

## A STUDY ON THE PUBLIC READINESS TOWARDS LIGHT RAIL TRANSIT (LRT) SERVICES IN JOHOR BAHRU

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### Abstract

This research was entitled 'A study on public readiness towards Light Rail Transit (LRT) services in Johor Bahru' that focus on the study on the public readiness among citizen that lives in Johor Bahru towards the Light Rail Transit (LRT) services in Johor Bahru area as one of public transportation modes in future. Currently, Johor Bahru is having a rapid development in infrastructure sector but they still have a limited of public transportation modes that can be used in the area. Because of that, the number of private vehicle user getting increase and will cause a traffic congestion. LRT was one of public transportation that can be implement in Johor Bahru area since it has been constructed in Klang Valley area in Malaysia. The main purpose of this research is to identify the public preferences on public transportation modes by suggesting a Light Rail Transit (LRT) as one of public transportation modes in order to help people in Johor Bahru area in their daily work activities. Researcher will distribute a questionnaire to people live in Johor Bahru area, interview with Prasarana Malaysia Bhd and Iskandar Regional Development Authority (IRDA) and also using secondary data as well. The result from this research can be used by some authority that responsible for making a development in Johor Bahru area.

**Index Terms**-- Public transportation, Readiness factor, Light Rail Transit (LRT)

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### INTRODUCTION

This research is to study on the issues of less option of public transportation modes in Johor Bahru area. This statement can be proved by Trip Advisor Malaysia website said Johor Bahru is a cities that somewhere difficult to getting around because less options of public transportation modes that can be used [1]. Only the public bus, taxi and e-hailing services can be found in this city. Researcher also found that Johor Bahru currently having a rapid development especially in infrastructure sector but in public transportation still not improved until now.

This research is conducted to measure on the readiness level of people towards Light Rail Transit (LRT) services in Johor Bahru area. There are some of readiness factor will be consider in this research which is cost of living, economy growth, environment factor and effectiveness of current public transportation modes. The main purpose of this research is to identify the public preferences on public transportation modes by suggesting a Light Rail Transit (LRT) as one of public transport modes in order to help people at Johor Bahru area in their daily work activities. Putra LRT have help many people living in Kuala Lumpur for getting around in those cities. All data will be collected by using primary data collection method such as interview and questionnaire. Researcher also use secondary data which is electronic resources such as an article, journal, book, internet, magazine and also newspaper.

### THEORETICAL FRAMEWORK

Anything that need to construct or built must be have a factor that need to consider first. It must to find because will be help to prevent any mistake or objection from other people that will be affected from the research and project. For this research, some of readiness factor will be need to see such as cost of living in the area, economic growth of the project, environment factor and the effectiveness of current public transportation in Johor Bahru. All this factor will be used to guide researcher get an information or previous study for the research that is 'A study on a public

readiness towards light rail transit (LRT) services in Johor Bahru'. First is cost of living. The number of affordable people had been increasing important topic of research about the limitations of ability to use modes of transportation for daily activities [2]. People currently was feeling ambivalence to choose which modes of transport could give them an affordable price with better services. Malaysian still the cheapest or low cost of living but for the local people who lived in the country feels that the cost of living rise each year [3]. Institute Darul Ehsan (IDE) doing a research about the rising cost of living was affected from the implementation of good service tax (GST) that starting on 2014 [4]. Second is environment factor. Environment also play a roles as public readiness factor towards public transportation in Johor Bahru. Traffic congestion was one of the major problems that can contribute to readiness factor in many urbanities area in Malaysia [5]. Too many development at urban area has resulted increase the traffic congestion on major road that leading to town center [6]. Because of that the amount of carbon emission also increase. Based on Iskandar Malaysia Greenhouse Gas Inventory 2015 Executive Summary has stated that 97.4% of total emission are come from transportation sector of Iskandar Malaysia [7]. Third is economy growth. Public transportation could give a positive impact to an economic growth for every country. Public transportation investment could be an ultimately lead to a greater and more lasting impacts on an area economy [8]. Sometimes, public transportation could give a hidden profit from their services through citizen of the country. The hidden economic value of public transportation uses could be worth anywhere from \$1.5 million to \$1.8 million per year depending how big the size of the city [9]. The effectiveness of current public transportation in Johor Bahru area also play an important key for public readiness factor towards light rail transit (LRT) services in the area. Low accessibility of bus stops to residential area is one of the critical factor that make a people rather travel with private vehicle [10]. Other than that, safety is a something that need to be aware in every situation at any place because it will affected with life and

also with personal belongings such as money, gadgets and many else. Public transportation in African and Asian countries were frequently poorly maintained and always overloaded, and also the drivers themselves receive low qualities of training [11]. Anything that need to construct or built must be have a factor that need to consider first. It must to find because will be help to prevent any mistake or objection from other people that will be affected from the research and project. For this research, some of readiness factor will be need to see such as cost of living in the area, economic growth of the project, environment factor and the effectiveness of current public transportation in Johor Bahru. All this factor will be used to guide researcher get an information or previous study for the research that is 'A study on a public readiness towards light rail transit (LRT) services in Johor Bahru'. First is cost of living. The number of affordable people had been increasing important topic of research about the limitations of ability to use modes of transportation for daily activities [2]. People currently was feeling ambivalence to choose which modes of transport could give them an affordable price with better services. Malaysians still the cheapest or low cost of living but for the local people who lived in the country feels that the cost of living rise each year [3]. Institute Darul Ehsan (IDE) doing a research about the rising cost of living was affected from the implementation of good service tax (GST) that starting on 2014 [4]. Second is environment factor. Environment also play a roles as public readiness factor towards public transportation in Johor Bahru. Traffic congestion was one of the major problems that can contribute to readiness factor in many urbanities area in Malaysia [5]. Too many developments at urban area has resulted increase the traffic congestion on major road that leading to town center [6]. Because of that the amount of carbon emission also increase. Based on Iskandar Malaysia Greenhouse Gas Inventory 2015 Executive Summary has stated that 97.4% of total emission are come from transportation sector of Iskandar Malaysia [7]. Third is economy growth. Public transportation could give a positive impact to Sometimes, public transportation could give a hidden profit from their services through citizen of the country. The hidden economic value of public transportation uses could be worth anywhere from \$1.5 million to \$1.8 million per year depending how big the size of the city [9].

The effectiveness of current public transportation in Johor Bahru area also play an important key for public readiness factor towards light rail transit (LRT) services in the area. Low accessibility of bus stops to residential area is one of the critical factors that make a people rather travel with private vehicle [10]. Other than that, safety is a something that need to be aware in every situation at any place because it will be affected with life and also with personal belongings such as money, gadgets and many else. Public transportation in African and Asian countries were frequently poorly maintained and always overloaded, and also the drivers themselves receive low qualities of training [11].

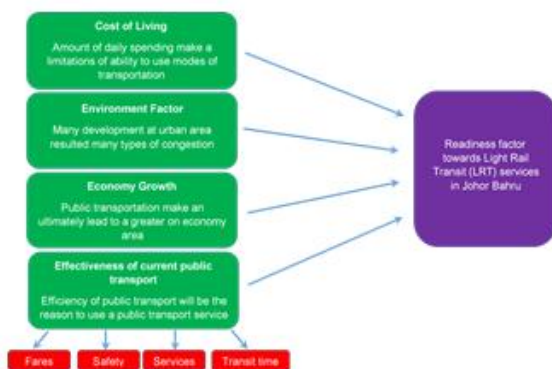


Figure 1. Theoretical Framework

**METHODOLOGY**

For this research, researcher was use both of methodology which is quantitative and qualitative method. Researcher use the quantitative method that is questionnaire to gain an information and data from people who live in the Johor Bahru area that divided into certain place that is Bandar Johor Bahru, Impian Emas, Taman Universiti, Taman Ungku Tun Aminah, Taman Molek, Bukit Indah, and Johor Jaya. Researcher want to get a data about public readiness level towards light rail transit services in Johor Bahru for this research.

Researcher only need to collect amount of sampling of respondent for this research is 384 from the amount of 502,900 population of people. By doing the quantitative method and distribute the questionnaire, researcher will easy to identify how much people in Johor Bahru can accept a new mode of public transportation and which area in Johor Bahru that really need a public transport in their place. After gather all the data, researcher will use a SPSS software to generate an analysis and use One Way ANOVA and One Sample T-test method for this research. Furthermore, a reason why researcher use this method to collect a data is because of the researcher can be able to know the respondent data or perception more precise and this method is more suitable compare than other method. Researcher have been choose to use an unstructured interviews for the qualitative data collection method. This type of interview will allow researcher to go more in-depth questions and open responses from the interviewer. Other than that, researcher choose an unstructured interviews because want to study an issues of less options of public transportation modes and public preferences on Light Rail Transit (LRT) services in Johor Bahru area as a case study for this research. Next, researcher use an unstructured interviews method to collect a data is because this research need an information about the LRT that has been implement in Klang Valley area such as cost, benefit, time-framed and so on. Researcher also will ask about the Transportation Blueprint that has been planned for the Iskandar Malaysia project such as Regional Rail Transit System. After gather all the data given, researcher will use a coding method to analysis the data given by respondent by following of certain theme. Coding is the process to create a description of the setting or people as well as categories or theme for analysis.

$T \times P \times Ln$

Where: T = Transcription Module  
P = Page , L = Line

**RESULT AND DISCUSSION**

**A. Quantitative Methodology**

There are 4 sections that have categories by researcher in the questionnaire that have distribute to the respondent who live in Johor Bahru district. It consists of demographic section, experiences with public transportation, readiness factor towards LRT and suggestion/opinion regarding new public transportation modes such as Light Rail Transit (LRT) services in Johor Bahru for future.

The result of the questionnaire also will explained in selected test and frequency data table for clearer understanding the concept of study. In this research, researcher will analyze all of variable that ask in the questionnaire that have been distribute to a people who in Johor Bahru area. There are 4 variable use to support the dependent variable such cost of living, economy growth, environment factor, and effectiveness of current public transportation. Researcher use two types of data analysis that is One Way ANOVA and One Sample T-test. This two types of data analysis was identified and statistically calculated by using a SPSS software. An expert assistance also has been referred by researcher in order to get the exact calculation of data finding.

**Cost of living**

Tests of Between-Subjects Effects					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Cost_of_living	1.839	4	0.460	2.685	0.031
Error	64.900	379	0.171		
Total	642.000	384			
Corrected Total	66.740	383			

**Economy growth**

Tests of Between-Subjects Effects					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Economy_growth	1.591	4	0.398	2.314	0.057
Error	65.149	379	0.172		
Total	642.000	384			
Corrected Total	66.740	383			

**Effectiveness of current public transport (Fares)**

Tests of Between-Subjects Effects					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Satisfy_Fares	3.906	4	0.977	5.890	0.000
Error	62.833	379	0.166		
Total	642.000	384			
Corrected Total	66.740	383			

**Effectiveness of current public transport (Times)**

Tests of Between-Subjects Effects					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Satisfy_Time	4.990	4	1.248	7.657	0.000
Error	61.749	379	0.163		
Total	642.000	384			
Corrected Total	66.740	383			

**Effectiveness of current public transport (Service)**

Tests of Between-Subjects Effects					
Source	Type II Sum of Squares	df	Mean Square	F	Sig.
Satisfy_Service	4.154	4	1.038	6.289	0.000
Error	62.586	379	0.165		
Total	642.000	384			
Corrected Total	66.740	383			

**Effectiveness of current public transport (Safety)**

Tests of Between-Subjects Effects					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Satisfy_Safety	3.016	4	0.754	4.485	0.001
Error	63.723	379	0.168		
Total	642.000	384			
Corrected Total	66.740	383			

**Environment factor**

One-Sample Test					
Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Lower Upper
Other_factor	44.677	383	0.000	3.844	3.67 4.01

A one-way ANOVA and one sample t-test was used to determined which variable that can be utilized as a readiness factor towards Light Rail Transit (LRT) services in Johor Bahru based on cost of living, economy growth, environment factor and effectiveness of current public transportation. There are only 3 variables that can be used because the p-value or significance was less than 0.05 and researcher can reject the null hypothesis. Mostly all questions was using a Likert Scale which is 1-Strongly agree, 2-Agree, 3-Neutral, 4-Disagree, and 5-Strongly disagree, and also 1-Very satisfy, 2-Satisfy, 3-Neutral, 4-Unsatisfying and 5-Very unsatisfying.

The first variable that can be utilized is cost of living based on the significance value that is 0.031. There are no relationship between cost of living and readiness factor towards LRT services in Johor Bahru. So researcher can conclude that cost of living can affect people to use a public transportation services. Mostly people will use a public transportation that can give them a cheaper and affordable price because everything that will spend will affect their daily cost of living.

Second variable is environment factor with the significance value is 0.000. Environment factor was divided into certain current factor that always happen to people who live in Johor Bahru area. Traffic jammed, reduce air pollution, less time consuming and many else could affect people to use a public transport. Environment factor variables will affected with dependent variable which is readiness factor towards LRT services in Johor Bahru. So researcher can conclude that people would take one of the current environment situation on the area that can persuaded them to use public transportation.

The third variable that can be utilized as one of the readiness factor towards Light Rail Transit (LRT) services in Johor Bahru is the effectiveness of current public transportation. People who was responsible to operate the public transportation services must always revised their certain thing such as fares, transit time, services and safety because this all thing can make a public transportation user to use the services or not.

Lastly is economy growth. Based on analyze result by researcher, the current economy situation on the area that in Johor Bahru are currently good and maybe the LRT services could give an impact but not too much. So researcher can conclude that economy growth cannot be one of the variable because the significance value was 0.057. There are no relationship between the economy growth and cannot affected with the readiness factor towards LRT services in Johor Bahru.

**B. Quantitative Methodology**

Researcher only able to received proper approval by two person who was involved with a public transportation development from different public transportation company and government authority that is En Azhar from Prasarana Malaysia Berhad and En Suhaimi from Iskandar Regional Development Authority. In order to a research that related with public transportation, an interview has undergone with interviewee that with public transportation development. This is because to obtain the research data, right place and person need to be chosen.

**Table 1.** Interview Data Interpretation

THEMES	RESPONDENT	DESCRIPTION
Public transportation in Johor Bahru area	(Encik Suhaimi) Iskandar Regional Development Authority (IRDA)	Public Bus (Bus Iskandar Malaysia & Bus Muafakar Johor)
		Iskandar Malaysia Bus Rapid Transit (IMBRT)
		High Speed Rail & Rail Transit System
		Regional Rail Transit System
Public transportation could contribute to economy growth	(Encik Suhaimi) Iskandar Regional Development Authority (IRDA)	Create an employment like technician, bus driver, operator, and police that will take care public transportation station
		Catalyst for economy growth
	(Encik Azhar) Prasarana Malaysia Berhad	Public transportation could generate business activities
Either suitable to build LRT services based on current geographical & environment situation	(Encik Suhaimi) Iskandar Regional Development Authority (IRDA)	Based on time was to bigger actually to construct LRT services in Johor Bahru
		Each modes of public transportation have their own passenger per hour per demand (PPHPD)
	(Encik Azhar) Prasarana Malaysia Berhad	Need to look the density of the population of the area
		LRT good for Johor Bahru but it must relevant until next 50 years
Initiative to encourage & increase public transportation user	(Encik Suhaimi) Iskandar Regional Development Authority (IRDA)	Trying to provide a best public transportation modes such as High Speed Rail (HSR), Rapid Transit System (RTS) and Iskandar Malaysia Bus Rapid Transit (IMBRT)
		My50, My100 and MyCity pass that allow to get unlimited travel uses
	(Encik Azhar) Prasarana Malaysia Berhad	Implement 100% cashless in all public transportation services
		Application such as Plan My Journey

To conclude the findings from the interview session with Prasarana Malaysia Berhad (PRASARANA) and Iskandar Regional Development Authority (IRDA) both were agree to the idea of the Light Rail Transit (LRT) services at Johor Bahru in future but they also stated some of issue that will need to face by the public transportation company or who will lead to the project.

The first issue was about to find the most suitable public transportation modes based on current situation on the selected area. According to En Ghazali from Prasarana Malaysia Berhad, a studies must be taken before make a decision to construct a Light Rail Transit (LRT) services in Johor Bahru. It because want to make sure that the chosen public transportation modes will be relevant for next 50 years. Same goes well to En. Suhaimi from Iskandar Regional Development Authority that to construct a LRT or others public rail transportation, the minimum amount of passenger per hour per direction (PPHPD) must have at least 20,000 passenger and currently the capacity from Kulai to Johor Bahru their PPHPD average only just achieve 3000 to 4000 that only suitable for bus only. But En Suhaimi also have stated that good to have Iskandar Malaysia Bus Rapid Transit (IMBRT) support by LRT.

The next issue was about all public transportation project that want to construct will be involve with others party such as state government like Ministry of Transportation, federal government and also land owners. En. Suhaimi give an example, the issue of RTS project that the land that they want to use was owned by the ruler of Johor, Sultan Ibrahim Ibn Almarhum Sultan Iskandar. Sultan Ibrahim was willingly to hand over his plot of land in Bukit Chagar to government for the RTS project for free. According to En. Ghazali, to construct a LRT services was a good idea but it will depend on the political of the current government who lead the Malaysian development. Against according to En. Suhaimi, to construct a LRT services will involve such as a big amount of investment that usually will provided by state government. So the project must be good and can give a benefit

back to the government and to the people as well. He also said that the new mode of public transportation must achieve the good ratio of public transportation and private vehicle that is 40:60.

**CONCLUSION**

There are two research objective was listed in completing this research study and identifying the result of the research study. All the objective was very important in order to support the problem statement and became the source of driven to the research. The first objective of this research is to investigate the current modes of public transportation in Johor Bahru area. In this objective, researcher want to know what and how many modes of public transportation that have in certain area of Johor Bahru. Researcher also targeted to identify which area in Johor Bahru area were currently need or get a less of public transportation services. This objective was achieved from the quantitative and qualitative approach which is questionnaire that distributed to a people who live in Johor Bahru area and interview session with some of public transportation company and government authority that lead a public transportation development and also from the journal that researcher use to complete a literature review on Chapter 2. From the data found, researcher find there are only public bus, taxi and other e-hailing services that can be used by public transportation user and there will be a new project of public transport that started to implement in 2020. There also some of places were hard to get a public transportation services especially in certain rural area.

The second objective is to survey on a public readiness towards the Light Rail Transit (LRT) as one of public transportation modes. For this objective, researcher want to know the readiness factor that need to consider for this research that will lead to the implementation of LRT services in future at Johor Bahru area. Researcher also want to identify the benefit that LRT services could give to the people who use their services. All the readiness factor that found by researcher will be ask in the questionnaire that have distribute to the people who live in certain area at Johor Bahru. From the analyze, researcher found that mostly people in Johor Bahru area are really want a new public transportation modes such as LRT and willingly to change their daily modes of transportation from own vehicle to LRT services. Some of public transportation company and government authority that lead a public transportation development also agree with the LRT services in future at Johor Bahru but there will be some of issues that need to be face first. This objective has been achieved by using quantitative and qualitative approach such as distributing questionnaire and interview session.

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