

**FACTORS INFLUENCING BUS SERVICE QUALITY –
PERSPECTIVES OF USER, OPERATOR AND
AUTHORITY**

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**FACTORS INFLUENCING BUS SERVICE
QUALITY – PERSPECTIVES OF USER,
OPERATOR AND AUTHORITY**

by

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**MENEROKA PERSEPSI KUALITI PERKHIDMATAN BAS
BERDASARKAN TIGA PERSPEKTIF; PENGGUNA,
OPERATOR DAN PIHAK BERKUASA DI SEBERANG PERAI
TENGAH, PULAU PINANG**

ABSTRAK

Kajian ini mengambil kira isu utama mengenai keadaan semasa perkhidmatan bas yang disediakan di kawasan SPT. Walaupun jumlah peningkatan kenderaan di jalan raya semakin meningkat, pengguna jalanboleh seolah-olah bertolak ansur dengan keadaan ini. Pengguna mendakwa kuaiti perkhidmatan bas tidak memenuhi tahap kepuasan mereka dan ini menyebabkan penggunaan pengangkutan awam terutamanya bas semakin berkurangan. Kualiti perkhidmatan bas diukur berdasarkan atribut berikut; 1) kebolehgantungan, 2) akses, 3) tahap keselesaan, 4) keselamatan, dan 5) maklumat yang dipaparkan. Berdasarkan isu yang disebut, tiga objektif kajian ditetapkan iaitu; 1) mengkaji persamaan dan perbezaan kepentingan dan prestasi perkhidmatan bas bagi tiga perspektif; pengguna, operator dan pihak berkuasa, 2) menyiasat criteria perkhidmatan bas cecap, dan 3) mengkaji hubungan antara pengguna, operator dan pihak berkuasa tentang kepentingan atribut dalam perkhidmatan bas.

Penggunaan beberapa kaedah dalam memperoleh data telah digunakan seperti borang kajiselidik kepada pengguna, operator dan pihak berkuasa, kajian pemerhatian di tapak yang memperincikan operasi bas seperti masa perjalanan, masa menunggu, bilangan hentian dan bilangan penumpang. Penyelidik juga mengadaptasi

data primer yang diperoleh daripada pihak berkuasa dan operator bas, Data yang diperoleh dianalisa menggunakan beberapa teknik dalam SPSS seperti taburan kekerapan, penjadualan berentas dan perbandingan nilai min. Dalam membezakan hubungan antara tiga perspektif tersebut, analisa kuadran dan carta radar digunakan.

Penemuan kajian dibincangkan berdasarkan objektif kajian. Bagi objektif 1, persamaan dan perbezaan parameter kualiti perkhidmatan bas dari tiga perspektif tersebut dipilih dan mempunyai persamaan dalam kelas yang sama iaitu keselamatan dan kebolehbergantungan perkhidmatan bas. Walaubagaimanapun, atribut tersebut dibezakan pada kedudukan berlainan. Bagi objektif 2, perkhidmatan bas yang cekap haruslah mempunyai enam criteria berikut iaitu; 1) tahap keselesaan penghawa dingin dan kerusi, 2) akses orang kurang upaya, 3) tambang bas yang munasabah, 4) mudah mendapatkan tiket, 5) mudah untuk naik turun bas, dan 6) pemandu bas mengikut undang-undang jalanraya. Objektif ke-3 cadangan panduan kerja bagi reka bentuk laluan bas berdasarkan pengguna, operator dan pihak berkuasa memilih atribut mengikut kepentingan masing-masing.

**EXPLORING THE BUS SERVICE QUALITY PERCEPTION BASED ON
THREE PERSPECTIVES; USER, OPERATOR AND AUTHORITY IN
SEBERANG PERAI TENGAH, PULAU PINANG.**

ABSTRACT

The main issues this study dealt with the current bus service quality served within SPT area. Despite the increasing number of vehicles on the road that led to traffic congestion, pollution, etc., the road users seem to be tolerant with this situation. Users had claimed that the bus services quality not met their satisfaction level and lessened the utilization of public transport especially public bus. The quality of the bus service were measured based on a few attributes which are; 1) reliability, 2) accessibility, 3) comfort level, 4) safety and security, and 5) information displayed. Based on the issues mentioned, three objectives were set, 1) to examine the similarities and differences of the importance and performance of the bus services from three perspectives; user, operator and authority, 2) to investigate the criteria that describe the bus services provided as an efficient bus services and system, and 3) to establish a relationship between user, operator and authority on the importance of the attributes in bus services.

Employment of several methods in acquiring the data had been used which are questionnaires distribution to user, operator and authority, survey observation on site detailing on the bus operation including travel time, waiting time, number of stops and number of passenger. The researcher also adapted the primary data obtained from the authority and operator. The data obtained was analyzed using several techniques in SPSS statistical tools such as frequency distribution, cross-

tabulation and comparing mean value. In order to distinguish the relationship of different perspective, quadrant analysis and radar chart were used.

The main findings were discoursed based on the objectives targeted. For objectives 1, the similarities and differences of the bus services quality parameters from three perspectives; user, operator and authority, the attributes selected are classified in similar parameter which are safety and security and also reliability of bus services. However, the attributes was ranked differently. For objectives 2, the criteria of efficient bus services should reckon six main criteria which are 1) comfort level of air conditioner and seat, 2) handicap accessibility, 3) reasonable bus fare, 4) easy to get bus ticket, 5) easy to get on and get off the bus, and 6) bus driver followed the traffic rules. Third objective aimed for proposing a working guide for bus route design based on user, operator and authority choice of bus service attributes reckon different attributes as each of the player function differently.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

Urban public transportation system plays a vital role in the economic growth of a country. An efficient and a well linked public transportation system is one of the keys to spur a country's economic growth. However, there are a number of challenges and obstacles which stands in the way of developing an efficient and a well-linked urban public transportation system. Bhandaria, Advanib, Paridac, and Gangopadhyayd (2014) highlighted that one of the major problems with urban public transportation system is that the percentage of unsatisfied demand is getting higher and at the same time, the system is unable to meet the requirements of the users. In many parts of the world, a reformation from the traditional operator-oriented to customer oriented public transportation system is taking place (Mouwen & Rietveld, 2013). This situation shows the need for a sustainable public transportation system which is not only focused on the operator's profits but also on customer's satisfaction. This situation revealed the need for a sustainable public transportation system which is not only focussed on operator's profitability and customer's satisfaction, but also on environmental protection.

The public transportation in Penang, either in the island or the mainland is an important mode of transportation as Penang is labelled as the second smallest state in Malaysia as it only covers 293 km² and 753 km² on the island and mainland respectively. The Statistic Department of Malaysia revealed that the total population in Malaysia had increased by 5 million from the year 2000 to 2010 even though the rate of population growth had decreased by 0.6 % in year 2010 and it is spotted where Penang's population is rank to sixth place in Malaysia with 1.56 million people in it. In fact, Penang is the fourth state in Malaysia which is experiencing rapid urbanization. Geographically, Penang is small and that the use of private transports had increased rapidly compared public transports. Inevitably, this had created many issues in catering the road demand.

The increased number of vehicles these days had engendered a high rate of road accidents, pollution and many other consequences to road user and to the environment. In order to deal with it successfully, a fact where for every 50,000 population in urban area it is necessary to have transit bus system (Britain & Buchanan, 1964). Realizing that the public bus system can be beneficial to the user and the environment such as low energy consumption, less pollution, minimum congestion, etc. (Fan & Machemehl, 2006), many attempts had been made in order to make the system more efficient and effective. But, a lot of problems related need to take into account towards producing an efficient and effective public bus system. In reality, bus users have to deal with time, cost and environment concern.

1.2 Problem Statement

The use of public transports such as buses, taxis, trams and trains had been widely put into services across the regions. In Malaysia, public bus is the second most used mode of transport for the moderate and low income population. In Kuala Lumpur, the use of public bus is common but the level of service provided is below their expectations (Ismail, Hesam Hafezi, Mohd Nor, & Ambak, 2012). In Seberang Perai, public buses are not the preferred mode of transport among road user. As been mentioned by Rasagam (1999), the utilization of public bus in Penang had decreased as the service provided and favoured among captive user. More road users prefer to use their own transport although it adds to congestion and pollution. It is interesting to note that the road users in Seberang Perai are more tolerant to congestion. The reason to this might be the issues and problems associated with the use of public services which are often highlighted in the news, magazines, mass media, etc. In turn, this hinders the public bus system to grow rapidly.

The road users are the main driving force that creates demand for public bus services. In deliberating the services of the bus operator in Seberang Perai, the several users who were interviewed informally gave unanimous answer that the public bus services has a number of drawbacks. In an earlier study conducted by Stradling (2002), the results show that road users are willing to drive rather than to tolerate with the problems associated with public transport which makes it a less attractive alternative. More recently, Noor, Arshad, Jais, and Mustafa (2014) found that the most important features to road users in selecting their preferred mode of transport are safety and comfort. Determining the users' needs could possibly the

first step in eliminating the drawbacks related to the use of public transport and consequently retains existing users and attracts new ones.

In order to cater the demand of users, bus operators have to take measures in providing a good service. The quality of bus services had been debated by all and sundry. In order to cope with the demand from the users, bus operators are struggling to provide better services without neglecting their main target which is profit. The role of bus operator towards providing the demand from user is influenced directly by several factors. The main factor is profitability followed by the public assistance and welfare. Bus operators should mainly focus on their productivity, efficiency and effectiveness which are the three main pillars in determining the performance of the services provided (De Borger & Kerstens, 2000). However, understanding users' needs could also help to deliver an efficient public bus services.

However, the government's role as interlocutor to meet social responsibility and assist the bus operator is very crucial. As mentioned by Hensher and Stanley (2003), the direct assistance of government act enhances the performance of the public transportation system. In Malaysia, the role of government authority had been injected in the whole public transport system in order to control and provide guidelines to service providers while refuse to acknowledge the user needs. Several alternatives and approaches had been introduced in order to enhance the public transportation system. In the 10th National Key Result Area (NKRA), the initiatives on urban public transportation had focused more on *rakyat*-centric as *rakyat* or users as the major contributor in economic growth. One of the main focus is to enhance the

service reliability and network coverage while acknowledging the quality of service provided (SPAD, 2011).

The bus authority existence help in improving the bus service deliberation and managing the whole public transport system (Groenewald, 2003). The scholar also mentioned that in North and Southern America, the public transport authority acts as the planner and decision maker for the whole road system including the public transportation. Similar in Malaysia, establishment of the road and transport authority ameliorate the system since 2010 as the leader in the land public transport transformation to become *rakyat*-mode of transport (Suruhanjaya Pengangkutan Awam dan Darat, 2012). In the study done by Nurdden, Rahmat, and Ismail (2007) has suggested that the policy established by the government should considering the public transport usage by improving the service and system in term of frequency. The role of public transport authority is in doubt as the policy is not been put to act but only written on the paper documentation. Lack of integration among the public transport authority and service provider had confined the growth of public transport system in Malaysia (Bunnell, Barter, & Morshidi, 2002). Thus, identifying the authority's perspective on the bus service attributes may contribute to better transport system development.

In relation to the issues and problems mentioned, several questions are raised. User as the demander for the operator to provide the bus services delegate the power to distinguish their satisfaction towards the services provided. Identifying the attributes that users gratify might influence operators and authorities to cater the demand more effectively. At the same time, the views of the operator and authority

on the attributes of an ideal bus service are also important. Thus, it is imperative to ascertain the attributes of an efficient bus services from the perspectives of the user, operator and authority. Not only that, the issues also raised up a question on the criteria of efficient bus services in all perspectives. Based on these attributes, we can identify the relationship between the three perspectives which is very useful in developing a sustainable bus services.

Concisely, the expectation of the current bus services is in the efficient level was still not establish beyond doubt. The user, operator and authority have their own perception on the bus services. For user, the most important consideration is the satisfaction of the services provided. For the operator, juggling between profit and catering the demand from the bus users had forced them to balance both of the elements. On the other hand, the authority as an official responsible for the control and supervision of the bus system as a whole, has to take into consideration of the user and operator's needs. Thus, in order to provide quality services, cooperation between the user, operator and authority and the understanding of the basic principles of the bus network is essential. Determining the importance attribute from three perspectives is a challenge in this research work. In the end, the bus operator and the authorities need to cooperate to enhance public bus service starting by understanding the basic information in designing efficient bus system.

The two major factors that all the actors in the bus services and system should focus are; 1) understanding the factors which influences the efficiently of the services from the operator and authority's perspective and 2) the attributes of an efficient bus service.

1.3 Research Questions and Research Objectives

These problems lead us to several questions:

1. What are the differences between the user, operator and authority's attributes of an efficient bus service?
2. What are the criteria of bus services that can be described as efficient?
3. What is the relationship between the user, operator and authority on the importance of the attributes in bus services

From these questions, the objectives of this study are narrowed down:

1. To examine the similarities and differences of the perspectives of the user, operator and authority on the quality of bus services
2. To identify the criteria that describes an efficient bus services and system
3. To propose a working guide for bus route design based on the attributes of an efficient bus service from the perspective of the user, operator and authority

1.4 Scope of the Study

This study covered the entire Seberang Perai Tengah (SPT) area. SPT is one of the districts in Penang which has the highest population. This study will highlight the properties of an efficient bus service and how it can be beneficial to the user, operator and authority. In addition, the attributes that describe the bus service as efficient is deliberated based on previous research works. This study would enumerate important element in bus services in which will be helpful in reducing the

problems in public bus transportation system and at the same time could be used for new route development.

1.5 Theses Organization

The outline of this research work is conceived in five chapters.

Chapter 1

This chapter lays out the overview of this study based on the aim and objectives including the background of the study, the problem statement formulation, research questions and objectives and the scope of the study.

Chapter 2

This chapter sets out the literature, theories and concepts based on previous research works. The literature describes in detail of each of the keywords identified such as public transport, efficient bus services, bus network design, etc. The theoretical and conceptual framework is demonstrated and variables are identified based on the justification and supporting literature.

Chapter 3

This chapter presents the methodological review including the research design, data collection process, the data management, analysis employed and constraints and challenges involved for this study.

Chapter 4

This chapter delineates the data obtained by describing the details and process of the data collection. The analysis of the data take part in this chapter.

Chapter 5

This chapter discusses the findings and delineate the discussion rigorously on each of the data obtained.

Chapter 6

This chapter summarizes the research findings and the comprehensive review of the research objectives, further research works and provide an intuitive conclusion for this study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter, public transport, mainly focused on public bus is put as the first review which being summarized based on the definition and worldwide scenario. Discussion on global review of public transport and Malaysia public transport are made. Previous studies by a few scholars on public bus transit problem are also discussed. The criteria of an efficient bus services are identified based on rigorous literature. Thus, this chapter has been outlined to six main headings; 1) Role of Public Transportation, 2) Role of public governance and authority, 3)Bus operator's stand view, 4) Criteria of Efficient Public Bus Services, 5)Bus service quality measurement, and 6) Bus network design.

2.2 Role of Public Transportation

The need of mobility has become an essential part in people life. The number of registered vehicle on the road had increase rapidly by days. Dargay, Gately, and Sommer (2007) estimated that the world's total vehicle will increase by 2.5 times from year 2002 to 2030. The increasing of population over the world had created the phenomenon of vehicle-flood on the road. But over the increasing of the vehicles on the road, it has been spotted where private transports are in high demand compared to public transports as the main reason of this is that public transport is unreliable (Leong, Bagheri, Abidin, & Sadullah, 2010). Furthermore, even though private transport is claimed as faster mode of transport and more reliable, more parking demand is needed. People nowadays seem to be tolerating with the traffic congestion and scramble with parking lot as what road users aimed for are comfortable and reliable journey on the road. Mohamad and Kiggundu (2007) stated that the increasing number of vehicles on the road can cause other problems such as traffic congestion, accidents and pollution either in air, water, land or sound pollution. Not only that, travel times and cost will increase consequently from traffic congestion occurred.

Many attempts had been made to overcome that problem as one of it is enhancing the public transport system. In the Law of Malaysia Act 715, public transport namely land public transport is defined as “ *the transport on land by means of land public passenger and land public freight transport, and includes land public transport services, terminals, facilities, networks, systems, operations and other services associated with such transport or land public transport services*”. Briefly,

public transport is a mode of carrier that moves people and serves as a means of transportation. This statement is supported by the definition made by Tran and Kleiner (2005) which defined public transport as a transferral mode that provides general or special transportation to the users especially public users. However, public transport is often neglected in planning decision of town and city in which car has been mainly focus by local planners (Disney, 1998).

The advantage of shifting towards public transportation mode instead of private transportation is seemed to be relevant. Public transport is a very important mode of transport especially for urban areas as the needs for movement and circulation is very high. The significant of substituting the utilization of private transport to public transport will reduce the helter-skelter made involving the environmental pollution, traffic congestion, etc. (Shrivastava & O'Mahony, 2009). W. Fan and R. B. Machemehl (2006) stated that public transport can drop-off traffic congestion and pollution while lowering energy consumption and amend the mobility. In fact, Ning (2011) had listed three clearer benefits of public transport considering the social, economic and environment element. In perspective of social element, people have an opportunity for a better job while in economic element, three major things that can lay aside which are time, money and fuel. Thus the environment gets profit from it too where no spoil environment will be produce.

The importance and needs of public transport such as public buses had faced an increasing volume in developed and developing countries. Ostensible needs towards public transport had risen up the demand while empowering the government to enhance the public transport systems and cater the necessity of the people. Asian countries such as Singapore used public buses system as their main moving and mobility mechanism where half of Singaporeans choose public buses as their mode of transport (Meng Lim, Chong Seet, Sung Lee, Kiat Yeo, & Kassler, 2005). Policies had been aligned between the bus services to the facilities nearby including bus stops, interchange terminals, bus frequencies, etc. in which their main objective is to provide a feasible and effective bus systems.

In Spain, the importance of public transport had forced many parties to enhance the efficiency of the public transport system as the public transport is the greatest mode of mobility being used by the road user (Rodríguez-Núñez & García-Palomares, 2014). The authors mentioned that measuring the vulnerability of the public transport network using the optimum set of route could affect the whole system including the loss or hardening the facilities. As in Paris, two reasonable solution are suggested in overcoming the problem which are either improving the capacity of road network or examining the pricing element (Kilani, Proost, & van der Loo, 2014). In fact, public transport is proven in minimizing the traffic congestion (Monchambert & de Palma, 2014) and pollution (Gouge, Dowlatabadi, & Ries, 2013) issue compared to the private transport such as cars and motorcycle. Looking onto Asian country such as Korea, the needs of urban public transport had create a reformation in the Bus Rapid Transit (BRT) system (Cervero & Kang, 2011). The

authors mentioned that usage of public bus is cost-effective alternative as it will not only lessens the traffic congestion but also able to serve denser area.

India had used public buses that are managed by Public Bus by Bombay Electric Supply and Transport (BEST 1999) as their major mode of public transport in order to overcome the slow growth between intermediate and private transportation (Shrivastava & Dhingra, 2006). Likewise in China, the demand for public transport increase as the population growth increase from year to year (Chen, Yu, Zhang, & Guo, 2009). The public bus operates in high traffic flow mixing with motorized and non-motorized vehicles. Thus it creates more congestion and disruption to the traffic condition. The inefficient services of public buses in China had create a miserable public transport system that lead to enhance the system by restructuring the bus service system (Szeto & Wu, 2011).

Intensive public transport usage in United State of America had create a manageable system which incorporated with scheduling, timing, cost and bus capacity (Bartholdi III & Eisenstein, 2012). But in Stockholm, Sweden, the public buses have to deal with irregularities and delays where the scheduling is not managed well (Andersson & Scalia-Tomba, 1981). Similar situation happen in Dublin, Ireland where coordination between timing and trip distribution not compliant to each other (Shrivastava & O'Mahony, 2006).

Generally, a few mode of public transport has been used across many countries such as buses, taxis, rail, etc. Almselati, Rahmat, and Jaafar (2011) mentioned that the government of Malaysia had served the public by providing public transport but the priority of using this mode of mobility is less considered. The scholars find out that the quality of services provided is low and made the user shifted toward private transport. Malaysia also is classified as lower public transport usage among other Asia countries.

Marked by correspondence of global review of public transport, Malaysia had resembling the situation too. Shifting from private transport to public transport discourage the injuries and death volume while preserving the nature from hazardous gases emit by private transports (Nurdden, Rahmat, & Ismail, 2007). A review made by Almselati et al. (2011) had shown that public transportation in Malaysia is woeful in which required a few strategies and solutions to puzzle out the situation;

- Poor public transport system
- Increment of private transport ownership

In Malaysia, the government had tried a few initiatives in hope of reducing the traffic congestion and at the same time enhancing the public transport system (Nasrudin, Nor, Noor, & Abdullah, 2013). According to Kasipillai and Chan (2008), Malaysian government intensified the policy to grow up the usage of public transportation such as obviate the fuel subsidies and alteration of road tax for private vehicle as this will help the government in spending the money in the needs of sustainable public transportation. The usage of public bus has started in Kuala

Lumpur in early 1960 and has been a very popular mode of transport in that time. However, Rohana Kamaruddin, Ismah Osman, and Che Anizaliana Che Pei (2012) mentioned that among other Asian country, the usage of public transport in Malaysia is very low and this situation had forced the government in launching several initiatives to surmount the problem. Not only the growth of the population had caused the traffic congestion, the rapid development in industrialization and urbanization are also classified as the factors influencing this problem (Chee & Fernandez, 2013). In Penang, the rate of car ownership is the second highest car ownership where every 1.74 residents in Penang own a car and this situation had forced the government, authorities and public transport agency to find the solutions. Chee and Fernandez (2013) stated that enhancement in the policy should be make in order to make the private vehicle driver given up in driving and shifting towards public transport usage. However, the proposed solutions might not efficiently workout if no further action is taken by all the actors in overcoming the situation.

Look at attentively, Kuala Lumpur as a core part of the nation's growth played an important role in enhancing and rose up the public transportation system. Comprehensive upgrading initiatives by government from no rail to 290 kilometres electrified railway system, investment for new road construction equivalent to new urban public transport development and so on had given impact to the environment and community while their main objective is to enhancing the usage of public transport (Bunnell, Barter, & Morshidi, 2002). Government targeted to achieve 70:30 modal split between public to private transport (Nor, Nor, & Abdullah, 2006) and this could be accomplished if there is an integration of land use development and

public transportation planning (Sharifi, Boerboom, Shamsudin, & Veeramuthu, 2006).

Despite the strategies done by the State, financing and funding is at vast expense problem. Failure to sustain the public transport system by the operators mainly caused by poor financial performance had lead to poor public transport system in which minify the volume of public transport users (Kiggundu, 2009). In short, management in government administration authoritative is needed to control and monitor the development of public transportation system by taking into consideration a few parameters such as land use planning, monetary aspects, etc. A brief overview of Malaysia public transport is tabulated in Table 2.1.

Table 2.1

Brief overview of Malaysia public transport

No.	Brief Overview	Location	Author (Year)
1	Expansion of transportation infrastructure has been made to cater the needs of public users	Kuala Lumpur	Bunnell et al. (2002)
2	Limited access for public transport had create a lesser popularity of public transport compared to private transport	Penang	Leong et al. (2010)
3	Public transport is inadequate and low quality and availability	Putrajaya	Nor et al. (2006)
4	Integration between land use planning and public transport will create an increasing demand for public transport	Klang Valley	Sharifi et al. (2006)
5	Monetary value is an ad hoc issue to the actors in public transport	Kuala Lumpur	Kiggundu (2009)

2.3 Role of Public Governance and Authority

The role of transport authority been emphasized in the study done by Groenewald (2003) in which different model of public transport legislation involving the government was used to evaluate and adapted to the local circumstances. Different countries had developed different model in enhancing the public transport system. For instance, in Singapore, Land Transport Authority (LTA) is authorised to monitor and empower the whole public transport system. In Singapore, the authority regulates the policy established and lead to a systematic public transport system that featured with well-maintained infrastructure. Groenewald (2003) mentioned that this authority had covered the entire transport mode in Singapore including the funning and road maintenance facilities.

Looking at Seoul, Korea government legislation, Seoul Metropolitan Government (SMG) is the important board of authority that responsible to improve the bus system. In the study done by K. S. Kim and Dickey (2006), the authors examined the role of SMG in the reformation on bus system in which the establishment of urban governance committee under the supervision of SMG assisting the process of public transportation improvement. The authors reviewed on the SMG role in enhancing the public transport system such as modification towards public transport orientation, consideration of user needs despite the important role of other player in public transport industry and also responsible in monitoring the whole public transport system.

In developed country such as Netherland, Australia, tendering 19 authorities as governance body in the public transport system involve the government forethought in selecting the most suited authority based on strict regulation and negotiation-avoidance process. Despite the government and the authority have different aims in delivering better quality of public transport system, collaboration of these two perspectives help to cover the hole impaired in the public transport system (W. Veeneman a & van de Velde, 2014)

In Malaysia, the transportation system is empowered by the Ministry of Transport in which public bus transportation system is monitored under the Land and Logistic Department. The whole land transportation system is under purview of Land Public Transport Commission in which this organization plays a role as planners, policies regulator and also helps to improve the land transportation system. Apart from the authority, in response to the user demand, the bus operator played an important role as the mediator to cater the demand. The bus operator is under the control of the public governance and authority as been mentioned by Jarboui, Forget, and Boujelbene (2014), majority of the bus service operator is under the public authority surveillance.

As been mentioned in the study done by Ong, Mahlia, and Masjuki (2012), public transport usage in Malaysia is the lowest among the Asian countries. This situation had forced the government in fostering the public transportation by introducing initiatives and funding schemes. One of the initiatives done launched by the Prime Minister, Dato' Sri Mohd Najib Tun Abdul Razak is the Interim Stage Bus

Support Fund (ISBSF) which this initiative aimed to sustain the continuity of the bus services provided and also enhancing the public service and system.

2.4 Bus Operator's stand view

The performance of the bus operators can be evaluated through several parameters such as the productivity, efficiency, financial performance, etc. In the study done by De Borger and Kerstens (2000) , the bus operator performance was measured based on the productivity level and efficiency of the services provided. The authors mentioned that the performance of the bus operator is evaluated from ability to fulfil the demand from user, response towards economic changes, capability of sustaining the environment while providing the services, etc. Adapting the regulation made by the government authority might influence the performance of the bus operator. In addition, the bus operator had to take the opportunity to grab the initiatives that the government made that will beneficially help the bus operator.

While the government adjudicate the regulatory establishment and funding programmes, the bus operator main focus should not be shifted to other than fulfilling the society-needs of mobility. In the study done by Sezhian, Muralidharan, Nambirajan, and Deshmukh (2011), the bus operator should highlighted to a few attributes while providing the services in order to retain old customer and attract new customer. The attributes mentioned are the accessibility, punctuality and cleanliness.

However, in the study done by Hensher and Stanley (2003), the bus operator main target is valued for profit growth and social-welfare. The authors mentioned that in achieving these targets, the bus operator had to obligate the requirement in contract provision. Evaluation of the quality performance of the bus operator is seen in the process of tender documentation in which the bus operator struggling to harness the customer needs. Indeed, the availability of quality performance contract evaluation will enrich the public bus system.

2.5 Criteria of Efficient Public Bus Services

The issue on bus services quality had attracted many prospects in continually study on this in order to obtain optimum resolution. Years to years, the quality of services provided by the bus operator had been a subject interest to many scholars. The term services often been defined in various ways. The term *services* used in this study is defined as “*the set of bus vehicles which run along the fixed bus route*” (R. Liu & Sinha, 2007) in which the services of the bus operating system is measured based on several indicators mentioned by few scholars. Often, the bus services quality is related with the user perception. In order to measure the quality of the services provided, a few attributes need to be looked on.

Based on a comprehensive review on the literature, the criteria of an efficient bus service are indirectly discussed in several ways. The criteria of an efficient bus services can be derived from passenger or operator perspective respectively. In point of view of the passenger, there are few elements considered to measure the efficiency

of the services which are ridership, reliability, accessibility, physical features of the bus, bus fare, comfort, etc. The efficiency of the bus services also depend on the rules and regulation, route network design, fares and ticketing system, fleet size, scheduling, etc.

The ridership (Rohani, Wijeyesekera, & Karim, 2013) which influence by internal and external factors determined the quality of the services. The authors mentioned that the internal factors refer to the comfort level, travel time, distance, user-friendly, etc while the external factors refer to the operators' control over a few variables such as demand, supply, fuel price, congestion, policy, etc. There are also research work done by Putra, Jinca, Bambang, and Agus (2014) in which they mentioned that the quality of the services is measured through the satisfaction or dissatisfaction of the user. The author list out that accessibility, reliability and security as main attributes that represent the level of quality services provided. However, the physical features of the bus, bus stop or even the bus terminal not affecting the contentment towards bus services provided.

In the study done by Hensher and Prioni (2002), the bus service quality is measured by examining a few parameters such as seating in the bus, driver attitude, bus fare rate, bus reliability, frequency, walking distance and travel time. The authors had done this study aimed to acknowledge the user needs to the bus operator and economic governor. Despite the important parameters that the bus operator need to focus on, the bus operator also should take into consideration in improvising the bus service quality by focusing on the attributes that is indistinct such as comfort level in the bus while utilizing the services. The authors used the Service-Quality Index as

the evaluation tool to indicate the strength of each parameter in defining the best services by the bus operator.

Based from the research work done by Sezhan et al. (2011), the authors studied the comparison between the perception of the manager in bus operator company with the user perception in India and figured the important factors influencing the determination of service quality provided by the bus operator. The most important attributes that the bus operator should focused on while providing the best services and catering the demand from user are punctuality, cleanliness, seating availability and ticketing issues. Adapting the performance-importance matrix in the study done by the authors had clarified the attributes selected by the bus operator and user that could be used as the indicator in service quality improvement.

The attributes in determining the quality of bus services were also been raised by Trompet, Parasram, and Anderson (2013) in which the scholars mentioned that service availability, travel time, information, comfort, security, customer care, accessibility and environmental impact consideration had been selected by the user as the important attributes in determining the bus service quality. These attributes use to benchmark the practitioners, bus operator and authority in catering the demand and meet the user satisfaction level that leads to efficient bus service quality and system.

The attributes had been selected by the user and operator in different ways. Based on the study done by Behrens and Schalekamp (2011), the most important attributes selected by the user are travel speed and comfort level. Different findings was discovered in the study done by Sezhian et al. (2011) in which user had selected ticketing issue and cleanliness as the most important attributes. Reliability of bus services in term of bus punctuality is highly selected by the user as the top prior attributes determining the service quality in the study done by Trompet et al. (2013). In recent research work done by Putra et al. (2014), punctuality and comfort level been ranked as the most important attributes by the user. To be clear, user most selected attribute is comfort level (Behrens & Schalekamp, 2011; Putra et al., 2014). In the perspective of operator, the attributes that defined the bus services quality was looked in various ways. The main concern of the operator is shifted toward value for money (Hensher & Stanley, 2003). For operator also, punctuality (Sezhian et al., 2011) is described as the most important attribute.

Based on the mentioned attributes for quality of bus services determination, a few similarities been noted. The attributes listed focused on users' need. For example, comfort in term of seat and air conditioner level is needed by the user to have a reliable and comfort journey. As shown in Table 2.2, comfort is listed by many scholars in which indicated that these attributes are very important in determining the quality of the bus services. Not only that, there are also a few other attributes that is majorly mentioned by previous scholars such as punctuality, driver attitude, availability of information, etc. However, the study on the public service quality is not capable being stop as until nowadays, research had been made in this field. Thus,