



THE MODE OF CHOICES FOR NON-MANDATORY ACTIVITIES,  
CASE STUDIES IN KOTA BHARU, KELANTAN

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## ABSTRACT

In order to understand the reason how and why citizens of Kota Bharu Kelantan choose to travel by public transport or private vehicles, a study was conducted to investigate the mode of choices for non-mandatory activities. The objectives of this study are to understand the influence of family household profiles and numbers, with the mode choice of transportation and to study the influence of vehicle ownership as well as to study the most influencing factors behind mode choices for choosing the transportation, such as distance time saving, cost saving, comfort choices, captive or no other choices, and other reasons. Data was collected using questionnaires to relate the most influencing factors for choosing mode of transportation with different situations when travelling such as alone, coupled, more than two people, during night time, and day time. The reasons for each mode choice based on situation and distance base are time saving, cost saving, comfort choices, captive/ no other choices and others. From the data of short distance travelled the pattern of mode choices for these studies are car and motorcycle as the most influential factor known from the data collected when travelling short distance are time and cost saving. As for medium distance travelling they tend to use car and the highest reasons are time saving and comfort choices. Meanwhile for long distance travelled respondents tend to use bus and car because of time saving and comfort choices. From the results mode choices of choosing transport for non-mandatory activities are understandable and research objectives are achieved.

## ABSTRAK

Untuk memahami bagaimana dan mengapa warganegara Kota Bharu Kelantan memilih untuk membuat perjalanan dengan pengangkutan awam atau kenderaan persendirian, satu kajian telah dijalankan untuk mengkaji mod pilihan untuk aktiviti bukan mandatori. Objektif kajian ini adalah untuk memahami pengaruh profil isi rumah keluarga dan bilangan ahli dengan pengaruh pemilikan kenderaan keatas pilihan mod pengangkutan dan juga untuk mengkaji faktor-faktor yang paling berpengaruh di sebalik pilihan mod untuk memilih pengangkutan, seperti jarak penjimatan masa, penjimatan kos, keselesaan, keterpaksaan atau tiada pilihan lain, dan sebab lain. Data dikumpulkan dengan menggunakan soal selidik untuk mengaitkan faktor yang paling berpengaruh untuk memilih mod pengangkutan dengan keadaan yang berbeza apabila perjalanan seperti seorang sahaja, berdua, lebih daripada dua orang, pada waktu malam, dan pada waktu siang. Pemilihan mod adalah berdasarkan keadaan dan jarak dengan alasan untuk memilih seperti penjimatan masa, penjimatan kos, keselesaan, keterpaksaan atau tiada pilihan lain dan lain-lain. Dari data apabila perjalanan jarak dekat corak pilihan mod bagi kajian ini adalah kereta dan motosikal sebagai faktor yang paling mempengaruhi dan data menunjukkan penjimatan masa dan penjimatan kos merupakan alasannya. Bagi jarak sederhana perjalanan mereka cenderung untuk menggunakan kereta dan faktor yang mempengaruhi adalah menjimatkan masa dan keselesaan. Sementara itu jarak jauh mengembara mereka cenderung untuk menggunakan bas dan kereta kerana menjimatkan masa dan pilihan keselesaan. Dari keputusan pilihan mod pengangkutan untuk aktiviti bukan mandatori yang dikaji objektif kajian adalah tercapai dan difahami.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 BACKGROUND OF STUDY

Nowadays, many factors are related to choosing a particular mode of transportation. As pointed out above, it is vital to understand the travel behavior and the reasons for choosing one mode of transport over another. However, travel behavior is complex and multidimensional. People consider the characteristics, advantages, disadvantages and costs of the different modes to make a trip. Moreover, the choice of one specific transport mode can vary over time, according to the type of journey and the nature of the destination. To meet the travel demand, many people use both public transport and personalized vehicles.

To ensure accessibility and live ability of our cities for future generations, a substantial quality leap in public transport is necessary. Consequently there is a renewed interest in alternative forms of transportation and perhaps a need for greater use of public transportation systems, especially in urban areas. This will facilitate a desired modal shift from car traffic towards public transport, which is safer, cleaner and produces less congestion.

There is a relation between car use and both emission and congestion. Because of this, public transport uses should be increased to trim down the emission and traffic congestion. So, in order to reduce car use it is necessary to realize the underlying patterns of travel behavior of the people. In general, there is no doubt that the car is the most attractive transport mode for travel. Convenience, speed, comfort and individual freedom are well-known arguments in favor of car use (Anable, 2005:65; Hagman,

2003:1; Jensen, 1999:19). This means that public transport needs to adjust the service to the attributes required by consumers in order to become more attractive and influence a modal shift. Service quality, i.e. what the consumers' desire, is an important determinant for travel demand by the travelers.

Based on previous research, it can be assumed that the usage of the transport system influences mode behavior. This travel behavior sometimes is influenced by psychological factors such as perceptions, attitudes, and habits. So changing the psychological factors may also change the travel mode choice, even if the level of service remains the same. Hagman (2003:1) studied car users and explored how they perceived the advantages and disadvantages of personalized vehicles.

### **1.1.1 NON-MANDATORY ACTIVITIES**

When it comes to the definition of non-mandatory, we must understand that non-mandatory is something that is not required by law or mandate; it is a voluntary action. Non mandatory activities means it is not authoritatively ordered to do that particular activities, in other words not obligatory or not compulsory.

Based on data for out-of-home activities, they are often grouped into the following three, commonly categorized as types of activity (Vovsha et al. 2004):

1. Mandatory activities (e.g. work, university, or school),
2. Maintenance activities (M) (e.g. shopping, banking, visiting doctor, etc.),  
and
3. Discretionary activities (D) (e.g. social and recreational activities, eating out, etc.).

For this study, (Bradley and Vovsha 2005) mandatory activities are further divided into work and school purposes because there is essentially a difference between work and school as to by whom and when such activities are carried out. Non-mandatory pattern are the last two activity types, maintenance and discretionary

activities, that are often treated as one type of activity, that can be distinguished from mandatory primary activities such as work and school patterns.

For this study the focus will be more on non-mandatory activities that related to non-work based. This study will be focused on citizens both male and female who are an employee, student, and non-employee/student to be the respondent. The chosen respondent are based on usage rate assuming components with three types of major mode of choice, namely, choices of daily activity-travel patterns, time of day, and destination. Daily activity-travel patterns except for home, which means staying at home all day, are defined by primary activity, primary tour type, and number and type of secondary tours. Primary activities or purposes are classified as home, work, school, maintenance, and discretionary for the sake of modeling.

### **1.1.2 TRANSPORTATION SYSTEM IN MALAYSIA**

Transportation in Malaysia started during British colonial rule. The country's transport network is now developed. Road network in Malaysia is covering 63,445 km and it's including 1,630 km of expressways. The highway link network of the country extends over 800 km, and reaching the Thai border from Singapore. Link network of road system in the east Malaysia is not as well developed, while roads in peninsular Malaysia are in high quality. Types or modes of transport in peninsular Malaysia include buses, trains, cars, airplanes, and to an extent ships.

Lynn and Boyle in 2008 observation was conduct in 1985 to 2005 found out that there is observed and result is the private transport flourished that about 24%. The public transportation facility in Malaysia is modern but lacks in some service quality. Big city like Kuala Lumpur also having problem with inaccurate time busses arrival. That's why of public transport users in Malaysia are low. (Zakaria et al., 2010) finds that there is no different with train which is rail public transport system introduces in 1980s. Train also could not increase the popularity of public transportation. (Nurdden et al., 2007) state that the road network insufficient at the present scenario and other factors like travel cost and travel time, distance from home to public transport and also

distance from home to work are the contributing factors that influence the modal shift from car to public transport in Malaysia was increase by vehicle ownership.

Nowadays, people prefer cars because of passion for car and driving, the degree of freedom, accessibility, negative perception, and comfort or at times. Use of public transport may put them in between traffic and thus waste their time when travelling to destination. (Nurdden et al., 2008) find two different case studies on choice of modal shift conducted in Malaysia that travel time and travel costs are the characteristics that favor car ownership was stated by Cities like Kuala Lumpur, Penang, Johor Bahru, Kuching and Kota Bharu have similar case which is an increased car population rate.

### **1.1.3 HOUSEHOLD BACKGROUND IN KELANTAN**

This survey component covers the socio-economic background of the household in Kota Bharu including number of household members, age structure, household composition and employment status obtained from summary of key statistics by state, Malaysia, 2010. Based on household statistic, total population in all Kelantan households are 1,589,900 people and the numbers of male are 789,700 people and female 791,200 person. For Kota Bharu only, the population are 509,400 people.

According to the Summary, total number of employee in Kelantan 575600 people where 64.1% are male and 35.9% are female employment status. The average numbers in a household are 6 people consist of father, mother and children and this may affect the mode preferences when choosing transportation. If this is not supported by adequate public transport services, people will prefer using private transport to meet the needs of their tours; this can lead to the problem of congestion even at non-peak hours too.

### **1.1.4 MODE CHOICES IN TRANSPORTATION**

In Local News, Malaysian Fuel Prices by Paul Tan 4 June 2008, Fuel prices were raised on June 5, 2008 which consequently led to the increase in inflation rate. Rising fuel prices have a chain impact on the cost of transportation and thus to the

increase of the price of raw materials, goods and services. Consequently, the prices of goods and services become more expensive. Since public transport is able to improve and ensure accessibility and live ability of cities and public transport might create a reduction of the negative impacts of increased car mobility, a leap in quality of public transport is necessary.

A useful list of factors known to influence the choice of mode in three main groups: attributes of the traveller, attributes of the journey and characteristics of the transport facility provide by Ortuzar and Willumsen (2001). The analyses in this paper will examine characteristics falling under these three groups focusing largely on those that may be tested using data available from Travel Survey. Mode choice and usage will be discussed in relation to the following aspects:

- 1) Socio-demographic characteristics of traveller (age, gender, household size, household income, employment Status)
- 2) Vehicle Ownership
- 3) Trip purpose for each distance
- 4) Time factor
- 5) Cost factor
- 6) Convenience
- 7) Access of vehicle/ captive/ no other choice
- 8) Traveling Companions

There also diagnosis of socioeconomic parameters involve when choosing a transportation that have been studied by Mintesnot Gebeyehu and Shin-ei Takano. Place of residence, gender, age, income vs. public transportation fare, family size, bus users, distance, waiting time, and chained trip, are involve in different kind of mode choice that have been made by their respondent.

## **1.2 PROBLEM STATEMENT**

The growth of private vehicles usage in Malaysia is widely expanded; hence the public transports are currently neglected. The usage of public transport is decreasing since the increasing rate of public transport usage in Kota Bharu, even though public transport is more convenient and beneficial rather than private vehicles. People consider the characteristics, advantages, disadvantages and costs of the different modes to make a trip. Moreover, the choice of one specific transport mode can vary over time, according to the type of journey and the nature of the destination. To meet the travel demand, many people use both public transport and personalized vehicles. But mostly citizens of Kota Bharu choose to travel mostly by private vehicles to travel to work or other trip purpose. But not all of them prefer to use private vehicles when travelling too, and decides to choose public transportation. This mode of choices varies according to many factors that have been considered such as socio-demographic characteristics of traveller (age, gender, household size, and employment status), trip purpose, time of day, access of transport, travel time, convenience, cost, vehicle ownership, and traveling companions. In order to understand the reason how and why citizen of Kota Bharu Kelantan choose to travel by public transport or private vehicles, a study will be conducted to investigate the mode of choices between these transportation.

## **1.3 OBJECTIVE OF STUDY**

The research problem will be addressed through pursuing the following research objectives.

- i. To understand the influence of family household profiles and numbers, with the mode choice of transportation for non-mandatory activities in Kota Bharu, Kelantan.
- ii. To study the influence of vehicle ownership, with the mode choice of transportation for non-mandatory activities in Kota Bharu, Kelantan.
- iii. To study the most influencing factors behind mode choices for choosing the transportation, such as distance time saving, cost saving, comfort choices, captive or no other choices, and other reason.

#### **1.4 SCOPE OF STUDY**

The scope of this study is to investigate the comparison between public transport and private vehicles usage in Kelantan, Malaysia. Since Kelantan has a wide range of public transport such as bus, taxi, plane and train, this study will be conducted to investigate the reason why they choose to use that particular transportation in different point of view such as socio-demographic characteristics of traveller (age, gender, household size, and employment status), trip purpose, time of day, access of transport, travel time, convenience, cost, vehicle ownership, and traveling companions.

The methodologies are involved and reflect the complexity of the travel behavior, the range of factors that impact on the choice process, the interaction between variables during decision-making and the variability due to the diversity of travellers making these decisions themselves. These approaches mathematically model the choice process in what Hensher et al (2005) refers to as a 'multi-attribute environment' taking into consideration the effects of influencing variables not singularly but conjointly and varies over times.

#### **1.5 SIGNIFICANCE OF STUDY**

The comparison quality of the public transport service will drive people to use more public transport and less private vehicle and this situation will lead to substantial saving of resources in terms of space which is less vehicle on road and it will reduced congestion. The result of this study may help the citizen to improve their planning when choosing public transport or private vehicles. Besides that, using public transport also will reduced gasoline usage and automatically will reduced pollution and will gives better environment at Kelantan as well the whole Malaysia.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 PRIVATE VEHICLES IN KELANTAN**

For the past decades private vehicle ownership has increased tremendously in this country which is partly due to the economic growth, rapid urban development, population growth and inadequate public transport availability and services. Product Quality encompasses the features and characteristics of a product or service that bears on its ability to satisfy stated or implied needs. In other words, product quality is defined as “fitness for use” or ‘conformance to requirement” (Russell and Taylor, 2006).

Motorcycles market in Malaysia will sustain and continue to grow in the future due to several factors. One of the main contributing factors is traffic congestion, As a result of the increasing number of vehicles on the road every year; traffic congestion has reached a critical level especially in the city center. Hence, motorcycles are a useful mode of transportation for commuting within the city area especially during traffic congestion due to its small size and high maneuverability. Furthermore, many roads in Malaysia are very narrow due to space constraint especially in states such as Kelantan and as well as in rural areas.

Therefore, motorcycles are the preferred mode of transportation in those situations, Apart from that, the lower income group still depends heavily on motorcycles for transportation to save cost. Parking rates for motorcycles in most of the buildings within the city areas are usually cheaper and sometimes free of charge as compared to parking rates for cars. Besides that, parking spaces for motorcycles are a lot easier to find as compared to cars. Inefficient public transportation also promoted



higher motorcycles demand among the lower income group.

In 2010, Malaysia has a population of 28.3 million, 17.4 million private vehicle automobiles and 11.7 million registered drivers. Traditionally, income has been hypothesized as a major determinant of private vehicle ownership. However, the spatial arrangement of urban fabric has becoming more important determinant of owning a vehicle. Other determinants such as government policy, auto vehicle financing, household characteristics and travel characteristics are also important. Therefore this thesis is analyzing the spatial determinants of private vehicle ownership in Malaysia with a special reference to Kota Bharu, Kelantan.

Currently, there have been many researchers conducted all over the world on car ownership such as studies by Dargay and Gately (1997) on income's effect on car and vehicle ownership. In year 2001, Joyce M. Dargay has carried out a research on the determinants of car ownership in rural and urban areas with the application of a pseudo-panel analysis. The paper examines the factors determining car ownership for households living in rural and urban areas. A dynamic car ownership model is estimated using pseudo-panel approach based on data from Family Expenditure Survey in the United Kingdom for year 1982 till 1985. The results show that rural households' car ownership is far less sensitive to motoring costs than that of their urban counterparts. The implication of these results are that general increases in the costs of car transport would pose a considerable economic burden for rural households, and that other area specific transport measures may be more suitable, particularly from an equity point of view.

Apart from that, Sangho Choo and Patricia L. Moktharian have conducted a study on the role of attitude and lifestyle in influencing vehicle type choice in year 2002. For the past, economists and market researchers have been interested in identifying the factors that affects consumers, car buying behaviors to estimate market's demand and they have developed various models of vehicle type choice. Usually, they do not consider consumers' travel attitudes, personality, lifestyle and mobility as factors that may affect the vehicle type choice. The study is to explore the relationship of such

factors to individuals' vehicle type choices and to develop an agreeable choice model of vehicle type based on these factors as well as typical demographic influential variables.

The data of the study come from the mail-U mail-back survey of 1904 residents in San Francisco Bay area. The dependent variables (the most often ridden vehicle) are classified into nine categories: small, compact, mid-sized, large, luxury, sports, van/minivan, pick up and sports utility vehicle. Based on these categories, vehicle choices were correlated to travel attitude, personality, lifestyle, mobility and demographic variables individually, using a one-way analysis of variance and chi-squared tests. Then, a multinomial logic model for the vehicle type choice was estimated. The final model confirmed that the analyzed variables significantly affect an individuals' vehicle type choice. The results of the study provide useful reference for the vehicle manufacturers, authorities and planners of transportation policy related to vehicle ownership, traffic congestion and energy consumption.

The previous researches on car ownership are useful as reference for future studies on other vehicle ownership such as motorcycle ownership. Some of the factors that influence car ownership also affect motorcycle ownership and usage in Asia may be influenced by parameters that are different from western countries' Some of important parameters are population density, cultural background, economy and the weather in a particular city. Apart from that, Gross Domestic product growth was proven to have strong influence on the growth of motorcycle. According to the research, motorcycle ownership is influenced by its advantages such as the affordable price, the convenience of using a motorcycle which provides door-to-door access and easy to park as well as high maneuverability. In Malaysia, motorcycle has been the main priority because it often becomes the first vehicle purchased by new workers. Besides that, it is the popular mode of transportation for the low to middle income groups in urban and rural areas.

Motorcycle is suitable to be used for short journey and it is the main commuting mode for daily travel in these three countries. Education background, age group using motorcycle, monthly income and travel distance are some of the demographic factors that affect the motorcycles ownership in those countries. Besides that, there are some differences in traffic rules and motorcycle traffic characteristics among Taiwan, Malaysia and Vietnam.

Tuan et. al (2005) has carried out a research on modeling of household motorcycle ownership behavior in Hanoi City. The objectives of the research are to develop dynamic discrete choice model models expressing the ownership behavior and investigate household response to policy. Firstly, a retrospective survey is conducted to collect information of the household motorcycle transaction processes. In year 2003, a total of 299 sampled household data are collected to build the dataset. On average, one household has 3.6 people and is holding 1.7 motorcycles.

Approximately, two people are holding one motorcycle, producing an extremely high rate of motorcycle ownership compared to other developing cities in south East Asia. In the research, heterogeneity is analyzed using random coefficients logic model. State dependence is investigated using buy-smooth and lagged dependent variables. The results show the increases in numbers of workers or students, motorcycle price, income and previous transactions significantly influence current transaction decisions. The researchers also suggested that imposing sufficient high taxes on motorcycle users could be effective in controlling the motorcycle ownership. As conclusion for the study, the researcher states that development of a motorcycle ownership based on local travel demand is important for future motorcycle ownership and motorcycle travel demand understanding.

## 2.2 PUBLIC TRANSPORTATION IN KELANTAN

Kelantan is situated in the east cost of Malaysia and was well known for its culture reserves. The surroundings area are mostly old building but lots of development had increased the country name and lots of tourist from local and overseas comes to see the development while preserving it history. There is some of public type of public transport that has been introduced by the government shown in table 2.1.

**Table 2.1:** Type of Public Transport in Kelantan

Type of transport mode	Regional	Central	District	Rural
Bus	✓	✓	✓	✓
Train	✓	✓	✓	
Airplane	✓			
Taxi		✓	✓	✓

*Source: JKR Kelantan*

### 2.2.1 Bus

Bus services use buses on roads to carrying numerous passengers on short or long journeys. Buses operate with high capacity compared with trains and can operate on roads and with relatively inexpensive bus stops to serve passengers. In Kelantan, buses are commonly used to connect cities, towns, and rural areas as well for shuttle services supplementing in cities area.

There are two bus terminals which all outstation buses including express buses and local busses where it also place to pick up and drop off passengers. The first one is Jalan Hamzah state capital of Kota Bharu where the express busses and local busses are operating here. Another one is at SKMK Langgar Bus Terminal which is the minority choices for citizen in Kota Bharu, and the new one is located at Lembah Sireh, behind Tesco Kota Bharu where only express busses are operating here.

City liner a stage bus operators Malaysia's largest private, operating in the states in Peninsular Malaysia, particularly Kedah, Pulau Pinang, Pahang, Kelantan, and Selangor. City liners are one of the companies that operate local busses at Kota Bharu now that connects rural and urban areas, village to town to bring tens of thousands of passengers every day. The region was formerly operated by the Kelantan Malay Vehicles-Limited Company (MCMC), a subsidiary of Malaysia Berhad Group Vehicles (KKMB) previously combined with the Express unit under one portfolio. Now City liner - Operation is a private entity, which focuses on the operation of local buses.

Express busses services use coaches for long-distance buses for longer distance route where it connect other country in Malaysia. Buses or the vehicles are normally equipped with more comfortable seating with a separate luggage compartment, toilet and also video. The buses have higher standards than city buses and have a limited stopping pattern

### **2.2.2 Train**

Malaysia railway is formerly known as the Malayan Railway Administration, it came to be known as KTMB (Keretapi Tanah Melayu Berhad) after the government led corporatization in 1992. As the only railway operator in Malaysia, the railway remained owned by the federal government. This train travel between Johor Bharu in the south of Peninsular Malaysia and Kota Bharu in the north. There is a daily train that travels straight through the jungles in the center of Peninsular Malaysia. Kota Bharu's main railway station Wakaf Bahru is about 5 kilometers away from the city center.

This train was called the 'jungle' train, though only a small part of the total route actually crosses the jungle. The 1,669 Km Malaysia railway system dates back to the British colonial era, when it was first built to transport tin. Fares are generally reasonable, but the low speed of the intercity trains on the narrow gauge tracks make them not competitive with other modes of public transportation. The current KTMB route covers West Coast and East Coast of peninsular Malaysia. The West Coast line runs from Padang Besar on the Malaysia - Thailand Border in Perlis (where it connects with the State Railway of Thailand's network) to Singapore via Butterworth, Penang (for connections to Penang) and Kuala Lumpur.

The East Coast line runs between Gemas in Negeri Sembilan and Tumpat in Kelantan. Gemas is the rail junction between the West Coast and East Coast lines. It is called the East Coast line because it serves two of Peninsular Malaysia's East Coast states, namely Pahang and Kelantan. The only country in Malaysia that is not serving by KTMB Malaysia Railway network is Terengganu.

### **2.2.3 Airplane**

Sultan Ismail Petra Airport is an airport that operates in Pengkalan Chepa, Kota Bharu. A famous state at Kelantan, Malaysia where the airport was named after Ismail Petra of Kelantan, the thirteenth Sultan of Kelantan, who ruled from 1980 to 2010. The present terminal was officially opened in September 2002 and it was 12,000 m<sup>2</sup> airport

terminals which have three aircraft stands, three aerobridges and able to handle 1.4 million passengers.

The three aerobridges were inspired from the old Subang Airport and refurbished. The airport route offers flights between a total of five domestic destinations from Malaysia Airlines, Air Asia and Firefly and one international destination. In 2012, it becomes the busiest airport in the East Coast and 9th by passenger traffic and 3rd in Malaysia by terms of total aircraft movements (take-off and landing). This may include commercial, private, training and military aircraft. The airport handled 1,132,000 passengers, with 64,114 total aircraft movements. The price of each ticket is varies by times and during event times.

#### **2.2.4 Taxi**

There are a number of small taxies companies such as Cirta Travel & Tours Sdn Bhd and Editas Travel Sdn Bhd while others are privates and individual. The reputation of Kelantan taxi service has been marred by the poor conduct of local taxi drivers, who have been known, among others, to refuse using taximeters, overcharge and pick-and-choose which destinations they will travel to, regardless of locals and foreigners, while driving poorly maintained vehicles. The taxi station are varies. Some of them are ported at airport and also busses station including busses terminal and bus stand.

### **2.3 ADVANTAGES AND DISADVANTAGES OF PUBLIC TRANSPORT VERSUS PRIVATE TRANSPORT**

A study by Beirao and Cabral (2007:478) found some advantages and disadvantages of the uses of public transport and private cars. These advantages and disadvantages are presented in Table 2.2 and 2.3.

Table 2.2: Advantages and disadvantages of public transport

<b>Advantages</b>	<b>Disadvantages</b>
Public transport	
<ul style="list-style-type: none"> <li>• Cost</li> <li>• Less stress</li> <li>• No need to drive</li> <li>• Be able to relax</li> <li>• Be able to rest or read</li> <li>• Travel time on bus lanes</li> <li>• Less pollution</li> <li>• Talk to other persons on the vehicle</li> </ul>	<ul style="list-style-type: none"> <li>• Waste of time</li> <li>• Too crowded</li> <li>• Lack of comfort</li> <li>• Time uncertainty</li> <li>• Lack of control</li> <li>• Unreliability</li> <li>• Long waiting times</li> <li>• Need of transfers</li> <li>• Traffic</li> <li>• Lack of flexibility</li> <li>• Long walking time</li> </ul>

*(Source: Beirao and Cabral, 2007: 478)*

Table 2.3: Advantages and disadvantages of private transport

<b>Advantages</b>	<b>Disadvantages</b>
Private transport	
<ul style="list-style-type: none"> <li>• Freedom/ independence</li> <li>• Ability to go where I want</li> <li>• Convenience</li> <li>• Rapidity</li> <li>• Comfort</li> <li>• Flexibility</li> <li>• Know what I can expect</li> <li>• Safety</li> <li>• Having my own private space</li> <li>• Listen to music</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> <li>• Difficulty of parking</li> <li>• Cost of parking</li> <li>• Stress of driving</li> <li>• Traffic</li> <li>• Waste of time in rush-hour traffic</li> <li>• Pollution</li> <li>• Accidents</li> <li>• Isolation</li> </ul>

*(Source: Beirao and Cabral, 2007: 478)*

From both Tables above, it can be seen that it is a complex task to make it generalized for the improvement of the usage in public transport sector. It can be realized that although public transport has some advantages, at the same time it deals with some disadvantages also. Simultaneously, from point of view of private car, the

opinion is the same. But it should be noted that the number of car usage advantages is higher than public transport usage advantages.

On the other hand, car usage disadvantages are fewer than for public transport usage. It is a dilemma that world-wide transport policies encourage the use of public transport to reduce the environmental emission even though the advantages of public transport are less than for car usage. Again, people like to enjoy the car usage advantages. However, it is a two-sided urge. It means people should use public transport to minimize the vehicular pollution, and on the contrary, people like to use private car to enjoy a higher comfort in travel than public transport

## **2.4 DEMAND NOWADAYS ON TRANSPORTATION**

From (Anable, 2005:65; Hagman, 2003:1; Jensen, 1999:19) personal travel is usually estimated at one-quarter to one-half of prevailing wage rates. Focusing on the quality of public transport, the following main quality aspects were noted:

### **2.4.1 Age:**

(Joe Grengs, Chuang-Chung Hu, Mari Weitz,) Younger passengers are slightly more likely to ride passenger public transport than older passengers. In addition, the demographics of the group that undertake these trips are predominantly young with limited access to a private vehicle.

### **2.4.2 Employment Status:**

(Joe Grengs, Chuang-Chung Hu, Mari Weitz,) The survey questionnaire asked about employment status using the categories. Only four percent of responding passengers reported being unemployed, while 11 percent reported being retired. A substantial share of respondents identified themselves as students, with 14 percent as college students and nine percent as students that are not in college.