

# Bike Sharing Implementation in Malaysia: A Performance on Demand in Petaling Jaya

Nuur Fathin Roslan, Ahzilah Wahid, Muhammad Zaly Shah



**Abstract:** *Bike-sharing is one of the innovative developments in sustainable transport to foster sustainable transportation. The potential for each station to meet the increasing demand for bikes and empty lockers is a critical factor in the success of a system. Intended for the study measure demand bike sharing implementation and analyses the significant demand for the system usage among citizen in Petaling Jaya area.*

**Index Terms:** *Bike Sharing, Demand, Congestion & Pollution, Green transportation*

## I. INTRODUCTION ON BIKE SHARING

Despite urbanization and modernisation achieving unprecedented levels, congestion on the roads has become a modern issue.. Heavy traffic is related to the impoverished environment such as air and noise pollution associated with a safety risk, economic competitiveness and sustainable growth. It is no surprise that bike-sharing program has exploded in popularity in the last decade since people nowadays realised about the poor environment that harmful to them. Bike-sharing is a viable format that emerged in the mid-2000s. Until June 2014, bike-sharing was accessible in 50 countries, including China, Spain, Italy, and France, covering 712 towns, operating at 37,500 stations approximately 806,200 bikes (Sommerville, 2015). The most obvious effect of rapid motorization is increased traffic congestion and reduced driving speeds. With the increase in vehicle ownership, it has been emphasised that the demand for travel to central city areas would grow far beyond the capacity of the road network. Cities attempting to foster green transport infrastructure and reduce vehicle emissions and congestion should embrace bike sharing systems.

### Problem Statement

Malaysians are spending more time in the traffic congestion in this period, according to the Star Online (2016), and the researcher found that 55% of Malaysian spent more time in a traffic jam. The Ministry of Transport (MOT) has enforced many rules and regulations to reduce emissions and green transportation. As Klang is the fastest metropolitan region in the nation,

in terms of population and economy, they are facing to congestion and heavy traffic in most of the urban area because of high usage of private cars, motorcycle and taxi (Khorasani, 2012a).

Explicit hidden costs such as a deterioration in public health triggered by inactive lifestyles and stress caused by traffic congestion also arise. In Asia and Southeast Asia in particular, Where cycling rates are low and there is almost no cycling infrastructure in their cities, limited literature is needed to tackle cycling opportunities and obstacles (Shokoohi & Nikitas, 2017). This research conducted to identify Petaling Jaya citizen on Bike Sharing demand and to identify ways to reduce the level of emissions and congestion by encouraging people to use Bike-sharing rather than private cars.

### Research Objective

This study's research aims are as follows:

- a) **R.O1:** To identify the Bike-sharing demand among citizen in Petaling Jaya.
- b) **R.O2:** To analyse the significant demand for Bike-sharing adoption in Petaling Jaya.

## II. LITERATURE REVIEW

### Bike Sharing

Bike sharing schemes have been introduced as part of the urban transit system to increase the flexibility of public transport systems to final destinations. The system appears to be cost-effective and a sustainable. Positive attention was given in recent years to initiatives along with bike use, enhancing the first mile or last mile connect with other modes of transportation and reducing the environmental impact of motorized transport activities (DeMaio, 2009). Integrating with other public transport systems and providing affordable access to riding bikes. The system reduces the use of automobiles for short trips in urban cities to avoid traffic congestion and lessen noise and air pollution (Khorasani, 2012b). This is intended as an innovative model of transportation within the city to satisfy the needs of the public transit system. The idea is that the commuters can take the bicycles whenever they need them and leave them in a nearby station. The rapid expansion of bike-sharing systems in urban areas tends to build a new market for public transport services. There were two critical questions faced by operators and local authorities responsible for managing these schemes on how to attract new members and how to retain existing members (2018, Morton)

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### Demand & Supply

Transport service must be used immediately as it cannot be stored (Shaheen, 2013). Sama goes with Bike Sharing that has been operated Cutting-edge the economic system, numerous activities located in the difference area generate movement that must be supported by the transportation system. Without movement, infrastructures would be useless, and without infrastructures, the movement could not occur (Shaheen, 2013). The same idea extended to Bike Sharing, the user could not ride the bicycle from one point to another without infrastructure, and vice-versa, if the provider offering the infrastructure, but there is no consumer desire to use the bicycle, it will be a waste. According to Fricker and Gast, (2006) demand reductions can have two significant adverse impacts, one on income loss and the other on carbon emissions because people can turn to transport modes that burn fuel.

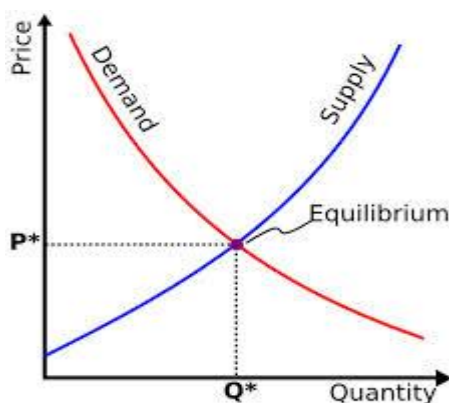


Fig. 1 Demand and Supply graph

### Bike Sharing in Petaling Jaya

TownBike in Singapore in 1999 was the first bike-sharing network launched in Asia. The second Asian bike-sharing program started in Taito in 2002, Japan named the Taito Bicycle Sharing Program. The system was running at 12 locations with 130 bicycles (Shaheen S. A, 2010). Bike share systems currently operate in Taiwan, South Korea, and China. First bike sharing services implemented in the city of Nubija in Chongwen in South Korea in 2008. The program has 430 bicycles and 20 terminals located in the city centre. Malaysia is one of Asian countries initiating a program of bike sharing. One of the locations that have this transport system is in Petaling Jaya, this study examines the demand factors of citizens' bike-sharing in Petaling Jaya.

However, most of the studies in Bike Sharing focus more on Western and developed countries such as the Netherlands, Denmark and Germany or other Western and developing countries that have at least adequate bike sharing infrastructure standards or are rapidly improving, such as the United States, UK and Australia. (Shokoohi & Nikitas, 2017) This study focus at Petaling Jaya Kuala Lumpur. With the status of an industrial state in Malaysia, the primary issue identified in Petaling Jaya is the growing number of private vehicles as more and more cars hit the streets, especially during peak hours. (Shariff, 2012) Kuala Lumpur experienced heavy congestion as a result of rapid population growth in the early 1950s. The state government has formed a

1,200-acre rubber plantation named "Effingham Estate" in Jalan Klang Lama to create a new settlement called Petaling Jaya to resolve this congestion problem. Although the government has diverted Petaling Jaya from Kuala Lumpur, Petaling Jaya is now facing worse congestion due to economic growth and increasing numbers of citizens. Most study on Bike sharing focus on developed countries that have at least adequate cycling infrastructure standards or rapidly improving like the UK and Australia (Shokoohi & Nikitas, 2017).

## III. METHODOLOGY

### Research Design

Methodology fieldwork is pertaining to a collection of methods that are often used in a research as a structured solution to the issue. It includes analytical procedures, numerical schemes, statistical approaches, and others. In this paper, the researcher used a quantitative method. Quantitative analysis in certain diverse academic and professional fields has become essential in the form of research. Qualitative research is an appealing and fruitful way of doing analysis in many fields. In this research, the use of a qualitative approach is more fitting than a descriptive method for capturing the respondent's personal experience. The total number of respondents was calculated using the finite sample size formula centered.

### Data Analysis

The primary way to acquire data from the relevant respondent is by distribute the questionnaire to the citizen of Petaling Jaya on bike-sharing demand data obtained from this method used in data analysis process as the key references. According to Frary, (2003), The scale used in the questionnaire is to answer to the assertion written in the questionnaire by the respondent. It is used when there are many types of questions in the survey and each question requiring a scale.

### Demographic Profile

Summarise data respondent based on the respondent's demographics presented in table 1. Based on table 4.1 shown above most of the respondent's gender was 52% male, followed by 48% female. This revealed that male respondents are the highest respondents in this research since they know more about bike sharing and also use bike sharing than female respondents. For this research, the respondent's age below 20 years old is 22%, 21 to 40 years old is 59%, 41 to 60 years old is 17% and 61 years old and above is 2%. It showed that most of the respondents are aged between 21 years to 40 years old. This is because young people still have the strength to ride a bike rather than older people. The respondent's race for this research which has been categorised into four categories. For this research, the respondent's race which is Malay is 60%, Indian is 14%, Chinese is 24%, and another race such as Iban is 2% (2). It showed that the majority of the respondent's race is Malay because Malaysia is one of a Muslim country,

so that Malay citizen rates are higher than the other races the Respondent's occupation which is private servant is 23% public servant is 9%, self-employed 11% and others which include students is 57%. This research, the respondent's daily vehicle used is public transport 24%, motorcycle 10%, bicycle 0% and the car is 66%. For this research, the respondent's level of education which is SPM 33%, a diploma is 12%, the degree is 53%, and the PhD is only 2%. The respondent's monthly income which below RM 1,500 is 71% (71), RM 1,501 to RM 2, 500 is 9% (9) RM 2,501 to RM 3,500 is 14% (14) and RM 3,501 above is 6% (6). It showed that most of the respondent's monthly income is below RM 1,500 and it can encourage more people to use bike sharing as it can save travelling cost.

	Frequency	Percentage %
Male	52	52
Female	48	48
Below 20 years	22	22
21 years – 40 years	59	59
41 years – 60 years	17	17
61 years and above	2	2
Malay	60	60
Indian	14	14
Chinese	24	24
Others	2	2
Private Servant	23	23
Public Servant	9	9
Self-employed	11	11
Others	57	57
Public Transport	24	24
Motorcycle	10	10
Bicycle	0	0
Car	66	66
SPM	33	33
Diploma	12	12
Degree	53	53
PhD	2	2
Below RM 1,500	71	71
RM 1,501 – RM 2,500	9	9
RM 2,501 – RM 3,500	14	14
RM 3,501 above	6	6

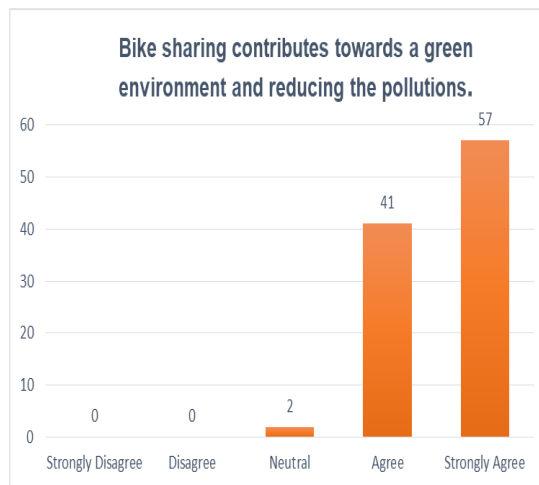
**Table. 1 Demographic Profile Respondent**

**IV. RESULT AND DISCUSSION**

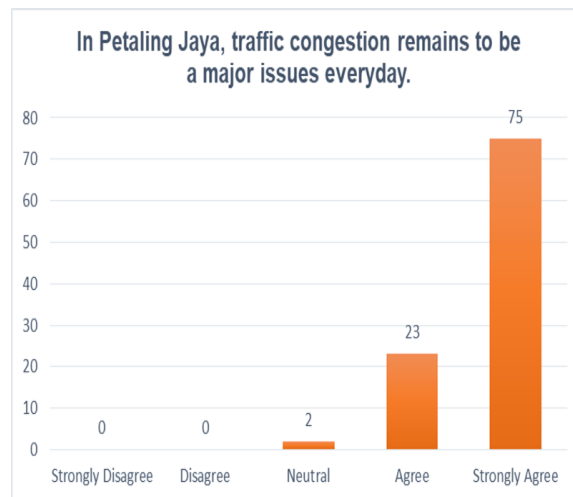
The findings from this research were focused on data collection:

I. 57% of respondents strongly agreed that bike-sharing contributes towards a green environment and reducing the

pollutions as bike-sharing did not bring any harm to the environment. Air pollution comes from a variety of sources, and one of them is driving a car. Each time the user chooses to ride a bike, it can reduce air pollution in the area of the neighbourhood and the city.



**Fig. 2 Green environment and reducing the pollution**



**Fig. 3 Traffic congestion in Petaling Jaya**

II. 75% respondents strongly agreed that they always faced the traffic jam in Petaling Jaya especially during peak hours, the traffic jam gettings worse, Bike sharing can be used to reduce the congestion since several private vehicles are less when more user use Bike Sharing in Petaling Jaya.

III. 63% of respondents agreed that Bike Sharing could reduce the travelling cost rather than drive a private vehicle. Other than that, 29% of respondents responded strongly agreed that Bike Sharing can save cost in terms of maintenance and fuel rather than use cars. Bike-sharing programs appear to be a cost-effective and sustainable way to widen the transit options portfolio among available policies and solutions. Bike-sharing can move more people at a lower cost and brings more benefits to people health and reduce environment pollution compared with another mode of transport.

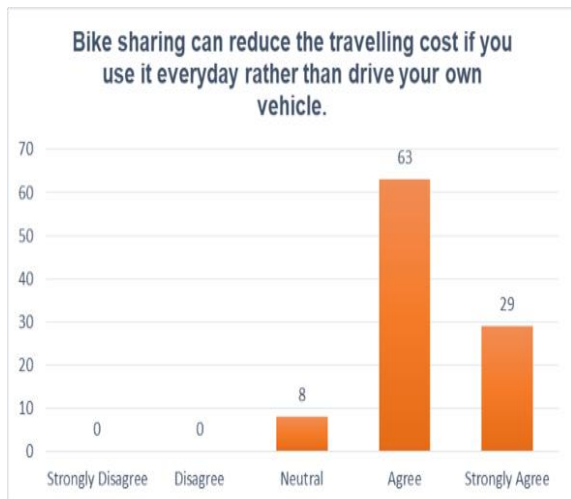


Fig. 4 Travelling cost

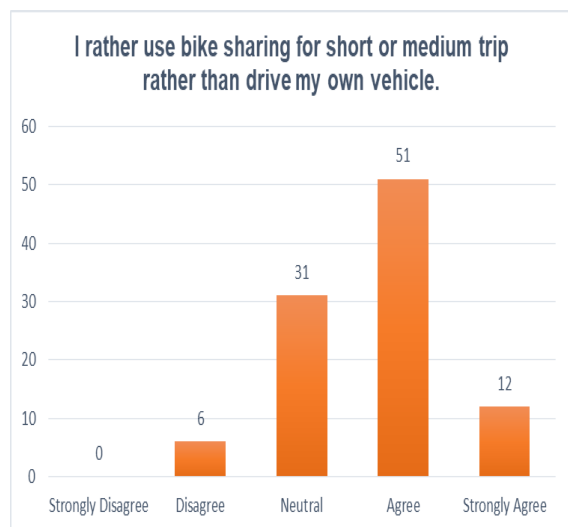


Fig. 5 Comparison of BS with private vehicles

IV. 51% of the respondents agreed that they prefer to use Bike sharing for short distance. Based on the analysis, network stations are much more likely to rely upon four blocks of a bike share station engaged in nearby businesses and bike-share users. Deciding on congested areas like urban centers, the bike share riders spent significantly less time searching for parking and spending more time descending nearby businesses. The system offers an excellent chance for people to choose active transportation for short trips.

V. 44 out of 100 respondents agreed that they always faced the traffic jam every day, especially during peak hours. Forty-three respondents also responded it as strongly agree since they always spent their time on traffic jam. While 13 respondent responded it neutral. Living in Malaysia, citizen deal with lousy traffic every single day, especially during peak hours in places like Petaling Jaya and Kuala Lumpur. People are more interested in using their cars to go to work instead of using public transport, walking and cycling. When the number of vehicles is beyond the capacity, people will spend most of their time on the road for hours because of heavy traffic congestion.

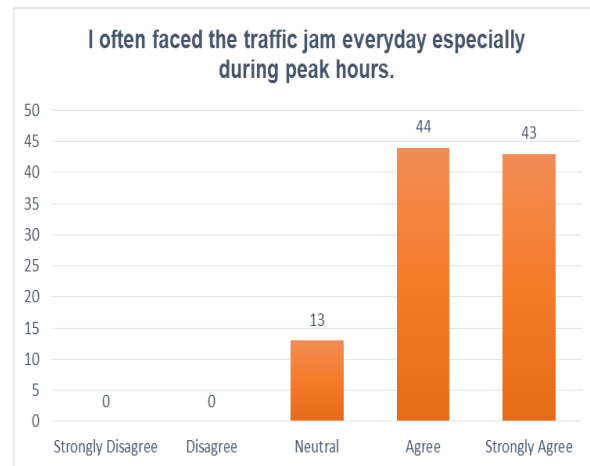


Fig. 5 Peak Hours

V. CONCLUSION

The finding from this research shows that some of the respondents prefer to use private vehicles compare to use Bike Sharing because they feel more comfortable rather than using public transport or bike-sharing. By using private vehicles, they can reach the destination faster compare with other transportation did. They are willing to facing traffic jams every day as long they can reach the destination comfortably. Most of the respondents indicated that they are eager to use short to medium distance bike sharing. Marketing and promotion is a medium used to attract more people to ride bike sharing. Most of the respondent are strongly agree that Bike sharing promotes a healthy lifestyle.

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