CHAPTER 3

RESEARCH FINDINGS

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3.0   Introduction

This chapter organizes the findings of the survey and presents the results. The demographic characteristics of the respondent are discussed in the first part of the chapter, followed by the description of travel behaviors. Frequency distributions were used to summarize the general characteristics and the travel behavior of the respondents. The last part is dedicated to the analysis of the estimation of the elasticity values.

3.1   Demographic Characteristics

A total of 280 responses were obtained in the fieldwork out of 400 questionnaires distributed, of which nine questionnaires were not usable due to incomplete information. Thus, the study analyzed a sample of 271 respondents who are passenger car users who commute within or into the Klang Valley region. Table 3.1 summarizes the general characteristics of the respondents.

The sample is comprised of 49.8 percent male respondents and 49.2 percent female. The large proportion of the sample (55.4 percent) was from age group of 30 year-old and below. This percentage was composed of 28.8 percent (78 respondents) age below 26 while the remaining 26.6 percent (72 respondents) belongs to 26 to 30 year-old

old cohort. 13.7 percent of the respondents age between 31 to 35 year-old, while for the

36 to 40 year-old and above 40 year-old age groups represent 12.5 percent and

Table 3.1:
Demographic Characteristics

Variables		Frequency	Percentage (%)
Gender			
	Male	135	49.8
	Female	136	49.2
Age			
	25 and below	78	28.8
	26 to 30 years old	72	26.6
	31 to 35 years old	37	13.7
	36 to 40 years old	34	12.5
	41 and above	50	18.5
Status			
	Married	142	52.4
	Single	128	47.2
	Others	1	0.40
Income			
	RM529 and below	12	4.40
	RM530 to RM1059	78	28.8
	RM1060 to RM1589	69	25.5
	RM1590 to RM2119	62	22.9
	RM2120 to RM2649	19	7.00
	RM2650 to RM3179	12	4.40
	RM3180 to RM3709	7	2.60
	RM3710 to RM4239	1	0.40
	RM4240 to RM4769	3	1.10
	RM4770 and above	8	3.00

18.5 percent of the total number of sample respectively. In terms of marital status, 142 respondents (52.4 percent) were married while single respondents made up 47.2 percent (128 percent) of the total respondents.

With regard to the respondents' monthly income, majority of the respondents earn below RM2120 each month, where the cumulative percentage of those earn a monthly income of RM2129 or lower is 81.5 percent (221 respondents). This is formed by 12 (4.4 percent) respondents who earn below RM530 per month, 78 respondents (28.8 percent) earn between RM530 to RM1059, 69 respondents (25.5 percent) earn between RM1060 to RM1589 each month, and another 62 respondents (22.9 percent) got paid between RM1590 to RM2119.

3.2   Travel Behavior

This part is devoted to study the travel behavior of the respondents. In the survey, the respondents were asked to provide information regarding their commuting characteristics. The information of travel distance per trip, travel time, cost of travel, and the accessibility of public transportation were gathered and performed in table 3.2 below.

The survey found that most of the respondents travel 20 kilometer or less travel per trip. A total of 167 respondents (61.7 percent) live within 20 kilometer from their workplace in which 60.5 percent of them made shorter per trip travel of 10 kilometer or less. Other 22.9 percent of the total respondents were identified to live between 21 and 40 kilometer from their workplace. Only 15.5 percent of the respondents have a greater distance of 40 kilometer or more.

Reflecting on the travel distances, majority of the respondents, forming 54.6 percent, spend only 30 minutes or less on road. Another 41 percent of the respondents made between 30 minutes to 1 hour travel, while the remaining 4.4 percent spend 1 hour or more in their trips.

Table 3.2:
Travel Behavior

Variables	Frequency	Percentage (%)
Travel distance		
10 KM and less	101	37.3
11 to 20 KM	66	24.4
21 to 30 KM	36	13.3
31 to 40 KM	26	9.60
40 KM and more	42	15.5
Travel time		
30 minutes and below	148	54.6
31 to 40 minutes	55	20.3
41 minutes to 1 hour	56	20.7
1 to 1 1/2 hour	9	3.30
Above 1 1/2 hour	3	1.10
Monthly travel cost		
RM100 and below	81	29.9
RM101 to RM200	91	33.6
RM201 to RM300	54	19.9
RM301 to RM400	28	10.3
RM401 and above	17	6.30
Public transportation availability		
Available	239	88.2
Not available	32	11.8
Public transportation accessibility		
Strongly agree	46	17.0
Agree	67	24.7
Moderately agree	74	27.3
Less agree	35	12.9
Disagree	18	6.60

Although most of the respondents spend not more than RM200 each month, if a comparison of the sum expend on travel cost and the respondents' income were made, this amount of expenditure made up to more than 10 percent of the respondents' income. With reference to table 3.3 below, the largest numbers of respondents who spend RM200 and below of their income on travel cost came from those who earned between RM530 and RM1059. This implies that certain respondents might spend up to 18 percent of their income on the cost of travel.

Table 3.3:
Proportion of income spent on transportation.

Income Group	Travel Cost					
	RM100 and below	RM101 to RM200	RM201 to RM300	RM301 to RM400	RM401 and above	Total
RM529 and below	6	5	0	0	1	12
RM530 to RM1059	31	27	13	5	2	78
RM1060 to RM1589	24	22	12	7	4	69
RM1590 to RM2119	14	25	12	8	3	62
RM2120 to RM2649	3	4	6	4	2	19
RM2650 to RM3179	1	3	3	4	1	12
RM3180 to RM3709	1	1	3	0	2	7
RM3710 to RM4239	0	0	0	0	1	1
RM4240 to RM4769	0	1	2	0	0	3
RM4770 and above	1	3	3	0	1	8
Total	81	91	54	28	17	271

The respondents also were asked to provide some information regarding the public transportation availability and accessibility in their residential area. Of 271 respondents, 239 of them (88.2 percent) said that public transport are available, compared to only 32 respondents (11.8 percent) noted that the alternative mode are not available. In

terms of accessibility, the respondents were asked to state whether they are strongly agree (5), agree (4), moderately agree (3), less agree (2) or disagree (1) with a statement that the public transport available is easy to access. Most of the respondents, forming 27.3 percent, moderately agreed with the statement, while 24.7 percent of them agreed. Only 6.6 percent disagreed with the statement which reflects that the public transportation at their residential place is not easily accessible.

Apart from the general travel characteristics, respondents were also asked to response to several statements to identify the factors influencing their choice of private and public modes of transportation. Respondents were asked to state whether they strongly agree (5), agree (4), moderately agree (3), less agree (2) or disagree (1) that the factors influencing their decision to use private and public transport listed. Five factors listed for each mode of transportation. For private transportation, fuel price, in-vehicle time, parking fee, toll fee, and road congestion were the factors which the respondents had to consider. Fare, in-vehicle time, out-vehicle time, comfort, and road congestion were listed to be considered by the respondents in the public transportation part.

From the responses given by respondents, the mean of each factor were generated to determine which the dominant factor in both cases. In this case, the highest mean shows that a particular factor as the most important determining factor. Table 3.4 and table 3.5 below present the results.

Table 3.4:

Factors affecting car usage

Factor	Mean	Rank
Fuel	3.3653	3
In-vehicle time	3.6421	1
Parking fee	3.0295	5
Toll	3.0812	4
Road congestion	3.4760	2

Table 3.5:

Factors affecting public transport usage

Factor	Mean	Rank
Fare	3.2841	5
In-vehicle time	3.4170	1
Out-vehicle time	3.2952	3
Comfort	3.2952	3
Road congestion	3.3727	2

In using private mode of transportation, the most influential factor is the time consumed for each travel made which recorded the highest mean of 3.6421. The second factor with the mean of 3.4760 is the road congestion. This implies that the most influential factor is the comfortableness of the journey itself. The fuel price would moderately influence the road users' decision in using private vehicle. Meanwhile, toll and parking fee tend to have marginal effects on the private transport usage.

This might be due to the fact that most of companies provide free parking space for their employees. The workplace distance may also explain this observation where most of the respondents live near to their workplace which they traveled by using conventional road and they may not need to use tolled highway.

The most important stimuli for public transportation seemed to be parallel to the private vehicle factors. Again, the in-vehicle time and road congestion scored the highest mean values of 3.4170 and 3.3727 respectively. Other measures of comfort, out-vehicle time and comfort of the public transport scored the same mean value of 3.2952 while fare factor scored the least.

3.3   The Elasticity Estimates

In order to make the estimation of the elasticities, the respondents were asked to state their response towards changes in several attributes of private and public mode of transportation. Three attributes were listed for private transportation i.e. fuel price, in-vehicle time, and parking fee. While the respondents have to take into consideration four attributes for public transportation viz. fare price, in-vehicle time, out-vehicle time, and crowdedness.

Table 3.6:
Elasticity Estimates of Demand for Private Transportation

Variables	Parameter Estimates	p-values	Significant
Fuel price	-0.075020	0.0016	Yes*
In-vehicle time	-0.181527	0.0000	Yes*
Parking fee	-0.033792	0.1708	Yes**

Note: *   Significant at 5% level
      ** Significant at 20% level

From the responses given by the respondents, estimation of own price and service elasticities of private transport was made. The results are as shown in table 3.6. From the estimation, all variables appear to be significant. The coefficients have a negative value corresponding to the theory of demand. Since the F statistics is significantly high (49.57569), all of the models are considered to be acceptable.

The study found that the most influencing variable in the demand for private vehicle model is in-vehicle time, which has the highest absolute parameter estimates of 0.181527. This implies that a 10 percent increase in travel time will reduce the demand for travel in private transport by 1.82 percent. While effects of a parking fee change appears to be marginal to the private transport usage. From the estimation, the demand for travel in private vehicle will reduced by 0.34 percent due to a 10 percent increase in the parking fees. Fuel price effects also appear to be marginal since a 10 percent increase in fuel price will likely reduce the demand for travel in private automobile by only 0.7 percent.

These findings are consistent with the findings for the determining factor in using private transportation in section 2.2, where the parking charges as well as fuel price did not have as much influence on the respondents' decision to use private transportation as the time factor. From several interview surveys held, the respondents said that they will continue to use private transportation although there are changes in fuel price since the private mode is more reliable and flexible, and certainly much more convenient than the public transportation.

The second estimations of elasticity are for the demand for public transport with respect to fare price, in-vehicle time of the public transportation, out-vehicle time, and crowdedness as the measure of comfort of the public transportation. The estimations are presented in the following table.

Table 3.7:
Elasticity Estimates of Demand for Public Transportation

Variables	Parameter Estimates	p-values	Significant
Fare Price	-0.069113	0.0129	Yes*
In-vehicle time	-0.034354	0.2969	No
Out-vehicle time	-0.017316	0.5346	No
Crowdedness	-0.187055	0.0000	Yes*
Constant	2.985611	0.0000	Yes*

Note: * Significant at 5% level

The signs of the parameter tend to follow the initial expectations, in which all the variables should have an inverse relationship with the demand for public transportation. Overall, the model has a high F statistics value of 48.21583 which shows that the model is statistically significant. However, for individual variables, both time factors are insignificant with the p value more than 0.2.

Crowdedness or the comfort of the public transport tends to have the greatest impact among the variables with the absolute value of the parameter estimates of 0.187055. This result reflects that current car users are strongly influenced to use public transport when the comfort of the alternative mode is guaranteed. The fare elasticity estimate appears to be inelastic where a 10 percent reduce in fare charge will increase the demand for travel in public transport by only 0.69 percent. These findings are again consistent with the findings for the factors influencing public transports usage in *2.2* which reported that fare factor as the least influencing factor. However, the in-vehicle

time factor that is expected to be significant appears to be the reverse. This reflects that in using public transportation, the whole service attributes of the mode are taken into consideration. The change in in-vehicle time per se, for example, would not induce the travel by public transportation as long as the public transports are crowded and inconvenient.

The overall finding of the estimations found that the elasticity values of demand for both public and private transportation tend to be inelastic where a 1 percent increase in the cost or time of travel by public or private vehicle will reduce the demand for travel in a particular transportation mode by less than 1 percent. One possible explanation for such observations is the fact that the demand for transportation is a derived demand. Therefore the elasticity values tend to be inelastic (Oum, et al 1992).

Another plausible explanation is the study sample of commuters. According to Victoria Transport Policy Institute (2002), the elasticity of demand of commuters is the most inelastic compared to other purpose of travel. Commuting has a very low elasticity because it is related to a fundamental economic activity that provides income. Therefore, drivers are marginally influenced by variations in the independent variables.