



NEAR EAST UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

DEPARTMENT OF CIVIL ENGINEERING

**SERVQUAL ANALYSIS OF PUBLIC BUS TRANSPORT SERVICES: A CASE STUDY OF
ABUJA, NIGERIA.**

M.Sc. THESIS

Serah Onuh JOHN

Nicosia

February, 2022

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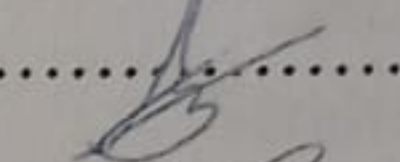

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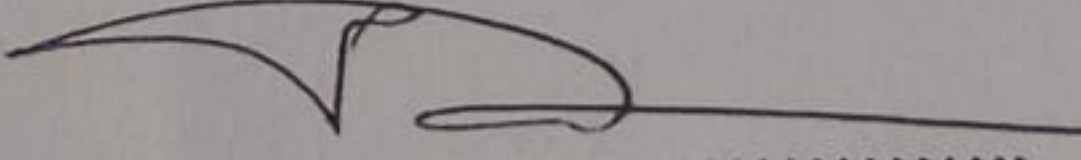
Approval

We certify that we have read the thesis submitted by **Serah Onuh JOHN** titled “SERVQUAL ANALYSIS OF PUBLIC BUS TRANSPORT SERVICES: A CASE STUDY OF ABUJA, NIGERIA” and that in our combined opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Educational Sciences.

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Declaration

I hereby declare that all information, documents, analysis, and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of the Institute of Graduate Studies, Near East University. I also declare that, as required by these rules and conduct, I have fully cited and referenced information and data that are not original to this study.



Serah Onuh JOHN

.10./ .05./ .2022

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Throughout the process of the academic year, I have been through rough and smooth days, good and bad days. Some days are harder than others, but I scaled through with excellence and victory. This excellence would not have been completed without the keen support of my dedicated supervisor, Assoc. Prof. Dr. Shaban Ismael Albrka, for his kindness and patience throughout this study, it is a privilege to work with and learn from his guidance and my co-supervisor, Prof. Dr. Hüseyin Gökçekuş, for his constant encouragement and guidance. And to all the Professors and other reliable teachers who made my learning days at the university beneficial. Through their consistent contributions towards the completion of this thesis as a whole, I was able to achieve this academic excellence through their consistent contributions.

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Serah Onuh JOHN



Abstract

SERVQUAL ANALYSIS OF PUBLIC BUS TRANSPORT SERVICES: A CASE STUDY OF ABUJA, NIGERIA.

Serah Onuh JOHN and Dr. Shaban Ismael ALBRKA

MSc, Department of Civil Engineering, Faculty of Civil Engineering and Environmental Sciences, Near East University, Nicosia.

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The Abuja Public Bus Transport System has encountered so many difficulties, such as long queues of passengers, long wait periods, panics caused by passengers rushing for buses, the loss of valuables as a result of battling for buses, and work delays. The influence of the Abuja Urban Mass Public Bus Transport Service Quality on passenger mobility is investigated in this paper. This study examines the impact of Abuja Urban Mass Public Bus Transport Service Quality on commuter mobility. Primary and secondary sources were the major sources of data collection. The data collected were on the commuters' waiting times at the bus stops, their level of satisfaction, and reasons for using public bus transport services. The research reveals that the bus stops were not sufficient, the buses are derisory, and the few ones available are either bogged down and/or in bad condition, leaving commuters waiting too long, causing poor service rendered. According to the study, there are no dedicated bus lanes, long wait times, poor reliability, and lack of in-vehicle comfort, low efficiency, and long downtime vehicles as a result of a lack of proper maintenance. Finally, the study recommends that more buses and bus stops be provided, bus lanes be designated, and the organization maintain a good bus maintenance culture.

Keywords: service quality, public, transport, federal capital city, reliability, accessibility, T-test sample, analysis, mean, standard deviation and correlation.

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List of Abbreviations

SERVQUAL: Service Quality

RATER: Reliability, Assurance, Tangibility, Empathy and Responsiveness

RECSA: Reliability, Extent of service, Safety and Affordability

SQI: Service Quality Index

FCT: Federal Capital City

CHAPTER I

Introduction

1.1 Background of the study

Road transportation is one of the major challenges experienced in developing countries. The quality of road transport services provided for commuters is an important aspect of a city's social and economic growth. For the majority of public transport operators, the assessment and enhancement of the quality of operation of urban public transport is a priority (Nwaogbe & Ukaegbu, 2013). Moreover, in an effort to cope with the rising rate of car ownership and the high rate of traffic congestion in the area, urban transport operators are forced to put special emphasis on monitoring and enhancing the standard of service delivered. Climate and how to advance the sustainability of urban transport networks to a large extent (Tyrinopoulos & Antoniou, 2008).

A city can be smartly developed when innovative technology is used for the design that helps to connect people from different parts of the city, both outside and within, information and urban features in order to have a sustainable and inventive environment, thereby improving the city's quality of life for the people living in it (Bakc & Wareham, 2013) and (Cunha, Medina, and Burgos, 2016). The quality of the urbanized road transport system of a city can be determined by its availability, safety of passengers, and user satisfaction level (Suleimanov, Mavrin, Kalimulina, Liubimov, Melnikov, and Filippov, 2017). Suleimanov, Mavrin, Kalimulina, Liubimov, Melnikov, and Filippov (2017) also stated that a city's economic and social development depends solely on the reliability, safety, and efficiency of the road transport network system.

There are so many challenges developing countries face, especially when it comes to road transport systems. A smart road transport network gives a city a smart and attractive road network for its commuters' convenience and easy or flexible movement around the city, which makes the use of road transport more reliable and safe for commuters to use. And this means helping reduce the number of private car owners to help control the fleet of cars driven on city roads to avoid heavy traffic (Enoch, Osmanu, and Daniel, 2018).

The quality of road transport services is calculated solely by the disparity between the customer's expectations and his or her perceptions of the services rendered (Rose & Gert,

2006). Previous studies have shown that the preferences and perceptions of customers about the quality of road transport services are formed by contrasting previous experiences of good service. Other studies have also considered the views of passengers about the efficiency of road transportation services as an inference shown by road transit system services (Bitner and Hubert, 1994).

However, most African countries on the verge of developing are faced with road transportation problems due to the increasing number of commuters. In the case of Johannesburg, many studies have shown that the city is facing similar challenges regarding road transport systems, where the use of road transport is regarded as a low standard of living and which also leads to the high rate of private car usage by commuters. Rose and Heyns (2006) revealed in previous studies that the government's vision of achieving large-scale modal shifts from private to public transport and realizing the National Development Plan's aim to provide an integrated system for passenger transport and access to opportunities for all (National Planning Commission, 2011) means that it is important to provide a transport system that is attractive to users. Similarly, Tripoli in Libya also has challenges with road transport where studies have shown that there is a higher rate of accidents and deaths of road transport users due to the intake of alcohol while driving, which causes bad traffic on the road.

The major cities in Nigeria, such as Lagos, Port-Harcourt, Kano, and Abuja, are presently experiencing issues related to public bus transportation. Although train stations were created, they are insufficient, unreliable, and not readily available. The train stations are situated far from the towns where people find it difficult to access at any given time. Road transportation is a thing of concern in Nigeria because it is not sufficient and ineffective in society and, most importantly, it is unsafe for passengers. Though the government tends to solve the problems of bus transport systems between two different cities by creating train stations, the reverse is the case. Private cars are the dominant mode of commuter transport in Abuja, Nigeria. The already congested town, with the population growth rate doubling each year, is destined to get trapped. Given the city of Abuja, the Federal Capital Territory of Nigeria, urban development and structural underinvestment, the city's transport system is now characterized by congestion and related problems such as pollution, accidents, decrease in public transport, deterioration of the environment, climate change, and depletion of resources, visual intrusion, and lack of accessibility for the urban poor.

It is necessary to obtain input from the actual passengers in the system about the improvements they would like to see in order to better address their needs and enhance the public bus transport system in Abuja. Indeed, passengers are the subject of the provision of public bus transport services. Alternative bus strategies can be formulated so that more people choose this service, especially private car owners, by identifying the key dimensions that provide value and affect passenger satisfaction. This will, in turn, relieve the existing traffic jams and related problems facing the city of Abuja and its residents.

Over time, the SERVQUAL original by Zeithaml & Berry, 1985, was developed to measure the level of road transport passenger expectations and perceptions. Service quality is determined using this model to check the reliability of road transportation services and their ability to perform the services on their own and accurately as intended (Ali, 2016).

Generally, research has shown that the challenges that come with public road transport and their shortcomings were ascertained using the SERVQUAL model. It is used to measure the quality of public bus road transport services and also in developing and planning a smart, attractive city for the reliability and convenience of its public road transport system.

1.2 Problem Statement

Abuja has a land mass of over 8000 square kilometers bounded by Kaduna state to the north, Kogi state to the south-west, and to the west by Niger state and Nasarawa state on the east side. The city has witnessed a large inflow of people coming from different parts of the country in search of greener pastures. This is not far from the fact that the city has developed sustainable infrastructure that provides opportunities for those looking for greener pastures and a lot of potential investors that have found the city a paradise, which has contributed greatly to the development of the city in different ways for the masses.

The Federal Capital Territory has a beautiful road network, crisscrossed by overhead bridges and traffic lights at various points to manage the level of gridlock within the heart of the city. Abuja, Nigeria's Federal Capital City, used to be refreshingly beautiful and calm for residents. The roads were decent, neat, and free of heavy traffic, so driving from one end of the city to the other end hardly took more than fifteen minutes. The reverse is now the case, as traffic congestion in the city and its suburbs is now the order of the day. This has made driving through parts of the city a horrible nightmare.

Driving within the city to connect to the town or work places, especially from some remote satellite towns of the city such as Mararaba and Nyanya, is very challenging. Some people from the neighboring states drive in to carry out their daily businesses. Nasarawa state is very

connected to the city, which makes most people come in on a daily basis for jobs, businesses, etc. Most of the popular satellite towns in the city are found around the Nyanya and Mararaba axes, connecting Nasarawa state to the city. One of the most congested freeway areas in the city is the AYA. Due to the traffic challenges, people have to get up as early as possible to catch up with their jobs and businesses. These usually happen because of bad or damaged roads or probably congested road spans.

1.3 The Aim and Objectives of the study

The aim and objectives of this research paper is to analyse the quality of public bus transport services and passengers satisfaction level. The objectives of this study is found below; analysis on the issues with urban transport in the study area, constraints of the operators of urban public transport in the study field, the nature of the urban public transport needs of the study area's inhabitants, the degree to which urban public transit operators are involved in urban transport in the study field and the service level of existing city bus services and evaluate the space and time coverage of the new bus service.

1.4 Research Questions

The purpose of this study is to respond to the research questions below and explore how it can help to achieve the purpose of the study and realize the objectives of the research.

- What are the possible ways of creating an adequate bus transport system within the city?
- Does the quality of public transport bus services in Abuja vary significantly between expectations and perceptions?
- What impact does this disparity have on the degree of satisfaction of the city's users of public bus services?

1.5 The Significance of the study

Transportation faces many obstacles, including standing in a long passenger queue, extended waiting times, trampling, loss of valuables due to the struggle for buses and being late for work. The relevance of this study is that it reflects on how high quality services will support users of public transport. And due to the fact that the degree of satisfaction is very low because of inadequate resources made available, the buses used are poorly maintained and also due to the population growth in the city.

1.6 Scope of the study

This research study is basically limited to public bus transport services within the city of Abuja, the Federal Capital Territory in Nigeria.

CHAPTER II

Literature Review

2.1 Introduction

This chapter focuses on the literature review and the conceptual framework relating to the accessibility of public bus transport services for sustainable transport growth, with the view of providing a framework for this analysis. It stresses that route coverage, service duration and time of day, travel demand for public bus transport services, and enhanced public transport services are taken into account as a result of increased connectivity and, ultimately, sustainable public transport.

Every developing country must have the safety of its citizens' at hand when it comes to transportation. Transportation is very essential and it is the bedrock foundation of most developing countries as it helps to link different cities and towns within the nation. Studies have shown that most developing countries are exposed to serious challenges in the use of public bus transport when it comes to safety and reliability (Iles, 2005; Simpson, 2003). The use of private cars is growing rapidly and uncontrollably and has to be reduced as it effects the environment in a negative manner. It is unarguably true that public bus transportation has a positive impact on the social, environmental, and economic growth and development of every country (Steg, 2003; Le-Klähn, Hall & Gerike, 2014).

2.2 Theoretical Framework

2.2.1 Definition of Term (Accessibility)

Accessibility is an elusive notion and one of those generic words that everybody uses when faced with the problem of defining and calculating it, hence many meanings of various origins and inclinations. (Makri and Folkesson, 1999). In the fields of transport planning, community planning, and geography, the model is widely used, but there does not seem to be a specific description. Specifically, the meanings and uses of accessibility differ widely, including in the area of transport. (Murray, Davis, Stimson, and Ferreira, 1998) argued that mobility is the public transit system's ability to transport people out of the system to another point location of exit in a specific amount of time. Accessibility also requires the operational functioning of a framework of accessibility for regional services. Research carried out by Ingram (1971) explained that accessibility can be characterized as a place's inherent characteristics in order to overcome some types of friction sources that operate in space, such as time.

As a result, not only the ability to overcome space but also the ease of achieving the goal of a person is worth doing for their own good (Tseu, 2006). Accessibility is the ease with which any land use operation can be accessed from a location using a particular transport system (Dalvi & Martin, 1976). As stated by Schoon, Mc Donald, and Lee (1999), accessibility tests people's ease and convenience of getting access to a specific transit system. Other researchers, such as Geurs & Ritsema (2001), also stated that accessibility has four possible components. The transport component deals with metrics such as travel time, cost, and effort to move through space. The land use component measures the spatial distribution of activities or opportunities and includes an assessment of the competitive nature of demand and the supply of potential users for activities in destinations. The time component examines the time constraints that users face in business. The time component examines the time constraints that users face in relation to business models and the availability of events or opportunities based on the time of day, week, or year. The individual component analyzes the needs, skills, and opportunities of transport users and therefore takes into account socio-economic and demographic factors. Accessibility is one of the most important aspects of public transport studies (Mamun, 2011).

2.2.2 Public Bus Transport Accessibility

The public bus transportation system is of great importance as it is a means to convey most commuters, such as the poor (who are the majority) and the disabled, from one location to the other in order to meet their needs (Enoch, Osmanu & Daniels, 2018; Poku-Boansi & Adarkwa, 2013; Krizek & El-Geneidy, 2007). Accessing bus transportation is of great importance, which, in one way or the other, poses effects on the use of public bus transport. Other studies have shown that such a problem will only improve if the use of both public bus transit accessibility and service quality is properly organized (Larwin, 1991). Improving public transport accessibility can be considered an effective way of reducing the external costs and negative side effects of motorized commuting. In 2016, Lättman, Friman, and Olsson (2016) defined access to transportation as a way of living satisfactorily in life using public transit systems. And the studies aim at capturing service quality as the subjective measures that are based on user perception, integrating them with other measures that give the quantitative measures of predetermined parameters (Lättman, Friman & Olsson, 2016). Further studies have also shown that accessing public transport needs conventional independent measures aiming to apprehend a particular component of the concept of accessibility, which is based on the same independent characteristics of a large group of commuters (Muhammad, Mohammad & Torok, 2018).

2.2.3. Service Quality in Public Transport System

The aim of transport research should not be limited to theoretical analysis, but should include the development of practical tools capable of improving the quality of people's mobility and their daily lives. Improving urban public transport services through effective service quality management and benchmarking can be seen as a major step forward towards achieving that goal (Nwaogbe, Ukaegbu & Calistus, 2013).

Service quality explains the variation between passenger expectations and perceptions of the service received. Research shows that passengers' views of the service type are based on comparisons of good service quality experiences (Rust and Oliver, 1994). Other studies have also demonstrated the impression of a customer's view of service quality in a global entity, implying the measurement of service quality by a degree of relativity in which the customer compares a common experience with a previous experience, generally in word of mouth, campaigns, or personal sales, creating the good quality expected (Bitner & Hubert, 1994; Cravens & Piercy, 2006).

On public transport, it is particularly important to determine and fulfil service expectations because customers are likely to use their own car when this is not met. Since Nigeria's transport policy is intended to create a public instead of a private transport system with the aim of achieving a modal shift towards facilitating public transportation, the availability of public transport services is essential if they offer viable alternatives to private vehicles. To determine differences in service quality (and therefore the necessary interventions), the study is focused on Federal Capital City public transportation services. There are a wide variety of public transport services in the City of Abuja (offered by the private sector or by the public sector with a government subsidy), but a general disappointment persists among all. Only when service quality issues are identified and dealt with in all forms of public transport can modal shift plans be achieved. The objective of this research is to identify major service gaps in the city of Abuja in public transport (Luke & Heyns, 2006).

2.2.3.1. Measures of the SERVQUAL Model

There is various literature that proposes different methods implored to measure and determine the service quality of public transport. The Parasuraman, Zeithaml, and Berry methods are most commonly used (Andreassen & Lervik, 1999). Other literature studies have also revealed the different approaches that can be used in measuring the service quality of public transport systems, introducing the national indices based on customer expectations and perceptions (Johnson 2001). These methods include the SQI, CSI, SERVQUAL, RATER, and RECSA.

The SQI (Service Quality Indexes) is a method developed for measuring the quality of public transport service. This method was discussed in Hensher & Prioni (2002), Hensher et al. (2003), and Eboli & Mazzulla (2007) theories, which stated that the SQI is basically used in different theories and distinct models. It involves using different choice data similar to the customer ratings.

Over time, the Parasuraman et al. (1988) instrument was refined and has been used on two sets of 22 items, which are further categorized into five different parts of service quality, which include; reliability, assurance, tangibility, empathy, and responsiveness. These modalities are used to compare the service gaps between customer expectations and perceptions. The greatest gaps between the five items of the RATER indicate the weakest part of the service quality given to customers of public bus transport users.

However, the RATER has proved to be the most widely used model for measuring the service quality expectations and perceptions of customers. Research has revealed that the RATER model has been used in assessing the service quality of public bus transport in most developing countries. According to Enoch, Osmanu & Daniels (2018), in the research conducted in Ghana, Kumasi to be precise, using the RATER model to measure the service quality of public transport systems, it was confirmed that service gaps were recorded in regards to the reliability and responsiveness, as well as availability (arrival and departure time of bus) of the public transport service system to the commuters, showing that the service quality expectations of the model used supersede the perceptions, which further explains that the score gaps in reliability and empathy of the five dimensions are very large. Another research carried out by Barabino, Deiana & Tilocca (2012) in Cagliari, Italy, applying the SERVQUAL gap scores to analyse the quality of public bus transport services in the Cagliari metropolitan area, a mid-size coastal city in Sardinia, Italy, found that the gap scores from the analysis conducted were very great in terms of cleanliness, proximity of bus stop shelters, availability of buses, about an hour difference for each bus, bus route network, and ticket validation. The results show that the quality of customer expectations does not match the quality of perceptions. In Scotland, Craig, Brian, and Jillian (2016) carried out a research study on bus transport system users using the SERVQUAL model in determining the quality of public transport service provided in Scotland. The research conducted shows the scale measurement comparisons which reveal issues relating to customer perceived convenience, quality of the cabin environment and easy access to usage. The research also explains further how the perceived service quality identified varies depending on socio-economic status, which means commuters of different life stages and experiences have varying attitudes towards the perceptions of the quality of service received. It is further

suggested that understanding the differences in the perceived quality of service will be of great help to the government of Scotland in improving the transport system. Meanwhile, Too & Earl (2009) used the RATER model to measure the quality of service in a smart city in Australia and suggested two items from the five items of dimension, which are responsiveness and reliability, are areas shown to expect improvements. So did Rhandheer, Al-Motawa & Vijay (2011) use the RATER model as well, and from the results obtained from the analysis of the study on quality of service in the Hyderabad and Secunderbad areas of India, considering other studies carried out in those areas, the study reveals that almost all the five items were found to be of great concern except one, which is tangibility. The service gap score shows that responsiveness, reliability, empathy, assurance, and culture need attention and improvements. The difference between customer expectations and perceptions varies primarily by country, the method used, and the type of services provided, which are confined to specific geographical locations within the country. It is suggested to engage in a professional investigation and a thorough understanding of the location to be able to use the results obtained from the investigation to tackle the problems related to service gaps and the quality of service to be provided.

However, there is various research carried out in which the RATER model is mostly used and applied in determining the service quality gap in most developing countries. The service quality was found to be affected by five elements: reliability, extent of service, safety, and affordability, which is called the RECSA model (McKnight, Pagano, & Paaswell, 1986). Ali (2014) applied the RECSA to measure the service quality of the public bus transport system in the city of Abuja to determine the perceptions and expectations of passengers, and the studies resulted in detecting two variables that show the highest service gap score, namely: safety and comfort. Also, the studies made recommendations addressing the factors affecting the service quality of the bus transport system providers on how to solve the problems related to service quality and how to meet passengers' expectations to achieve positive perceived results.

2.2.3.2. Scopes of Service Quality

According to Bergman and Klefsjo (2003), in their research studies, quality is progressively getting to be a key issue within the Western world. One of the reasons for the Japanese industry's success when it comes to transportation systems within the 1970s and 1980s was the early recognition by the Japanese that the concept of quality ought to start from the desires and desires of clients (Bergman & Klefsjo, 2003). This discernment played an imperative part in bringing progress to transport systems (Bergman & Klefsjo, 2003). Nowadays, service quality is more dynamic than ever since service suppliers get it that in the event that they need to remain

in commerce, they must provide customer-perceived esteem. As completion increases worldwide, clients have more options to select from, which leaves them no other option than just service quality to fall back on as they (clients) need to spend their cash, particularly as they look forward to maximizing customer esteem and fulfilment for each dollar spent.

In the research conducted by David and Bwisa (2014) in Kitale Terminus, Kenya, it was stated that service quality and customer satisfaction level can hence be determined by travel time, promptness, clear data, great staff behavior, and security on board, which are traits that signify clients' perceived satisfaction in the use of public transport services.

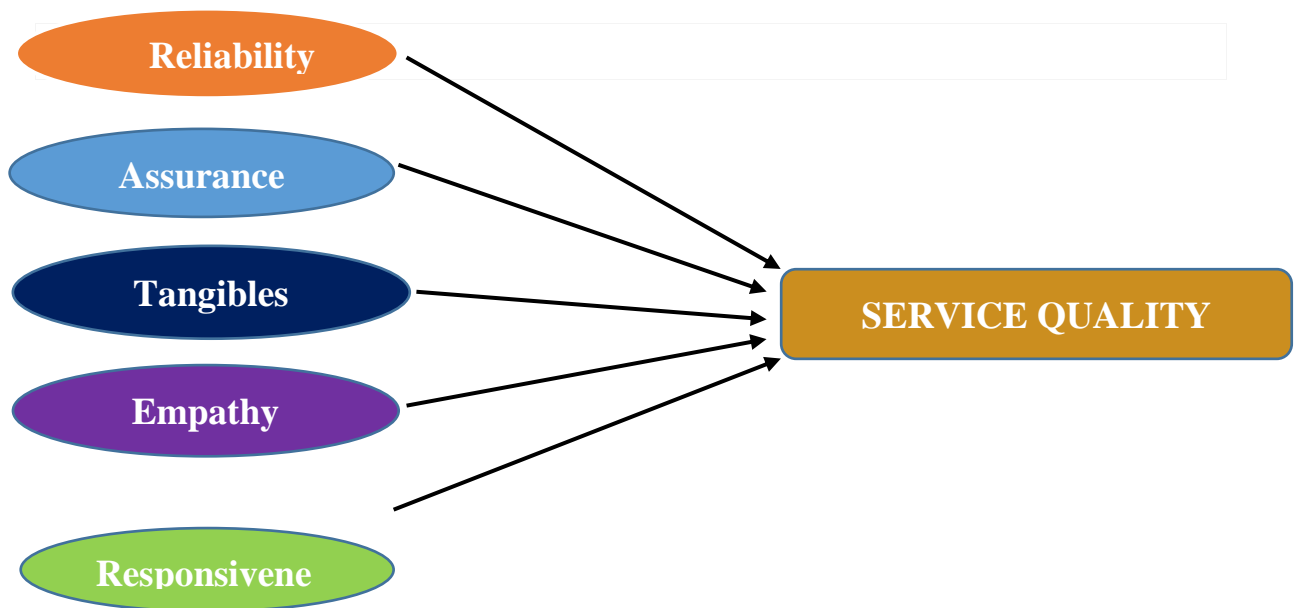
Uolevi & Jarmo (1991) defined service quality in three (3) dimensions, which include physical quality, interactive quality, and corporate quality, stating that these three dimensions are relatively connected to the service quality and the organization and can also be used to measure and analyze the quality of service. Also indicating that the physical quality comprises the physical elements, which includes the quality of materials (products) and the service facilities (support), the interactive quality has to do with the interaction between the customer and the interactive elements of the organization, and the corporate quality shows the historic development of the service organization.

Five important measurements within the public transportation system were established. Customers will utilize a few or all of these measurements to decide the quality of service they are receiving. Analysts too accept that diverse societies will affect the relative importance put on the five measurements. Unmistakable highlights, such as the personnel's or exhibition's appearance, are decently clear to evaluate. Be that as it may, intangible highlights such as security and understanding clients' needs may be remarkably troublesome for the proficient and the client to evaluate. Reliability: The capacity to deliver the promised service in a reliable manner

- ❖ Assurance: the knowledge and courtesy of workers and their ability to express confidence and trust.
- ❖ Tangibility: appearance of physical equipment, equipment, staff and contact materials
- ❖ Empathy: the provision of service, individualized attention to customers
- ❖ Responsiveness: ability to serve customers and provide timely service (R. Luke et al., 2008).

Figure 1:

Five components of service quality



CHAPTER III

Study Area and Methodology

3.1 Introduction

This chapter presents the methods adopted and the approach used in the research study. The administrative seat of Nigeria is the Federal Capital Territory, widely known as Abuja. It occupies an area of approximately 8,000 km² and is bounded on all sides by four states: Kaduna to the north, Niger to the west, Nassarawa to the east, and Kogi to the southwest (Dawan, 2000). The location is between latitude 8° 25' and 9° 20' north of the equator and 7° 45' longitude and 7° 39' east of the meridian of Greenwich. The region is officially composed of six local authorities currently, consisting of the municipal city of Abuja and five others: Abaji, Gwagwalada, Kuje, Bwari, and Kwali (Ali, 2014).

The Federal Capital Territory is part of the West African sub-Guinean region's forest savanna mosaic zone with tropical forest patches. This occurs in the Gwagwa Plains, especially in the rugged terrain of the gullies and the rugged terrain of the south-eastern parts of the territory. The rainy season starts in April and ends in October, when the temperature reaches between 28° C and 30° C during the day and decreases to between 22° C and 23° C at night. The daytime temperature will rise during the dry season to 40° C, dropping to 12° C at night (Wikipedia, 2014).

3.2 Research Methodology

This research study contains both dependent and independent variables, which are used as the specific quality of service given to customers and their satisfaction level. These variables may depend on information gathered with regards to the use of public bus transportation services, such as safety, comfort, buses in good condition, transport company staff behaviour, accessibility of bus stops, and cleanliness. Therefore, for the purpose of this research, a domain of public bus transport in the capital city of Nigeria, Abuja, has been selected for the study. The city consists of five metropolitan areas that make up the overall city, such as Abaji, Gwagwalada, Kuje, Bwari, and Kwali

3.3 Required Data

The type of data needed for this research developed from the questionnaire generally is entailed by the following items listed below:

- i Bus routes
- ii Bus capacities
- iii Travel time
- iv Waiting time
- v Time for bus services

3.3.1 Source of Data Collection

The data collected for this study is obtained from both primary.

3.3.2. Data Collection and Tools

The data collected for this study was obtained from other resources such as previous research or papers, books, qualified researchers, the internet, and other references related to this topic. And also the sharing of online survey links of questionnaires to respondents of the study area to obtain the data from the online survey carried out by the respondents to get the respondents' point of view on the use of public transportation in the capital city of Abuja in Nigeria.

3.3.3 Primary Source of Data Collection

The primary source of data was obtained through the administration of links connected to the online survey forms developed due to the pandemic. The online survey form/questionnaire elicited information on travel time, waiting time, and distance to the bus stops, safety, comfort, and convenience, while data on the capacity of the buses and the span of bus service on each route and bus frequency were also derived from the survey form developed using Google forms.

3.3.4 Process of Data Collection

The method adopted for the study is the purposive sampling and random sampling technique for the administration of well-structured survey forms and questionnaires created using Google Forms online. There was no opportunity to have a structured interview with the heads of operation and planning of the different public high-capacity bus service operators in the city. The survey was carried out online by the respondents of the capital city, through Google Forms, which was shared among the commuters of various areas of the city within the designated study area covered.

3.4 Sample Size and Population Proportion

The study recognizes just one study area, which is the public bus transport system. A purposive sampling was used. A number of models have been developed to estimate sample size. Yamane (1967) provides a simplified formula to calculate sample size with a 95% confidence level and a 5% sampling error assumption. $n = \frac{N}{1 + N(e)^2}$ n = Number of samples N is the population size e is the sampling error. The study used the above formula to obtain a total of 373 respondents representing the volume of passengers moved daily by the various operators on the selected routes to be administered a questionnaire. To determine the proportion of the respondents, Yamane's (1967) sampling method for determining the proportion of respondents was also used, i.e., $n = \frac{395}{N}$ Where n = the daily volume of passengers moved on each route, N = total number of passengers moved on all routes chosen. The sample size was designed according to the population of people using public transportation.

An infinite sample size

$$S = Z^2 * \frac{P(1 - P)}{M^2}$$

Were S: is sample size for infinite population

Z: Z score (were confidence level is assumed 95%)

P: population proportion (assumed to be 50% = 0.5)

M: margin of error (assumed to be 0.05)

S will be equal to 373

The sample size of the needed population is 373. Figure 2, presents the summary of the research method and the relationships between the chapters and sections at every stage. This research employed qualitative and quantitative data to ensure valid and reliable research findings.

3.5 Data Scaling

To obtain appropriate method of analysis, the ordinal scales are used based on the Likert scale.

Table 1:

Data Scaling

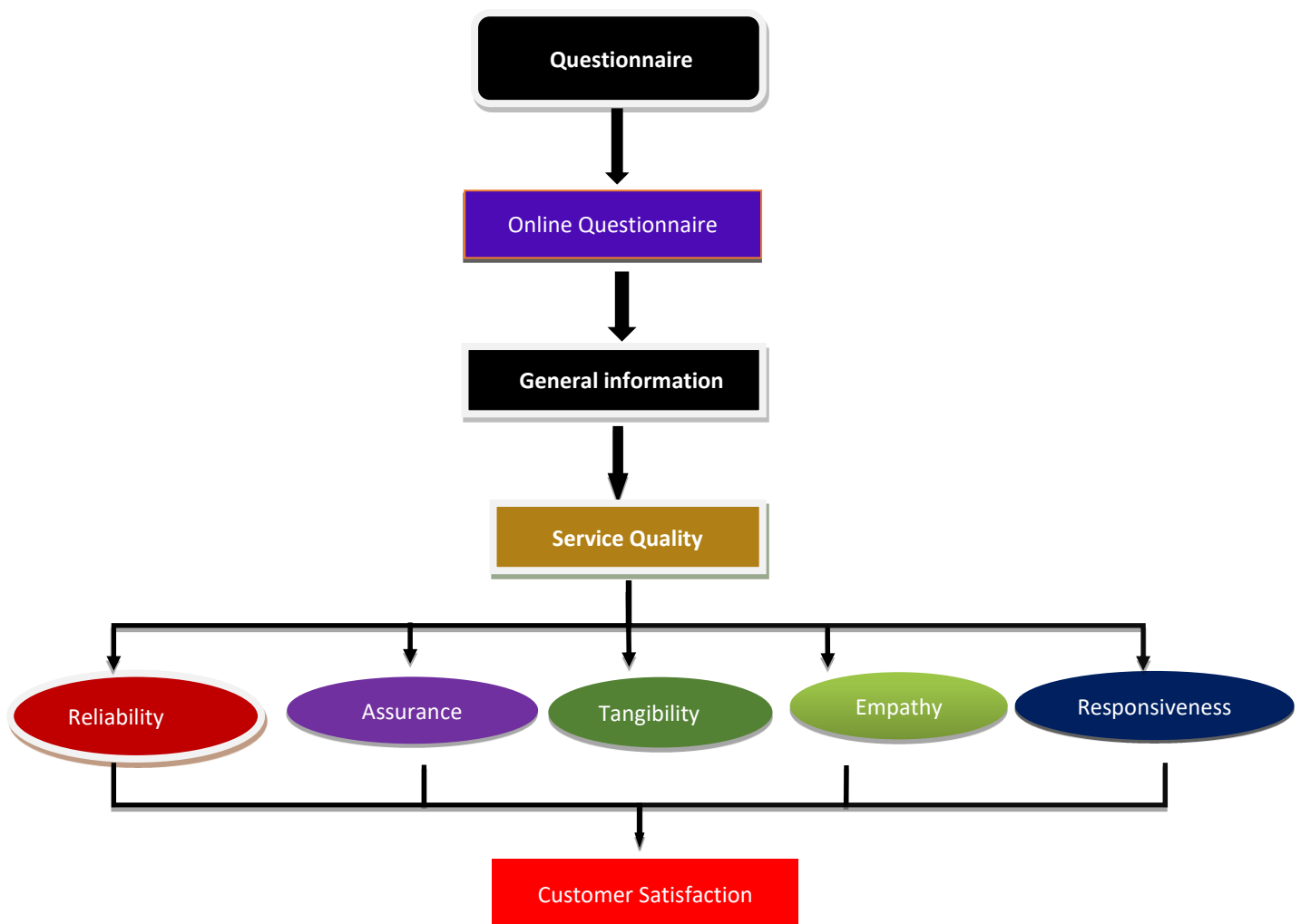
	Extremely Satisfied	Very Satisfied	Satisfied	Moderately Satisfied	Not Satisfied	Extremely Satisfied
Importance Rating Scale	5	4	3	2	1	

3.6 Questionnaire

The questionnaire is divided into two (2) parts, the first of which contains the respondents' general information and data such as their age, gender, qualifications/academic level, experience, and occupation. The second part of the questionnaire has to do with the scaling of the respondents' satisfaction level by the type of bus services rendered to them by the transport authorities in the study area.

Figure 2:

Questionnaire Flow Chart



3.7 Tools for Analysis

The Data was analyzed using (SPSS). The following statistical tools were used:

- 1) Cronbach's Alpha for Reliability Statistics.
- 2) Frequency and Descriptive analysis.
- 3) Pearson correlation coefficient for Validity.
- 4) One-sample T-test

The t-test is used to determine if the mean of an item is significantly different from a hypothesized value of 3 (the middle value of the Likert scale). If the P-value (sig.) is smaller than or equal to the level of significance, = 0.05, then the mean of an item is significantly different from the hypothesized value. The sign of the test value indicates whether the mean is significantly greater or smaller than the hypothesized value. 3, on the other hand, if the P-value (sig.) is greater than the level of significance = 0.05, then the mean of an item is insignificantly different from the hypothesized value 3.

CHAPTER IV

Findings and Discussion

4.1 Introduction

The information obtained in the field has been examined in this section. Separately, each set of questionnaires was analysed. As respondents, a total of 395 bus passengers received a questionnaire with a formal interview for planning and operations managers of large-capacity bus operators in the Federal Capital Territory. The collected information was evaluated according to the goals set for this analysis.

The total number of respondents are 359 in which all are Nigerians, with a percentage of 95.4%, and other nationalities have a percentage of about 4.6%, which are also divided into a frequency of 7 Cameroonians, 3 Ghanaians, 3 Liberians, 1 each, Sierra Leonean, and South African respondents. All respondents' occupations percentages comprises of 18.8% working in the engineering sector and 11.3% in health sector, 30.3% are into businesses, 6.7% respondents are Lawyers, 12.3% are students, meanwhile 20.6% for other fields were divided into (civil servants, teachers, accountants, pensioners, artistes, cashiers, traders, entertainers, military personnel, entrepreneurs, tailor, politicians, makeup artist and security guards).

4.2 Personal Data of Participants

The frequency and percentage of respondents aged 18–24 are shown in Table 2. 9.1% for the age range of less than 18 with 34 respondents, 32.4% of the age range of 18-30 with 123 respondents, 26.8% of the age range of 31-40 with 100 respondents, 17.4% of the age range of 41-50 with 65 respondents, 6.7% of the age range above 60 with 25 respondents.

Table 2:

Frequency and Percentage of Ages of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 18 years	34	9.1	9.1	9.1
	18 to 30 years	123	33.0	33.0	42.1
	31 to 40 years	100	26.8	26.8	68.9
	41 to 50 years	65	17.4	17.4	86.3
	51 to 60 years	26	7.0	7.0	93.3
	Above 60 years	25	6.7	6.7	100.0
	Total	373	100.0	100.0	

Figure 3, depicts the respondents' age range, which includes 9.6% for those under the age of 18, 32.4% for those between the ages of 18 and 30, 26.8% for those between the ages of 31 and 40, 17.4% for those between the ages of 41 and 50, 7% for those between the ages of 51 and 60, and 6.7% for those over 60.

Figure 3:

Percentage of Age of Respondents

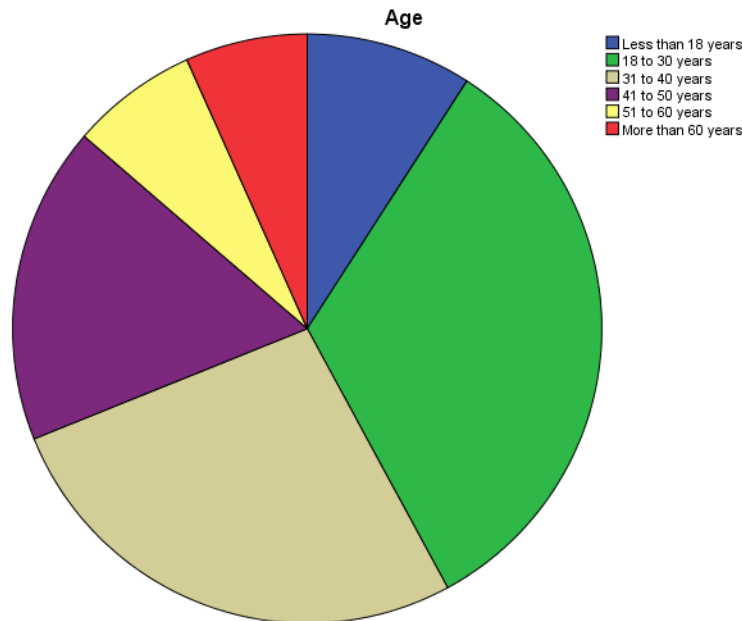


Table 3 shows the percentage of respondents' qualifications, with 2.1% in primary school, 16.1% in high school, 54.4% holding a "bachelor's degree," 22.5% holding a "master's degree," and 4.8% holding a PhD degree. In conclusion, this research will be based on highly educated people.

Table 3:

Frequency and Percentage of Academic Level of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary School	8	2.1	2.1	2.1
	Sec/School	60	16.1	16.1	18.2
	B.Sc.	203	54.4	54.4	72.7
	M.Sc.	84	22.5	22.5	95.2
	Ph.D.	18	4.8	4.8	100.0
	Total	373	100.0	100.0	

Figure 4 depicts the frequency and percentage of qualified respondents. 8 respondents are from primary school, about 2.1%, 60 respondents were from "high school" about 16.1%, and 203 have a "bachelor's degree" at a percentage of 54.4%, and 84 hold "master's degrees" at a percentage of 22.5%. 18 of the respondents, about 4.8%, hold a "Ph.D. degree."

Figure 4:

Percentage of Academic Level of participants

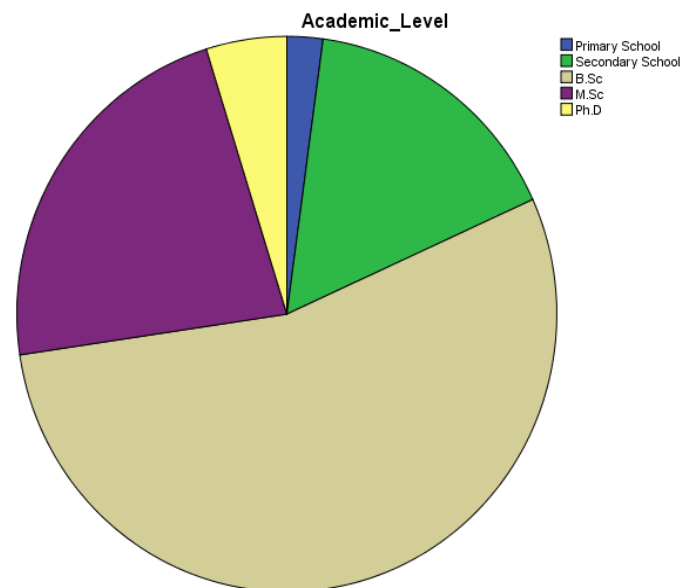


Table 4 shows the frequency and percentage of respondents' occupations in the study area. According to the results, 74 respondents are engineers, 154 are business owners, 101 are medical professionals, and 44 are lawyers. Each of these participants' occupations has percentages of 19.8%, 41.3%, 27.1%, and 11.8%, respectively.

Table 4:

Frequency and Percentage of Occupation of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Engineering	74	19.8	19.8	19.8
	Business	154	41.3	41.3	61.1
	Medical	101	27.1	27.1	88.2
	Law	44	11.8	11.8	100.0
	Total	373	100.0	100.0	

Table 5 displays the frequency and percentage of respondents who have lived in the study area for a number of years. The result shows that 59 participants have an experience of less than 1 year with 15.8% of the total number recorded, 132 of the respondents have an experience of 1–4 years with a percentile of 35.4%, whereas 97 of the respondents have an experience ranging from 5–10 years with 26% of the total number, and 83 respondents have experience above 10 years with 22.3%. From the result analysis, there are 2 responses missing, representing 0.5% of the total number.

Table 5:

Frequency and Percentage of Experience of participants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	59	15.8	15.9	15.9
	1 -4 years	132	35.4	35.6	51.5
	5 - 10 years	97	26.0	26.1	77.6
	10 years above	83	22.3	22.4	100.0
	Total	371	99.5	100.0	
Missing	System	2	.5		
Total		373	100.0		

4.3 Reliability Statistics Analysis

Cronbachs Coefficient is used to measure the overall dimension of the quality of service quality in public transportation.

Table 6:

Cronbach's Coefficient Alpha

Cronbachs Alpha	.900
N of Items	25

Table 6 shows that the value of the Cronbach's coefficient is 0.900, and which clarifies the coefficient alpha of the factors of the dimensions of quality of service. So that shows that the internal consistency is completely on a high level. How Reliable and Valid are the questions in this case?

4.3 Analysis of Service Quality Dimensions

4.3.1 Questions Analysis for Reliability

Table 7, shows the analysis of question No. 1, "The bus always arrives on time." The number of responses are as follows 32, 61, 118, 117 and 45 of which each is allocated to the corresponding likert scale "extremely satisfied", "very satisfied", "satisfied", "moderately satisfied", "not satisfied". This explains that the number of commuters who are "Satisfy" with this reliability question of the Bus is Always on time are higher.

Table 7:

Frequency and Percentage of Q1 "The bus is always on time?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	32	8.6	8.6	8.6
	Very Good	61	16.4	16.4	24.9
	Satisfactory	118	31.6	31.6	56.6
	Fair	117	31.4	31.4	87.9
	Poor	45	12.1	12.1	100.0
	Total	373	100.0	100.0	

As shown in Figure 5, there are 8.6% of responded that, they received "Excellent" services, 16.4% thinks the services were "Very Good ", meanwhile 31.6% responded to be "satisfactory", with the services and 31.4% responded the services rendered are "Fair" , 12.1% responds that the services were "Poor".

Figure 5:

Percentage of Q1 “The bus is always on time?”



Table 8 shows the analysis of question No. 2: "Is the bus efficient and in good condition all the time?" The number of responses are as follows 26, 46, 129, 119 and 53 of which each is allocated to the corresponding likert scale "Excellent", "Very Good", "Satisfactory", "Fair", "Poor". This explains that the number of commuters who are "Satisfy" with this reliability question of the Bus is Always on time are higher on a frequency of 129 and a percentile of 34.6%

Table 8:

Frequency and Percentage of Q2 “The bus is efficient and in good condition all the time?”

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	26	7.0	7.0	7.0
	Very Good	46	12.3	12.3	19.3
	Satisfactory	129	34.6	34.6	53.9
	Fair	119	31.9	31.9	85.8
	Poor	53	14.2	14.2	100.0
	Total	373	100.0	100.0	

As shown in Figure 6 represents 6.9% of the people in the service area responded "Excellent", 12.3% responded the services relating to this question is "Very Good", 34.6% responded "Satisfactory", and 31.9% responded "Fair," and 14.2% "Poor" to the services rendered as regards to Q2 of Reliability of services.

Figure 6:

Percentage of Q2 "The bus is efficient and in good condition all the time?"



Table 9 shows the analysis of question No. 3: "Do passengers book tickets without any trouble?" The frequency of response is as follows: 22, 46, 129, 126 and lastly 50, following the rating scale used for the analysis in the order of "Excellent", "Very Good", "Satisfactory", "Fair" and "Poor". The analysis in the table also shows that there is a higher number of respondents who consider the quality of service in Q3 "satisfactory" and "fair" compared to other ratings.

Table 9:

Frequency and Percentage of Q3 "Passengers book tickets without any trouble?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	22	5.9	5.9	5.9
	Very Good	46	12.3	12.3	18.2
	Satisfactory	129	34.6	34.6	52.8
	Fair	126	33.8	33.8	86.6
	Poor	50	13.4	13.4	100.0
	Total	373	100.0	100.0	

As shown in Figure 7, 5.9% of respondents were "Excellent", 12.3% were "Very Good", 34.6% were "Satisfactory", and 33.8% were "Fair", while 13.4% were "Poor".

Figure 7:

Percentage of Q3 "Passengers book tickets without any trouble?"



Table 10 shows the analysis of question No. 4: "Does staff respond to passengers' requests correctly the first time?" 22 of the respondents were "excellent". 124 of the 45 respondents said "satisfactory" and 133 responded "Fair," while 49 respondents were "Poor".

Table 10:

Frequency and Percentage of Q4 "Staff satisfies passengers' request right the first time?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	22	5.9	5.9	5.9
	Very Good	45	12.1	12.1	18.0
	Satisfactory	124	33.2	33.2	51.2
	Fair	133	35.7	35.7	86.9
	Poor	49	13.1	13.1	100.0
	Total	373	100.0	100.0	

As shown in Figure 7, 5.9% of responses were "excellent", 12.1% were "very good", 33.2% were "satisfactory", and 35.7% were "fair," while 13.1% were "poor."

Figure 8:

Percentage of Q4 "Staff satisfies passengers' request right the first time?"



Table 11 is the analysis of the service quality of question No. 5: "Do bus routes have a scheduled timetable?" 23 of the responses were "excellent". 52 responded "Very Good", 120 responded "Satisfactory", 113 responded "Fair," and 65 responded "Poor".

Table 11:

Frequency and Percentage of Q5 "Bus routes have scheduled timetable?"

		Frequenc y	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	23	6.2	6.2	6.2
	Very Good	52	13.9	13.9	20.1
	Satisfactory	120	32.2	32.2	52.3
	Fair	113	30.3	30.3	82.6
	Poor	65	17.4	17.4	100.0
	Total	373	100.0	100.0	

As shown in Figure 9 that the 6.2% of responses were "Excellent", 13.9% are "Very Good", 32.2% are "Satisfactory", and 30.3% are "Fair" while 17.4% were "Poor".

Figure 9:

Percentage of Q5 "Bus routes have scheduled timetable?"

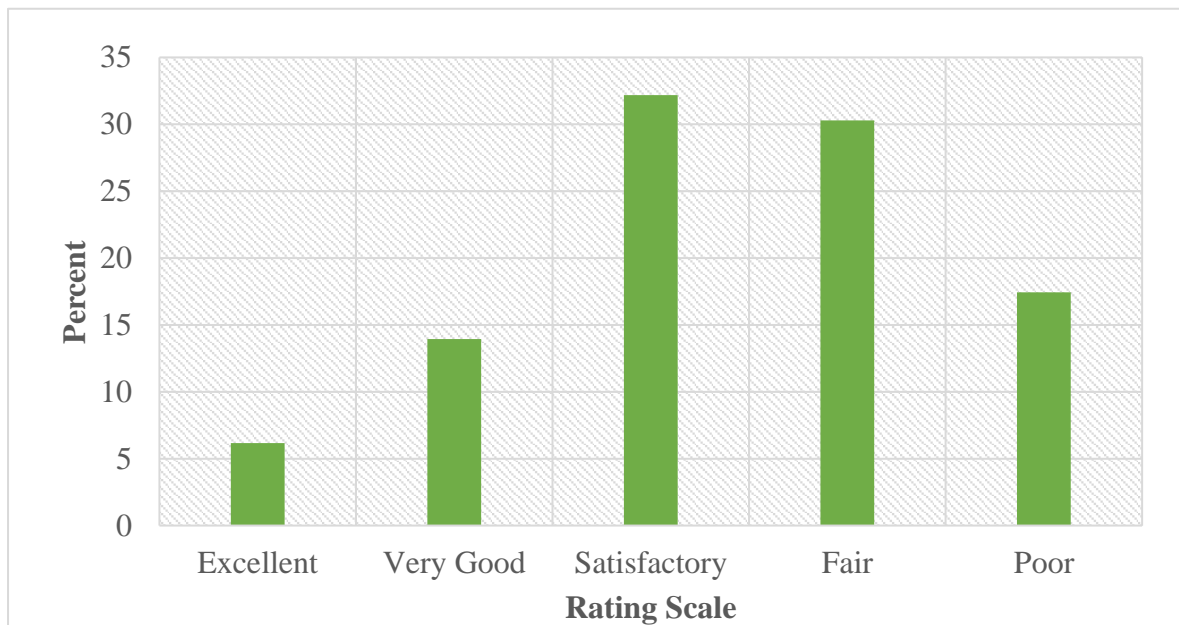


Table 12 summarizes the means and standard deviation of all the five questions related to the reliability of public bus transportation services in the city. The result has shown that public bus users are unsatisfied with the type of service quality they receive while using public bus transportation. Results show that the commuters were not satisfied at all with not having a well-structured time shift for buses ($M = 2.61$). To encourage commuters to use the bus services more frequently, the system needs to be improved considering these factors, improving this factor of dimensions in regards to "reliability" for their travels.

Table 12:

Mean and Std. deviation of Q1-Q5

	Q1	Q2	Q3	Q4	Q5
Mean	2.7802	2.6595	2.6354	2.6193	2.6113
Std. Deviation	1.12160	1.08479	1.05036	1.04719	1.11277

Table 12, Q1, "The bus is always on time." M (mean value) is 2.7802. And from table 13 below, the value is seen to be 47.872, and the value of P is seen to be 0.000, less than the level of significance (0.05). However, the sign of the T value test is positive, so the items in this dimension are considerably greater than M (mean) equal to 3 (the mid value of the Likert scale). It shows that this service quality factor is responsive. In Table 12, Q2: "Is the bus efficient and in good condition all the time?" The value of M (mean) is 2.6595, and in Table 13, T value is equal to 47.349, and P value is 0.000, which is less than the level of significance of 0.05. The T value test is shown to be positive, so the factors that are related to this dimension are expressively greater than the M, which is equal 3 (the mid value of the Likert scale). It shows that the respondents are satisfied with these quality factors.

In Table 12, Q3, "Do passengers book tickets without any trouble?" The average M is 2.6354. Table 13 shows the T value to be 48.457, and the P value is 0.000, which is less than the level of significance, which is found to be 0.05. However, the T value test is shown to be positive, so this shows that the factors of this dimension are ominously greater than the M equal to 3, which is the mid value of the Likert scale. It shows that the responses are positive when quality factors are included. In Table 12, Q4 "Staff satisfies passengers' requests right the first time?" The average M is 2.6193. As seen in table 13, the T value is equal to 48.307, and the P value is equal to 0.000, which is greater than the level of significance = 0.05. The sign of the T value test is positive, so the questions in this factor dimension are significantly greater than the M

equal to 3 (mid value of the Likert scale). This indicates that the respondents are pleased with these factors of service quality.

In Table 12, Q5 "Do bus routes have a scheduled timetable?" The value of M is equal to 2.6113, and table 13 shows that the value of T is equal to 45.321, and the P value is equal to 0.000, which is shown to be greater than the level of significance, which is equal to 0.05. Moreover, the T value test is found to be positive, so the items related to this dimension are significantly more than the mean (M = 3) (the mid value of the Likert scale). It shows that the responses are satisfactory to the commuters with these factors of the quality services.

Table 13:

T value test for Q1-Q5

Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q1	47.872	372	.000	2.78016	2.6660	2.8944
Q2	47.349	372	.000	2.65952	2.5491	2.7700
Q3	48.457	372	.000	2.63539	2.5284	2.7423
Q4	48.307	372	.000	2.61930	2.5127	2.7259
Q5	45.321	372	.000	2.61126	2.4980	2.7246

Table 14 shows the analysis of the Pearson correlation coefficient of validity on every question dimension on "Reliability". Since the value of P is less than the 0.05 level, this means that the Pearson correlation coefficient of this dimension is significant at $\alpha=0.05$. Therefore, this dimension can be considered valid and consistent to quantify the analysis.

Table 14:

Correlation coefficient of Q1-Q5

Correlations						
		Q1	Q2	Q3	Q4	Q5
Q1	Pearson Correlation	1				
Q2	Pearson Correlation	.665**	1			
Q3	Pearson Correlation	.646**	.676**	1		
Q4	Pearson Correlation	.611**	.669**	.724**	1	
Q5	Pearson Correlation	.595**	.563**	.699**	.710**	1

** . Correlation is significant at the 0.01 level (2-tailed).

** . Correlation is significant at the 0.05 level (2-tailed).

4.2.2 Analysis of Assurance Dimension

Table 15 shows the analysis of Q6 "Passengers' safety in their transactions with staff." 11 of the respondents were "excellent". 114 respondents were "very good", 140 responses were "satisfactory" and 111 respondents were "fair", whereas 39 responses were "poor".

Table 15:

Frequency and Percentage of Q6 "Passengers safety in their transactions with staff."

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	11	2.9	2.9	2.9
	Very Good	72	19.3	19.3	22.3
	Satisfactory	140	37.5	37.5	59.8
	Fair	111	29.8	29.8	89.5
	Poor	39	10.5	10.5	100.0
	Total	373	100.0	100.0	

As shown in Figure 10, 2.9% of responses were "excellent", 19.3%, "very good", 37.5%, "satisfactory", and 29.8% were "fair", while 10.5% were "poor".

Figure 10:

Percentage of Q6 "Passengers safety in their transactions with staff."

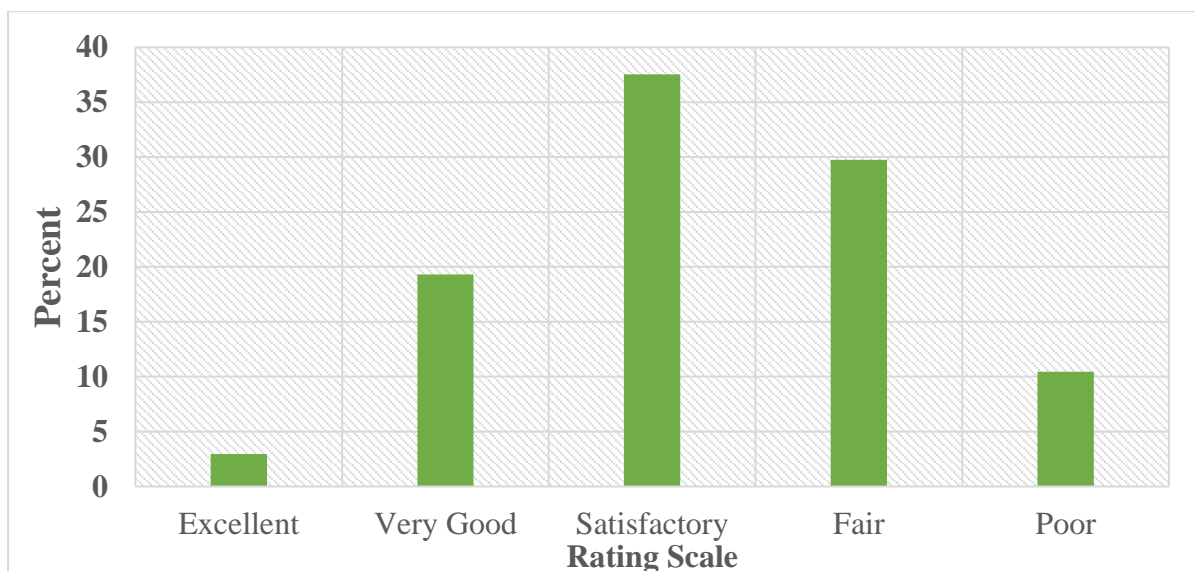


Table 16 shows the analysis Q7 "Passenger luggage is secured?" The responses are in the order of frequency as follows: 44, 66, 116, 102, and 45, corresponding to the following rating scale of "excellent", "very good", "satisfactory", "fair", and "poor".

Table 16:

Frequency and Percentage of Q7 "Passengers luggage are secured?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	44	11.8	11.8	11.8
	Very Good	66	17.7	17.7	29.5
	Satisfactory	116	31.1	31.1	60.6
	Fair	102	27.3	27.3	87.9
	Poor	45	12.1	12.1	100.0
	Total	373	100.0	100.0	

As shown in Figure 11, 11.8% of responds were "excellent", 17.7% were "very good", 31.1% were "satisfactory" and 27.3% were "fair", while 12.1% were "poor".

Figure 11:

Percentage of Q7 "Passengers luggage are secured?"



Table 17 shows the analysis of question No. 8: "Staff are always nice." The responses are in the order of frequency as follows: 13, 58, 125, 140, and 37, corresponding to the following rating scale of "excellent", "very good", "satisfactory", "fair", and "poor".

Table 17:

Frequency and Percentage of Q8 "Staff are always nice?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	13	3.5	3.5	3.5
	Very Good	58	15.5	15.5	19.0
	Satisfactory	125	33.5	33.5	52.5
	Fair	140	37.5	37.5	90.1
	Poor	37	9.9	9.9	100.0
	Total	373	100.0	100.0	

As shown in Figure 12, 3.5% of responds were "excellent," 15.5% were "very good," 33.5% were "satisfactory," and 37.5% were "fair," while 9.9% were "poor".

Figure 12:

Percentage of Q8 "Staff are always nice?"

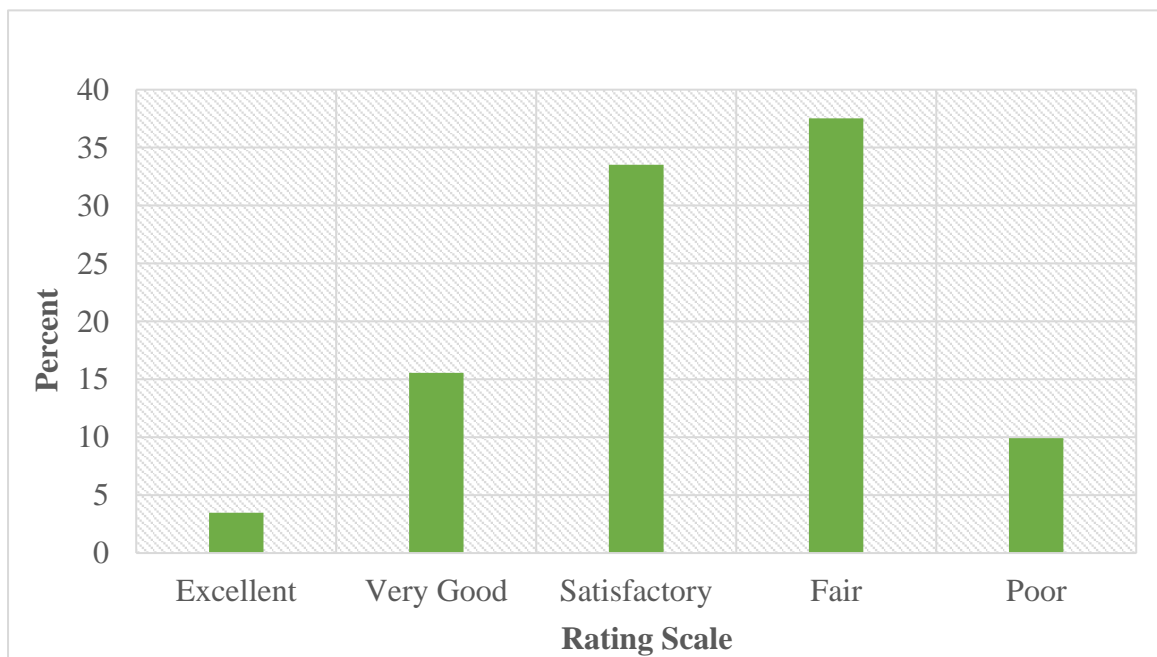


Table 18 shows the analysis of question No. 9: "Do staff have in-depth knowledge of their work descriptions?" The responses are in the order of frequency as follows: 14, 49, 126, 146, and 38, corresponding to the following rating scale of "excellent", "very good", "satisfactory", "fair", and "poor".

Table 18:

Frequency and Percentage of Q9 "Staff have in-depth knowledge of their work description?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	14	3.8	3.8	3.8
	Very Good	49	13.1	13.1	16.9
	Satisfactory	126	33.8	33.8	50.7
	Fair	146	39.1	39.1	89.8
	Poor	38	10.2	10.2	100.0
	Total	373	100.0	100.0	

As shown in Figure 13, 3.8% of respondents were "excellent", 13.1% were "very good", 33.8% were "satisfactory", and 39.1% were "fair", while 10.2% were "poor".

Figure 13:

Percentage of Q9 "Staff have in-depth knowledge of their work description?"



Table 19 is the analysis of question No. 10: "Do passengers have confidence in staff behaviour?" 13 of the responses were "Excellent", 48 responded "Very good", 127 responses were "satisfactory" and 138 responses were "Fair," while 47 responded "poor".

Table 19:

Frequency and Percentage of Q10 "Staff behaviour gives confidence to passengers?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	13	3.5	3.5	3.5
	Very Good	48	12.9	12.9	16.4
	Satisfactory	127	34.0	34.0	50.4
	Fair	138	37.0	37.0	87.4
	Poor	47	12.6	12.6	100.0
	Total	373	100.0	100.0	

As shown in Figure 14, 3.5% of respondents were "excellent", 12.9% were "very good", 34% were "satisfactory" and 37% were "fair", while 12.6% were "poor".

Figure 14:

Percentage of Q10 "Staff behaviour gives confidence to passengers?"



The results show that commuters were dissatisfied with the quality of service they received when taking public transportation. The results also show that the commuters don't have a safe transaction with staff as M is equal to 2.7453. By improving this aspect of the assurance dimensions of service quality, individuals may be encouraged to use public transport more frequently for their movements.

Table 20:

Mean and Std. deviation of Q6, Q7, Q8, Q9 and Q10

	Q6	Q7	Q8	Q9	Q10
Mean	2.7453	2.8981	2.6515	2.6113	2.5764
Std. Deviation	.98210	1.18245	.97370	.96530	.98247

As shown in Table 20, Q6 "Passengers' safety in their transactions with staff," the M is equal to 2.7453, and Table 21 shows the value of T to be equal to 53.987, and the P value is 0.000, which is less than the level of significance of 0.05. However, the T value is found to be positive, indicating that the items related to this dimension are greater than M equal to 3 (considered the Likert scale's midpoint). It shows that the respondents are satisfied with these quality factors. In Table 20, Q7 "Passengers' luggage is secured?", shows the mean (M) to be equal to 2.8981, and in Table 21, the T value is 47.336, and the P value is 0.000, which is less than the level of significance = 0.05. Moreover, the sign of the T value test is positive, so the items related to this dimension are considerably greater than the M = 3 (which is the mid value of the Likert scale). It shows that the respondents are satisfied with these factors of service quality.

In Table 20, Q8 "Staff are always nice?" the mean M is 2.6515. And the T value shown in table 21, is equal to 52.592, and the P value is 0.000, which is less than the level of significance = 0.05. Also, the sign of the T value test is positive, so the items related to this dimension are greater than the M equal to 3 (since M = 3 is the mid value of the Likert scale). It shows that the passengers are satisfied with these factors of service quality dimensions.

In Table 20, Q9 "Do staff have in-depth knowledge of their work descriptions?" the mean M is equal to 2.6113, and in Table 21 below, the value of T is equal to 52.245, and the P value is 0.000, which is greater than the level of significance of 0.05. The sign of the T value test is positive, so the question related to this dimension is unarguably greater than M equal to 3 (as the Likert scale's middle value). It shows that the respondents are satisfied with this service quality.

In Table 20, Q10 "Do bus routes have a scheduled timetable?" the mean M is equal to 2.5764, and in Table 21, the T value is equal to 50.646, and the P value is 0.000, which is greater than the level of significance of 0.05. Moreover, the sign of the T-value test is positive, so the items related to this dimension are significantly less than the M = 3 (mid value of the Likert scale). It shows that the respondents are satisfied with these factors.

Table 21:

T value test of Q6, Q7, Q8, Q9 and Q10

Test Value = 0						
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q6	53.987	372	.000	2.74531	2.6453	2.8453
Q7	47.336	372	.000	2.89812	2.7777	3.0185
Q8	52.592	372	.000	2.65147	2.5523	2.7506
Q9	52.245	372	.000	2.61126	2.5130	2.7095
Q10	50.646	372	.000	2.57641	2.4764	2.6764

Table 22 shows the analysis of the Pearson correlation coefficient to check for the validity of the items related to these dimensions. The P values presented below are less than the 0.05 level, so the Pearson coefficient of these factors is significant at the level of 0.05. In conclusion, we can say that the dimensions are valid and also consistent for measuring the quality of service.

Table 22:

Correlation coefficient of Q6, Q7, Q8, Q9 and Q10

Correlations						
		Q6	Q7	Q8	Q9	Q10
Q6	Pearson Correlation	1				
Q7	Pearson Correlation	.704**	1			
Q8	Pearson Correlation	.573**	.518**	1		
Q9	Pearson Correlation	.570**	.448**	.688**	1	
Q10	Pearson Correlation	.551**	.474**	.643**	.702**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

4.3.3 Analysis of Tangibility factors

Table 23 shows the analysis of question No. 11: "Staff members are dressed neatly and smartly?" 39 responded "excellent." 58 responses were "very good", 120 responded "satisfactory" and 125 responded "fair", while 31 responses were "poor".

Table 23:

Frequency and Percentage of Q11 "Staff members are dressed neatly and smartly?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	39	10.5	10.5	10.5
	Very Good	58	15.5	15.5	26.0
	Satisfactory	120	32.2	32.2	58.2
	Fair	125	33.5	33.5	91.7
	Poor	31	8.3	8.3	100.0
	Total	373	100.0	100.0	

As shown in Figure 15, 10.5% of response were "excellent", 15.5% were "very good", 32.2% were "satisfactory" and 33.5% were "fair," while 8.3% were "poor".

Figure 15:

Percentage of Q11 "Staff members are dressed neatly and smartly?"



Table 24 shows analysis of question No. 12: "Do bus companies have a professional appearance?" 48 responded "excellent." 62 responses were "very good", 114 responded "satisfactory" and 115 responded "fair", while 34 responses were "poor".

Table 24:

Frequency and Percentage of Q12 "Bus companies have a professional appearance?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	48	12.9	12.9	12.9
	Very Good	62	16.6	16.6	29.5
	Satisfactory	114	30.6	30.6	60.1
	Fair	115	30.8	30.8	90.9
	Poor	34	9.1	9.1	100.0
	Total	373	100.0	100.0	

As shown in Figure 16, 12.9% responded "excellent", 16.6% were "very good", 30.6% were "satisfactory", and 30.8% were "fair", while 9.1% were "poor".

Figure 16:

Percentage of Q12 "Bus companies have a professional appearance?"



Table 25 shows the analysis of question No. 13: "Do bus companies have adequate waiting areas for passengers?". 24 responded "excellent." 54 responses were "very good", 115 responded "satisfactory" and 114 responded "fair", while 66 responses were "poor".

Table 25:

Frequency and Percentage of Q13 "Bus companies have adequate waiting area for passengers?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	24	6.4	6.4	6.4
	Very Good	54	14.5	14.5	20.9
	Satisfactory	115	30.8	30.8	51.7
	Fair	114	30.6	30.6	82.3
	Poor	66	17.7	17.7	100.0
	Total	373	100.0	100.0	

As shown in Figure 17, 6.4% of responses were "excellent", 14.5% were "very good," 30.8% were "satisfactory," and 30.6% were "fair", while 17.7% were "poor".

Figure 17:

Percentage of Q13 "Bus companies have adequate waiting area for passengers?"

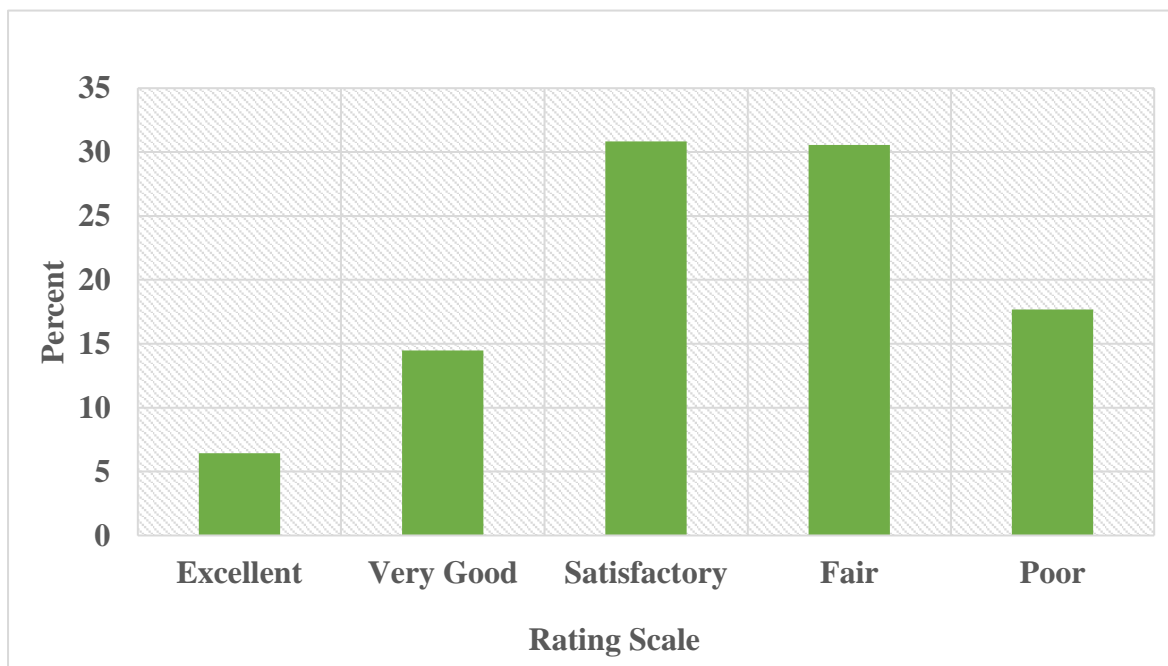


Table 26 shows the analysis of question No. 14: "Do bus companies have spacious seats for passengers on board?" 12 responded "excellent." 55 responses were "very good", 118 responded "satisfactory" and 126 responded "fair", while 62 responses were "poor".

Table 26:

Frequency and Percentage of Q14 "Bus companies have spacious seats for passengers on board?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	12	3.2	3.2	3.2
	Very Good	55	14.7	14.7	18.0
	Satisfactory	118	31.6	31.6	49.6
	Fair	126	33.8	33.8	83.4
	Poor	62	16.6	16.6	100.0
	Total	373	100.0	100.0	

As shown in Figure 18, 3.2% of responds were "excellent", 14.7% were "very good," 31.6% were "satisfactory" and 33.8% were "fair", while 16.6% were "poor"

Figure 18:

Percentage of Q14 "Bus companies have spacious seats for passengers on board?"



Table 27 shows analysis of question No. 15: "Is the ticket office well organized?" 19 responded "excellent." 54 responses were "very good", 125 responded "satisfactory" and 123 responded "fair", while 52 responses were "poor".

Table 27:

Frequency and Percentage of Q15 "The ticket office is well organized?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	19	5.1	5.1	5.1
	Very Good	54	14.5	14.5	19.6
	Satisfactory	125	33.5	33.5	53.1
	Fair	123	33.0	33.0	86.1
	Poor	52	13.9	13.9	100.0
	Total	373	100.0	100.0	

As shown in Figure 19, 5.1% of responses were "excellent", 14.5% were "very good", 33.5% were "satisfactory", and 33% were "fair", while 13.9% were "poor",

Figure 19:

Percentage of Q15 "The ticket office is well organized?"



Table 28 shows analysis of question No. 16: "Are buses maintained properly and kept clean?" 14 responded "excellent." 35 responses were "very good", 114 responded "satisfactory" and 138 responded "fair", while 72 responses were "poor".

Table 28:

Frequency and Percentage of Q16 "Buses are maintained properly and kept clean?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely	14	3.8	3.8	3.8
	Very Good	35	9.4	9.4	13.1
	Satisfactory	114	30.6	30.6	43.7
	Fair	138	37.0	37.0	80.7
	Poor	72	19.3	19.3	100.0
	Total	373	100.0	100.0	

As shown in Figure 20, "Buses are maintained properly and kept clean?" 3.8% of passengers responded "excellent", 9.4% were "very good", 30.6% were "satisfactory", and 37% were "fair" while 19.3% were "poor".

Figure 20:

Percentage of Q16 "Buses are maintained properly and kept clean?"



Table 29 shows analysis of question No. 17: "Is internal space and sitting arrangements comfortable?" 15 responded "excellent." 38 responses were "very good", 92 responded "satisfactory" and 146 responded "fair", while 82 responses were "poor".

Table 29:

Frequency and Percentage of Q17 "Buses internal space and sitting arrangements comfortable?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	15	4.0	4.0	4.0
	Very Good	38	10.2	10.2	14.2
	Satisfactory	92	24.7	24.7	38.9
	Fair	146	39.1	39.1	78.0
	Poor	82	22.0	22.0	100.0
	Total	373	100.0	100.0	

As shown in Figure 4.19, "Buses internal space and sitting arrangements comfortable?" 4% of respondents were "excellent", 10.2% were "very good", 24.7% were "satisfactory," and 39.1% were "fair", while 22% were "poor".

Figure 21:

Percentage of Q17 "Buses internal space and sitting arrangements comfortable?"

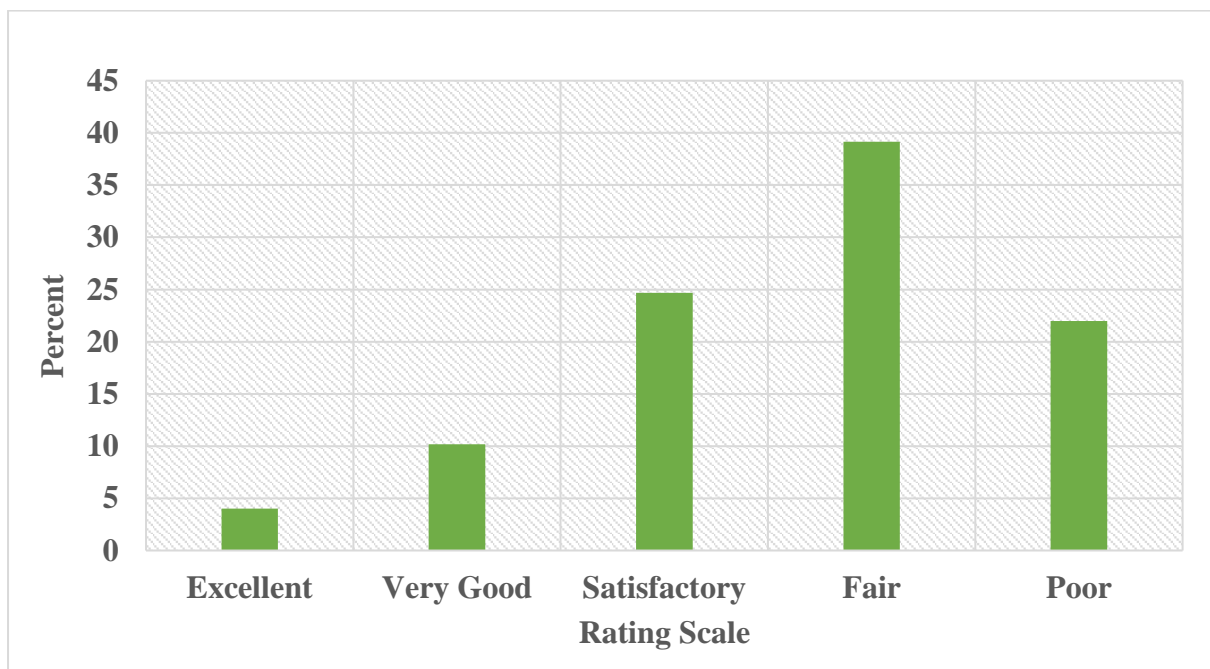


Table 30. The means and standard deviations values of service quality factors are related to the factors of tangibility dimension, and the results show that the users were not satisfied with these factors of service quality when they used the public transportation system. The results also show that passengers don't feel safe in their transactions with the staff, as the mean M value is equal to 2.0286. Commuters may be encouraged to use public bus transport more frequently if these factors are improved.

Table 30:

Mean and Std. deviation of Q11, Q12, Q13, Q14, Q15, Q16 and Q17

	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Mean	2.8633	2.9330	2.6139	2.5416	2.6381	2.4129	2.3512
Std. Deviation	1.10719	1.16319	1.12690	1.03514	1.05257	1.02183	1.05621

As shown in Table 30, Q11 "Staff members are dressed neatly and smartly", the mean value is 2.8633, and in Table 31, the value of T is equal to 49.945, and the value of P is 0.000, which is less than the level of significance (0.05). However, the T value test is positive, so the items related to these factors are greater than the $M = 3$ (mid value of the Likert scale). Which shows that the responses are satisfactory with these quality factors.

In Table 30, Q12 "Do bus companies have a professional appearance?" The mean value M is equal to 2.9330, and in Table 31, the T value is 48.698, and the P value is 0.000, which is less than the level of significance = 0.05. So, therefore, since the T value test is positive, this shows that the factors are greater than the mean $M = 3$ (known as the mid value of the Likert scale). This shows the services rendered are satisfactory.

In Table 30, Q13, "Do bus companies have adequate waiting areas for passengers?" The mean M value from the table is 2.6139 on average. And in table 31, the T is equal to 44.798, and the P value is 0.000, which is less than the level of significance of 0.05. Moreover, the sign of the T value test is positive, so the items related to this dimension are significantly greater than the mid value of the likert scale, which is M is equal to 3. It shows that the respondents received satisfactory services.

In Table 31, Q14, "Do bus companies have spacious seats for passengers on board?" The mean $M = 2.5416$ and in Table 31, the T value is equal to 47.419 and the P value is 0.000, which is greater than the level of significance of 0.05. The sign of the T value test is positive, so the items related to this dimension are significantly greater than the M equal to 3 (as the mid value of the Likert scale). It shows that the services are satisfactory.

In Table 30, Q15, "Is the ticket office well organized?" The mean $M = 2.6381$, the T value is equal to 45.605, and the P value is 0.000, which is greater than the level of significance of 0.05. Moreover, the T value test is positive, so these dimensions are shown to be significantly less than the M, which is 3, known as the mid value of the Likert scale. It shows the respondents' satisfaction with these quality factors.

In Table 30, Q16 "Are buses maintained properly and kept clean?" The mean value M equal to 2.4129, in Table 31, the T value is equal to 48.405 and the P value is 0.000, which is greater than the level of significance of 0.05. Meanwhile, the sign of the T value test is positive, this dimension are significantly less than the M equal to 3 (mid value of the Likert scale). It shows the service quality are satisfactory to the respondents.

In Table 31, Q17, "Is the bus's internal space and seating arrangements comfortable?" The mean $M = 2.3512$, and in Table 31, the T value is equal to 42.993, and the P value is equal to 0.000, which is greater than the level of significance of 0.05. However, the value of the T test is positive; these service dimensions are significantly less than the mid value of the Likert scale as M equals to 3. This shows that the quality factors are satisfactory to the public.

Table 31:

T value test of Q11, Q12, Q13, Q14, Q15, Q16 and Q17

Test Value = 0						
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q11	49.945	372	.000	2.86327	2.7505	2.9760
Q12	48.698	372	.000	2.93298	2.8145	3.0514
Q13	44.798	372	.000	2.61394	2.4992	2.7287
Q14	47.419	372	.000	2.54155	2.4362	2.6469
Q15	48.405	372	.000	2.63807	2.5309	2.7452
Q16	45.605	372	.000	2.41287	2.3088	2.5169
Q17	42.993	372	.000	2.35121	2.2437	2.4587

Table 32 shows the analysis of the tangibility dimension factors on the Pearson correlation coefficient of validity. The P values are less than the 0.05 level, so, therefore, the Pearson coefficient of these factors is significant at the point when $\alpha=0.05$. This means the dimensions are valid and consistent to measure the quality of service of the use of public bus transport systems.

Table 32:

Correlation coefficient of Q11, Q12, Q13, Q14, Q15, Q16 and Q17

Correlations		Q11	Q12	Q13	Q14	Q15	Q16	Q17
Q11	Pearson Correlation	1						
Q12	Pearson Correlation	.859*	1					
Q13	Pearson Correlation	.632*	.657*	1				
Q14	Pearson Correlation	.400*	.408*	.468*	1			
Q15	Pearson Correlation	.613*	.606*	.564*	.568	1		
Q16	Pearson Correlation	.333*	.369*	.440*	.683*	.529*	1	
Q17	Pearson Correlation	.303*	.336*	.444*	.696*	.492*	.787*	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

4.2.4 Analysis of questions related to Empathy

Table 32 shows analysis of question No. 18: "Bus companies always consider passengers' interests?" 23 of the respondents were "excellent", 62 responses were "very good." 140 responded "satisfactory." And 109 response were "fair," while 39 responded "poor".

Table 33:

Frequency and Percentage of Q18 "Bus companies always considers passengers interest?"

		Freque ncy	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	23	6.2	6.2	6.2
	Very Good	62	16.6	16.6	22.8
	Satisfactory	140	37.5	37.5	60.3
	Fair	109	29.2	29.2	89.5
	Poor	39	10.5	10.5	100.0
	Total	373	100.0	100.0	

As shown in Figure 22, 6.2% of responses were "excellent", 16.6% were "very good", 37.5% were "satisfactory" and 29.2% were "moderately satisfied", while 10.5% were "poor".

Figure 22:

Percentage of Q18 "Bus companies always considers passengers interest?"



Table 34 shows the analysis of question No. 19, "Bus companies' convenient operating hours?" 27 of the responded "excellent", 58 responded "very good", 120 responded "satisfactory". And 136 responses were "fair", while 32 responses were "poor".

Table 34:

Frequency and Percentage of Q19 "Bus companies operating hours are dependable?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	27	7.2	7.2	7.2
	Very Good	58	15.5	15.5	22.8
	Satisfactory	120	32.2	32.2	55.0
	Fair	136	36.5	36.5	91.4
	Poor	32	8.6	8.6	100.0
	Total	373	100.0	100.0	

As shown in Figure 23, 7.2% of passengers responded "excellent", 15.5% were "very good", 32.2% were "satisfactory" and 36.5% were "fair" while 8.6% were "poor"

Figure 23:

Percentage of Q19 "Bus companies operating hours are dependable?"



Table 35 shows analysis of question No. 20: "Staff are always polite." 30 of the responses were recorded "excellent", 57 of commuters responded "very good", 133 responded "satisfactory." And 120 responses were fair", while 33 responses were "poor".

Table 35:

Frequency and Percentage of Q20 "Staff are kind to passengers?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	30	8.0	8.0	8.0
	Very Good	57	15.3	15.3	23.3
	Satisfactory	133	35.7	35.7	59.0
	Fair	120	32.2	32.2	91.2
	Poor	33	8.8	8.8	100.0
	Total	373	100.0	100.0	

As shown in Figure 24, 8.0% of responses were "excellent" 15.3% were "very good" 35.7% were "satisfactory" and 32.2% were "fair" while 8.8% were "poor"

Figure 24:

Percentage of Q20 "Staff are kind to passengers?"



Table 36 shows the analysis of question No. 21 ("Easy to find and access the ticket office/station?"). 20 of the responses were recorded "excellent", 55 of commuters responded "very good", 109 responded "satisfactory." And 126 responses were fair", while 63 responses were "poor".

Table 36:

Frequency and Percentage of Q21 "Easy access to online booking facilities?"

		Freque ncy	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	20	5.4	5.4	5.4
	Very Good	55	14.7	14.7	20.1
	Satisfactory	109	29.2	29.2	49.3
	Fair	126	33.8	33.8	83.1
	Poor	63	16.9	16.9	100.0
	Total	373	100.0	100.0	

As shown in Figure 25, 5.4% of respondents were "extremely satisfied", 14.7% were "very satisfied", 29.2% were "satisfied", and 33.8% were "moderately satisfied," while 16.9% were "not satisfied."

Figure 25:

Percentage of Q21 "Easy access to online booking facilities?"



Table 37 this finding indicates that commuters were satisfied with the service quality factors related to the empathy dimension by using the public bus transportation system. Results also shows that it is safe for passengers to make their transactions with staff of the transport systems ($M = 2.0286$). This factor, if improved, might encourage commuters to use more frequently the public bus transportation to about their businesses.

Table 37:

Mean and Std. deviation of Q18, Q19, Q20 and Q21

	Q18	Q19	Q20	Q21
Mean	2.7882	2.7641	2.8150	2.5791
Std. Deviation	1.03989	1.04886	1.05779	1.09608

As shown in Table 37, Q18, "Do bus companies always consider passengers' interests?" The value of the mean M is 2.7882, whereas in Table 38, the T test value is equal to 51.784, and the P value is 0.000, which is less than the level of significance = 0.05. However, the sign of the T test value being positive, this means that the factors relating to this dimension are significantly more than the $M = 3$, considered as the mid value of the Likert scale. These factors are satisfactory in terms of the quality of transport service. In Table 37, Q19 "Bus companies' convenient operating hours?" The mean $M = 2.7641$, while in Table 38 the value of the T test analysis is 50.896, and the P value is 0.000, which is less than the level of significance = 0.05. Moreover, the sign of the T value test is positive, so the items related to this dimension are significantly greater than the $M = 3$ (mid value of the Likert scale). It shows that the respondents are satisfied with these quality factors.

In Table 37, Q20, "Staff are always polite?" As shown in table 38, the average M is 2.8150. The T value is equal to 51.397, and the P value is 0.000, which is less than the level of significance of 0.05. Meanwhile, the sign of the T value test is positive, so the items related to this dimension are significantly greater than the $M = 3$, mid value of the Likert scale. It shows that the passengers are satisfied with these service quality factors. In Table 38, Q21 "Easy to find and access the ticket office/station?" The value of the mean M is 2.5791, in Table 38 the T value is equal to 45.444, and the P value is 0.000, which is greater than the level of significance = 0.05. The sign of the T value test is positive. However, the items related to this dimension are significantly greater than the $M = 3$, the expected mid value on the Likert scale. It means that the respondents are equally satisfied with these dimensions of service quality.

Table 38: The Values of T test of Q18, Q19, Q20 and Q21

Test Value = 0						
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q18	51.784	372	.000	2.78820	2.6823	2.8941
Q19	50.896	372	.000	2.76408	2.6573	2.8709
Q20	51.397	372	.000	2.81501	2.7073	2.9227
Q21	45.444	372	.000	2.57909	2.4675	2.6907

Table 39 shows the analysis of the empathy dimension factors on the Pearson correlation coefficient of validity. The P values are less than the 0.05 level, so, therefore, the Pearson coefficient of these factors is significant at the point when $\alpha=0.05$. This means the dimensions are valid and consistent to measure the quality of service of the use of public bus transport systems.

Table 39:

Correlation coefficient of Q18, Q19, Q20 and Q21

		Q18	Q19	Q20	Q21
Q18	Pearson Correlation	1			
Q19	Pearson Correlation	.738**	1		
Q20	Pearson Correlation	.727**	.743**	1	
Q21	Pearson Correlation	.676**	.729**	.760**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

4.2.5 Analysis of Dimensions of Responsiveness

Table 40 shows the analysis of question No. 22: "Does staff provide individualized attention to help customers?" 17 of the responses were recorded "excellent", 84 of commuters responded "very good", 115 responded "satisfactory." And 107 responses were fair", while 50 responses were "poor".

Table 40:

Frequency and Percentage of Q22 "Staff are available to give help to customers?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	17	4.6	4.6	4.6
	Very Good	84	22.5	22.5	27.1
	Satisfactory	115	30.8	30.8	57.9
	Fair	107	28.7	28.7	86.6
	Poor	50	13.4	13.4	100.0
	Total	373	100.0	100.0	

As shown in Figure 26, 4.6% of the participants responded "excellent", 22.5% were "very good", 30.8% were "satisfactory", and 28.7% were "fair", while 13.4% were "poor".

Figure 26:

Percentage of Q22 "Staff are available to give help to customers?"



Table 41 shows the analysis of question No. 23: "Do bus companies provide timely and efficient services?" 24 of the responses were recorded "excellent", 54 of commuters responded "very good", 118 responded "satisfactory." And 131 responses were fair", while 46 responses were "poor".

Table 41:

Frequency and Percentage of Q23 "Bus companies provide timely and efficient services?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	24	6.4	6.4	6.4
	Very Good	54	14.5	14.5	20.9
	Satisfactory	118	31.6	31.6	52.5
	Fair	131	35.1	35.1	87.7
	Poor	46	12.3	12.3	100.0
	Total	373	100.0	100.0	

As shown in Figure 27, 6.4% of commuters responses were "excellent", 14.5% were "very good", 31.6% were "fair", and 35.1% were "fair," while 12.3% were "poor",

Figure 27:

Percentage of Q23 "Bus companies provide timely and efficient services?"

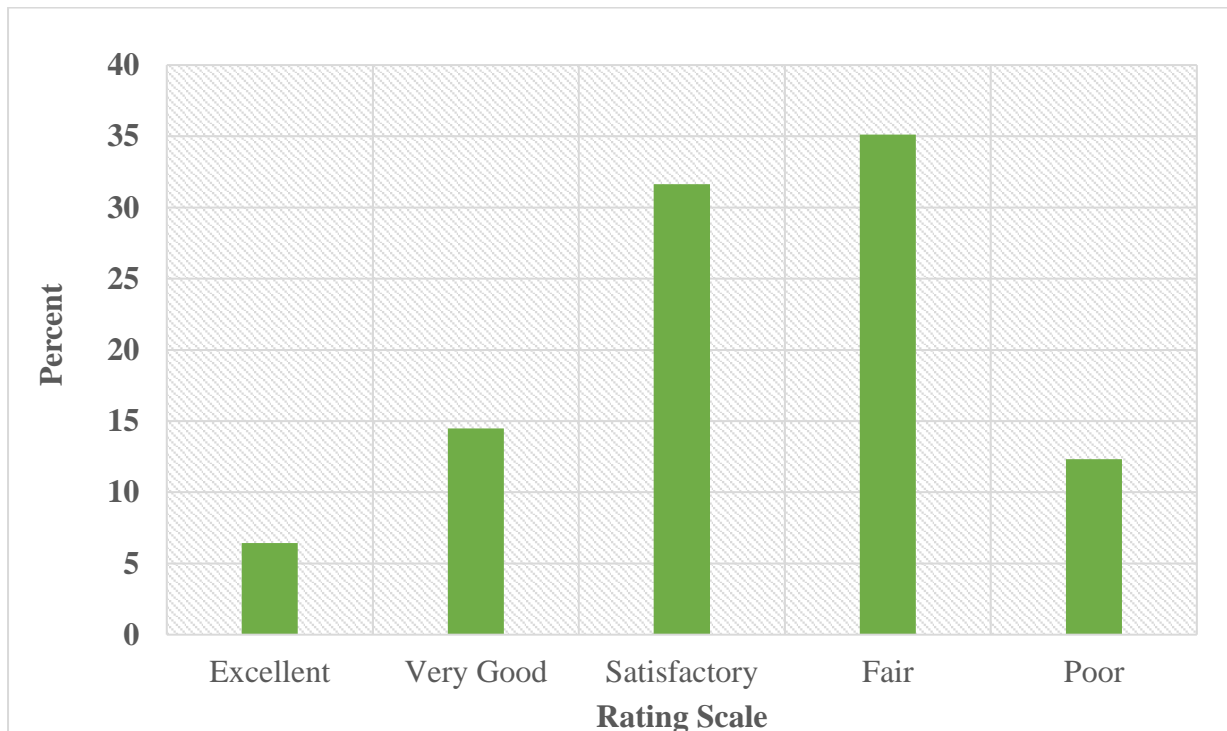


Table 42 shows the analysis of question No. 24: "Communication with staff is clear and helpful." 27 of the responses were recorded "excellent", 67 of commuters responded "very good", 127 responded "satisfactory." And 110 responses were fair", while 42 responses were "poor".

Table 42:

Frequency and Percentage of Q24 "Communication with staff is clear and helpful"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	27	7.2	7.2	7.2
	Very Good	67	18.0	18.0	25.2
	Satisfactory	127	34.0	34.0	59.2
	Fair	110	29.5	29.5	88.7
	Poor	42	11.3	11.3	100.0
	Total	373	100.0	100.0	

As shown in Figure 28, 7.2% of participants responded "excellent," 18% were "very good", 34% were "fair", and 29.5% were "fair", while 11.3% were "poor",

Figure 28:

Percentage of Q24 "Communication with staff is clear and helpful"



Table 43 shows analysis of question No. 25: "Staff are always willing to help passengers." 47 of the responses were recorded "excellent", 80 of commuters responded "very good", 107 responded "satisfactory." And 97 responses were fair", while 42 responses were "poor".

Table 43:

Frequency and Percentage of Q25 "Staff are always willing to help passengers?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	47	12.6	12.6	12.6
	Very Good	80	21.4	21.4	34.0
	Satisfactory	107	28.7	28.7	62.7
	Fair	97	26.0	26.0	88.7
	Poor	42	11.3	11.3	100.0
	Total	373	100.0	100.0	

As shown in Figure 29, 12.6% of respondents were "excellent", 21.4% were "very good", 28.7% were "satisfactory", and 26% were "fair", while 11.3% were "poor".

Figure 29:

Percentage of Q25 "Staff are always willing to help passengers?"



Table 44 this result indicates that commuters were satisfied with the service quality factors when using public bus transportation. Results show that commuters feel safe in their transactions with staff ($M = 2.0286$). By improving this factor, commuters and individuals may be encouraged to more frequently use public bus transportation in their travels.

Table 44:

Mean and Std. deviation of Q22, Q23, Q24 and Q25

	Q22	Q23	Q24	Q25
Mean	2.7614	2.6756	2.8043	2.9812
Std. Deviation	1.08480	1.06981	1.08597	1.19685

As shown in Table 44, Q22, "Does staff provide individualized attention to help customers?" The value of the mean M is 2.7614. Meanwhile, in Table 45, the T test value is equal to 49.163, and the P value is 0.000, which is less than the level of significance = 0.05. However, the sign of the T test value being positive, this means that the factors relating to this dimension are significantly more than the $M = 3$, considered as the mid value of the Likert scale. These factors are satisfactory in terms of the quality of transport service. In Table 44, Q23, "Do bus companies provide timely and efficient services?" The mean $M = 2.6756$, while in Table 45 the value of the T test analysis is 48.303, and the P value is 0.000, which is less than the level of significance = 0.05. Moreover, the sign of the T value test is positive, so the items related to this dimension are significantly greater than the $M = 3$ (mid value of the Likert scale). It shows that the respondents are satisfied with these quality factors.

In Table 44, Q24, "Communication with staff is clear and helpful," As shown in table 45, the average M is 2.8043. The T value is equal to 51.397, and the P value is 0.000, which is less than the level of significance of 0.05. Meanwhile, the sign of the T value test is positive, so the items related to this dimension are significantly greater than the $M = 3$, mid value of the Likert scale. It shows that the passengers are satisfied with these service quality factors. In Table 44, Q25, "Easy to find and access the ticket office/station?" The value of the mean M is 2.9812. In Table 45, the T value is equal to 48.107, and the P value is 0.000, which is greater than the level of significance = 0.05. The sign of the T value test is positive. However, the items related to this dimension are significantly greater than the $M = 3$, the expected mid value on the Likert scale. It means that the respondents are equally satisfied with these dimensions of service quality.

Table 45:*T value test of Q22, Q23, Q24 and Q25*

Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q22	49.163	372	.000	2.76139	2.6509	2.8718
Q23	48.303	372	.000	2.67560	2.5667	2.7845
Q24	49.872	372	.000	2.80429	2.6937	2.9149
Q25	48.107	372	.000	2.98123	2.8594	3.1031

Table 46 shows the analysis of the Responsiveness dimension factors on the Pearson correlation coefficient of validity. The P values are less than the 0.05 level, so, therefore, the Pearson coefficient of these factors is significant at the point when $\alpha=0.05$. These means the dimensions are valid and consistent to measure the quality of service of the use of public bus transport systems.

Table 46:*Correlation coefficient of Q22, Q23, Q24 and Q25*

		Q22	Q23	Q24	Q25
Q22	Pearson Correlation	1			
Q23	Pearson Correlation	.742**	1		
Q24	Pearson Correlation	.688**	.725**	1	
Q25	Pearson Correlation	.692**	.604**	.725**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

CHAPTER V

Discussions summary of findings

5.1 Introduction

The key outcomes are discussed in this chapter in relation to the context and the literature review. The views of the investigator are often included as a result of statistical inference, observation, and perception of circumstances experienced during the course of the study. However, research conclusions are drawn on the basis of the findings, and thus, recommendations based on the conclusions have been made. At the end of this chapter, other areas of in-depth study were also suggested. The objectives of this research were based on investigations carried out through an online questionnaire to evaluate commuter satisfaction with the quality of services rendered by the transport authorities in the city.

5.2 Summary

A number of deductions was made from this research and is further discussed in the following paragraphs below;

- i. The study shows that there is adequate dedication of routes covered by mini buses and high-capacity bus transportation services, which ensures proper organization among the different types of transport to meet the requirements of commuters. However, in the study area, this policy enforcement has been neglected by the government, such that private car owners, taxis, and other smaller transport systems use the routes committed to high-capacity bus transport services.
- ii. This study also shows clearly that the respondents of the study area are dependent on the public transport system, especially in the morning and evening, to get to work or to their various business areas. And previous studies have shown that the majority of the population depends solely on public transportation systems (Aworemi, Salami, Adewoye, and Illori (2008).
- iii. The research shows that the number of men using public bus transport is higher than women. However, the number of women in business who use public transport is higher than the number of men in the study area.
- iv. The study has also found out that the majority of commuters are very satisfied, while some are moderately satisfied with bus services' "schedule," "routes" and "cost".

CHAPTER VI

Conclusion and Recommendations

6.1. Conclusion

This study is aimed at establishing a wider perspective on the quality of public transport in the city of Abuja. And this was carried out by identifying the major findings which have to do with the level of perceptions of the population in the study area in regards to the quality of transport services rendered, which the results gathered show that the majority of the commuters are dependent on public mobility to either get to work, places of business, school, or entertainment purposes. The results analysis shows most respondents are not comfortable when using public buses, which may be a case of the buses being congested with passengers and their luggage. And also, respondents find the public bus service system unreliable and inefficient, not meeting the standards expected.

The underlying factors identified from the research analysis are: respondent accessibility to public bus transport services, passenger comfort, adequate bus capacity, and areas affected are investigated and measures to improve the bus services are adopted and implemented. This can be done if the policies implemented are strictly complied with and monitored by some law enforcement authorities such as the Federal Road Safety Commission in the FCT-Abuja. There should be a constant check and monitoring on how to improve the quality of service for the city's population by forming an association or body that will be in charge of monitoring public transportation affairs. This can be done yearly, effecting the changes that improve the quality of service to have a smarter and better city to live in.

However, a list of recommendations is found below to further improve the level of service quality of the factors affecting the public bus transport services, which affects the planning agenda of the FCT-Abuja, and which therefore, is important as the high demand for these services can possibly affect the quality of life, development and productivity of the city in general.

6.2. Recommendations

- However, based on the research findings, the following recommendations are made: passenger comfort while using public transport must be enhanced and monitored by the

appointed authorities by making sure that the public bus operators abide by the policies and rules set up to ensure the comfort and relaxation of passengers. At the same time, reducing passenger wait times and walking distances to bus stops in the study area can be considered a form of collaboration. Meanwhile, by doing this, it will also attract private car owners to adopt the use of public buses, which decreases the number of cars used on city roads. Therefore, more roads that link up routes in the city must be constructed and the old ones maintained properly to ensure swift access to different parts of the city and for other commuters who are limited to the use of bus services and are forced to use motorcycles, they will be able to access the city bus services.

- The high increase in the use of motorization causes high rate of traffic congestion, increases the level of pollution, increased consumption of renewable energy, possess a threat to the quality of lives of commuters and high rates of accidents in the city.
- To have a sustainable future in the use of public bus transport, it is important to make available the public bus transportation system a solution to increase commuter satisfaction.
- By making the use of public bus transport available and very accessible to commuters, it will help fulfill their travel demands but attracts other commuters and also make the city more ecological friendly and make a smart city to live in.

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APPENDICES

Appendix A: Questionnaire

**Near East University
Faculty of Civil and Environmental Engineering**

Dear Sir/Madam

I am Serah Onuh, John, a master student at Near East University in the Turkish Republic of Northern Cyprus. I am currently conducting research entitled "SERVQUAL ANALYSIS OF PUBLIC BUS TRANSPORT SERVICES: A CASE STUDY OF ABUJA, NIGERIA.". This study is investigating the customer satisfaction of using public bus transport services in Abuja. These findings can contribute to improving the public transportation system.

In order to achieve the aim of the study successfully, empirical work should be carried out in the context of the Federal Capital Territory, Abuja, using a research questionnaire as a data collection tool. Therefore, your cooperation is required to enable the researcher to obtain adequate and proper data needed for the research. You are kindly requested to complete all sections of the questionnaire. I can also assure you that all the answers and information given will be treated confidentially and anonymity will be maintained. Moreover, it will be used only to serve the aims of the research.

I thank you in advance for the time you devoted, the effort you made, and the consideration you gave in filling out this questionnaire.

With Kind Regards;

SERAH ONUH JOHN

Appendix A

Questionnaire

PART ONE

DETAILS OF THE RESPONDENT

Please kindly fill in the following

1. Name:

.....

Surname

Middle name

First name

2. Gender:

Male

Female

3. Age:

4. Nationality:

Nigerian

Others:

5. Occupation:

6. Years of Work Experience:

Below 1 year

1-4 years

5-10 years

10 years and above

7. Educational Level:

High School

B.Sc.

M. Sc.

Ph. D.

PART TWO

IMPACT RATING

According to your latest travel experience of taking public transport, please rate your satisfaction with each of the service aspects, where 1 represents very dissatisfied, 3 represents neutral and 5 represents very satisfied.

Kindly provide a rating that represents the significance of the factors towards the most effective impact of services on using public transportation.

	Extremely Satisfied	Very Satisfied	Satisfied	Moderately Satisfied	Not Satisfied
Importance Rating Scale	1	2	3	4	5

Reliability

1. The bus is always on time.					
2. The bus is efficient and in condition all the time.					
3. Passengers book tickets without any trouble					
4. Staff satisfies passengers' request right the first time.					
5. Bus routes have scheduled timetable.					

Assurance

1. Passengers safety in their transactions with staff.					
2. Passengers luggage are secured					
3. Staff are always nice					
4. Staff have in-depth knowledge of their work descriptions.					
5. Staff behavior gives confidence to passengers.					

Tangibles

1. Staff members are dressed neatly and smartly.					
2. Bus companies have a professional appearance.					
3. Bus companies have adequate waiting area for passengers.					

4. Bus companies have spacious seats for passengers on board.					
5. The ticket office is well organized					
6. Buses are maintained properly and kept clean.					
7. Buses internal space and sitting arrangements comfortable.					

Empathy

1. Bus companies always considers passengers interest.					
2. Bus companies operating hours are dependable.					
3. Staff are kind to passengers.					
4. Easy access to online booking facilities.					

Responsiveness

1. Staff are available to give help to customers					
2. Bus companies provide timely and efficient services					
3. Communication with staff is clear and helpful.					
4. Staff are always willing to help passengers.					

Reliability: The capacity to deliver the promised service in a reliable manner

Assurance: the knowledge and courtesy of workers and their ability to express confidence and trust.

Tangibility: appearance of physical equipment, equipment, staff and contact materials

Empathy: the provision of service, individualized attention to customers

Responsiveness: ability to serve customers and provide timely service (R. Luke et al., 2008).



BİLİMSEL ARAŞTIRMALAR ETİK KURULU

26.09.2022


Dear Serah Onuh John

Your application titled “**Servqual Analysis of Public Bus Transport Services: A Case Study of Abuja, Nigeria**” with the application number NEU/AS/2022/128 was examined by our committee and it was decided that no ethical violation was found in the thesis and it was approved by the Ethics Committee.

Prof. Dr. Aşkın KİRAZ

Rapporteur of the Scientific Research Ethics Committee

Appendix C. Similarity Index

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