher than those who without driving license in terms of intention to ridesharing. This could be the signal that having a driving license attracts students to rideshare.

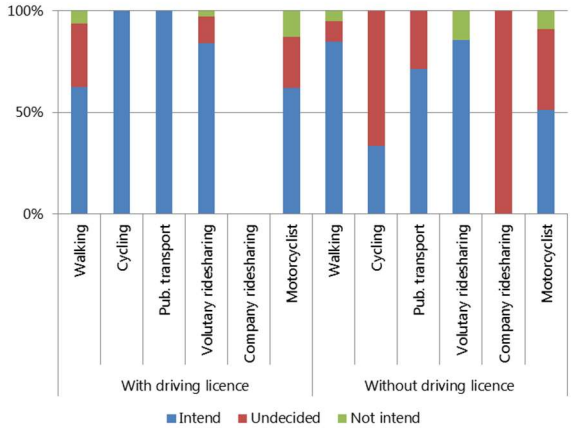

Figure 3. Percentage of student intention to ridesharing program based on travel behavior to university and driving license ownership

Meanwhile, this study shows that both students with and without driving license have a similar percentage on an intention to ridesharing. This is because they used to rideshare with friends, family, or parents. The student who has a driving license offers a spare seat to a student without a driving license. However, some of the students who used to rideshare and having driving licenses were still wondering (undecided) to ridesharing programs in the university.

Students who walked to university and did not have a driving license had a higher percentage of intention to ridesharing in university about 85.7% than those who have a driving license. Again, having a driving license could be the reason. Similarly, students who used to go to university by using public transport and they have a driving license have a higher percentage of intention (about 100%) among those who did not have a driving license. According to this analysis, it indicates that the intention of ridesharing is caused by whether the student has a driving license and does not commute alone to university.

Figure 2.c shows the percentage of travel behavior of the student to the university. The motorcyclist is dominant. Riding alone to university without a share with others is the most favorite behavior by the students. Meanwhile, ridesharing was also common for a student. They share spare seats with friends, family, or parents. Some of them are dropped and picked up by their parents or family. In addition to riding a motorcycle, walking is a common travel behavior to a student who lives near university.

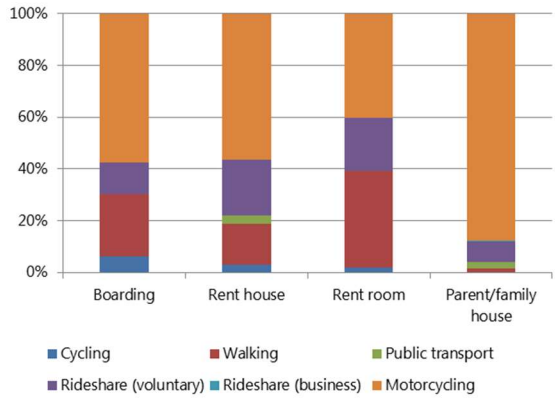

Figure 4. Percentage of home address status based on student's travel behavior to university

The travel behavior of students based on the status of student housing is depicted in Figure 4. It is apparent that the student motorcyclist is dominant among other travel behavior such as walking, cycling, or ridesharing. Some of the student who lives in rent room, rent house and the

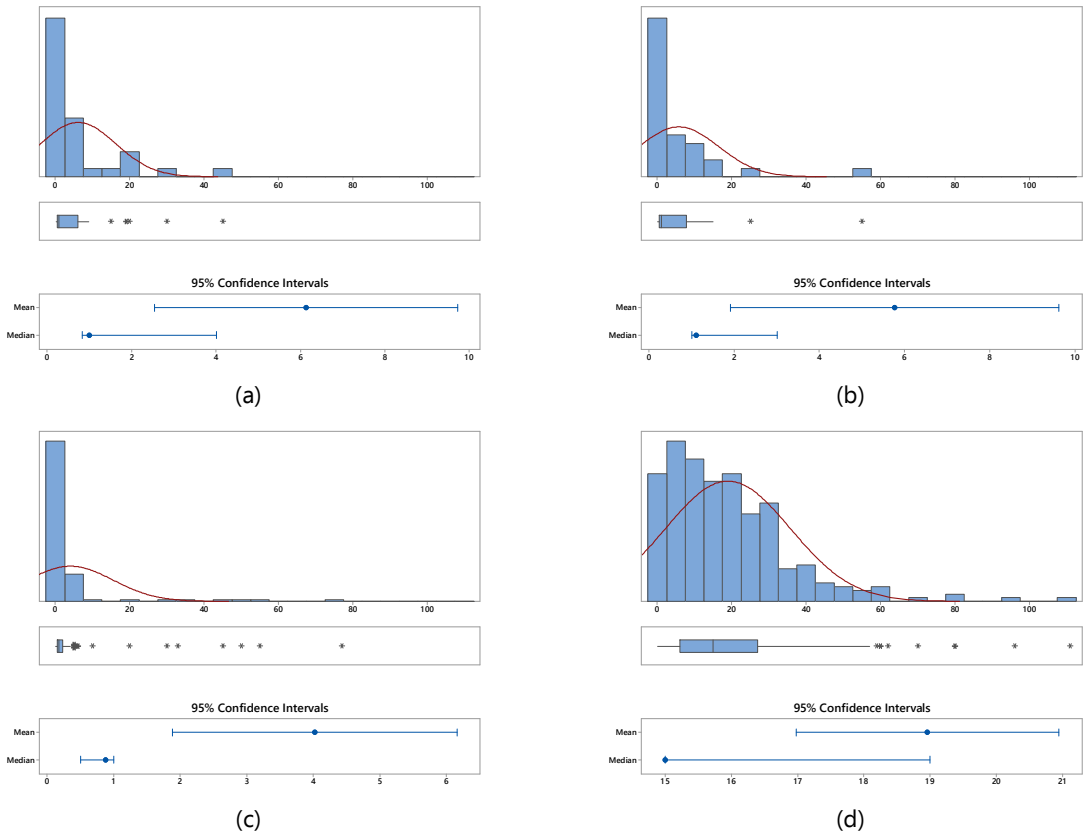

Figure 5 Distribution of residential distance of students who live in (a) boarding house, (b) rent house, (c) rent room, (d) parent/family house.

boarding provided by the university used to ride a motorcycle to university. It is also seen that walking is a common behavior for a student who lives in boarding school, rent house, and rent room. Even a number of students who rent room used to walking to university is almost similar to a student who rides a motorcycle. It is because these types of housing status are near the university, so they are able to walk to university.

Figure 5 presents the distribution of residential distant based on the status of the housing. Figure 5(a), 5(b) and 5(c) present that most of the student are living in less than 10 km far from the university. But students who live with parents or family are living much further from the university than those who live in a boarding house, rent house, and rent room. The detail of distribution measurement is presented in Table 3.

As seen from Table 3, the average distance of the boarding house is 6.13 km far from the university. The average distant of rent house and rent room are also much shorter than the parent/family house. But, the minimum distant of parent/family house, which is 0.1 km, shows that there are students who live with parents or family who located near the university area.

In accordance with Figure 2.d, the intention of to motorcycle ridesharing program is achieving 65.86% of students in this study. The following paragraph will discuss the testing models to identify the determinant of the ridesharing program. The goodness of Fit test and parameter estimation of all models, including its significant values, are presented in Table 4 and Table 5.

Model 1

Based on data in this study (Table 1), *the p-*value of G^2 of Model 1 is 0. This implies that by using α = 0.01 or 0.05, there is sufficient data to claim that at least one variable, the status of home

Table 3. Mean, standard deviation, minimum and maximum distant of student's home

	Number of students	Mean (km)	Standard Deviation	Min. (km)	Max. (km)
Boarding house	33	6.13	10.12	0.20	45.00
Rent house	32	5.77	10.69	0.10	55.00
Rent room	112	4.02	11.45	0.05	77.00
Parent/family house	277	18.96	16.75	0.10	111.00

Table 4. Goodness-of-Fit test for Loglinear models

Model	G^2	*The goodness of fit test* (χ^2)	
		Pearson	*Deviance*
Model 1:	202.778	75.533	70.724
$(x_{ha}, x_{dl}, x_{btu})$	(0.000)	(0.153)	(0.263)
Model 2:	22.825	3.423	4.596
(x_{btu}, x_{irsp})	(0.000)	(0.635)	(0.467)
Model 3:	5.088	155.644	165.031
(x_{d}, x_{irsp})	(0.024)	(0.647)	(0.441)

Table 5. Summary of effect Model 1 and Model 2

Variable	*Estimate*	*p-value*	*Odd ratio*
Model 1:			
Intercept (cycling)	0.128	0.758	
Intercept (pub. transp)	0.282	0.495	
Intercept (rideshare)	0.509	0.220	
Intercept (rideshare comp.)	1.667	0.000*	
Intercept (motorcycle)	1.684	0.000*	
x_{ha} (rent room)	-0.163	0.751	0.85
x_{ha} (rent house)	0.506	0.210	1.66
x_{ha} (parent's/fam house)	-2.184	0.000*	0.11
x_{dl} (motorcycle d.l)	-2.345	0.000*	0.10
x_{dl} (car d.l)	0.558	0.617	1.75
x_{dl} (both d.l)	-3.633	0.001*	0.03
Model 2:			
Intercept (not intend)	-2.821	0.000*	
Intercept (neutral)	-1.175	0.000*	
x_{btu} (cycling)	0.603	0.531	1.83
x_{btu} (pub. transp)	-0.000	1.000	1.00
x_{btu} (rideshare)	-0.761	0.131	0.47
x_{btu} (rideshare comp.)	1.998	0.235	7.37
x_{btu} (motorcycle)	0.763	0.019*	2.15
Model 3:			
Intercept (not intend)	-2.451	0.000*	
Intercept (neutral)	-0.839	0.000*	
(x_d) residential distant	0.013	0.023*	1.01

address or driving license, influences the behavior of students to travel to university. This argument is also in strengthened by the *p*-value of Goodness-of-fit tests, where both *Pearson* and *Deviance* of Model 1 that also proven more than 0.01 or 0.05. The higher *p*-value of *Pearson* and *Deviance* means there is sufficient evidence that the relationship among variables is significant.

The estimation of logistic regression on the relationship among the travel behavior of a student, residential housing status, and driving license ownership is presented in Table 5. The baseline of travel behavior to university is walking to university, and the baseline of housing status is a boarding school, whilst the baseline of driving license ownership is no driving license.

From data analysis given at Table 5, this study has proven that student who lives with parent or family house, those who have motorcycle driving license and have both car and motorcycle driving license are significant to influence travel behavior to university. This is because *p*-values of those variables are less than the significant value of 0.05.

The parameter of a student house who live with parent and family is -2.184. This indicates that this variable has a negative relation to the baseline of student travel behavior to university, i.e., walking. Based on the odds ratio, this is clearly explained that student who lives with parent and family house has 0.11 probability of walking to university in comparison to a student who lives in boarding school provided by the university. In other words, expecting students who used to live with family and parents to walk to university is very low. The reason is the distance of their home living is far from the university. This is different from those who live in a boarding school where the location is not far from the university.

Meanwhile, the parameter estimation of students with motorcycle driving license and both – car and motorcycle – driving license are -2.35 and -3.63, respectively. Both parameters are negative. This affects to odd ratios of those parameters that will less than 1. This implies that having a motorcycle driving license may reduce the probability of students to walk to the university by 0.1, whilst the reduction of probability of student to walk to university was about 0.03 when student

having a motor and car driving license.

A driving license is prominent for the rider. Without driving license means against transportation law, even though there were some students who rode to university without driving license. This study recorded, about 80.8% of students who ride alone to university have a driving license, but 14.4% of them didn't have a driving license.

Model 2

Model 2 predicts the relationship between student intention to ridesharing and travel behavior to university. The goodness-of-fit test of Model 2 in Table 4 shows the p-value of G^2 values is 0, while χ^2 of Pearson and Deviance provide a p-value of more than 0. The small p-value of G^2 and high p-value of χ^2 indicates that Model 2 fits the data. In other words, this study has sufficient data to claim that there is a significant relationship between student intention to ridesharing and travel behavior of the student to the university.

How much the influence of student travel behavior to student intention to ridesharing program in the university is explained by parameter estimation in Table 5. In this Model, the baseline of student intention to ridesharing is intent to ridesharing program.

The result of logistic regression analysis in Table 5 shows that students who travel to the university by motorcycle are significantly influenced by the intention of the ridesharing program. This is because the p-value of the variable is 0.019. In this study, we applied 0.05 for the α. Hence, 0.019 is less than 0.05, which means that there is sufficient evidence that the parameter of variable influences the intention to ridesharing.

The positive value of estimation that is 0.763 indicates the positive relationship between those two variables. This means, traveling to motorcycle to university increase the intention of student to ridesharing program. The odd ratio is 2.15 indicates that the increase of student travel behavior using a motor vehicle to university. In this term, it is a motorcycle, and there is a 2.15 increase in intention to ridesharing program.

Motorcyclist student in this study is those who use motorcycle alone to university. They have a spare seat to share with others. The evidence from this study that motorcyclists have a relation to the intention to rideshare may be contributed by their attitude related to rideshare. This study also investigates the positive attitude of students related to ridesharing through five questions. Those questions are about offering rideshare to pedestrians, the value that rideshare may improve rewards from Allah, the value that rideshare contributes to strengthening the friendship and relation, the value that rideshare may increase blessing from Allah and the value that ridesharing is better than ride alone. Those questions are measured on 5 Likert scales: very disagree, disagree, neutral, agree, and very agree. The result is provided in Figure 5.

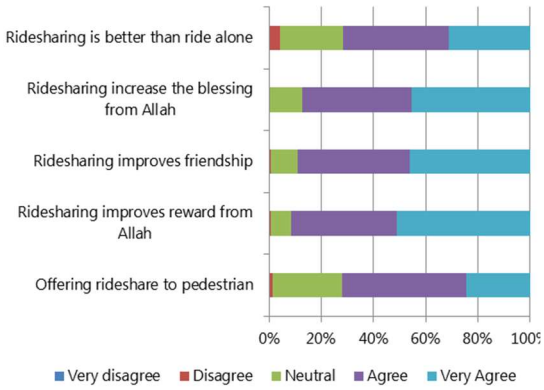

Figure 5. Student attitude related to ridesharing

Apparently, Figure 5 shows the agreeness from motorcyclist related ridesharing values. The highest agreeness from the motorcyclist is achieved from the value of ridesharing related to a blessing from Allah (*berkah*), friendship (*silaturahmi*), and reward from Allah (*pahala*). This may be caused by Islamic values, dominate the character of a student in an Islamic university, i.e., IAIN Surakarta, as the location of study.

Model 3

The Goodness-of-Fit of Model 4 from Table 4 shows that the p-value of both G^2 and χ^2 is significant. This means there is sufficient data to prove that distant of the home address to university influences the intention of students to ridesharing program.

Meanwhile, the summary of estimation Model 3 in Table 5 shows that there is a positive influence of residential distant to university on the intention of student to ridesharing. This implies the increase in residential distant about 1 kilometer will increase the intention to rideshare by 1.01 in comparison to those who do not intend to ridesharing.

Discussions

Data from this study recorded that 61% of students were living with parent and family, that in turn led them to ride alone to university. This study shows that living with parents or family influences the travel behavior of a student. Walking, of course, is not preferred by them because living with a parent or family means they live far from the university. Based on this study, students' probability of walking to university is minimal due to their home living distant. The different destinations and the distance from home to university describe why home status influences traveling behavior. The previous study of Davison et al. (2015) also proven that the permanent address of students influences a student to use a car instead of public transport. In this study, the status of student housing, i.e., the parent or family house, is a permanent address. This could be the barrier of ridesharing programs as students more prefer to ride alone.

This study also has proven that the ownership of driving license while they live with parents and family, which is afar from university, also influences the student to ride the motorcycle to university. The study of Djakfar et al. (2010) states that a driving license contributes to using a motorcycle to the university by the university student. But, this study found that travel behavior to the university by using a motorcycle may improve the willingness of the student to the ridesharing program.

From this study, designing the ridesharing program in the university should consider the travel behavior to the university by the students. Later, student home living and the ownership of driving license contributes to travel behavior. When the student lives with the parent, they will more prefer to use a motorcycle to university. Controlling student home living, so they change travel behavior to university, is impossible as more students were originally from Solo Raya area, i.e., Surakarta, Boyolali, Sukoharjo, Wonogiri, Klaten, and Karanganyar. They will decide to live with a parent or family. In this study, the further distance of home living influence student to support the ridesharing program in the university.

IV. CONCLUSION

This study has proven that further housing implies less preference to walk to university. Meanwhile, IAIN Surakarta student is dominated by those who live with parents and family where the location is much further than those who rent house, rent room, and live in a boarding house near the university. Reducing the number of a motorcycle to university, while most of the students live afar from university and limited transportation, is an impossible project to be implemented soon. But, rideshare could be the alternative to figure out the environmental hazard created from the motor vehicle. Rideshare may reduce the number of motor vehicle trips without breaking the motor vehicle industry.

The various designs of the ridesharing concept have been invented by many researchers, but it didn't achieve high success. Ridesharing is common to university students. They share the ride to friends, family, and parents while they go to university. About 65.8% of IAIN students who have the willingness to the ridesharing program, whilst only 35.9% of the most often and always ridesharing their motorcycle spare seat to others. However, driving alone to the university by using a motorcycle is the most favorite among university students.

In comparison riding alone, ridesharing more environmentally travels behavior. Two people with two motorcycles to university produce more pollution than two people in one motorcycle to university. It implies motorcycle rideshare to university may reduce half of the pollution resulted from riding alone travelling to university. Moreover, it saves cost for travelling. But, rideshare is not as flexible as to when riding alone. This is why the study of Erdoğan et al. (2014) shows that there is a small interest of students and staff from

university to ridesharing. However, this study shows contrary results where more motorcyclist student intends to ridesharing program.

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