Modelling the Use of Grabcar Ridesharing Services

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Abstract: Over the years Grabcar has become the most popular ridesharing services transportation technology-based application e-hailing that match passenger expectation on transportation services. Grabcar has managed to enter Malaysia's market because, during that time, the Malaysia taxi industry was experiencing severe issues related to safety, intimidation of passengers and also poor services. In order to understand the passengers' intentions toward these services, the Theory of Planned Behaviour Model (TPB) has been incorporated into this study to understand more about how passengers' intentions can be shaped. Using a purposive sampling method, a total of 227 respondents were involved in this study. Smart-PLS (v 3.2.8) was used in order to analyse the relationship between three constructs (attitude, social influence and safety) and passenger intention to use Grabcar. Overall, the result showed that all of the stated factors have a positive relationship with intention.

Keywords: TPB, Intention, Attitude, Safety, Social influence, ridesharing services

I. INTRODUCTION

The ride-sharing industry has become an essential phenomenon due to the rapid growth of technology adoption and sharing economy that bring convenience from public transportation (Chaudhry, Yasar, El-Amine, & Shakshuki, 2018; Dong, Wang, Li, & Zhang, 2018; Hamenda, 2018). Ride-sharing services have brought significant changes to the residents' city traffic, as an environmental-friendly and sustainable travel alternative to consumer (Dong et al., 2018). Hence, due to its popularity, ride-sharing studies have gradually increased in the academic circle from cost sharing (Agatz, Erera, Savelsbergh, & Wang, 2012), profit ride-sharing (Anderson, 2014), digital disruption (Tan, Tan, Lu, & Land, 2017), real-time ride-sharing (Belk, 2014; Dong et al., 2018; Widdows, Lucas, Tang, & Wu, 2017), disruptive innovation (Skok & Baker, 2018), customer satisfaction and service quality (Hamenda, 2018), traffic congestion (Chen, Liu, & Wei, 2019; Svangren, Skov, & Kjeldskov, 2018), ride-hailing (Guo, Xin, & Li, 2019), collaboration consumption (Hawapi, Sulaiman, Abdul Kohar, & Talib, 2017; Retamal, 2019), rider to rider discriminatory attitude and ride-sharing behaviour (Moody, Middleton, & Zhao, 2019), sexual harassment and discrimination (Griffith, van Esch, & Trittenbach, 2018), behavior to ride-hailing requests (Xu et al., 2018) and sharing economy (Glöss, Mcgregor, & Brown, 2016; Li, Liu, Jia, & Sun, 2019; Tan et al., 2017).

Some of the biggest names in the ride-sharing industry are Grabcar which has become the most trendy e-hailing technology company in South East Asia that accumulates up to 3 billion rides in 2019 (Grab Press Center, 2019a). Therefore, Grabcar has gained high market share due to the development of the e-hailing app that enables passengers to hail and pay for ride-sharing through their phone and also help the driver to connect or locate their passenger destination (Gloss et al., 2016). Even though Grabcar manages to enter Malaysia's market, it became controversial with serious issues surrounding with passenger safety, intimidation of passengers and sexual harassments (Lin & Dula, 2016;Shiying, 2017). In Malaysia, the researches related to ride-sharing have mainly done in the areas of customer satisfaction, services quality of ride-sharing (Balachandran & Hamzah, 2017), brand image and purchase intention (Chin & Lai, 2018). Based on the current knowledge, it appears that there is a lack in the studies on customer ride-sharing intention using new transportation services such as Grabcar by using Theory Planned Behaviour (TPB) to examine whether safety exerts any effect on customer intention. Thus, it is necessary to know more about how safety can influence passenger intention on ride-sharing in Malaysia, because according to Kanchanapibul et al. (2014) Malaysia is diversified with consumer behaviour across the country.

II. RESEARCH FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Passenger Intention

Purchase intention refers to a consumer's preference to purchase a specific product or service. Mirabi, Akbariyeh, and Tahmasebifard (2015) regarded purchase intention as the willingness of a consumer to buy a particular product or service in certain circumstances.

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It is typically related to the perception, attitude, and behaviour of a consumer when decided to obtain a product or service in exchange for something. Purchase behaviour is an essential aspect for a consumer to get and assess certain products and marketers usually use it as a key input for making effective decisions when it comes to introducing new products and services or modifying the existing ones. When a company can understand the purchase intentions among consumers, it will be able to make a correct prediction about future sales and foresee how the activities may affect the purchasing decisions of their consumers.

Passenger intention is a study on how a consumer responds to the new services, such as Grabcar and how can he or she be easily influenced due to their curiosity and want to explore new things (Felder & Brent, 2005; Swaim, Maloni, Napshin, & Henley, 2014). Moreover, the passengers' intention subjected to their attitude in making their decision whether or not to use Grabcar services (OOECD, 2004). Besides that, different passengers have their selections on what kind of services they want, but most of the passengers tend to tell how dangerous is trying the new services while others are very eager to try on Grabcar services. On the other hand, car passengers usually have the intention to use services that make them felt safe. Therefore, most of the passengers think that some of the public transport is dangerous and not safe due to the unknown drivers, compared to Grabcar because they provide the driver profile off hand in order to provide security measures to the passenger (Yahya & Zaidatun, 2015). On top of that, intention can also be influenced by many factors such as family, friends and also peers who have the experience in using Grabcar and they will share their experience with others (Vaus & Wise, 1996).

Attitude

Consumers' attitude is an important factor in influencing consumers' purchase intention towards private label product (Chaniotakis et al. 2010). Consumers' attitude includes 'trust in private label product', 'familiarity' and 'perceived economic situationConsumers' attitude is an important factor in influencing consumers' purchase intention towards private label product (Chaniotakis et al. 2010). Consumers' attitude includes 'trust in private label product', 'familiarity' and 'perceived economic situation Attitude is a key factor in affecting the purchase intention of consumers towards a product or service (Chaniotakis, Lymperopoulos, & Soureli, 2010). It can be determined through the actions that consumers display when they intend to obtain a product or service for satisfying their needs. According to Mhlophe (2016), attitude can be shaped through an individual's behaviour, which will identify his intention to take action. The attitude of consumers can be created based on various elements, such as trust towards the service provider, brand familiarity, and perceived usefulness. In previous literature, it was reported that attitude represents a significant factor that influences the purchase intention. Gracia and de Magistris (2007) also confirmed the positive effect of attitude on consumers' purchase behaviour. Other scholars added that attitudes influence the intention to purchase by a consumer, and when the attitude is positive, the intention to purchase will be higher (Tarkiainen & Sundqvist, 2005).

TPB is a prominent theory for explaining consumer attitude and purchasing behaviour (Swaim et al., 2014). Prior research showed that attitude has a direct influence on behavioural intention to use a car or public transportation (Van, Choocharukul, & Fujii, 2014). However, the attitude has also has been considered to have an indirect effect on the positive intention of using public transport compared to their car (Donald, Cooper, & Conchie, 2014). Besides that, attitude can also be changed whenever the passenger has experienced new services such as Grabcar. If the passenger receives excellent services, they will have a positive intention and will use those services again. Therefore, this proves that attitude has an essential role in consumer intention to use certain services that they are not familiar with (AL Ziadat, 2015). Thus, the following hypotheses are presented:

H1: Attitude has a positive effect on the intention to use Grabcar ride-sharing services.

Safety

Safety in ride-sharing services is a growing problem that been increasingly alarming the passengers about the consequences of losing their valuable thing and need to be very cautious to avoid it before it happens. One of the main contributing factors in the public transport sector is personal safety especially to woman passenger, which has become a major concern and debated in a field of ride-sharing services (Chaudhry et al., 2018; Lin, Mei; Dula, 2015). Flores and Rayle (2017) stated that the consumer would have the intention to use services that make them feel safe. Therefore, Grabcar offers GPS for tracking where passengers can share driver and travel details to their family and friends in real time and ensure passenger safety during and after the ride. In additions, passengers can rate driver performance in a case when the driver is driving carelessly and breaking the law while driving or using abusive behaviour or language (Chaudhry et al., 2018). With this type of offer, Grabcar provides security for a passenger who intends to use Grabcar services and more likely to use their services (Ma, Yan, Huang, & Abdel-aty, 2010). Hence, the following hypothesis is postulated:

H2: Safety has a positive effect on the intention to use Grabcar ride-sharing services.

Social influence

Social influence stands for the existence of social pressures to influence an individual to behave in a certain way (Ajzen, 1991). Aaronson (2004) referred to social influence on the impact of the behaviour of others on a person. The sources of social influence come from reference groups, co-workers, friends, peers, neighbours, family, and any other persons or groups who with a direct relationship to influence an individual's intention or change his thoughts and actions (Ajzen, 1991).

Reference groups have gained greater importance in analysing consumers' buying behaviour because they can create a high influence on consumers purchase decisions.

Furthermore, social media channels, opinion leaders, consumers' experiences and any other shared information among individuals influence their willingness to buy. Bickart and Schindler (2001) found that social influence had a significant effect on consumers' intentions to buy a product or service. The concept of consumer intention has been established in the Theory of Reasoned Action (TRA), which highlighted the effect of social influence on intentions to behave a certain way (Sthapit, Laohakosol, & Sharma, 2018).

In the car ride-sharing services, social influence affects passengers intention, as it can affect their emotions, opinions or behaviours towards specific products and services (Dahl, 2013). Also, social influence has been shown to play a significant role in influencing passenger intention based on the previous study by Ismail (2016). Meanwhile, other studies indicated that social influence consists three factors such as subjective norm, social identity and group norm which will reflect the processes of compliance, identification, and internalisation (Zhou & Li, 2014).

For a consumer with different social influence, for example, a normal social group they might intend to use Grabcar economy due to cheaper fare as compared to a passenger with higher status will intent to use Grabcar Premium in order to experience luxurious life, and full fill his need (Dahl, 2014). Besides that, social influence can also be an indicator to enable the user to adapt to new services such as Grabcar and also share their experiences through words of mouth WOM (Hawapi et al., 2017; Yeap, Yapp, & Balakrishna, 2017). Therefore, the following hypothesis is presented:

H3: Social influence has a positive effect on the intention to use Grabcar ride-sharing services.

Overall, this study deployed Theory Planned Behaviour to determine the relationship between attitude, social influence, safety and intention to use Grabcar services. In this research model attitude and social influence is taken from TPB while perceived behaviour replaced by safety. Figure 1 shows the research framework for this study.

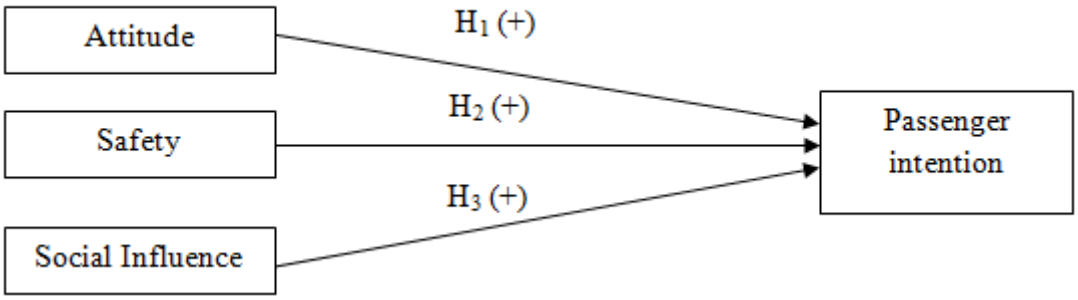

Fig. 1 Research Model

III. METHOD

This study employed the quantitative research approach in which the data was collected through a questionnaire as a primary tool. The developed questionnaire consisted of three parts. The first part deals with the respondent information on gender, age, ethnic, status, religion and education level. The second section was comprised of the information regarding the intention to use Grabcar services. The last section included information about attitude, safety and social influence. For the independent variable in section C (I), this study used a five-point scale, which starts from range one strongly agree until range five strongly disagree (Bertram, 2007).

On the other hand, the seven-point scale was used in the dependent variable item in section C (II) (Doane, 2015). To reduce the bias method, this study used two methods to remedy the bias method, the first method is using a different scale for the independent variable and dependent variable and follow by the statistical procedure of Herman's single factor to test common method variance (Podsakoff & Organ, 1986). The results showed that there is no Common Method Bias in the survey; thus, supporting Herman's single factor analysis of 46.41% total of variance, which is less than 50% (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

The targeted population for this study included the users of Grabcar ridesharing services aged around 18 years and above. Moreover, previous studies have shown that the respondents aged 18 and above have a different attitude and behaviour as compared to past era generation (Kanchanapibul, Lacka, Wang, & Chan, 2014). This study used purposive sampling technique as a sampling procedure (Kumar, Mukesh; Abdul Talib, Salim; Ramayah, 2013) and a total of 371 questionnaires were distributed, but only 227 accounted useable for analysis which represents 61% of the valid response rate. Sekaran (2003) has suggested that a total of 30% response rate is enough to conduct a survey and it is also supported by G*Power analysis which indicated that 77 respondents for three predictors are enough to represent the sample size (Faul, Erdfelder, Lang, & Buchner, 2007). Hence, the total of 227 respondents in this study is considered sufficient as the minimum requirement for social science research is 0.80 and the sample size of 227 for this study is above 0.8 (Hair, Sarstedt, & Ringle, 2019).

Table. 1 Profile respondent

Item	Frequency	Percentage (%)
Gender		
Male	56	24.7
Female	171	75.3
Age		
18-21 years	71	31.3
22-25 years	127	55.9
26-29 years	12	5.3
30- years and above	17	7.5
Ethnic		
Malay	150	66.1
Chinese	26	11.5
Indian	16	7.0
Other	35	15.4
Status		
Single	213	93.8
Married	13	5.7
Divorced	1	.4
Religion		
Islam	176	77.5
Buddhism	26	11.5
Christianity	9	4.0
Hinduism	13	5.7
Other	3	1.3
Education Level		
Undergraduate level	193	85.0
Postgraduate level	34	15.0

Table 1 indicates that the majority of the respondent in the sample included 75.3% of females, and the remaining is 24.7% for representing the male respondent. 55.9% of the participants were in the age group of 22-25 years, followed by those in the age group of 18-21 years, which represents 31.3% of the sample. In term of ethnic Malay, respondent represents 66.1% and 93.8% of the respondent are not married. The higher portion of respondents are Muslims (77.5%), followed by Buddhism (11.5%). Lastly, the education level of the respondent indicates that 85% of them have a bachelor degree.

Data Analysis and Results

This study used the Smart-PLS version 3.2.8 and two-stage approach to analyse the measurement model and structural model to examine the research hypotheses (Anderson & Gerbing, 1988; Ringle, Wende, Sven, Becker, 2015). The validity and reliability of the model were assessed in the measurement model. Meanwhile, the structural model analysis looked at the hypothesised relationship using 5000 bootstrapping methods of resamples (Hair, Risher, Sarstedt, & Ringle, 2019). In the first stage analysis of the measurement model is to necessary to assess convergent validity by examining the loading factors, average variance extracted (AVE) and composite reliability (CR) (Hair et al., 2014). To archive the convergent validity, Hair et al. (2014) have suggested that the loading must be>0.70, CR >0.70 and AVE >0.5. As shown in Table 2, the result of the measurement model shows that all the loading are more than 0.7, and the AVE values are more than 0.50. Meanwhile, CR value is higher than 0.70, which indicate good reliability (Hair et al., 2019). Lastly, we identified that there was no problem with multicollinearity as all of the VIF value were less than 5 (Hair et al., 2019). Therefore this result indicated that the instrument is valid and reliable.

Table. 2 Result of the Measurement Model

Construct	Item	Factor Loading	AVE	CR
Intention	INT1	0.89		
	INT2	0.91		
	INT3	0.90	0.75	0.94
	INT4	0.81		
	INT5	0.82		
Attitude	ATT1	0.90		
	ATT2	0.93	0.75	0.92
	ATT4	0.88		
	ATT5	0.74		
Sosial Influence	SI1	0.82		
	SI2	0.86		
	SI3	0.86	0.68	0.91
	SI4	0.81		
	SI5	0.75		
Safety	SAF1	0.86		
	SAF2	0.88		
	SAF3	0.89	0.78	0.95
	SAF4	0.86		
	SAF5	0.92		

Note: AVE=average variance extracted, CR=composite reliability

In the second stage, we assessed discriminant validity following Henseler, Ringle, & Sarstedt (2014) Heterotrait-Monotrait (HTMT) discriminant validity test. To confirm the discriminant validity, previous studies have set the HTMT the threshold at .85 and .90 (Kline, 2011). The result of HTMT in Table 3 indicates an acceptable discriminant validity. Therefore, the measurement model in this study suggests sufficient convergent validity and discriminant validity.

Table. 3 The result of Heterotrait-Monotrait (HTMT) Test

	Attitude	Intention	Safety	Social Influence
Attitude				
Intention	0.709			
Safety	0.648	0.602		
Social Influence	0.703	0.611	0.598	

Assessment of the Structural Model

In the next stage, we tested the hypotheses by running a bootstrapping procedure with a resample of 5000, to assess the structural model Hair et al. (2017) suggested to achieve that by looking at R^2, beta and the corresponding t-values. The results of hypotheses presented in Table 4 indicated that the R^2 for intention to use Grabcaris 0.48, which shows that all the modelled constructs explained 48% of the variance in intention to use Grabcar. Since this study is under consumer behaviour, the R^2 value is considered high (Cohen, 1988; Hair et al., 2014). This study also has double confirmed the power by using the danielsoper.com by indicating the number of predictors set at 3, a sample size of 227 and R^2 of 0.48 which archive a power of 1.0 which indicated the good explanatory power of the model. The result of hypothesis in table 4 showed that all of the hypotheses are supported.

The H1 path concerning the relation between attitude and intention show the coefficient of β = 0.40, LL = 0.69, UL = 0.79 and significant at $p< 0.01$. Next, the second hypothesis (H2), which dealt with the relationship between safety and intention indicate was reported at a coefficient of β = 0.22, LL=0.74, UL=0.81, and significant at $p< 0.01$. The last hypothesis concerning the relationship between social influence and intention indicated a coefficient of β = 0.19, LL=0.62, UL=0.72, and significant at $p< 0.01$. Base on the predictors examined, we found out that attitude had a stronger effect on the intention to use Grabcar as compared to safety and social influence. All of the effect sizes (f^2) for this study achieved a small effect size of 0.02 and moderate 0.15 (Cohen, 1988) and the Q^2 was 0.34 which was greater than 0, which suggests that there is predictive relevance (Geisser, 1974; Hair, Babin, & Krey, 2017; Stone, 1974).

Table. 4 Result of Hypothesis

Hypotesis	Relationship	Beta	SE	t-value	p-value	LL	UL	Supported	R^2	Q^2	f^2	VIF
H1	ATT→ INT	0.40	0.08	4.87**	p< .001	0.69	0.79	Yes	0.48	0.34	0.16	1.939
H2	SAF → INT	0.22	0.07	3.32**	p< .001	0.74	0.81	Yes			0.05	1.680
H3	SI → INT	0.19	0.08	2.37**	0.010	0.62	0.72	Yes			0.04	1.801

Note: ATT= Attitude, SAF= Safety, SI=Social Influence
**p<0.01

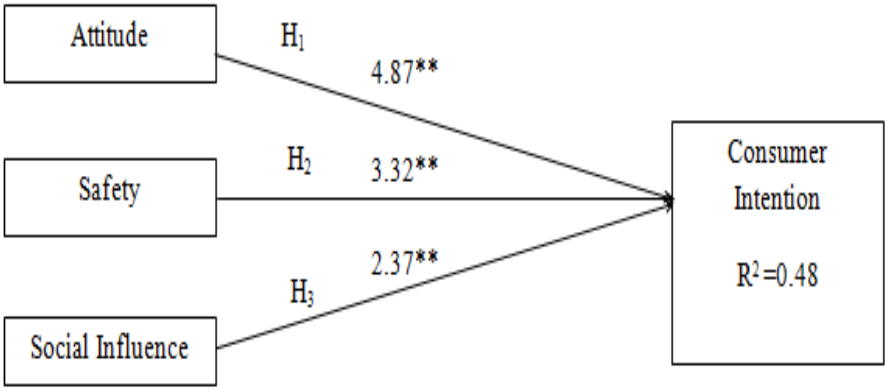

Fig. 2 Hypotheses Testing

IV. DISCUSSION AND CONCLUSION

Based on the outcomes of analysis, the results revealed that there is a positive relationship between attitude and passenger intention towards Grabcar ride-sharing services as shown in Table 4. (β =0.40, t = 4.87, p < 0.01, with moderate effect size (f2 = 0.16). This show that passenger have a positive evaluation toward ride-sharing services and this shows that attitude can influence passenger intention to choose Grabcar ride-sharing services. As mentioned in the study of Ahmed Sallam & Ali Algammash (2016), a positive experience will encourage the customers to use the services. Moreover, H2 focused on the positive relationship between safety and passenger intention, and the result showed that it has a positive and significant relationship between safety and intention (β =0.22, t = 3.32, p < 0.01, with small size effect (f2 = 0.05). That shows passengers feel confident and secure while using ride-sharing services.

Moreover, safety is essential to humans being because they had only one life. So it is crucial to give services that have safety control so that consumers do not doubt using the services (Ahmed Sallam & Ali Algammash, 2016). Safety concerns defined as consumers' concern regarding the quality of life, health issues and the environment for humans and non-human species. Therefore, safety has become a concern to use Grabcar ridesharing services. On top of that, showing that the best services that had high security in it, the higher student intends to use that services.

Moreover, safety is critical to humans because and it is so vital for Grabcar ride-sharing to ensure that passenger safety (Ahmed Sallam & Ali Algammash, 2016). According to the present study finding, the analysis showed there is a positive relationship between social influence and passenger intention towards Grabcar ride-sharing services (β = 0.19, t = 2.37, p > 0.01, with small size effect (f2 = 0.04). This finding showed that social influence does influence the passenger intention; this is because younger passengers only listen to their friends and also from public opinion such as social media where they like to explore further to get more feedback on the services, which will indirectly affect their intention to use the services.

Even though social influence has a positive relationship with intention, but it has lesser influence as compared to the attitudeOverall, this study was conducted to examine the factors that influence passenger intention to use Grabcar ride-sharing services due to the popularity of the Grabcar ride-sharing services in Malaysia. Besides that, it can give consumers a variety of options to choose to ride alternative transportation. Moreover, passengers such as students can choose services that provide advantages for them. Future research needs to focus on using different variables and test the model in the different geographical region to verify the findings of the current study. Moreover, to understand more about the passenger intention to use ride-sharing services, the use of different variable may yield important finding. Besides that, by doing this study to the consumer with different geographic will also help future researchers to get different views.

On top of that, the future study can use an online questionnaire to reach a more extensive number of respondents. The finding of this study also could help consumers who would like to try this ridesharing services because of the outcome for this study showing that Grabcar and Uber are safe to use and can get much promotion from this services. Lastly, the discovery for this study also can be used as a tool to develop strategies to attract more passenger to use Grabcar services.

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