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Research paper

Overview of Service Quality for Public Bus Services

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Abstract

Service quality for public transport has recently received many complaints from customers. Nowadays public transport commutes passengers to work or any other places. Buses usually give service to people in rural and urban areas. Increase in population may increase the demand for public transport. Problems with schedule, fare, security and others were obtained. The objective of this article is to overview of services quality for public bus services. This review paper focuses on to understand the definition, issue and methodologies in evaluating service quality in public transport especially public bus services. The methodology using to overview in this article is a comparison between definitions about quality services for public bus, comparison of methodology in conducting assessment for quality services and comparison issues been raise about services quality for public bus. As conclusion, even though there are many problems with regarding service quality for public transport, several ways are developed to improve it slightly better than before. Hence, this research articles can help people and create awareness on the importance of service quality of public bus transportation.

Key words: *bus services quality; public transport; service quality; transportation problem.*

1. Introduction

Public transport is commuters that serve passengers or a system to move passengers. It is therefore necessary to keep the service in good condition or the service level may drop. An individual's perception is important for his daily decisions, especially with those involving transport. In fact, the development of an industry depends on the services provided. If an industry can survive for a long term, it indicates that a good service is delivered.

1.1. Public transport

Public transport in Malaysia, especially for buses, is one main transport service in the city. Buses gives services in different parts of the city and stops frequently at every bus stop unless stated. [1] consider public transport provides time tables, vehicles and staff schedules, fares collections and more recently tracking vehicle locations.
[2] believed that public transport provides mobility service that should be equal to economic, environment and social sustainability. [3] stated that the public transport is a universal importance to urban mobility. To attract people to use public bus rather than private vehicle, system consistency should be implemented in the first place. However, risks like traffic congestion and road accidents on the roadway network cannot be prevented [4].
Rather, private car may probably cost high for travelling it is therefore recommended to take a public transport that may cost less for travelling even though travel within the whole country [5]. China is one country that maintains a central plan for public bus transport service because its mode is public owner with public delivery [6]. Thus, to reduce traffic congestion, public transport plays a role in commuting passengers to work or any places that they desire [7] [24].

1.2. Bus

Public bus is very useful especially for those living in rural areas. This is because rural areas lack facilities and cannot enjoy urban area convenience. Indeed, people living in urban area also need public bus badly since their population is growing daily.
Smart Bus is announced as a network of premium service routes along major roads that link to major trip generators [5]. Public bus has become the official transport mode for major events. Therefore, a Central Bus Station was introduced [4].
Decreasing passengers made the government take a wise action in solving the situation. Therefore, public bus or "community bus" serves as a substitute for a served bus route or as welfare service for public transport in inconvenient areas [8].

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2. Service quality/performance

2.1. Definition

Monitoring of public transport systems performance has improved since advanced surveillance, monitoring, and management systems were deployed by transit agencies worldwide [9]. Reliability performance of bus operation refers to consistency in performance, frequency and dependability [10].
Public bus transport services refer to services established from the Commercial Vehicles Licensing Board and operate as vehicles that carry a large number of passengers, depending on the time and place [5].
Performance or services is related to reliability is as shown in Table 1. According to Transit Capacity and Quality of Service Manual (TCQSM) by Transportation Research Board United States of America, there are few measures that can be analysed throughout this research. Firstly, emphasize on the number of late trips, not only for the number of delays. Secondly, the effect of early departures on users was insufficiently addressed and thirdly, a well-organized schedule must be implemented to estimate the on-time performance [9].

Table 1: Definition of services quality

Authors	Definition
[9]	Monitoring of the performance measures of public transportation systems has improved since advanced surveillance, monitoring, and management systems have been deployed by transit agencies worldwide. Performance or services can be related to reliability. There are few types of measures that can be analyse throughout this research which is firstly emphasize the number of trips that are late, not only for the number of delaying. Secondly, do not adequately address the effect of early departures on users and thirdly, well-organized schedule has to be implementing to estimate the on-time performance.
[10]	Reliability performance of bus operation refers to consistency of performance, frequency and dependability.
[5]	Public bus transport services can be referring as services establishment that obtained from Commercial Vehicles Licensing Board as an operator that act as vehicle that carry passengers in large numbers, depending on the time and place.
[22]	However, the main aim for both transports is to save the passengers overall travelling time.

2.2. Issues

Table 2 below shows the issues raised by different authors.

Table 2: Issues raise in bus services quality

Authors	**Issues**
[1]	Designing timetables, scheduling vehicles and staff, collecting fares and more recently tracking vehicle locations.
[2]	Providing mobility service that should be equally with economically, environmentally and socially sustainable.
[3]	Characteristics of universality for public transport it the main important for urban mobility.
[4]	Unpredictable cannot be prevented like traffic congestion and accidents on the roadway network.
[5]	Rather than use the private car that might probably high cost of travelling, it is recommend to take public transport that may serve low cost of travelling even though travel within the whole country.
[6]	China is one of country that maintaining a central planned because the public bus transport service mode was public owner with public delivery.
[7]	Public transport plays a role in commuting passengers to work or any places that they desire as well to reduce traffic congestion.
[5]	SmartBus is announced as a network premium service routes along major road that link to the major trip generators.
[11]	In Malaysia, the most popular for public transportation according to) is delaying of time interval
[12]	indicate that the problem for reliability includes the following: • Routes characteristics = length, street parking, number of signalized intersections. • Condition of operation = traffic volume, service frequency, passenger activity • Vehicle operator = departure delays, operator-specific behaviour differences
[14]	The transit demand of service quality is a major problem in India. According to Deb & (), the total kilometres that consists of transit fare, per capita income, service quality, social variables are the problem that occur in India.
[15]	Different from one of the large country, China, problem with bus crew scheduling problem (BCSP) is often occur even though it is responsible for drivers and conductors to follow the provided timetable during a period of time.
[6]	The urban public bus is not well organized because it is not linked to government monopoly as before
[13]	Instead, the reform emphasizes integration, quality and public well- fare. The level of services of public transport has to improve because it affects the first impression to the passengers either to keep using it for long term. Thus, the delaying of bus at bus stop should be taken into serious.
[4]	Qatar, the major problem that people's facing nowadays is related to population growth which may affect in traffic congestion and stress on the city infrastructure.
[3]	Region of Umbria in central Italy, Perugia, the common problems for public transportation are population growth may affect the increase in demand, traffic congestion with crowding of car accidents, smog that threaten the protection of cities' artistic heritage.
[16]	Kenya, Nigeria, the issue for bus transportation is regarding to the accident and security (criminal behaviour)
[17]	Melbourne measures the quality of service in contrast to good network design and scheduling. Legibility, connectivity and effective frequencies are be reviewed through routes and timetables.
[18]	Lisbon, Spain, school bus routing problem is the major problem that involve children that using bus for their main transportation. Therefore, their government is planning to implement the design of the new service introduces an integrated procedure based on traditional formulations.
[19]	In Singapore the common phenomenon of bus systems is bus bunching which frequently resulting more waiting time for passengers. This is because due to the increasing number of populations with the small country.
[20]	Sulawesi is an island in Indonesia and currently growth of population is increasing. Hence, high demand of the movement would push the trend of transportation facility demand.
[5]	For example, the lack of information service, inappropriate bus schedule and timetable, high pricing ticket are the possibilities that may not influence people to use the service.

[4]	Qatar only several people like to use public transport. Generally, female commuters in Qatar do not use the service and school children do not use public buses in general due to the safety and concern from their family.
[16]	They might assume that lots of anti-social behaviour, crimes against users and vandalism always happens and this may put them in unsecure situation.
[21]	There are several risk zones that can be identify based on the distraction risk indices derived from distracting ratings, distracting durations, and driver perception of risks.

3. Perspective from different countries

3.1. Problem definition

A problem is something that must be solved or an unpleasant or undesirable condition that needs correction. Problem in service quality occurs when service provided is unsatisfactory, either the service lacks in something or becomes worst in all aspects.

3.2. Country overview

Different countries articulate different problem definitions towards transport though all of them reflect the same principle. Regardless of the issues or main problems, they must be taken into account. According to [11], the most popular problem for public transport in Malaysia is the delay in time interval. However, [12] indicated that reliability problem include:
Routes characteristics = length, street parking, number of signalized intersections.
Condition of operation = traffic volume, service frequency, passenger activity.
Vehicle operator = departure delays, operator-specific behaviour differences.
The service quality for transit demand is a major problem in India. According to [14], the total kilometres that consists of transit fare, per capita income, service quality, social variables are problems that occur in India.
A large country like China is different whereby the problem is with bus crew scheduling (BCSP) that often occur even though it is the responsibility of drivers and conductors to follow the provided timetable for a time period [15]. Unfortunately, according to [6] the urban public bus service is not well organized because it is not linked to government monopoly as before. Instead, the reform emphasizes on integration, quality and public welfare. [13] stated that services for public transport must improve because they affect passenger's first impression for continuous usage. Thus, bus delay at bus stop should be seriously considered.
In Qatar, the major problem that people face nowadays is related to population growth which may affect traffic congestion and stress on the city infrastructure [4]. But for Perugia, the capital city of Umbria in central Italy, common public transport problems are population growth that may affect an increase in demand, traffic congestion with many car accidents and smog that threatens the cities' artistic heritage protection [3].
However, different from Kenya in Nigeria, the issue for bus transport relates to accidents and security (criminal behaviour) [16]. Referring to Parker [17], Melbourne measures the service quality in contrast to good network design and scheduling. Legibility, connectivity and effective frequencies are reviewed through routes and timetables.
Meanwhile in Lisbon, Spain, school children bus routing is a major transport problem for children who use bus as their main transport. Therefore, the government is planning to implement a new service design which introduces an integrated procedure based on traditional formulations [18].
But in Singapore the common phenomenon of bus systems is bus bunching which frequently results in longer waiting time for passengers. This is because of increasing population in a small country [19].
A developing country like Japan, claims their country are faced with reducing bus services from bus companies because passengers are more attracted to motorization and this affects a decreasing number in passengers [8].
Sulawesi, an island in Indonesia, is currently facing an increasing population growth. Hence, the high demand for mobility would push the transport facility demand trend [20].

3.3. Risk

Risk happens when something unpredictable happens and cause danger or insecure to the researcher. Possible risks are accidents, danger and fraud.
A researcher may face several risk while conducting a research. Thus, some aspects must be considered, for example, the lack of information service, inappropriate bus schedule, timetable and expensive ticket. These possibilities may not influence people to use the service [5].
Unfortunately, in Qatar only several people like to use the public transport. Generally, female commuters do not use the service and school children do not use public buses because of safety and family concern [4]. They assume that many anti-social behaviour, crimes against users and vandalism always may happen and these make them in an unsecured situation [16].
On the other hand, risk in driver's behaviour may affect analysis. Several risk zones can be identified based on the distraction risk indices derived from distracting ratings, distracting durations, and driver perception on risks [21].

4. Comparison between urban rail transit and Shutter Bus

Urban rail transit and shutter buses are two aspects of focus in types of services and the advantage of these services are being compared. However, the main aim for both transport is to save the overall travelling time for passengers [22].

4.1. Method

There are many methods that can be compared to obtain a particular investigation result. Sometimes these methods give additional information without we are realizing it. In this paper, there are many people who might be useful in data collection.
Generally, the most suitable method in data collection is by information gathering. Information gathering can be obtained by checking the schedules and announcement board. By using the information, actual arrival and departure time is identified [23]. According to [20] a questionnaire sample is one main instrument used for collecting quantitative data to strengthen research. [11] described that

a questionnaire a set of written statement or question to determine the respondent's feedback and their answer are then recorded. A questionnaire can be divided into parts such as demographics, perceived satisfaction, perceived importance and intention [5]. For that reason, a questionnaire reflects different levels of satisfaction, ranging from very unsatisfied to very satisfied [4]. Thus, this study it was decided that only hand out questionnaires were used.

Other than that, spontaneous questions can give quite several perceptions with different service opinion to enhance it with respect to demands and personal comfort [4]. Drivers, passengers and administrative workers from the operator were interviewed to acquire their vision on current issue [23]. The main objective is to get the public perception. [5] defined perception as a cognitive process from people, organizes and environmental stimuli. Overall for these perceptions, people try to understand their surroundings and the objects, people and events in it. Generally, an interview was carried out to suite the condition between respondents' data and information of respondents while creating a connection between the data collection and viewpoint [20]. Table 3 shows the summary of methods used to collect data.

Table 3: Summaries methods use in Malaysia for services quality studies

Authors	Method
[23]	The most suitable method in collecting data is by information gathering. Information gathering can be obtained by checking the board of schedules and announcement. Using the information, the actual for arrival and departure can be identified.
[20]	Sample of questionnaire is one of the instruments that is used as the main instrument in collecting data to strengthen research quantitative.
[11]	Describe that questionnaire is a written set that consists statement of question to determine the respondent's feedback and record their answer then.
[5]	There are few parts can be divided in questionnaire such as demographics, perceived satisfaction, perceived importance and intention.
[4]	For that reason, a sample pf questionnaire reflects different level of satisfaction, ranging from very little satisfy to very satisfy. Thus, it was decided to use only hand out questionnaires for this study.
[4]	Spontaneous questions can give quite a lot of perception with different point of view in order to enhancing the service considering their demands and personal comfort.
[23]	Drivers, passengers and admin workers from the operator is interviewed to acquire their vision towards the current issue.
[5]	The main point is to get publics' perception defined as the cognitive process from peoples, organizes and environmental stimuli.
[20]	Interview was carried out to make suitable condition between data and information of respondents also to generate connection between the data collection and viewpoint.

5. Conclusion

Even though there are many problems with regarding service quality for public transport, several ways are developed to improve it slightly better than before. Hence, this research can help people and create awareness on the importance of service quality of public transport. This paper is important for overview understanding in services quality for bus services in contributing to further research in developing expert system for services quality for urban bus.

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