

# Tourists' satisfaction with public transport services in Lagos, Nigeria

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## ABSTRACT

This research examined tourists use and perception of public transport services in the city of Lagos, Nigeria. It strived to find out factors that influence their level of satisfaction with public transport services. Data were collected from a study of tourists using a self-rating questionnaire with an intercept survey at chosen tourist sites in Lagos. Data were analysed using descriptive statistics, principal component analysis and discriminant function analysis. The results depict that tourists were not satisfied with public transport services in the city of Lagos. Principal component analysis results identified five underlying components – accessibility, journey comfort, traveling security, traveling information, and customer services – that impact on tourists' contentment with public transportation services. The study recommended extensive improvement of public transport systems that will enhance satisfaction of tourists and help to address tourists and local users' problems of using public transport systems get to their destinations in the city of Lagos.

## KEYWORDS

public transport; urban tourism; tourist use; satisfaction; quality of service attributes

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## 1. Introduction

The importance of transportation for tourism is the same as the importance of water for navigation (Asokan and Prideaux 2000; Praveen 2013; Ladki et al. 2014; Yuksek et al. 2016; Ojekunle et al. 2016). "Good quality public transport services improve connectivity of urban places and improve development, by carrying several users in the available space. Mass transit has a significant task to play in relieving traffic jam and make flows of traffic to flow smoothly by moving large numbers of passengers very efficiently" (Flausch 2015: 1–2). Public transportation in urban areas refers to any transport system by which a greater number of urban population obtain access to reach socio-economic activities and services they need to enhance their sustenance and welfare (Fitzgerald 2012). The importance of comprehending and facilitating the use of public transport by tourists is becoming increasingly important because of the significance of the tourist economy for numerous urban areas including city of Lagos. In spite of that, majority of researchers focused on the use of public transport by local residents with little or no knowledge about the public transport needs of tourists in urban tourism including the city of Lagos. To encourage the use of mass transit either by local users or tourists it is vital to have well organized and functional public transport system that is demand-oriented with a good knowledge of user behaviour (Oseyomon and Ibadin 2016). Previous research on customer satisfaction with public transport at nationwide and district levels in Nigeria concentrated only on local customers (Ali 2014; Afolabi 2016; Oseyomon and Ibadin 2016; Wojuade and Badiora 2017), yet, there is no publications on tourist contentment with mass transit services within Nigerian metropolises including the city of Lagos. For the providers of mass transit, the additional incomes they make depend on the more passengers that patronize the services they provide. It is essential, hence, to comprehend in what ways visitors utilize mass transportation so that blueprints and marketing master plans for model rearrangement may be evolved in the city of Lagos.

Lagos as one of the major tourism cities in Nigeria with the growing improvement of public transport network supplies an outstanding situation in the country for a research of visitor utilization of mass transit at a metropolitan attraction. Again, according to the 2014 Mastercard Global Destinations Cities Index, Lagos emerged the fourth most visited destination city in Africa with 1.3million international overnight visitors up 5.8 percent from the 1.25 million international visitors who visited the city in 2013. International visitors to Lagos in 2014 spent US \$710 million, up 3.8 percent from the US \$684 million in 2013 (Hedrick-Wong and Choong 2014). Again, presently "Lagos is housing 2000 industrial institutions, 10,000 business ventures and 23 industrial

estates. Lagos is accountable for thirty percent of nation's Gross Domestic Products. It also accounts for seventy percent of the national maritime cargo freight; eighty percent international aviation traffic and fifty percent of energy consumed in Nigeria" (Babatunde 2016: 5). With these rich statistics that greatly underpin escalated advancement in tourism business in Lagos state, it becomes indispensable to investigate the perception of tourists of public transport in order to incorporate their ideas in improving the existing public transport systems in Lagos. Public transport stated in this study refers mainly to buses and ferries. "Tourists are all visitors remaining behind between one night and one year outside their usual environment" (Peeters et al. 2004: 6). The identification of passenger needs and wants is of great importance for appropriate enhancement of the efficiency and quality of services of public transport systems (Banyte et al. 2011). Thus, this study investigated the tourist use of public transport in the city of Lagos, Nigeria. Three basic objectives pursued to achieve this aim were to (1) discern the tourists' perception of public transportation services available in the city; (2) identify underlying factors that affect their satisfaction with public transport services in the city and (3) examine the most significant service quality attributes contributing to the overall satisfaction of tourists with the public transport as the determination of the most influential service attributes is important for service improvement in the study area by the operators.

## 2. Literature Review

### 2.1 Tourist destination and transport accessibility

Development of transport infrastructure and sufficient accessibility is essential for the development of tourism in any given areas (Więckowski et al. 2014). This is because the accessibility and quality of the transport system (especially public transportation network) motivate tourists to travel to several areas within close proximity to make them enjoy many linked relaxation pursuits (Xiao et al. 2012). One of the major problems confronting many tourist sites in developing countries including Nigeria is poor physical accessibility (Omisore and Akande 2009). Predominantly, the geographic accessibility to any tourist destination can be affected by usable transport infrastructure and services (Kahtani et al. 2011). For the publicity of visitor attraction sites to be successful, accessibility is a vital matter. For a greater number of tourists, a satisfactory accessibility to a tourist attraction is when the locale can be reached and toured, expeditiously, cheaply and congenially (e.g. by means of public transport). "As tourist attractions are connected to good roads, they then become highly accessible to numerous customers with their movements creating distinctive motif on spatial scenery. Tourist

attractions with excellent accessibility to customers will lessen the price of visitors patronizing the attraction sites and also make them to go long distance to patronize other visitor attractions that they need to enjoy themselves" (Omisore and Akande 2009: 70). Accessibility of the destinations included the basic physical facilities, operational plans and government laws and opined that destination accessibility impacts on tourist satisfaction (Araslı and Baradarani 2014). Accessibility is studied as a dimension of transportation services, destination image and dimension of attribute of satisfaction (Chi and Qu 2008; Currie and Falconer 2014).

## 2.2 Customer Satisfaction with Public Transport

The import of customer satisfaction both practically and theoretically for organizations' performance and continuity cannot be overstressed (Zalatar 2012). Satisfaction is analyzed by investigating the supposition of service and perceptions. To find out the dimension of customer contentment with public transportation services is a vital theme in transport studies and application. In enhancing customer's satisfaction with public transportation services and increasing the number of users, operators are required to discern the extent of passenger suppositions that have really been satisfied. Customer studies are very important because they supply transportation providers with useful facts about service quality attributes that are essential for customers and they will also help to identify service quality attributes the customers are pleased or those that they are displeased. According to Oliver (2010: 8) "satisfaction is the client's accomplishment answer. It is a perception that a service attribute supplied (or is supplying) a delightful degree of utilization-related attainment, as well as degrees of bellow or over fulfillment". Customer satisfaction helps to determine if the services or products supplied by the provider meet the need or transcend the expectations of the customer. Khadka and Maharjan (2017: 5) pointed out that "customer satisfaction is a crucial component of business strategy as well as customer retention and product repurchase". Analyzing customer satisfaction with the services of public transport systems is a vital theme in transport study and implementation. In order to enhance public transport services and attract more customers, suppliers need to discern how much customer suppositions have absolutely been fulfilled. Andaleeb et al (2007) investigated methods of ameliorating bus transport services in Dhaka. The study identified "eight components to address contentment levels of constant bus customers whose point of views and regards are considered indispensable in making bus service provisions in the city more efficiently arranged, demand based, and service aligned. Using factor analysis and multiple regressions, five of the eight chosen underlying dimensions were discovered to have remarkable consequences on customers' satisfaction. These comprise comfort levels, staff

behaviour, number of buses changed to arrive at destination, supervision, and bus stand facilities. Rozmi et al. (2013) studied the comparison of customers, preference and satisfaction toward Malaysian public transport network especially Train commuter (KTM) and light Rail Transit (LRT). The results showed that passengers' preference and satisfactions in LRT network is higher than KTM network. The study also identified four underlying dimensions that play a part in the liking and satisfaction of passengers with the mass transit which are facilities, service quality, comfort and vehicle design. Generally, it was discovered that a greater number of passengers have assessed as displeased with the Malaysia mass transit. Radnovic et al. (2015) conducted a research to determine the satisfaction of public transport users in Belgrade with the aim of improving their satisfaction. The results of the study showed a significant correlation between quality of service, attitude and behavior of employees, adequate information, quality of vehicles, line routes and timetable factors and passenger satisfaction with public transport services in Belgrade and that users are dissatisfied with the services provided by the operators. Yuksek et al. (2016) examined the effects of public transport performance on destination satisfaction in the Turkish city of Eskişehir and using regression analysis found that "destination satisfaction is affected by infrastructure, ease of use, timing and physical condition, respectively" (Yukksek et al. 2016: 8). The results of their study indicate that local transport significantly impacts on the destination satisfaction of visitors. This implies that destination managers of establishments in relation to destinations need to concentrate more in accommodating the satisfaction of visitors at destination being dependent on local transport. In his study of passenger satisfactions with the service quality attributes of public bus transport services in Abuja, (Ali 2014) identified four service dimensions – comfort, accessibility, adequacy and bus stop facilities – that influence customer contentment with public bus transportation services in the city of Abuja. "Regression analysis additionally depicted that the influence of comfort in the vehicle on general satisfaction is the highest. "Accessibility came after comfort in the vehicle and followed by adequacy and bus stop facilities in relative order of importance in impacting customer contentment of bus mass transit service provision in the city" (Ali 2014: 99–100). With the inception of Bus Rapid Transit in 2008 in Lagos, Afolabi (2016) investigated the impact of Bus Rapid Transit on customer' satisfaction in the city of Lagos. The results of the study revealed that a little above mean of the customers were pleased with the Bus Rapid Transit system whereas some were completely displeased. The study did not investigate the specific factors that influence their satisfaction with the Bus Rapid Transit in city and as such the management of the BRT need to carry out research to find out the specific factors that influence

users' satisfaction so as to retain them and encourage more people to use the transport system. Wojuade and Badiora (2017) evaluated how passengers were satisfied with public transportation services in Ibadan urban area. The research revealed the vital elements that influence passengers' satisfaction with bus services and identified that six attributes of the levels of the public transportation services affect passengers' satisfaction with the services. Furthermore, the result of principal component analysis identified underlying dimensions of comfort, service reliability, security and accessibility that contribute more to passengers' satisfaction with bus services in the city. The underlying dimensions strongly affect the level at which the customers are satisfied with bus services in the city of Ibadan. For this reason, to enhance passengers' use of bus public transportation in Ibadan, the quality of the identified underlying dimensions must be improved. Creating an excellent system for assessing performance of transit operators enhances quality of service provision. Obasanjo and Martina (2015) investigated the discernment of customers of the quality of bus services in city of Kaduna, Nigeria. The study identified that the users are not pleased with services provided in terms of comfort, safety, crowding, behavior of drivers and conductors and fare charged by the providers of public transport services.

The above studies have furnished noteworthy understanding into how customers assess public transport performance. Nevertheless, the authors aimed at local users instead of visitors' use of public transportation. But tourists make up of an appreciable number of mass transit users at urban destinations. Their behaviour, anticipation and presupposition of public transport quality of service attributes are considerably different from the local users. As a result, assessment of tourist satisfaction with public transport performance is worthy of separate study. Again, tourism is very important to urban economy, and as such, tourists' perceptions of public transport services should be sought to help transport operators learn about the areas for improvement in order to enhance the visitors' use of the system.

### 3. Public transportation in Lagos

Lagos megacity has immense road networks aided by ferry and suburban train services (Salau 2015), with ninety percent of the whole customers and freight transported via road transport (Oshodi et al. 2018). The estimated demand for trips in the Lagos megacity in 2015 (walking inclusive) was twenty-two million per day with walk trips consisting of forty percent of the whole trips in the city of Lagos. The city has one of the least lengths of road network in the West Africa sub-region with 2.2 km of road per 10,000 populations (Lagos State Ministry of Transportation 2012). With the fast growth in population and the quality of livelihood in the city, the daily request for trips will increase to about forty percent per day by 2032 (Lagos Metropolitan Area Transport Authority 2014). The summary of the daily passenger traffic in the city of Lagos is depicted in Table 1. The inception of Bus Rapid Transit (BRT) in Lagos public transport systems in 2008 to find the lasting solution to the challenges facing urban passenger transportation is in the enhancement of mobility in the city of Lagos.

Nevertheless, there is a necessity for more development on the current operating level so that it will be in a position to liken well with what is available in the developed countries where Bus Rapid Transit has been functioning effectively (Mobereola 2009; Amiegbebor et al. 2016). The public transportation network density of around 0.4 km/1000 population in the city is rather low even by African standard (Tayo 2010). The supplying of bus mass transit is highly disintegrated with minimum fleet operation; as a substitute, private persons operate numerous minibuses of substandard quality and in an unruly manner (Toyo 2010). The appalling state of the network of roads and public transport systems impact seriously the improvement of the city and livelihood conditions of people living in the city. An absence of sufficient infrastructural development for many years to tackle the growing population has triggered ponderous traffic overcrowding and housing inadequacy in the city (Olawepo 2010). Mass transit systems in the city are not organized notwithstanding its size. Again, the

**Tab. 1** Passenger traffic per day in Lagos State.

Mode	No. of passengers/ day	Percentage to total passengers
Bus Rapid Transit	90,000	0.70%
Regulated bus (LAGBUS)	120,000	.091%
Private cars	2,508,000	19.04%
Semi-formal mini uses (danfos)	9,982,000	75.79%
Federal mass transit train	132,000	1.00%
Water transportation system	74,000	0.56%
Other non-data modes (including motorcycle, tricycle, bicycle, taxis, articulated vehicles, mini-vans and boats)	264,000	2.00%
<b>Total passengers</b>	<b>1,317,0000</b>	<b>100%</b>

Source: Lagos Metropolitan Area Transport Authority 2015, adopted from Oshodi et al. (2018: 54).

inland water transport systems are not fully exploited to provide option non-road based passenger services. Obviously from the duty of Lagos as a vital gateway to the country, the related transportation insufficiencies demand for a special plan for its organization.

### 4. Data and Methods

#### 4.1 Study Area

The study area is the city of Lagos. It is also the commercial nerve centre of Nigeria as well as industrial, educational and cultural centre in Nigeria and in West Africa. The city of Lagos is located within 6°23'N and 6°41'N and longitude 3°90' and 3°28'E, in Lagos State, southwestern Nigeria (Fig. 1). City of Lagos has considerable higher population density than any city in Nigeria with mean density of 2400 persons/km<sup>2</sup> and a yearly population increase rate of higher than five percent (Odeleye 2011). The population of the Lagos urban cluster increased from 10.3 million in 1995 to around 10.9 million in 1996 and to 9 million by the 2006 census statistic. Lagos is adorned with several historical and amazing tourist attractions, such as Lekki Conservation Centre, slave trade house, Whispering Palms Resort, National Art Theatre Iganmu, Coconut Beach, Nike Art Gallery, Bar Beach, National Museum, the African Shrine among others.

#### 4.2 Sampling and Data Collection

Questionnaire was used to collect Data for this study, between October 2018 and December 2018. The questionnaire utilized in the study was produced built on the published works reviewed in this study, as well as extensive brainstorming. Tourists in Lagos were

the target population in this study. This is because we want to elicit their perceptions and satisfaction with their use of public transport to access their destinations and at their destinations as they are alike in their utilization of public transportation services but diverse in their other characteristics such as age, earnings, career, mobility, level of education among others.

Five major tourist centers and attractions that are spatially located and popular in Lagos were chosen as representative locations for this study. The tourist sites sampled are National Art Theatre, National Museum, Bar Beach, Eko Tourist Beach Resort, and Lekki Conservation Centre (see Fig. 1). From each of the sampled tourist sites, tourists were invited for the survey using an intercept survey approach– that is at high-traffic tourist sites, survey assistant intercept and requested participation from every fourth tourist who arrived. At tourist sites that experience low traffic of tourists, survey assistant approached every tourist who arrived or was seen in such sites. Survey assistant then introducing himself or herself, fleetingly explain the topic and the aim of the study and invites the tourist to take part in the survey. Those tourists that consented to take part in the survey were given copies of questionnaire to fill and return. This method was complemented by accidental or opportunistic technique in which tourists found in motor parks, restaurants, conferences, and in shopping malls etc. by chance were administered with the questionnaire. Opportunistic technique too known as Convenience Technique or accidental Sampling is a type of non probability sampling where members of the earmarked population that meet up with definite practical principles, such as easy accessibility, geographical closeness, availability at

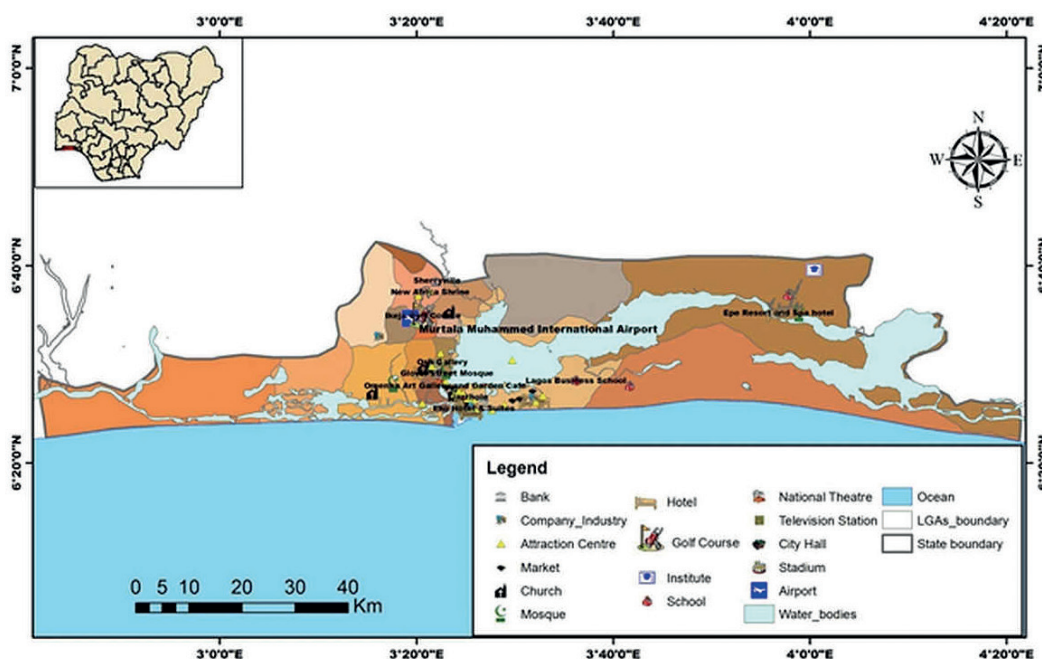


Fig. 1 Sampled Tourist Sites in Lagos.

**Tab. 2** Tourist questionnaire distribution and return.

Sampled Tourist Site	Number of tourists approached	Copies of questionnaire distributed	Total copies of questionnaire returned
		No.	No. (%)
National Art Theatre	110	100	98 (98)
National Museum	109	105	96 (91.4)
Bar Beach	99	97	90 (92.8)
Eko Tourist Beach Resort	93	90	88 (97.8)
Lekki Conservation Centre	111	109	102 (93.6)
Total	522	501	474 (94.6)

a given time, or the readiness to take part are incorporated for the intention of the study (Dörnyei 2007). A self-administered questionnaire was employed to gather information for this research. Section A of the questionnaire contains questions used to collect tourists' trip characteristics and section B contains a five-point likert scale with 'strongly satisfied' = 5, 'satisfied' = 4, 'undecided' = 3, 'dissatisfied' = 2, and 'strongly dissatisfied' = 1. The Likert-scaled questions were used to measure tourists' general contentment with the mass transit service quality and the characteristics of mass transit services that impact on their contentment. The copies of the questionnaire were administered to tourists that were willing to participate in the survey after a few screening questions to ensure they were qualified as the target respondents. Also, the respondents were requested to answer the questions and return the questionnaire on the spot. Some tourists that were found having limited literacy were orally administered with the questionnaire to allow them participate. Five survey assistants were recruited for this survey that surveyed the five sample sites selected for this study. Five hundred and twenty-two (522) tourists were approached and 501 copies of questionnaire were administered. The sum of 474 copies of the questionnaire were returned (Table 2), leaving 27 copies rejected because the questions in the questionnaire were not properly completed.

### 4.3 Data Analysis

Analysis of a general satisfaction (dependent variable) and particular service quality characteristics (independent variables or exploratory) of public transport was established on the frequency values obtained from the self-rated questionnaire. The frequency values help us to compare the tourists' levels of satisfaction with each service quality attribute by means, standard deviation and variance. Correlation investigation was carried out to evaluate the linear relationship between the variables. Then, principal component analysis (PCA) with the varimax orthogonal rotation method was used to extract the underlying dimensions of service quality attributes influencing tourists' satisfaction with public transport in the city of Lagos. Components were extricated

utilizing an eigenvalue bigger than 1 and factor loading  $\pm 0.70$ . The internal consistency for each of the factors identified along with measures of satisfaction was analyzed using Cronbach's alpha ( $\alpha$ ). All factors with a Cronbach's alpha reliability of 0.70 and above as recommended by Nunnally (1978) were accepted for the purpose of this study. Thereafter, a Discriminant Function Analysis (DFA) (Step-wise method) was employed to identify the most individual service quality attributes that affect the visitors' satisfaction with public transportation services in Lagos. This stepwise method has been demonstrated to be effective in identifying predictor variables of customer satisfaction in previous studies (Felleson and Friman 2008; Kim and Lee 2011; Le-Klähn et al. 2014).

## 5. Results

### 5.1 Respondents' profile

Out of 474 surveyed sampled respondents for this study, 91.77% (435 tourists) made use of public transport services during their visit in Lagos, while 8.23% (39 visitors) did not. Table 3 indicates that majority (52.1%) of the visitors came to Lagos from other African countries followed by Nigerians (22.2%). Fifty-eight percent of the visitors are males while 42% are females. The ages of the tourists range from 37.7% (ages less than 30 years) to 6.9% (ages 60 years and above). Table 3 further indicates that most of the public transport users are well educated with 42.6% graduates of university and college and 23.5% post-graduates. More than half of the users (58.2%) indicated visiting Lagos for the first time while 41.8% of them had previously visited Lagos. The majority of the tourists indicated visiting Lagos on holiday (31.7%) followed by those who came to Lagos for business (19.8%).

Forty-eight percent of the tourists indicated frequent use of public transport services, 31% use public transport services twice or three times per week while 21% stated rare use of public transport at their home residences. Most of the respondents (62.5%) indicated ownership of a car and a stay of 1–3 day is most common (37.2%) followed by 4–6 days (32.4%) and the least is 10 days and above (5.7%).

Tab. 3 Respondents profile.

	Items	Frequency	Percentage
Country of residence	Nigeria	97	22.2
	Other African countries	227	52.1
	Europe	18	4.1
	America	35	8.3
	Asia	58	13.3
Gender	Male	254	58.0
	Female	181	42.0
Age	<30	164	37.7
	30–39	103	23.7
	40–49	84	19.3
	50–59	54	12.4
	60 and above	30	6.9
Marital status	Single	171	39.3
	Married	211	48.5
	Others	53	12.2
Educational status	No formal	3	0.6
	Primary school	23	5.2
	Secondary school	118	27.1
	University and college	190	43.6
	Post graduate	102	23.5
Visiting Lagos for the first time	Yes	182	41.8
	No	253	58
Major purpose of visit	Holiday	225	51.1
	Business	86	19.8
	Official mission	18	4.1
	Education	53	12.2
	Visiting friends and relatives	44	10.1
	Others	9	2.1
Use of public transport at home	Frequently	209	48.0
	Twice or three times per week	135	31.0
	Rarely	91	21.0
Car ownership	Yes	272	62.5
	No	163	37.5
Trip duration	One day	34	7.8
	1–3 days	162	37.2
	4–6 days	141	32.4
	7–9	73	16.8
	10 days and above	25	5.7

Source: Authors' Fieldwork (2018).

## 5.2 Public Transport Use by Tourists in Lagos

The public transportation use by tourists in the city of Lagos is a function of their purposes of being to the city. Majority of the tourists in Lagos (81.2%) used public transportation to get to their attractions (Table 4). Transport for business activities accounted for 15.27% of the total respondents, while visiting relatives and friends, shopping, educational activities and others accounted for 25.1%, 14.1%, 9.2% and 2.5% respectively. Public bus transport mode was found to be mostly used by the tourists in Lagos of which 48.7% of the tourist used Bus Rapid Transit (BRT), 50% used other buses and 8.5 of the tourists used ferry services.

## 5.3 Tourists' Satisfaction with Public Transport Services in Lagos

The analysis of tourists' perception of overall satisfaction and the 24 specific service quality attributes

that affect their satisfaction with public transport in Lagos using mean, standard deviation and variance is presented in Table 5 (in descending order by mean). It is observed from Table 5 that tourists tended not to be satisfied with the overall satisfaction of public transport services in Lagos with a mean score of 2.81, standard deviation of 0.6 and variance of 0.4. The tourists were also not satisfied with the most of specific quality attributes of public transport services in the city of Lagos. This is because 14 of the 24 specific service quality attributes have mean scores below 3.0 (mean < 3.0). The specific service attributes of public transport in Lagos that were relatively appreciated (mean > 3.0) by the tourists are transport price /fare is affordable, short walking distance to bus stop and ferry stop, vehicles are generally available, route network coverage, ease of finding information about routes, destinations and stops, willingness of bus and ferry staff to help passengers, attitude of driver/staff

**Tab. 4** Purpose of use of public transport services and mode of public transport used by tourists in Lagos.

Purposes of use	Percentage of tourists used public transport for each purpose (%)
Tourists attractions in the city	81.2
Business related-purposes	15.27
Educational activities	9.20
Visiting relatives and friends	25.1
Shopping purposes	14.1
Public transport mode used by the tourists	
Mode type	%
(1) Bus (a) BRT	48.7
Other buses	50
Ferry	8.5

N. B Multiple: Totals are greater than 100%.

and availability of staff on board. The 24 service quality attributes plus the overall satisfaction of tourists with public transport in Lagos were transformed into a matrix of inter-correlation between the variables to know the strength of their correlations (Matrix not presented here). Principal Component Analysis (PCA)

using SPSS 20.0 was used to collapse the 24 service quality attributes of public transport into few underlying dimensions of tourists' satisfaction with public transport services in the city of Lagos. The underlying dimensions will help to improve the public transport services to enhance tourists' use in the city of Lagos. The analysis of the varimax rotated components matrix resulted into five components explaining 95.29% of the total variance (Table 6).

Each component was labeled according to the appropriateness of variables loaded in it. Components 1 ( $\alpha = 0.81$ ) has eigenvalue of 5.31 and explains 31.41% of the total variance. It has loadings on (Transport price/fare is affordable, high frequency of service, short waiting time at bus stop and ferry stop, vehicles are generally available, short travel time in the vehicle, route network coverage, and short walking distance to bus stop and ferry stop) components 1 is generally describing functionality of service quality characteristics influencing tourists' contentment in obtaining ingress to utilize public transportation to get to their journey ends in Lagos. Thus, component 1 is recognised as "**accessibility**". The component 2 ( $\alpha = 0.78$ ) comprises six variables (enough leg-space in vehicles, vehicles are well maintained, safety of

**Tab. 5** Tourists' Comparison of the Service Quality Attributes and the Overall Satisfaction responses of the Public Transport Services in Lagos by mean.

Service Quality Attributes	Mean	Standard deviation	Variance
Comfort while waiting at bus stop and ferry stop	4.10	0.3	0.1
Availability of staff on board	4.01	0.3	0.2
Transport price/fare is affordable	3.73	0.5	0.3
Ease of finding information about routes, destinations and stops	3.64	0.3	0.1
Willingness of bus and ferry staff to help passengers	3.31	0.5	0.
Route network coverage	3.27	0.4	0.2
Vehicles are clean inside	3.17	0.3	0.1
Attitude of drivers/staff	3.01	0.4	0.2
Short walking distance to bus stop and ferry stop	3.00	0.4	0.2
Availability of arrival information for vehicles	3.00	0.3	0.1
Personal security on board	2.92	0.4	0.2
Vehicles are generally available	2.87	0.5	0.3
Seats are generally available	2.86	0.6	0.4
Short waiting time at bus stop and ferry stop	2.86	0.6	0.4
Availability of information about service delays	2.82	0.5	0.3
Punctuality of service	2.80	0.4	0.3
Security while waiting at bus stop and ferry stop	2.71	0.4	0.2
Security of luggage on board	2.62	0.4	0.2
High frequency of service	2.50	0.4	0.2
Vehicles are well maintained	2.40	0.5	0.3
Safety of passenger on board	2.32	0.4	0.2
Short travel time in the vehicle	2.16	0.6	0.4
Reliability of service	2.15	0.6	0.4
Enough leg-space in vehicles	2.11	0.3	0.1
<b>Overall satisfaction with public transport services</b>	<b>2.81</b>	<b>0.6</b>	<b>0.4</b>



passenger on board, seats are generally available, vehicles are clean inside, and comfort while waiting at bus stop and ferry stop). The variables describe the conditions of facilities in the vehicles and at bus/ferry station that affect tourists' satisfaction with public transport services. Thus, component 2 is identified as **"journey comfort"**. It has an eigenvalue of 4.92 and accounts for 25.11% of the total variance. The third component ( $\alpha = 0.75$ ) accounts for 16.01 percent of the total variance with eigenvalue of 3.02. It has significant loadings on three variables (personal security during trip, security while waiting at bus/ferry stop and security of luggage on board. This component depicts the importance of security of tourists and their luggage on their journey). Component 3 is, therefore, identified as **"traveling security"**. The fourth component ( $\alpha = 0.73$ ) comprises three variables (ease of finding information about routes, destinations and stops, availability of information about service delays and availability of arrival information

for vehicles) and highlight the tourists needs of relevant information in traveling to his/her destinations and it is, therefore, identified as **"traveling information"**. Component 5 ( $\alpha = 0.71$ ) has significant loading on three variables (willingness of bus staff and ferry staff to help passengers, attitude of driver/staff and availability of staff on board) and accounts for 10.21 percent of the total variance component 5 generally describes the visitors expected services from bus/ferry staff while on journey to their destinations and thus, it is identified as **"customer services"**.

#### 5.4 Discriminant Function Analysis

The public transport in Lagos was examined in the service quality attributes. The influences of these service quality attributes on the tourists' overall satisfaction of public transport vary from each other. For the purposes of public transport improvement, it is vital to identify the most influential service quality attributes that have strongest impact on the tourists'

Tab. 6 Principal component analysis of public transport service dimensions.

Service Quality Attributes	Components				
	1	2	3	4	5
Transport price/fare is affordable	0.817*	0.217	0.069	0.117	0.342
High frequency of service	0.701*	0.125	0.223	0.168	0.201
Enough leg-space in vehicles	0.337	0.786*	0.006	0.127	0.110
Vehicles are well maintained	0.147	0.764*	0.219	0.341	0.215
Safety of passenger on board	0.371	0.879*	0.428	0.106	0.213
Seats are generally available	0.424	0.713*	0.314	0.116	0.310
Short waiting time at bus stop and ferry stop	0.811*	0.218	0.334	0.124	0.427
Punctuality of service	0.499	0.414	0.228	0.09	0.389
Reliability of service	0.592	0.292	0.108	0.009	0.119
Short walking distance to bus stop and ferry stop	0.714*	0.443	0.376	0.210	0.104
Vehicles are clean inside	0.196	0.872*	0.211	0.355	0.220
Vehicles are generally available	0.892*	0.422	0.169	0.129	0.431
Comfort while waiting at bus stop and ferry stop	0.289	0.802*	0.011	0.123	0.316
Personal security on board	0.008	0.138	0.882*	0.223	0.427
Short travel time in the vehicle	0.723*	0.155	0.333	0.417	0.248
Route network coverage	0.871*	0.390	0.199	0.249	0.107
Ease of finding information about routes, destinations and stops	0.346	0.218	0.010	0.821*	0.501
Security while waiting at bus stop and ferry stop	0.141	0.337	0.817*	0.117	0.101
Availability of information about service delays	0.421	0.309	0.025	0.825*	0.108
Availability of arrival information for vehicles	0.282	0.313	0.105	0.921*	0.502
Willingness of bus staff and ferry staff to help passenger	0.222	0.219	0.002	0.107	0.773*
Attitude of driver/staff	0.371	0.393	0.115	0.401	0.833*
Security of luggage on board	0.147	0.189	0.902*	0.380	0.281
Availability of staff on board	0.129	0.298	0.347	0.221	0.910*
Eigenvalue	5.31	4.92	3.02	2.47	2.35
% explained	31.41	25.11	16.01	12.55	10.21
Commulative%	31.41	56.52	72.53	85.08	95.29
Reliability coefficient (Cronbach's alpha ( $\alpha$ ))	0.81	0.78	0.75	0.73	0.71

\*Significant loadings =  $\pm 0.70$

**Tab. 7** Results of discriminant function analysis (overall satisfaction with public transport as the grouping variable – dependent variable)<sup>a,b,c,d</sup>.

Stage	Entered	Wilks' Lambda							
		Statistic	Df1	Df2	Df3	Exact F			
						Statistic	Df1	Df2	Sig
1	Personal security on board	0.912	1	6	385.000	45.510	1	385.000	0.000
2	Ease of finding information about routes, destinations and stops	0.876	2	6	385.000	33.145	2	366.000	0.000
3	High frequency of service	0.868	3	6	385000	29.425	3	341.000	0.000
4	Vehicles are clean inside	0.842	4	6	385000	26.512	4	330.000	0.000
5	Security while waiting at bus stop and ferry stop	0.783	5	6	385000	24.441	5	325.000	0.000
6	Comfort while waiting at bus stop and ferry stop	0.734	6	6	385000	19.562	6	320.000	0.000
7	Transport price/fare is affordable	0.644	7	6	385000	17.120	7	319.000	0.000
8	Willingness of bus and ferry staff to help passengers	0.603	8	6	385000	16.101	8	316.000	0.000

At each stage, variable that minimizes overall Wilks' Lambda is entered.

a) Highest number of step is 48

b) Highest significance of F to enter is 0.05

c) Highest significance of f to remove is 0.10

d) F level, tolerance, or VIN insufficient for further computation

Source: Authors' Fieldwork 2018.

satisfaction with public transport services. To identify which individual service quality attribute that has greatest influence on tourists' overall satisfaction with public transport, a Discriminant Function Analysis (DFA) was employed. To carry out this analysis, tourists' overall satisfaction with public transport was taken as the grouping variable (dependent variable) and the 24 service quality attributes as the independent variables. Wilk's Lambda statistic or value of discriminant function analysis was used to identify the service quality attributes that have the greatest influence on tourists' satisfaction with public transport. The value or statistic of Wilk's Lambda ranges from 0 to 1 and the smaller the value the more consequential the exploratory variables to DFA. The significant of Wilk's Lambda statistic is determined by F test. The results of the Discriminant Function Analysis identified eight service quality attributes that are the most important to tourist satisfaction with public transport services in Lagos. They are personal security on board; ease of finding information about routes, destinations and stops; vehicles are clean inside; security while waiting at bus stop and ferry stop; comfort while waiting at bus stop and ferry stop; transport price/fare are affordable and willingness of bus and ferry staff to help passengers (Table 7).

## 6. Discussion of Results

### 6.1 Public Transport Service Dimensions

In this study, five service underlying dimensions were identified. They are: accessibility, journey comfort, traveling security, traveling information and customer services. From the literature reviewed earlier in

this work, a number of dimensions of public transport services were identified. In situating the findings of this study with the findings of the previous studies, some similarities and differences were established. Like the findings of Le-Klähn et al. (2014), this study also identified accessibility as a vital underlying service dimension. The increasing-number of individual owned vehicle fleet, amalgamated with dependence on informal vehicles such as okadas, danfos among others has precipitated utmost traffic congestion across the city and unsatisfactory features of public transport service prospects (Oshodi et al. 2018) which has a great effect on tourists' access to public transport services in the city of Lagos This finding is also in accordance with the findings of Soltani et al. (2012) that accessibility is an important standard for high-quality, sustainable public transport systems. Accessibility to stations and transport vehicles, physically and financially, is important to enhance the improvement of penetration of visitors in the city. This includes access to destinations and within destinations. Transport accessibility and connectivity affect tourist choice of recreational destinations (Xiao, Jia and Jiang 2012).

Provision of public transport access and improving its services are essential, especially for national parks, suburban and rural areas near major urban areas. Journey comfort is another vital dimension of public transport performance which was also investigated in earlier studies (Rozmi et al. 2013). Comfort has the greatest impact on passenger satisfaction with public transport vehicle. With the exception of high capacity buses of Lagos State Bus Rapid Transit serving some routes totaling 22 km, other bus operators do not pay adequate attention to passenger comfort.

Traveling information is one of the key attributes on which the quality of a public transport service and customer satisfaction with such service is frequently measured. This finding is in accordance with the finding of Radnovic et al. (2015) that visitors have a greater requirement for public transport information than local users when making public transport journeys to their destinations. Customer Services shared similarities with Felleson and Friman (2008) of attitude and behavior of employees. Security is the new dimension found in this study. It was not explored in previous studies. Walking to a bus or ferry station, waiting for the vehicle to arrive, and traveling on the system are all situations where a person could be assaulted especially with insecurity situation in Nigeria. With present insecurity all over the world, public transport security is now an important factor that impacts greatly on passenger satisfaction with any public transport mode services in Lagos. According to Akinyemi and Isiugo-Abanihe (2014), Nigeria is still battling with the provision of minimal basic infrastructural facilities including transportation and security.

## 6.2 Identification of Individual Service Quality Attribute that has Greatest Influence on Tourists' Overall Satisfaction with Public Transport in the City of Lagos

The most influential service quality attributes identified that have strongest impact on tourists' satisfaction with public transport services are discussed in this section.

Personal security on board and Security while waiting at bus/ferry stop) (Table 6) are the security attributes of service quality. These attributes were identified as vital for tourists traveling by public transport in the city of Lagos. This is in line with the findings from Somuyiwa and Adebayo (2014). Security aspect of public transport quality of service is very important as public transport closely relates with human lives in greater numbers as many customers happen to be riding in one vehicle. Types of security incidents that happen in public transport in the city include pick pocking (pilfering), robbery, inflicting bodily harm, killings etc.

Ease of finding information about routes destinations and stops highlights the tourists' need of information of the routes to be taken to reach and locate their destinations when they are using public transport. As tourists, they need information of the area they are visiting more than the local users especially those tourists who are visiting a place for the first time (Thompson 2004). In Lagos, high service frequency is recognized as a major factor to customer satisfaction with any public transport system. Service quality attribute appeared consistently in studies on public transport service assessment (Del Castillo and Benitez 2012; Redman et al. 2013). Public transport systems in Lagos do not run frequently especially during

off – peak periods. Traffic congestion in Lagos during peak hours also reduces service frequency of public transport. Almost all the routes experience traffic congestion difficulty in Lagos which impacts on journey time, the number of trips a bus provider will make in a day and also the price of travel the customers will recompense. Increasing service frequency is believed to enhance ridership (Wall and Donald 2007).

Vehicles are clean inside: Poor standards of cleanliness on board public transport or at bus/ ferry station and stop can lead to an image of a neglected and poorly maintained public transport system (Mounica 2014). Tourists in Lagos were relatively satisfied with the cleanliness of public transport vehicles especially those used by Lagos Bus Rapid Transit (BRT).

Comfort while waiting at bus stop and ferry stop. To be comfortable while waiting for bus or ferry at their stations, means that there will be enough sitting spaces, shelters, lighting, fans etc. Availability of these facilities determine the customer satisfaction with public transport service (Eboli and Mazzilla 2007). In the city of Lagos, these facilities are quite deplorable in most of the bus and ferry stations and stops exposing commuters to crime, discomfort and many other physical and psychological costs that substantially exceed the benefit of traveling in public transport vehicles in the city and they are needed to be provided.

Transport price/fare is affordable. Price/fare has a major influence on the attractiveness of public transport (Redman et al. 2013). A considerable number of negative comments from tourists were related to the methods of payment.

Willingness of bus and ferry staff to help passengers: Tourists who are not familiar with a destination are likely to place greater importance on helpfulness and reassurance from public transport staff than the local users. In addition tourists may value knowledgeable drivers who are not only familiar with the route but have patience and courtesy in communication and can also advice on connections to other modes of transport to access visitors' attractions.

Even though respondents were relatively satisfied with public transport staff assistance to them in Lagos, there is still a great need for public transport operators to train their staff on how to attend to customers especially visitors to the city to encourage tourists' patronage of public transport services.

## 7. Conclusion and Recommendations

In conclusion, tourists were not adequately pleased with the public transportation services within the city of Lagos. The study also identified five underlying components – accessibility, journey comfort, traveling security, traveling information, and customer services – that influence visitors' satisfaction with public transport services in the city. The five service underlying

dimensions, jointly explained 95.29% of the total variance of tourists' satisfaction with public transportation services in the city. The eight major service quality attributes that influence overall satisfaction of tourists with public transport were identified by the use of Discriminant function analysis. They are personal security on board; ease of finding information about routes, destinations and stops; high frequency of service; vehicles are clean inside; security while waiting at bus stop and ferry Stop; transport price /fare is affordable and willingness of bus and ferry staff to help passengers.

Therefore, to enhance the public transport performance in Lagos for effective use by both tourists and local customers, we make the following recommendations:

We recommend that in addition to Bus Rapid Transit already in operation in the city, Lagos State should embark on more Vigorous road restoration should be carried out in all the local government areas including building of new roadways. A robust Integrated Mass Transit Scheme for rail, road, and water transportation services and effectual traffic management to enhance traffic flow and public transport service frequency which will address the tourists' accessibility problems to public transport and the use of public transportation services to get to their destinations in the city of Lagos. Again, providing more services along major tourist routes, for example, Lagos Island to Lekki Conservation Centre, should be a topic for major future planning of public transport providers in the city.

The study also recommends installation of security cameras on board transit vehicles and at stations, improvement of lighting and human surveillance at stops and stations and the introduction of public transport Police Force in the city of Lagos. The public transport police force is expected to monitor and be sure of the functionality of all aspects of public transport. Furthermore, security screening of passengers and their bags should be intensified to prevent use of bombs on public transport in the city. Security is a business of everybody, and as such, organized awareness education should be prepared and distribute to operators and users from time to time to educate them on their roles for effective security in public transport operation in the city of Lagos. The awareness education to be organized should be prepared in different languages. Providers of public transport services in Lagos should prepare information on routes, destinations and major public transport stops and distribute to users in the stations and vehicles, and also cooperate with tourist centres, tourist attractions and hotels to reach more tourists.

Comfort while waiting at bus stop is an important consideration for riders of public transport, and as such, the providers of public transport services in Lagos should make the waiting areas at bus stops and ferry stops clean, attractive, well-lit and accessible.

Again, shelters and benches should be provided in public transport stops and stations in the city of Lagos to enhance the comfortability of boarding and lighting riders. It is necessary that the method of payments should be a topic of future planning by public transport operators in the city. Even though respondents were relatively satisfied with public transport staff assistance to them in Lagos, there is still a great need for public transport operators to train their staff on how to attend to customers especially tourists to the city to encourage their patronage of public transport services.

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