Improving Urban Public Bus Service Quality: A Review of the Performance Benchmarking

Syazwan Baharum[#1], Suria Haron[*2],

[#*] *Faculty of Civil Engineering, Universiti Teknologi MARA, Permatang Pauh, Pulau Pinang, MALAYSIA*

[#1]syazwanbbn@gmail.com

[*2]suriaharon@gmail.com

***Abstract*— Malaysian nowadays prefer more on private transport such as car and motorcycle compared to public bus. This decision may be due to personal experience when the services do not meet the expected satisfaction. Understanding the key factors of bus performance is important because it related users' loyalty and ridership issue. However, current practice in Malaysia does not focus on developing and implementing an urban transport benchmarking. The authorities and the operators need to take a transparent action with an intense understanding of user needs in order to enhance the public bus service for foreseeable future. This article reviews an approach that acknowledged by previous studies in an interest of assisting public bus transportation planning that advantage of sustainable public transportation system.**

***Keywords*—** *Urban Public Bus, Users' Satisfaction, Performance Benchmarking.*

1. Introduction

Rapid urbanization has increased the growth of the Malaysian economy. World Bank (2015), reported that the percentage of urbanization continues to increase steadily every year after Malaysia became a middle-income country in 1985 [1]. The growth in population and migration to major cities have a positive impact on increasing the country's economy through increased in productivity and accelerating in the services sector. The economic stability of the urban region also became the driver of growth in household incomes and poverty reduction. However, despite the advantages of the urbanization can be seen, it also has emergent challenges in the mobility that dampen the ambition of becoming a high-income nation. Malaysia's becomes exceptionally high motorization rate [2] . In addition, the existence of some shortcomings in the public transport service quality has reduced the travel using public transport. Therefore, aware of this difficulty, the government now turns attention to give extra investment on public transportation. One of the priorities that should be given is to improve the current service quality of public bus. The public bus service should be updated from time to time in order to encourage road users to use public bus services [3]. Hence, the main focus of this study is to review the past study about quality attributes used for analysis service quality of urban bus. Many benefits that can be generated by the nation when the development of an efficient transportation system can be reached. The objective of reducing congestion on the roads should be rigged with more public bus ridership. Public transportation is capable of carrying larger number of passengers and is one of method that can offer urban sustainability [4].

2. Issues with Public Bus Service

Issues relating to the quality of public services in Malaysia cause annoying affect to passengers [5]–[7]. The effect can be seen when the services provided had less support from local community. Public buses are facing several issues and the most debate is the reduction in the number of ridership in the rural and even urban area [8], [9]. In Kuantan, Rapid Kuantan bus has been operating for five years received numerous of issues. Among the concerns are the bus takes too much time to arrive at destination that takes more than two hours. When compared to a car ride that is only takes about 30 minutes. In addition, a basic facility such as bus stops without a roof, the aspect of cleanliness, dangerous driving, punctuality and others [10]. In Penang mainland, study by [8] found that reliability of buses is not reliant only on the bus frequency but also subjective by the travel speed, level of traffic congestion, weather conditions, volume of passenger per returned trip and number of stop. Their finding proposed that an effective urban bus service ought to have an efficient route network, which entails accessible for

high density housing area, short travel distance and fulfils passenger's needs. In Penang Island, [11] found that the public buses are not effective enough to attract people to choose over private transport. Despite various efforts by local authorities and bus operators, apparently not as effective as the use of public buses among working people is less. From the analysis of consumer satisfaction, problems concerning the frequency of buses led majority respondents (79.15%) were unhappy about the public bus service. This situation reflects the poor frequency of bus arrivals and departures. Haron et al., (2015) discovered service quality dimension that affects the public bus performance in Penang are Image, Physical Facilities, Reliability, Accessibility, Safety, Responsiveness and Environment [5]. Public transportation in Kuala Lumpur offers wide range of choice such as rails and bus transport. Public bus service is usually preferred because it offers lower fares than others [12]. Similar situation happened in Kuala Lumpur's public bus in which the quality of facility is poor with availability and network coverage possess enormous gaps, unreliable services, waiting time and punctuality of buses arrive. This problem arises when lack of planning in the provision of bus services and lack coordinated planning [13]. Therefore, it is better to know the level of service quality at the initial stage in order to enhance it in accordance with the requirements of passengers [10].

3. Methodology

A structured questionnaire assessment of customer satisfaction in Malaysia's urban public transport was done earlier by [14], using attributes of Accessibility, Reliability, Safety, Fares, Communication and Trip Experience. A total of 63 respondents from a regular public transport user was pre-tested for content validity. Accordingly, the final assessment was conducted at numerous bus and train stations around Klang Valley area. A total of 467 questionnaires was collected which 82% of respondents were common users. The result show that attributes of safety, followed by accessibility, reliability, communication and trip experience influence customer satisfaction. Study done by [9], four dimensions compromise of tangible, reliability, responsiveness and assurance are expand in 17 items to capture the satisfaction level in Peninsular Malaysia urban and rural bus service. However, [15] suggests that customer satisfaction surveys supposed to be conducted annually or every six months basis to monitor consumer perceptions of the existing public transport services. More completely, several service qualities attributes of public transport services can be found in Table 1.

Table 1: Service quality attributes in previous studies

Author	Public Transport category	Country	Factors/Dimensions
de Oña et al., 2013	Urban Bus	Granada, Spain	Frequency, Punctuality, Speed, Proximity, Fare, Cleanliness, Space, Temperature, Information, Safety, Courtesy, Accessibility
Del Castillo & Benitez (2012)	Urban Bus	Bilbao, Spain	Frequency, travel time, punctuality, prices, information, cleanliness, staff performance, comfort and safety
Guirao et al., 2016	Urban Bus	Bilbao, Spain	Frequency, travel time, punctuality, prices, information, cleanliness, staff performance, comfort and safety
Guirao et al., 2016	Urban Bus	Madrid, Spain	Punctuality, Frequency, access, Cleanliness, Journey time, Comfort, information
Shaaban & Khalil, 2013	Urban Bus	Doha, Qatar	Comfort, convenience, safety, and cleanliness
Yao et al., 2014	Urban Bus	Kuantan, Malaysia	Tangibility, Reliability, Responsiveness, Assurance, Emphaty
Jomnonkwao & Ratanavaraha, 2016	Tour bus	Bangkok, Thailand	Vehicle Driver and crew Management

For urban bus category, several researchers coming out with evaluating the quality of service perceived by users. According to [16], Structural Equation

Model (SEM) method used to discover the unobserved latent characteristics describing the service and the relationships between these features with the overall service quality. They found that the unobserved latent variable is most important, while comfort and frontline personnel have less influence towards overall service quality. While, the methodology for identifying and measuring the relationship between the assessment given to the overall satisfaction and which is given to certain factor of a particular service or rating is presented by [17].

Finally, the overall model of the satisfaction index in the most influential factor used as a benchmark. However, [15] contributed by developing survey-based techniques to estimate the importance of quality attributes stated, and compare the results obtained using conventional surveys with the same sample. According to [18], further investigations of factors related to user perceptions of existing services through SEM approach can help to produce a significant attributes that can serve as a benchmark to authority to increase quality of bus service. In Malaysia, [10] evaluate customer satisfaction with services provided by Rapid Kuantan from the parameters of reliability, responsive, assurance and empathy. Meanwhile, [19], expected to develop indicators for monitoring and evaluating the tour bus services. Parameters are classified into three groups, ie; vehicles, drivers and crew, and management factors. Analysis using Confirmatory Factor Analysis (CFA) is performed simultaneously to validate the structure of factor.

4. Conclusion

Issues such as limited capital are the main challenges of operations and management systems to increase ridership. The main objective is to design a system to evaluate the quality of public transport services through efficient and effective passenger satisfaction surveys. Continuous assessment of public transport service by benchmark can benefit many parties, particularly public transport stakeholders. Although users' satisfaction issues arise, the practitioners can identify the factors that should be given priority for improvement. Literature reviews show some studies that have been implemented in Malaysia as well as abroad trying to find factors that can satisfy public transport users. The benchmark element of the previous study provides a starting point for identifying parameters that may affect the satisfaction of public transport users in Malaysia. The proposed assessment framework is expected to be widely applied as a methodological strategy to assess public opinion in the post-evaluation stage of large infrastructure projects.

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