A Study on Factors Influences Behaviour Intention towards Passenger Rail Transportation

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Abstract. Environment concerns are developing trends as the number of private vehicles in Malaysia has expanded each and every year. The needs for effective and efficient public transportation services are crucial to attract more people to use public transport, hence overcoming the issue of traffic congestion. Rail as sustainable transport capable help in a decrease of private vehicles utilized and in addition accomplish green environment. The aim of this study is to determine the factor that influences behaviour intention towards rail transportation. All the predictor variables are involves in the study. The data were collected from 384 local peoples that stay in Klang Valley through questionnaire. The sampling method used in the study is non-probability. The outcomes of this study are expected encourage people to use the rail transportation services provided in Malaysia. In this study, attributes such as services reliability, fares, safety and security will be investigated to show the relationship between this variables and the behaviour intention of passenger on choosing rail transport. Data collected were then analysed using correlation and multiple regression analysis.

1 INTRODUCTION

Malaysia is a wonderful country that located in Southeast Asia. Kuala Lumpur is the capital city of Malaysia. This city contains the most of the people in Malaysia which is 1.73 million people with more than 6,9 million people in Greater Kuala Lumpur, which is also called Klang Valley [1]. Nowadays, the updated Malaysian vehicles registration data till date 30 June, 2017 was issued by The Malaysia Automotive Association (MAA), have shown a total number of 28,181,203 units of vehicles are now being registered by people [2].

The increasing number of motor vehicles in Malaysia every year has brought high urban traffic overcrowding, increment travel time, popularity for parking spots in downtown areas and high percentage of damage and casualty which all prompt natural debasement [3]. The government try to develop the public transport to increase the quality of life and reduce congestion. Kuala Lumpur cover a variety of public transport, the main public transport can be categories into two categories, which is rail and road [4].

Nowadays, in Malaysia there are the increase percentage of register on private car, there are 41% increase from 2005 to 2010 [5] especially in Klang Valley, Kuala Lumpur, the most prosperous city in Malaysia and also the high population in Kuala Lumpur city that will lead to some problem, such as traffic

congestion, air pollution, not enough of parking space and time wasting. Therefore passenger rail transport becomes very practical in Kuala Lumpur city because some of this problem and that is the reason that the passenger choose to use the rail transport. At present, rail Transport Company failed in provide a perfect service quality that influence the decreasing number of passenger [6]. The first is the punctuality, that punctuality is used to measure it is on time for arrival and departure [7]. Now, the problem of delay becomes a most common problem in rail transportation, especially KTM. The KTM always make the delay at the commuting time, which is at the peak hour.

The poor ticketing system is also one of the problem such as insufficient ticketing counters service and ticket vending machines utilization are the problems of the rail company usually faced [8]. It will lead to increase the waiting time when it is in the peak hour. Facing the financial problem it will cause the deprivation of infrastructure. It is because the rail company need the highly cost of maintenance to maintain the rail ticketing system and also other service such as, road, bridge, terminal and road sign and other.

There are many public transport problem in Malaysia, and the service that provided by the rail company also under the necessary level. So that it cannot be reached the passengers expectation and fulfil the passengers' needs [9]. The faster growing population in our country

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lead that the transportation sector they are still not able to serve it [10].

There is a number of researcher have did research and have probe on the different definitions of the term "Behavioural Intention" [11-13]. The concept of behaviour intention is actually originally launched by Fishbein and Ajzen for the main use on solving the conflictive relationship among behaviour and attitude [14]. Also, customers' loyalty has stated as one of the major predictor that being proven in behaviour intention concept.

In this study, behaviour intention has been defined as the expectation of passengers on rail transportation mode for trip to reach the point of destination. Yet, it also includes the goal on customers to re-use the services and the intention on customers to suggest the services to other people [15]. The studies have shown the service reliability, fares and also safety and security are the main determinant that affecting behavioural intention. Therefore, this determines the factor that influences behaviour intention towards rail transportation.

2 METHODOLOGY

This study is a quantitative research by using survey strategy. In this study, questionnaires are distributed for data collection purpose.

2.1 Research Hypothesis

H1 There is a significant relationship between service reliability and behaviour intention towards rail transportation in Malaysia.

H2 There is a significant relationship between ride fares and behaviour intention towards rail transportation in Malaysia.

H3 There is a significant relationship between safety & security and behaviour intention towards rail transportation in Malaysia.

2.2 Data Collection Method

The survey questionnaire is distributed mainly through two ways. The first way is through collecting data by distributing questionnaire form to respondents [16]. Second method is distributing the questionnaire via online Google Form, which can let respondents to complete the questionnaire in their convenient.

2.3 Sampling Design

The sampling technique used in this study is non-probability sampling technique. Non-probability sampling provides a range of alternative skill to choose samples. In some of research that needed to do pilot test on questionnaire, non-probability sampling will be the most suitable. Non-probability sampling method is the simplest form and also has no restraint in the process of selection. In this case, preliminary data can be collected fastest and in a cheapest mode. So, non-probability

sampling method was picked since it is not difficult to adopt in this study. This study is based on purposive sampling that is one of the non-probability sampling techniques.

2.4 Sample Size

The targeted population and respondents in this questionnaire survey is about 384 respondents.

2.5 Research Questionnaire

In the questionnaire, there are three sections included. Section A consists of the social demographic profile. Section B includes all the questions in the aspect of three independent variables which are service reliability, fares and safety and security. Section C consists of the dependent variable. All of the respondents are asked to answer all the questions in the questionnaires. In this questionnaire, 5-point likert scale is used. Respondents are required to give rating from the range 1-5, that is from strongly disagree to strongly agree.

2.6 Sampling Location

The location of this study is set at Kuala Lumpur. Meanwhile, the questionnaire will be distributed to any people at public area such as stations and night market.

2.7 Data Analysis

Data analysis is a step to evaluate, remember every data that being collected during the study by adopting logical and statistical technique. The software that will be utilized in this study to analyse the data that been collected through questionnaire is IBM SPSS Statistics Software.

All the results that created from IBM SPSS Statistics Software will be tabulated into histogram, statistical tables and other information. The hypothesis which has been developed in this study will be tested by Pearson product-moment correlation and multiple-regression test.

2.7.1 Descriptive Analysis

Descriptive analysis is the procedure of summarizing and transforming all the collected raw data into tables and charts which can be interpreted by the researchers. Besides, median, mean and standard deviation of the independent variables in this study will be calculated to comprehend central tendency of the data. Descriptive analysis is mainly used to analyse demographic information of the respondents.

2.7.2 Reliability Test

Reliability test will being carried out on the purpose of confirming the accuracy, stability and consistency of all data that have been collected. To measure the consistency and accuracy, Cronbach's Alpha will be

imposed in this study [17-19]. The software IBM SPSS Statistics Software can help in calculating the correlation coefficient value for each variable.

2.7.3 Normality Test

Normality test is usually used to get skewness and kurtosis data from data collected. Also, normality test is used to ensure that the data is free from outlier. The major calculation in normality test was Skewness and Kurtosis. For Skewness result, it is better to get a value among -2 to +2. While for Kurtosis, the value of result should be less than 7 if it is normally distributed.

2.7.4 Pearson's Correlation Test

Pearson correlation test is used to decide the strength of linear related among two variables. In this test, the relationship among independent variables and variable will be found out. The value for correlation coefficient is better to be among -1 to +1. It shows a high positive correlation when the value of correlation is +1 while when the value is -1 means that it shows a high negative correlation.

2.7.5 Multiple Linear Regressions

Multiple linear regressions test is applied in this research to define the connection between the independent variables (IV) and dependent variables (DV). In addition, multiple linear regressions is used to investigate the strength of relationships for the overall regression model.

2.7.6 Pilot Test

Pilot test is used to control and regulate on how chosen respondents make response on the questionnaire. A pre-test is being run before the actual questionnaire being distributed [20].

3 RESULT AND DISCUSSION

An analysis will be conducted after the collection of data. SPSS software is used to analyse the collected data. There are 400 questionnaires were distributed and only 384 of questionnaire can be used for data analysis.

3.1 Pilot Test

Since the reliability is important, a pre-test is conducted to make sure all the survey questions are reliable. By doing pilot test, problem can be find out during respondent participate on the survey. Once pilot test is done, the questionnaire can then be distributed to all respondent when there is no problem found.

3.2 Reliability Test

When the Cronbach's alpha value is larger than 0.7, it means that the reliability is good. In other words, the reliability will be poor if the Cronbach's alpha value is less than 0.7. Table 1 shows the Cronbach's Alpha value for both independent and dependent variables. On service reliability factor, the Cronbach's Alpha value is 0.803. Cronbach's Alpha value for fares factor is 0.737 while Cronbach's Alpha value for safety and security factor is 0.819. In this case, all independent variables have achieved a high reliability. In dependent variable that is behavior intention, it has the highest value that is 0.822. All variable in our research have been proven to be good reliability.

Table 1. Cronbach's Alpha Value for Both Independent and Dependent Variables

Factor	Cronbach's Alpha
Independent variable- Service Reliability	0.803
Independent variable- Fares	0.737
Independent variable- Safety and Security	0.819
Dependent variable- Behaviour Intention	0.822
Overall	0.79525

3.3 Normality Test

Normality test in statistic is usually used to evaluate whether the data set fulfil the normal distribution. The data will be considered as normally distributed once the result of normality test show that skewness and kurtosis value is among -1.96 to +1.96. In other hand, when the skewness and kurtosis value is beyond -1.96 and +1.96, the data will not be considered as normally distributed.

Table 2. Summary of Normality Test for Dependent Variable and Independent Variables

Variables		Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Std. Error
Independent Variables	Reliability	-0.906	0.125	0.747	0.248
	Fares	-0.491	0.125	-0.186	0.248
	Safety and Security	-1.073	0.125	1.876	0.248
Dependent Variables	Behaviour Intention	-1.030	0.125	-0.948	0.248

According to Table 2, the skewness and kurtosis statistic for the independent variable – reliability is -0.906 and 0.747. Next, the skewness and kurtosis statistic for the independent variable – fares is -0.491 and -0.186. The last independent variable – safety and security had the skewness and kurtosis value of -1.073 and 1.876. For the dependent variable – behaviour intention, the value of skewness and kurtosis is -1.030 and -0.948.

3.4 Descriptive Analysis

Table 3 shows that “comfortability of rail transport is important for me” has the highest mean that is 3.8307

where the respondent feels that comfortable environment of rail and stations is an important factors for them to choose using rail transportation mode. Next, “The reliability of rail transport would attract me to use in future” has the second highest mean which is 4.2214. Most of the respondent agree with the statement

“Railways are accurate in timing of trains” that reach average mean 3.8307. “Satisfy customer services are provided” statement has a second lowest mean that is 3.5885. While “Information (delay of train, changes of routes) is deliver on time” has had the lowest mean that is 3.5000.

Table 3. Mean Score Analysis for Service Reliability Factor

No	Factors	Mean	Std. Deviation
1	Railways are accurate in timing of trains (punctual).	3.8307	0.95867
2	Satisfy customer services are provided.	3.5885	0.89529
3	Information (delay of train, changes of routes) are deliver on time.	3.5000	1.01168
4	Comfortability of rail transport is important for me.	4.3047	0.81653
5	The reliability of rail transport would attract me to use in future.	4.2214	0.90283

According to the Table 4, “One of the main concern of choosing rail transport is the fare charges” has the highest mean that is 4.0729 where the respondent state that price of rail transport is an important factors for them to choose using rail transportation mode. Next, “I feel satisfy with the fare that I pay for” has the second highest mean which is 3.8594. Respondent are mostly satisfied

with the fare since the fare are much reasonable. Most of the respondent agree with the statement “Rail transport fare are worth for the service received.” that reach average mean of 3.6953 since most of the respondent feel satisfied for what they pay and what they actually received. Lastly “The fare of using rail transport is reasonable” has had the mean that is 3.5000.

Table 4. Mean Score Analysis for Cost Factor

No	Factors	Mean	Std. Deviation
1	The fare of using rail transport is reasonable.	3.6094	1.08323
2	Rail transport fare is worth for the service received.	3.6953	0.92732
3	I feel satisfy with the fare that I pay for.	3.8594	0.94828
4	One of the main concerns of choosing rail transport is the fare charges.	4.0729	1.06199

According to the Table 5, “Safe passenger waiting area is provided” has the highest mean that is 3.9766. Next, “I feel safe when using rail transport” has the second highest mean which is 3.9375. Respondent feel that they are safe when using rail transport rather than using car or motorcycle. Most of the respondent agree with the statement “Safety guideline are proper publish

and user are well inform” that reach average mean of 3.7995 since most of the respondent agree that safety guideline such as fire evacuation plan have been well published. Lastly “Immediate action will be taken when unforeseen circumstances happen.” has had the lowest mean that is 3.4063.

Table 5. Mean Score Analysis for Safety and Security Factor

No	Factors	Mean	Std. Deviation
1	I feel safe when using rail transport.	3.9375	0.78248
2	Safe passenger waiting area is provided.	3.9766	0.84394
3	Safety guidelines are proper published and user are well inform.	3.7995	0.81366
4	Immediate action will be taken when unforeseen circumstances happen.	3.4063	1.03544

According to the Table 6, “Fares of rail transportation will affect my choice of transportation mode” has the highest mean that is 4.3047. Respondent have state that fare will be a most important factor for them to consider the usage of transportation mode because they actually pay much attention on their money usage. Next, “I will choose to use rail transport in the future” and “Safety and

security of rail transportation will affect my choice of transportation mode” has the second highest mean that is 4.2214. Lastly “Reliability of rail transportation will affect my choice of transportation mode” has had the lowest mean that is 3.9375. Respondent think that the reliability of transport is less important compared to the price and also safety of transport.

Table 6. Mean Score Analysis for Behaviour Intention Factor

No	Factors	Mean	Std. Deviation
1	Reliability of rail transportation will affect my choice of transportation mode.	3.9375	0.78248
2	Fares of rail transportation will affect my choice of transportation mode.	4.3047	0.81653
3	Safety and security of rail transportation will affect my choice of transportation mode.	4.2214	0.90283
4	I will choose to use rail transport in the future.	4.2214	0.90283

3.5 Pearson Correlation Coefficient Test

3.5.1 Relationship between Reliability and Behaviour Intention

From the Table 7, the relationship between service reliability of rail transport and the factors that affect passenger behaviour intention by using Pearson's correlation is significant, that is ($r=0.780$, $r>0.7$). The guidelines for the Interpretation of a Correlation Coefficient, there is a strong relationship between service reliability of rail transport and the factors that affect passenger behaviour intention since the value have reached 0.7. The Sig. 2-tailed level is .000 that means there is a positive and strong relationship between reliability and behaviour intention.

3.5.2 Relationship between Fares and Behaviour Intention

From the Table 7, the relationship between fares of rail transport and the factors that affect passenger behaviour intention by using Pearson's correlation is significant, that is ($r=0.368$, $r>0.3$). the guidelines for the Interpretation of a Correlation Coefficient, there is a

moderate relationship between service reliability of rail transport and the factors that affect passenger behaviour intention since the value have reached 0.3. The Sig. 2-tailed level is .000 that means there is a positive relationship among fares and behaviour intention.

3.5.3 Relationship between Safety & Security and Behaviour Intention

From the Table 7, the relationship between safety and security of rail transport and the factors that affect passenger behaviour intention by using Pearson's correlation is significant, that is ($r=0.486$, $r>0.4$). The guidelines for the Interpretation of a Correlation Coefficient, there is a moderate relationship between service reliability of rail transport and the factors that affect passenger behaviour intention since the value have reached 0.4. The Sig. 2-tailed level is .000 that means there is a positive relationship among safety & security and behaviour intention.

Table 7. Pearson's Correlation Test on the Relationship between Independent Variables and Dependent Variable

		Reliability	Fares	Safety	Behaviour
Reliability	Pearson Correlation	1	.501**	.543**	.780**
	Sig. (2-tailed)		.000	.000	.000
	N	384	384	384	384
Fares	Pearson Correlation	.501**	1	.528**	.368**
	Sig. (2-tailed)	.000		.000	.000
	N	384	384	384	384
Safety	Pearson Correlation	.543**	.528**	1	.486**
	Sig. (2-tailed)	.000	.000		.000
	N	384	384	384	384
Behaviour	Pearson Correlation	.780**	.368**	.486**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	384	384	384	384

** . Correlation is significant at the 0.01 level (2-tailed).

3.6 Multiple Linear Regression

Based on the Table 8, it shows that the significant value is .000 that is lesser than the significant level of 0.05 ($p<0.05$). It have indicated that there is a significant

different means between dependent variable by ANOVA test ($F(3,380) = 204.044$, $p = .000b$).

Table 8. ANOVA Result

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1791.032	3	597.011	204.044	.000 ^b
	Residual	1111.841	380	2.926		
	Total	2902.872	383			

a. Dependent Variable: Behaviour

b. Predictors: (Constant), Safety, Fares, Reliability

According to the Table 9, reliability has the largest beta coefficient that is 0.753 and the highest unique contribution on reliability factor. For safety variable, it beta coefficient value is 0.114. The beta coefficient value for fares variable is the lowest that is -0.070 that show a less unique contribution. Table 9 shows that the reliability variable had a significant p that is .000

(<0.005). It means that this variable is significant and important in behaviour intention. Safety variable also had a significant p that is .005 (=0.005) that is also significant and important in behaviour intention. While for fares variable, its significant value is more than 0.005 that is 0.077 that shows that this variable is not significant in behaviour intention.

Table 9. Coefficients in Regression Analysis

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.239	.576		7.358	.000

Collinearity Statistics
 Tolerance VIF

Reliability	.603	.032	.753	18.988	.000	.641	1.559
Fares	-.064	.036	-.070	-1.776	.077	.656	1.523
Safety	.112	.040	.114	2.827	.005	.618	1.619

a. Dependent Variable: Behaviour

According to Table 10, the R value is 0.785 that shows that there is a high degree of correlation among independent variables and dependent variable. Table 10 shows the percentage of variable variation that has been

explained by linear regression. R² in the above table was 0.617 that means that linear regression has explained 61.7% of the variation on the data.

Table 10. Model Summary of Regression Analysis

Model Summary					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.785a	.617	.614	1.71053	.617	204.044	3	380	.000

a. Predictors: (Constant), Safety, Fares, Reliability

The multiple linear regression equation as

$$\gamma = \alpha + B_1 X(\text{Reliability}) + B_3 X(\text{Safety}) + \varepsilon$$

$$= 4.239 + 0.603 (\text{Reliability}) + 0.112 (\text{Safety}) + 0.576$$

Where, γ stand for dependent variable that is behaviour intention. While, X stands for independent variables that are service reliability and safety. The beta value for reliability is 0.603, and beta value for safety is 0.112, while beta value for constant is 4.239.

3.7 Hypotheses Test

H0 There is no significant relationship between service reliability and behaviour intention towards rail transportation in Malaysia.

H1 There is a significant relationship between service reliability and behaviour intention towards rail transportation in Malaysia.

Based on the result show in Table 11, Coefficient Test, the beta coefficient value for reliability factor is beta= 0.603. The result of this factor is positive, so it is positive relationship between service reliability and behaviour intention. Hence, H1 is accepted and H0 is rejected.

H0 There is no significant relationship between ride fares and behaviour intention towards rail transportation in Malaysia.

H1 There is a significant relationship between ride fares and behaviour intention towards rail transportation in Malaysia.

Based on the result show in Table 11, Coefficient Test, the beta coefficient value for fares factor is beta = -0.064. The result of this factor is negative, so it shows negative relationship between fares and behaviour intention. Hence, H1 is accepted and H0 is rejected.

H0 There is no significant relationship between safety & security and behaviour intention towards rail transportation in Malaysia.

H1 There is a significant relationship between safety & security and behaviour intention towards rail transportation in Malaysia.

Based on the result show in Table 11, Coefficient Test, the beta coefficient value for safety and security factor is beta= 0.112. The result of this factor is positive, so it is positive relationship between safety and security and behaviour intention. Hence, H1 is accepted and H0 is rejected.

Table 11. Coefficient Table of Regression Analysis

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	4.239	.576		7.358	.000		
Reliability	.603	.032	.753	18.988	.000	.641	1.559
Fares	-.064	.036	-.070	-1.776	.077	.656	1.523
Safety	.112	.040	.114	2.827	.005	.618	1.619

a. Dependent Variable: Behaviour

4 CONCLUSION

The behaviour intention influenced by the service reliability, safety & security and fares that estimated by the research framework towards rail transportation in Klang Valley. The statistic results in this study show that the all independent variable were correlated with

behaviour intention. In this research, the strongest predictor of behaviour intention toward rail transportation in Klang Valley is service reliability. Service reliability has the strongest impact on behaviour intention ((r = 0.780, p < 0.01), next is safety (r = 0.486, p < 0.01) and the last is (r = 0.368, p < 0.01).

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