A STUDY ON EFFECTIVENESS OF PEDESTRIAN BRIDGE UTILIZATION AT JALAN TANAH PUTIH

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ABSTRAK

Pengangkutan memainkan peranan penting dalam mencapai pembangunan mampan. Peningkatan pergantungan kenderaan persendirian di Bandar Kuantan telah meningkatkan bilangan kemalangan jalan raya terutamanya untuk pejalan kaki semasa melintas di Jalan Tanah Putih. Sebuah jambatan pejalan kaki berfungsi akan memudahkan perjalanan pejalan kaki melintasi jalan raya dengan selamat dan mengurangkan kemalangan jalan raya untuk pejalan kaki. Oleh itu, jambatan pejalan kaki mestilah direka dengan baik untuk memaksimumkan keberkesanannya.

ABSTRACT

Transportation plays an important role in achieving sustainable development. The increasing dependency of private vehicles in Kuantan Town has been increasing the number of road accident especially for pedestrian during crossing road Jalan Tanah Putih. A functional pedestrian bridge will require for a smooth transfer of pedestrian crossing the road and decrease road accident for pedestrian. Therefore, a pedestrian bridge must be properly designed as to maximize the effectiveness of the bridge.

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LIST OF ABBREVIATIONS

AVG	Average
HTAA	Hospital Tengku Ampuan Afzan
JLN	Jalan
MPK	Majlis Perbandaran Kuantan
PDRM	Polis Diraja Malaysia
SOV	Single Occupant Vehicle
OKU	Orang Kelainan Upaya

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Pedestrian or motor vehicle crashes are a serious problem throughout the world and Malaysia has a particular problem with pedestrian death and injuries. Specifically, 711 pedestrian were reported to have been killed in motor vehicle crashes .in the Malaysia in 2005. These deaths are the second highest after the driver of motorcycle. From Road Accident Statistical Report by PDRM (2005), there are 162, 491 road accidents cases, with 5,712 are died. 62 percent is because negligence during crossing the roads. The popular location where most of the death, is in the middle of the road. Therefore the facilities to cross the road, like the pedestrian bridge, underpass, and zebra and pelican crossings are very important.

However, not many pedestrian are willing to use those facilities. Based on Table 1.1 below, the best alternative is to construct pedestrian bridge or other facilities for pedestrian. By doing this, we are not stopping-the traffic flow and at the same time, the number of accident which involved the pedestrian, can be reduced.

Behavior	Type of injury			Total
	Death	critical	Light	
Walking/playing	141	489	653	1283
Sports	1	5	7	13
Handicap	0	13	7	20
Careless during crossing	**333**	**918**	**968**	**2,219**
Drugs	3	2	0	5
Drunk	12	10	4	26
Not using facilities	12	24	31	67
Older/crazy	31	20	24	75
Total	**533**	**1,481**	**1,694**	**3,708**

Table 1-1 Injury based on the behaviours

1.2 Problem Satement

Pedestrian bridge is one of the facilities that has been built to maximize the safety of road users especially pedestrians when crossing the roads. In addition, the construction of a pedestrian bridge will take time and require high costs, including maintenance costs. However, this pedestrian bridge is often overlooked and very minimal usage of pedestrians to cross the road by using that. They are willing to face the danger of an accident while crossing the road rather than using pedestrian bridge. The construction of pedestrian bridge will become unbeneficial for local authorities if the objective is not achieved as pedestrians prefer to cross the roads which also cause traffic flow disruption.

1.3 Objective of the Study

In this study, the objectives have been identified which will guide in conducting this study. The main objectives of this study are:

To determine factors effecting the usage of pedestrian bridge

To propose measures to step up the utilization of pedestrian bridge

1.4 Scope & Limitation of Study

This study will be conducted at Jln Tanah Putih in front Hospital Tunku Ampuan Afzan. The selected pedestrian bridges are at HTAA which is crossing from HTAA to MPK. In addition, this study only focused on issues related to pedestrian bridges such as the factors that cause minimizes usage of pedestrian bridge. Some of the factors referred to pedestrian safety, the suitability of the location of pedestrian bridges and the effectiveness of pedestrian bridge utilization.

1.5 Study Area

Study area selected for the study of this pedestrian bridge at Jln Tanah Putih in front Hospital Tunku Ampuan Afzan Kuantan, Pahang. The selected areas are the focus areas of the consumer to walk in.

Figure 1-1: Pedestrian bridge at Jln Tanah Putih

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The pedestrian bridge is one of the elements in the system path for pedestrians. Pedestrian bridges are, for the use of pedestrians to cross busy roads with vehicles. In addition, the pedestrian bridges can be considered as a tool or crossing facilities the safest and most efficient for pedestrian. It is a form of segregation between pedestrians and vehicles on the road.

Provided pedestrian bridges should be able to attract the attention to use when are crossing. This is because many pedestrians often feel reluctant to use the pedestrian bridges provided by the authorities. Although the time taken by pedestrians is more or less the same when using the pedestrian bridge or not to use when crossing road. Sometimes, pedestrian take longer to cross without using the pedestrian bridge. To ensure that pedestrian bridges are provided to give the maximum return that corresponds to the cost incurred to build, then it should be located in strategic areas and where users do not have to walk far to use it.

Therefore, the pedestrian bridge plays its own role in reducing the accident rate involving pedestrians crossing the road, especially at the time. In addition, obstacle such as a fence built along the road leading to the pedestrian bridge is intended to prevent pedestrian from crossing the road without using pedestrian bridges that have been provided.

2.2 Pedestrian

According to Wikipedia, a pedestrian is a person travelling on foot, whether walking or running. In some communities, those travelling using roller skates or skateboards are also considered to be pedestrians. In modem times, the term mostly refers to someone walking on a road or footpath, but this was not the case historically. These are the example of the duties of pedestrians and nearby drivers according to Florida traffic's law by Florida Department of Transportation. Pedestrian use of streets and highways

Where sidewalks are provided, no pedestrian shall, unless required by other circumstances, walk along and upon the portion of a roadway paved for vehicular traffic.

Where sidewalks are not provided, a pedestrian walking along and upon a highway shall, when practicable, walk only on the shoulder on the left side of the roadway in relation to the pedestrian's direction of travel, facing traffic which may approach from the opposite direction.

No person upon roller skates, or riding in or by means of any coaster, toy vehicle, or similar device, may go upon any roadway except while crossing a street on a crosswalk; and, when so crossing, such person shall be granted all rights and shall be subject to all of the duties applicable to pedestrians.

No pedestrian shall walk upon a limited access facility (freeway or interstate highway) or a ramp connecting a limited access facility to any other street or highway.

2.3 Use of Pedestrian Bridge

As we already know, pedestrian bridge provided in order to facilitate pedestrian risked his own, by crossing the road without using the pedestrian bridge. Therefore, a more careful control is needed to determine who made ready pedestrian bridge fully used. Pedestrians normally will use the pedestrian bridge at the following condition;

They are aware of the dangers that will befall them when crossing the road with a lot of vehicle flow and speed.

When they have to wait long to cross a busy road.

There is traffic enforcement officer who will impose legal action if there is a pedestrian crossing without using the pedestrian bridge.

Vehicle flows very busy and fast-moving vehicle in which it is difficult to pass without an accident.

Usually the footbridge is constructed across the road with higher volume of traffic and pedestrians crossing the road. The objective are for the safety of the pedestrians and to maintain the traffic flow. According to Tamio (1991), the decision to build a footbridge based on the width of the road, traffic volume and the numbers of pedestrians crossed the road. But in other the footbridge is needed even though the demand was low.

2.4 Pedestrian Safety

Pedestrian Safety Pedestrians are particularly vulnerable in the road environment because most other road users are moving significantly faster than pedestrians, and pedestrians have little or no bodily protection in the event of a collision. Pedestrians are also often difficult to see and their behaviors may be unpredictable. This can make it challenging for other road users to successfully factor pedestrians into the decisions they are constantly making as drivers and riders. Pedestrian safety is for all ages. Unfortunately, in traffic incidents involving Pedestrians and motorists, it is the pedestrian who suffers, often with tragic results. In many cases it is not the driver's fault. It is the responsibility of both driver and pedestrian to ensure each other's safety by following some simple rules. As a pedestrian:

Cross at marked crosswalks or traffic lights, not in the middle of the block or between parked cars;

Make sure drivers see you before you cross;

Cross when traffic has come to a complete stop;

At traffic light, cross at the beginning of a green light. Do not cross once the "Don't Walk" signal begins to flash or once the light has turned to yellow. Never cross on a red 'light;

Watch for traffic turning at intersections or entering and leaving driveways;

Wear bright or light-coloured clothing or reflective strips, when walking in dusk or darkness.

There are several types of pedestrian crossing that has been used worldwide in order to sustain pedestrian safety such as.;

Pedestrian Traffic Signals

Frequently used at locations with large numbers of pedestrians, to separate pedestrian and vehicles.

Also installed at some mid-block locations where there are significant numbers of pedestrians (young, older or pedestrians with disabilities) wishing to cross.

Scramble crossing will stop all vehicles and permit pedestrians to walk in all direction.

Pedestrian Crossing (Zebra Crossings)

Drivers must slow down and be prepared to stop when a pedestrian steps onto a marked crossing

Drivers must give way to any pedestrian on the crossing. Some crossings are difficult for you to see, so zigzag white lines are painted on the road to give drivers advance warning.

Some drivers will not stop for pedestrians so wait until all vehicles have stopped before you start to cross.

Raised Pedestrian Crossings

Raised pedestrian crossings are placed at locations where there is a high level of pedestrian activity.

2.5 Pedestrian Attitude and Behaviour

Pedestrian behaviour is regarded by many authors as being important for explaining why pedestrian collision occurs (Roberts, 1997). By Sleight (1993), understand and know clearly the purpose of a person crossing the road or walking in general, are not directly provide information in planning to provide pedestrian crossings and space in certain areas. Anuj Kumar Gupta (2005), also of the opinion that the design of pedestrian walkways should be based on consumer characteristics through the route. For example, walking in the center of the elderly will affect different than walking in the area of university students. Route in the center of the elderly should be designed according to the nature of piety running gold, but the route is designed based on the nature of the university students walking to produce better movement.

2.6 Effects of Pedestrian Physical Impairment

Pedestrians who are impaired in a particular way e.g. in a wheelchair, using crutches, carrying heavy bags etc. are likely to take longer to cross the road, feel more vulnerable, and therefore choose to cross at marked crossings. Little research has been found on this issue, however a study conducted by Daff et. al (1991) in Australia found (through video observation and group discussions) that pedestrians carrying a heavy bag were more likely to cross at a signalized crossing.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter discusses the study design, the method in which the study was conducted and data collection methods, equipment required and the use and location of study.

This study involves the observation and analysis with respect to the characteristics of the pedestrian. It aims to produce information that can be used as guidelines and criteria to be considered in planning, designing and maintaining pedestrian facilities and so overcome the problem faced by pedestrians.

This chapter will explain more about conducting this study from start till the end. The purpose of this study is to determine the factors affecting the usage of pedestrian bridge and to propose the measures to step up the utilization of pedestrian bridge. Methodology for this study is divided into four stages according to the stages of this study. Stages of this case are;

Stage 1:

At this stage is made where the synopsis is to express the problems associated with pedestrian bridges and the formation of objectives.

Stage 2:

It is the stage at which the preliminary study made which involve the collection of data. At this stage was also carried out surveys in the form of interviews and observations in the study area.

Stage 3:

This is the stage at which the analysis of information collected is made. Analysis made important because of where the forecasts and recommendations can be formed.

Stage 4:

In this stage, after completion of the information collected was analyzed, then the proposals are considered suitable will be made then the overall conclusion will be formulated. The flowchart of the methodology has shown in Figure 3.1.

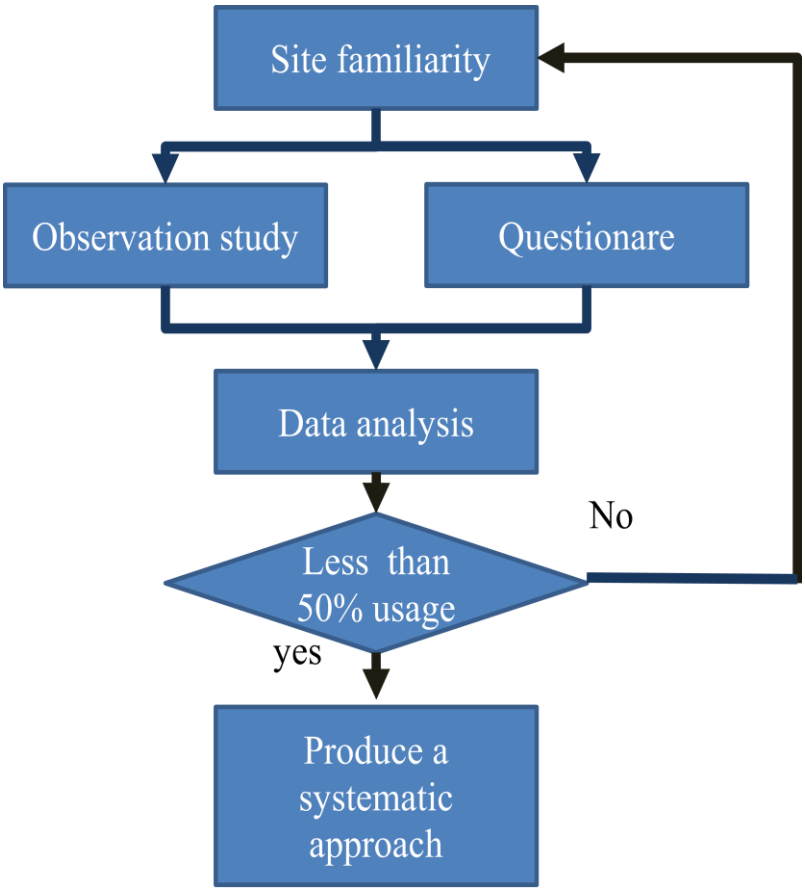

Figure 3-1: Methodology flow chart

3.2 Site Familarity

3.2.1 Site Visit

This activity is to choose the location. Firstly, identify how many and where the pedestrian bridge has installed at the area Hospital Tunku Ampuan Afzan, Kuantan Pahang. This is very important to identify the suitable location based on time allocated, environment and others. Plus to make sure the research will give positive results.

Figure 3-2: Pedestrian Bridge in front HTAA

3.2.2 Determine Suitable time

The best to choose the location is based on the number of pedestrians using the pedestrian bridge. The day is weekdays (Wednesday) in front HTAA and MPK. And the time is 7 a.m – 10 a.m for Pedestrian counting and 7 a.m – 12 p.m for questionnaire.

3.3 Data Collection

Data collection is a term used to describe a process of preparing and collecting data. The purpose of collecting data collection is to obtain information to keep on record, to make decisions about important issues and to pass information to others.

3.3.1 Observation Study

For this study, I will collect the data of pedestrian bridges volume usage. I will divide by pedestrian who are crossing the road by using pedestrian bridges and pedestrian who crossing the road without using the pedestrian bridges. I also will divide the category of pedestrian to child, adult, eldry and handicap. Data will be collected manually within 3 hour. For the pedestrian who cross the road outside 50 meter from the pedestrian bridge will be recorded as not using the footbridge.

Table 3-1: Data collection form from HTAA Crossing to MPK

Data Collection for the number of pedestrian
that using or not using the pedestrian bridge
From HTAA crossing To MPK

Date 15/08/17

	Child		Adult		Eldry		Handicap		Total	
Time (a.m)	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use
7.00-7.15										
7.15-7.30										
7.30-7.45										
7.45-8.00										
8.00-8.15										
8.15-8.30										
8.30-8.45										
8.45-9.00										
9.00-9.15										
9.15-9.30										
9.30-9.45										
9.45-10.00										

Table 3-2: Data collection form from MPK crossing to HTAA

Data Collection for the number of pedestrian
that using or not using the pedestrian bridge
Date 15/08/17 From MPK crossing To HTAA

	Child		Adult		Eldry		Handicap		Total	
Time (a.m)	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use
7.00-7.15										
7.15-7.30										
7.30-7.45										
7.45-8.00										
8.00-8.15										
8.15-8.30										
8.30-8.45										
8.45-9.00										
9.00-9.15										
9.15-9.30										
9.30-9.45										
9.45-10.00										

3.3.2 Questionnaire

These method is to classify the pedestrian bridge user's and what the rank of the usage of pedestrian bridge. Then, this method will be proceed with distributed the questionnaire to pedestrian to get the feedback from them about this facilities. From this questionnaire with the respondents' background information recorded directly in the study area. From this questionnaire, we can know the purpose of walking. Background information on the study was gender, age, and occupation. After that, 15 the survey forms were analyzed for the factors that influence pedestrian walking in urban areas.

3.4 Data Analysis

This stage is the stage which the analysis of information collected is made. Analysis made is important because of where the forecast and recommendation can be formed.The result at both location will be compare identify the factors that effecting utilization of pedestrian bridge.

The data collected will be anaylised by using this formula:-

$$\frac{\text{Number of pedestrian did not use the pedestrian bridge}}{\text{total of pedestrian}} = \text{percentage of pedestrian did not use the pedestrian bridge}$$

3.5 Propose measures to increase utilization of pedestrian bridge

In this stage, after completion of the information collected was analyzes, and recommendation as it deems fit to be made. Of the proposal overall conclusion will be formulated. A few steps and effective correctives measures will be highlited to increase the utilization of pedestrian bridge.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

The collection of data had be done for about a few week to get the required data and the result was shown in the chart so that the analysis can be done later. The data analysis can be separate into two part. First part is the pedestrian volume data and the second part is the pedestrian interview survey data. Jln Tanah Putih is one of the main road from Gambang tu Kuantan town. The location is located at near Hospital Tengku Ampuan Afzan (HTAA), Taman Esplanade Kuantan, Majlis Perbandaran Kuantan and Kolej Kejururawatan Kuantan.

4.2 Pedestrian Volume Data

In this part, pedestrian volume survey was held to know the volume of pedertrian who using the bridge and who do not using the bridge. The number of pedestrian was collected manually by using inventory form. The sample of data collected is as follow;

Figure 4-1: Pedestrian crossing road without using bridge

Table 4-1: Number of pedestrian that use and did not use the pedestrian bridge to cross from MPK to HTAA

	Child		Adult		Eldry		Handicap		Total	
Time (a.m)	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use
7.00-7.15	0	0	0	0	0	0	0	0	0	0
7.15-7.30	0	0	0	2	0	0	0	0	0	2
7.30-7.45	0	0	0	0	0	0	0	0	0	0
7.45-8.00	0	0	1	5	0	2	0	0	1	7
8.00-8.15	0	0	0	2	1	5	0	0	1	7
8.15-8.30	0	0	0	0	0	1	0	0	0	1
8.30-8.45	0	0	1	8	1	6	0	0	2	14
8.45-9.00	1	1	1	12	0	4	0	0	2	17
9.00-9.15	0	0	3	7	0	2	0	0	3	9
9.15-9.30	0	1	0	9	0	4	0	0	0	14
9.30-9.45	0	2	2	10	0	4	0	0	2	16
9.45-10.00	0	1	3	13	0	4	0	0	3	18

Table 4-2: Number of pedestrian that use and did not use the pedestrian bridge to cross from MPK to HTAA

	Child		Adult		Eldry		Handicap		Total	
Time (a.m)	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use
7.00-7.15	0	0	1	0	0	0	0	0	1	0
7.15-7.30	0	0	1	4	0	0	0	0	1	4
7.30-7.45	0	0	1	5	0	0	0	0	1	5
7.45-8.00	0	0	2	1	2	1	0	0	4	2
8.00-8.15	0	0	0	0	1	0	0	0	1	0
8.15-8.30	0	0	0	0	1	1	0	0	1	1
8.30-8.45	0	0	0	9	0	0	0	0	0	9
8.45-9.00	0	0	0	1	0	0	0	0	0	1
9.00-9.15	1	1	2	0	1	3	0	0	4	4
9.15-9.30	0	1	0	6	0	3	0	0	0	10
9.30-9.45	0	0	1	4	0	3	0	0	1	7
9.45-10.00	0	0	1	16	1	7	0	0	2	23

TOTAL ALL PEDESTRIAN	201
TOTAL PEDESTRIAN USING BRIDGES TO CROSING THE ROAD =	30
TOTAL PEDESTRIAN DO NOT USING BRIDGES TO CROSING THE ROAD =	171
TOTAL PERCENTAGE PEDESTRIAN USING BRIDGES TO CROSING THE ROAD =	15%
TOTAL PERCENTAGE PEDESTRIAN DO NOT USING BRIDGES TO CROSING THE ROAD =	85%

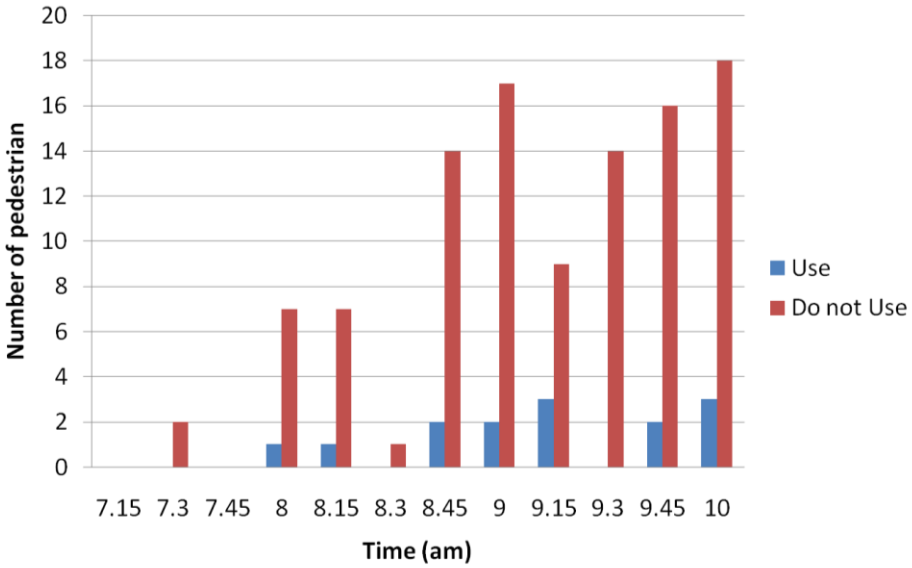

Figure 4-2 : Histogram Graph of pedestrian volume on Wednesday from MPK crossing to HTAA

Based on the histogram graph (Figure 4-2), the number of pedestrian is higher during 10 AM with 21 pedestrian and the higher pedestrian do not use the bridge also at time 10 AM. The graph shows all the time, number of pedestrian do not use the pedestrian bridge always higher than the number of pedestrian that use the bridge. The total percentage pedestrian using bridges to cross the road 12% while the percentage pedestrian do not using bridges to cross the road is 88%.

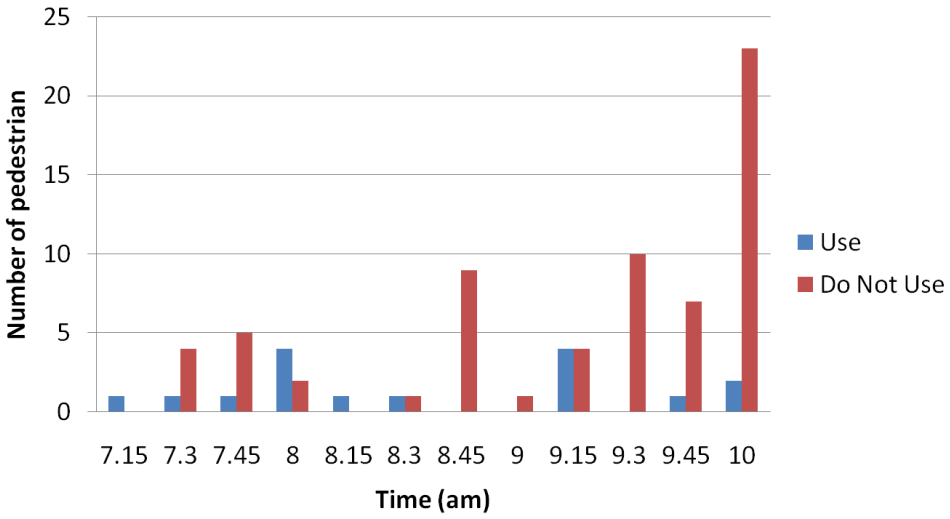

Figure 4-3: Histogram Graph of pedestrian volume on Wednesday from HTAA crossing to MPK

Based on the histogram graph (Figure 4-3), the number of pedestrian is higher during 10 AM with 25 pedestrian and the higher pedestrian do not use the bridge also at time 10 AM. The graph shows all the time, number of pedestrian do not use the pedestrian bridge always higher than the number of pedestrian that use the bridge. The total percentage pedestrian using bridges to cross the road 20% while the percentage pedestrian do not using bridges to cross the road is 80%.

4.3 Profile of respondents

4.3.1 Gender, Age and Work

A total of 30 pedestrian were in the interview for the survey area Pedestrian Bridge in Jln Tanah Putih, Kuantan Pahang. In this Study found that the total of 31% of the respondent are female and 69% of the respondent are male, (Figure 4-4). Majority of the respondent were in age group 55 years old above with 38% while 19% of respondent were at age 16-25 and 46-55 years old 12% for respondent age 26-35 years old and 36-45 years old. Lastly 0% for respondent below 16 years old (Figure 4-5). 37% of the respondent are work self-employed while 25% work with private company, 25% work with government and 13% others (Figure 4-6).

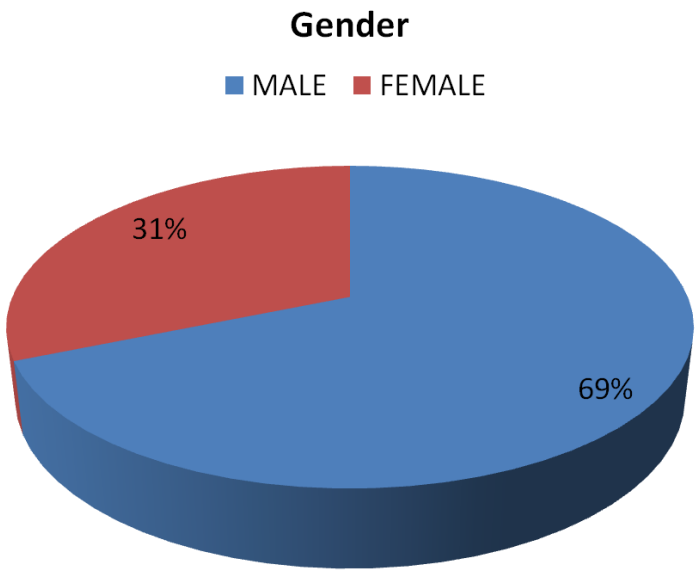

Figure 4-4: Gender of the respondents

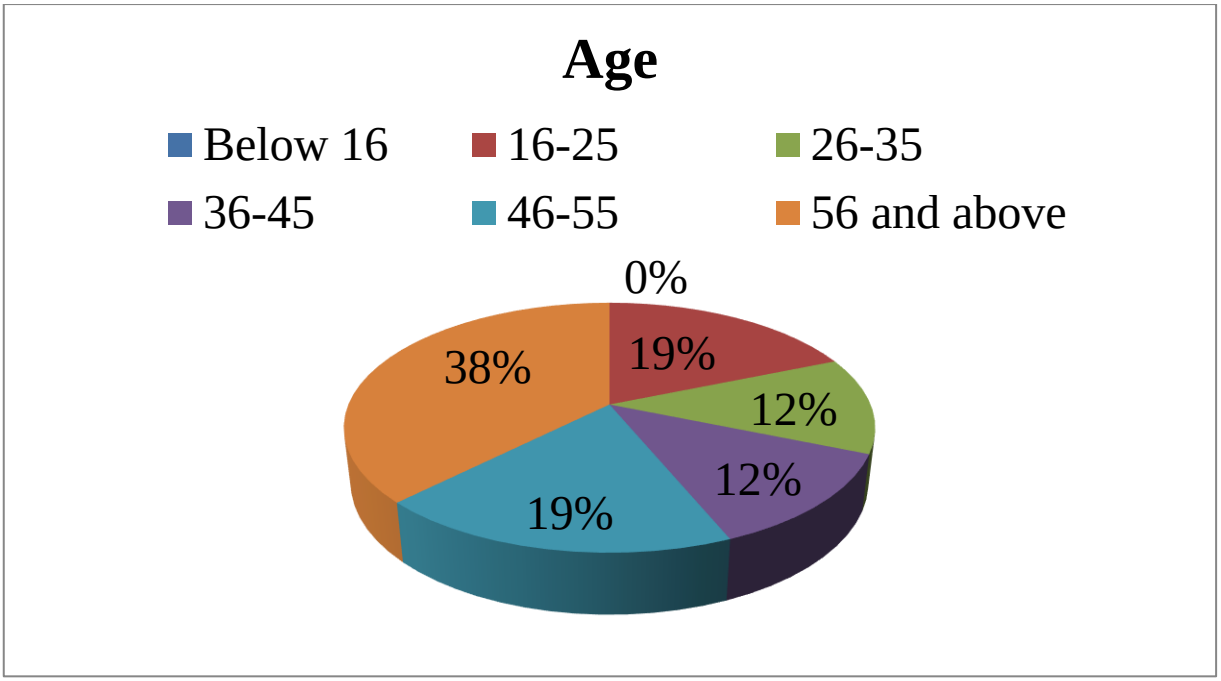

Figure 4-5: Age of the respondent

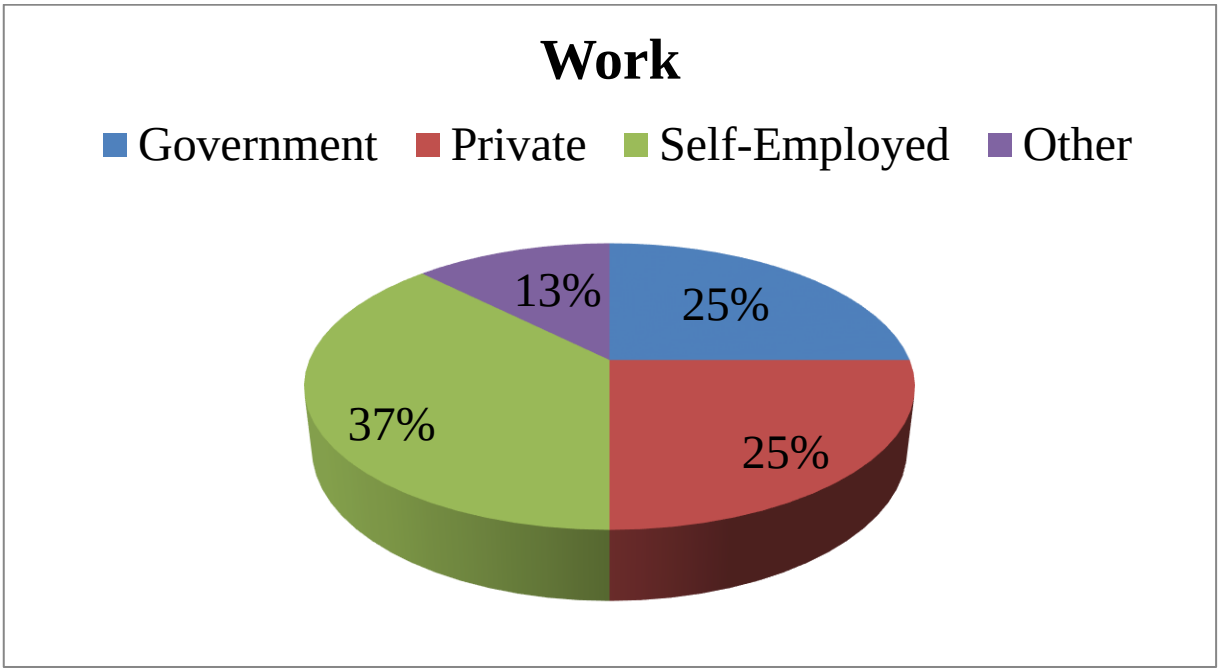

Figure 4-6: Work of the respondent

4.4 User of Pedestrian Bridge

4.4.1 Destination of User Pedestrian Bridge

If we look at the site, the bridge at Jln Tanah Putih connecting between HTAA and MPK. Other than that, it also connecting between Kolej Kejururawatan Kuantan and Taman Esplanade Kuantan. So the purpose of the pedestrian using the bridge is to cross whether to go HTAA and Kolej Kejururawatan Kuantan or to MPK and Taman Esplanade Kuantan. From the Pie chart at the figure 4-7, we can conclude that 63 % of the pedestrian bridger user are crossing to HTAA or Kolej Kejururawatan Kuantan from MPK or Taman Esplanade Kuantan while 37% of the pedestrian bridge user are from HTAA or Kolej Kejururawatan Kuantan crossing to MPK or Taman Esplanade Kuantan

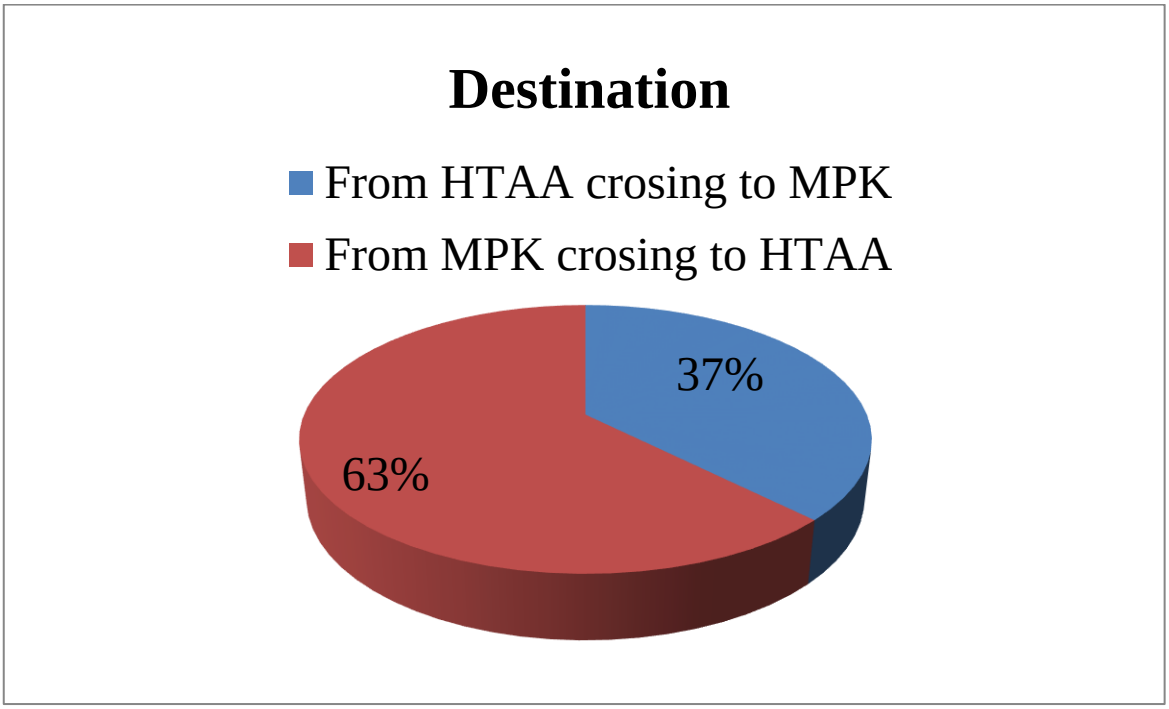

Figure 4-7: Destination of pedestrian bridge user

4.4.2 Types of vehicle of the user pedestrian use

From the Figure 4.8 below, we can conclude that the most types of vehicle of the user pedestrian use is Public transport which is Rapid Kuantan Bus and using private car with 44% while 12% of the user using motorcycle. 0% for pedestrian that use bicycle or walking and other.

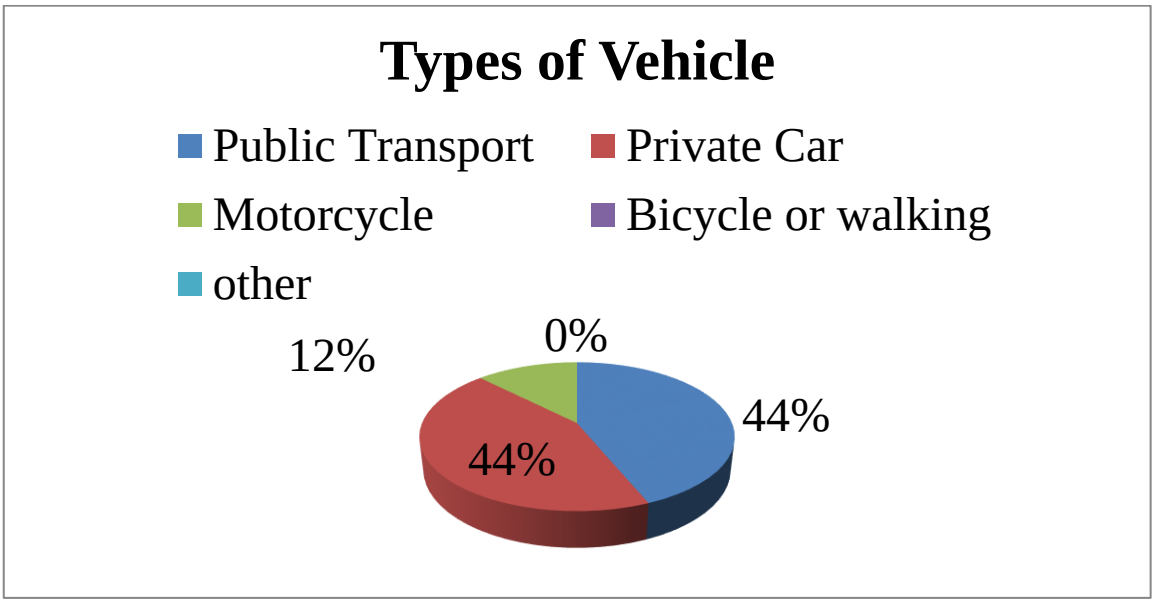

Figure 4-8: Types of Vehicle of the pedestrian use.

4.4.3 Factor Pedestrian do not use pedestrian bridge

From the figure 4-9 below, the main reason why almost of the pedestrian do not use the pedestrian bridge is inappropriate bridge position with 50% of the respondent. 31% of the respondent said that the factor pedestrian do not use pedestrian bridge because of health problem and 19% said that the factor is because by using pedestrian bridge, it take long time to cross.

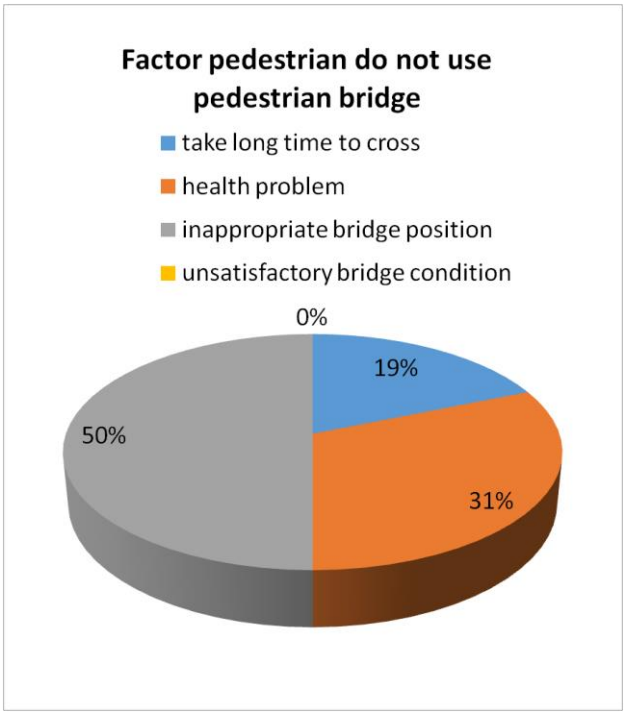

Figure 4-9: Factors Pedestrian do not use pedestrian bridge

4.4.4 Bridge Facilities

From The Figure 4-10, we can conclude that majority of the pedestrian said that the bridge facility in good condition

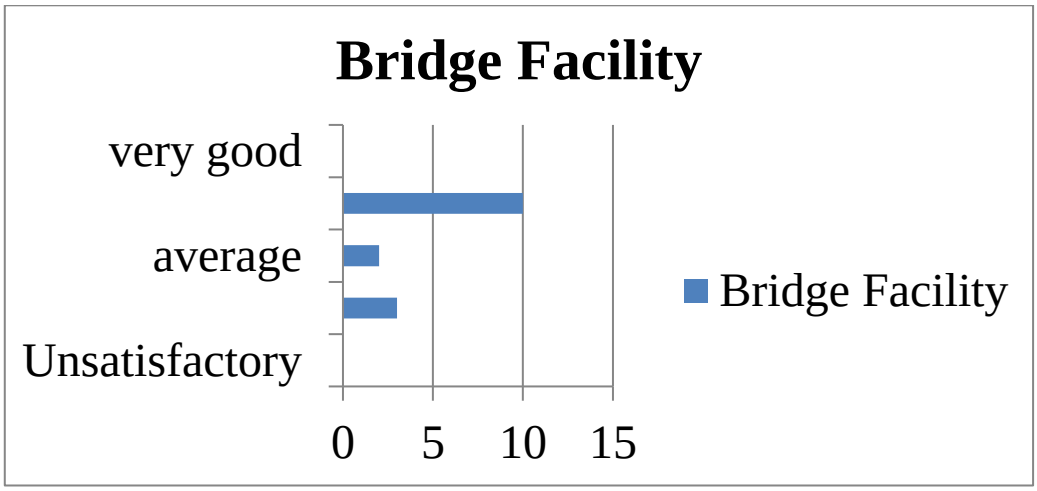

Figure 4-10: Bridge facility

4.4.5 Awareness of pedestrian to use bridge

From the table below, (figure 4-11) we can conclude that majority of the pedestrian aware that cross the road without use the pedestrian bridge is dangerous. Only 6 % of the respondent said that not dangerous if we cross the road without using the pedestrian bridge.

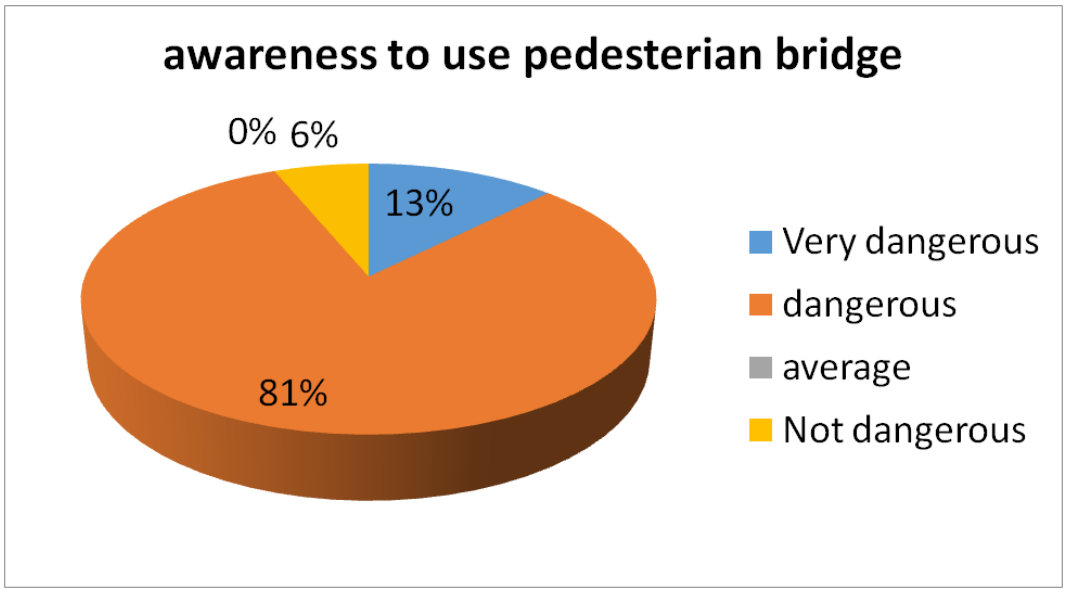

Figure 4-11: awareness to use pedestrian bridge

4.5 Suggestion for improvement

From the pie chart below (figure 4-12) 31% of the respondent said that they want a systematic maintenance, 32% want to install escalator, 25% for suitable location of pedestrian bridge and 6% for paint the bridge and install lift.

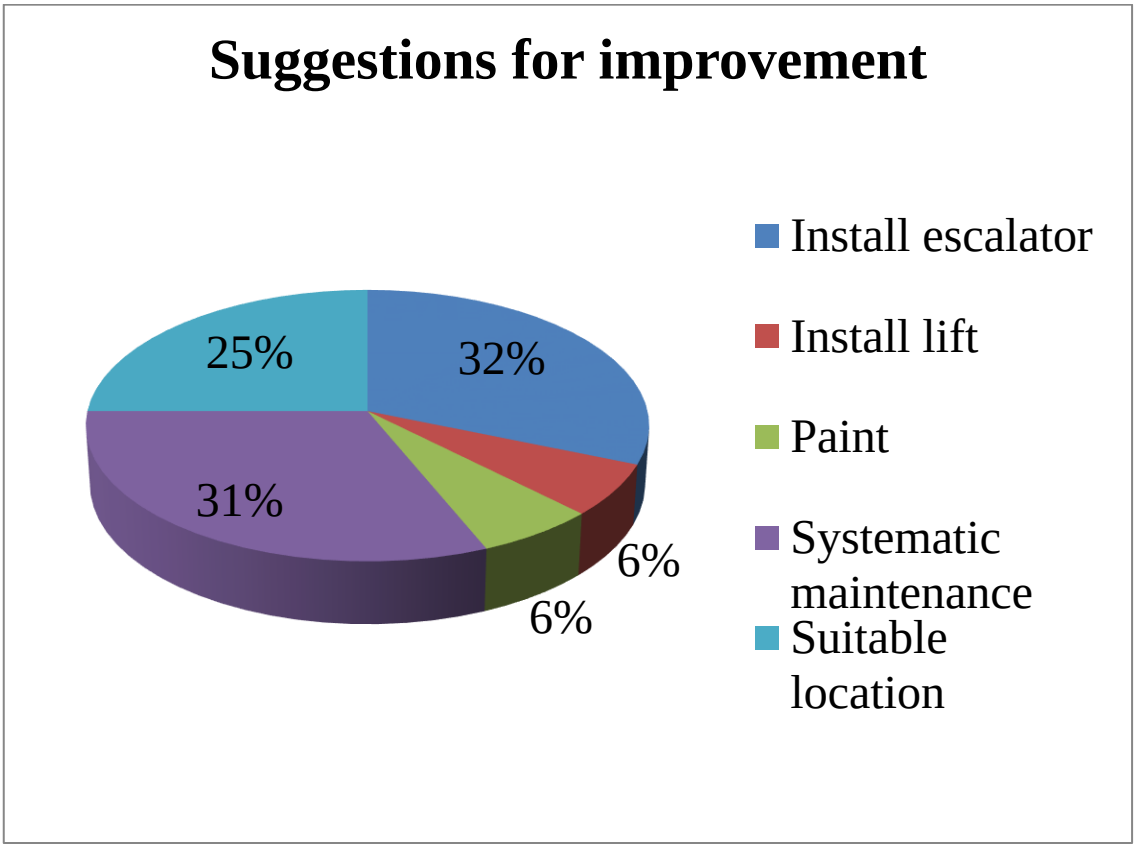

Figure 4-12: Suggestion for improvement

CHAPTER 5

CONCLUSION

5.1 Conclusion

In the conclusion, the pedestrian bridge was not effective and not fully used by pedestrian because only 15% use the pedestrian bridge, while 85% did not use it. The factors why almost of the pedestrian do not use the pedestrian bridge is inappropriate bridge position with 50% of the respondent. 31% of the respondent said that the factor pedestrian do not use pedestrian bridge because of health problem and 19% said that the factor is because by using pedestrian bridge, it take long time to cross. The measures to step up the utilization of pedestrian bridge are 31% of the respondent said that they want a systematic maintenance, 32% want to install escalator, 25% other and 6% for paint the bridge and install lift.

5.2 Recommendation

Pedestrian bridge very useful to decrease road accident especially for pedestrian safety. Its take Billion Ringgit to build one pedestrian bridge. But if pedestrian did not use the pedestrian bridge, it just wasted the government budged. Because of that, to maximise the usage of pedestrian bridge, there a few recommendation that i think very useful. First is install escalator (Figure 5.2 a) or install lift (Figure 5.2 b) This is because the location of the bridge near to hospital, therefore there are many people that are sick or unhealthy that can make them easy to use the bridge without have to using stairs to cross the road. Second recommendation is, install fence at the divider of the road so the pedestrian cannot crossing the road without use the pedestrian bridge.

Figure 5-1: Layout pedestrian bridge with 2 way escalator.

Recommendation design pedestrian bridge at Jln Tanah Putih with 2 way escalator the for the OKU or unhealthy person. This will help them to crossing the road easily.

Figure 5-2: Layout Pedestrian Bridge with lift.

Recommendation design pedestrian bridge at Jln Tanah Putih with Lift the for the OKU or unhealthy person. This will help them to crossing the road easily and will increase the number of pedestrian bridge usage.

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APPENDIX A
PEDESTRIAN COUNTING SHEET

Data Collection for the number of pedestrian
that using or not using the pedestrian bridge
From HTAA crossing To MPK

Date 15/08/17

	Child		Adult		Eldry		Handicap		Total	
Time (a.m)	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use
7.00-7.15										
7.15-7.30										
7.30-7.45										
7.45-8.00										
8.00-8.15										
8.15-8.30										
8.30-8.45										
8.45-9.00										
9.00-9.15										
9.15-9.30										
9.30-9.45										
9.45-10.00										
								TOTAL =		

Data Collection for the number of pedestrian
that using or not using the pedestrian bridge
From MPK crossing To HTAA

Date 15/08/17

	Child		Adult		Eldry		Handicap		Total	
Time (a.m)	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use	Use	Do not Use
7.00-7.15										
7.15-7.30										
7.30-7.45										
7.45-8.00										
8.00-8.15										
8.15-8.30										
8.30-8.45										
8.45-9.00										
9.00-9.15										
9.15-9.30										
9.30-9.45										
9.45-10.00										
								TOTAL =		

APPENDIX B
QUESTIONAIRE

BORANG KAJI SELIDIK PENGGUNAAN JEJANTAS

BAHAGIAN A : MAKLUMAT PERIBADI
Sila tandakan bahagian yang berkenaan

1. Jantina ☐ lelaki ☐ Perempuan
2. Umur ☐ dibawah 16 tahun ☐ 16-25 tahun ☐ 26-35 tahun ☐ 36-45 tahun ☐ 46- 55 tahun ☐ 55 tahun keatas
3. Pekerjaan ☐ Kerajaan ☐ Swasta ☐ Bekerja sendiri ☐ Lain-lain

BAHAGIAN B: PENGGUNA JEJANTAS
Sila tandakan bahagian yang berkenaan

1. Destinasi pergerakan anda?
- ☐ Dari HTAA melintas ke MPK
- ☐ Dari MPK melintas ke HTAA

2. Apakah jenis kenderaan yang anda gunakan ?
- ☐ Kenderaan Awam (bas,teksi,grabcar) ☐ Kereta sendiri
- ☐ Motorsikal ☐ Basikal atau berjalan kaki ☐ Lain-lain

3. Adakah anda menggunakan jejantas untuk melintas?
- ☐ Ya ☐ Tidak

3.1 Jika tidak, sila nyatakan sebab utama tidak menggunakan jejantas?
- ☐ Makan masa yang lama ☐ Keadaan jejantas yang tidak memuaskan
- ☐ Masalah kesihatan ☐ kedudukan jejantas yang tidak sesuai
- ☐ lain- lain ☐

4. Apakah penilaian anda terhadap tahap kemudahan jejantas di HTAA?
- ☐ Tidak memuaskan ☐ Kurang memuaskan ☐ Sederhana
- ☐ Baik ☐ Sangat baik

5. Apakah tahap kesedaran anda jika tidak menggunakan jejantas untuk melintas?
- ☐ Sangat bahaya ☐ Bahaya
- ☐ Sederhana Bahaya ☐ Tidak Bahaya

BAHAGIAN C: CADANGAN PENAMBAHBAIKAN
Sila tandakan bahagian yang berkenaan

1. Apakah cadangan penambahbaikan untuk jejantas yang sedia ada?
   - ☐ Memasang "excalator" ☐ Memasang lif
   - ☐ melakukan penyelenggaraan yang teratur
   - ☐ Lain-lain (nyatakan)……

Terima kasih atas maklumat yang diberikan

APPENDIX C

FIGURE OF PEDESTRIAN