

OPERATIONAL CHARACTERISTICS OF PUBLIC TRANSPORTATION IN THE FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA

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Abstract

This study analyses the operational characteristics of public transportation in the Federal Capital Territory, Abuja, Nigeria, and provides baseline information that can contribute to the renewed effort at improving the current service level by the FCT administration. Relevant data were collected through questionnaire administration to 315 public transport operators at 17 major public transport terminals in five of the most populated Area Councils of the FCT. The selections of the terminals were justified on the conditions of the- population strength of the settlements and clusters of activities which could serve as commuter consolidation point. The data were analyzed using descriptive statistical methods like percentages, means and charts. The result shows that most owners operated public transport vehicles in the FCT are small-sized, owned by individual operators, purchased mainly through personal savings and loans from cooperatives/unions. The vehicles at the time of the survey appeared old and rickety, their operations did not follow well defined schedules on routes and their fares were unpredictable. Incidences of overloading and multiple stopping enroute to pick and drop passengers were rife. These factors accounted for poor quality services, longer transit time which served as a disincentive to car-owning groups within the FCT. The paper recommends strict standard setting, enforcement of regulations for the operators and training of the public transport drivers and conductors by the relevant organs of FCT administration. Furthermore, a collaborative effort by the private organizations and the Area Councils in providing sound, neat and safe public transport vehicles for commuters is recommended with a view to increasing the service frequency as well as, reducing waiting time and public transport fare, thereby making the use of public transportation more attractive to the commuters with or without private cars in the FCT.

Keywords: public transportation, terminals, settlements, operators, passengers

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1. Introduction

The transport needs of major cities in Nigeria now present significant challenges to policy makers on unpredictable shift in population dynamics in response to the need for employment, housing and sustenance continues. The expansion of cities in Nigeria coupled with increasing urban population results in greater demand for the provision of transport. This demand has, however, not always been met and efforts to provide adequate transport infrastructural facilities are ad-hoc, uncoordinated and poor (Aderamo, 2008). Access to public transport has the potential of extending transport services to greater proportion of urban residents who do not have private cars and cannot afford frequent taxi fares (Andeleeb, Mohmadul and Ahmed, 2007). It has the potential of being used as a policy tool to reduce the number of cars on urban roads and by implication reduce traffic congestion in the city.

The FCT has witnessed a phenomenal growth in population and commercial activities since its creation in 1976. Current estimates at the time of this study suggest a population size of 6 million for both the FCT and the satellite towns (Nigeria Infrastructure Advisory Facility, (NIAF, 2010). This growth was accompanied by a substantial expansion of the city and much higher levels of economic and social activities. These have led to the extension of unplanned settlements in the city peripheries, with workers from the area exerting increasing pressure on the already inadequate public transportation facilities. The high cost of car purchasing and maintenance in Nigeria, the spreading of suburbs and transformation of villages into dormitory settlements have also created residential-to-work transportation problems in the FCT as a result of the inefficient public transport system. The speed of growth has brought along with it the challenge associated with public transportation such as traffic congestion, increase in travel time, high cost of transportation, loss of man hours due to longer trekking to bus terminals and waiting time for buses, increased stress, environmental pollution and road traffic accidents among others (Oniyangi, 2012). A survey of the FCT in 2008 indicates that: average daily passenger traffic is estimated at 1, 383, 814, while the average daily passenger (bus) is 772, 062 (56%) - a pointer to a high public transport supply-demand imbalance (FCT Transport Secretariat 2010). Public transport by bus is the dominant means of motorized transport in the FCT. The bus is one large self-propelled wheeled vehicle that is designed to carry passenger generally on fixed routes.

The public transport system in the FCT which caters for about 1.4 million commuters (Oniyangi, 2012) is at the time of this study facing numerous challenges notwithstanding the effort of the Government to improve the system. The complex and heterogeneous traffic pool, largely dominated by private vehicles and poor service level of the public transport operators create unbearable waiting time, heavy congestion and pollution of the territory's environment. This situation is further compounded by the declining service delivery and the inefficiency of the Abuja Urban Mass Transit Company bus services. The centralization of government functions and key private organizations in the city centre, while the majority of the population live in the surrounding towns and settlements lead to large volume of vehicular movement to and from the city and the adjoining settlements every day. The emerging features of mobility problems arising from poor service level of public transport in the FCT need to be thoroughly studied from different perspectives; this is because the renewed efforts at improving this system may not yield the desired result unless a reliable baseline information is provided. It is in the light of the foregoing that this study focuses on examining the structure and operational characteristics of public transportation in the FCT.

2. Literature Review

2.1 The Evolution of Public Transport in Cities

An attainment of reliable transport system in any country could best be realized through a precise understanding of the dynamism involved in the system (Ogbazi, 1992). Public transport is of particular importance to developing countries where they are extensively used, especially in circumventing the loopholes in ever increasing intra-urban movement (Wilson, 1973). Urban transport problem is as old as the era of man himself in the city (Ekong, 1977). Despite various strategies being advocated for improvement, innovation has never come about easily. Changes in technology exert a great influence upon transport form. Canals and railways were built primarily to meet the demand of industrial Europe for more efficient means of transport (Hilling 1996). The steam locomotive railway relieved the industrial countries of the 19th Century Europe from the limitation of horse power and 20th century development of air

transport has aided the growth of mining and industrial communities in the remote parts of Canada, Australia and Russia where adverse climate and topography have severely inhibited land communication. The final stage in the evolution in cities was the appearances of taxis and buses which were a major determinant of London's 20th century map (Bayliss 1981). However, it is instructive to note that the twenty first century development in public transport is far more advanced. The emergence of bullet trains, tram cars and electric trains for mass transit purposes in most developed cities has improved efficiencies and reduced appreciably the commuting challenges of cities dwellers.

Buses are very flexible for routine services and have efficient time keeping but motor cycles are better though they have their own service problems (Tolley 1988). Bus services offers several advantages compared to other public transport modes, such as high accessibility and mobility, operating costs that are beneficial for short-trips, easy and uninterrupted lane movement and relatively low maintenance costs. Bus service is best in meeting the transport requirements in terms of fare and flexibility and is thought to be especially favourable to the poor.

Prior to the introduction of the mass transit in 1988 in Nigeria, several urban centres were already being served by conventional: mini-buses, taxis and adapted vehicles known as "*molues*" particularly in Lagos (Ikya, 1993). There were many public transport problems due to severe deterioration of roads, insufficient and poor public transport vehicles with poor maintenance, high rate of breakdown, very low speed and insufficient capacity which in turn has produced inadequate services (Tyson 1991). All these throw light into the demand-supply imbalance. Then, there were the informal public transport vehicles offering more flexible service than mass transit. They offered more convenient door to door service or dropped passengers on request at specific unpredetermined stops (Fadare 1998). However, many of the vehicles used as informal public transport were noisy, smoky, rickety and jolty which posed specific environmental problems to the road users and non-road users alike (Fadare 1998). In most cases high accident rate was recorded among para-transit operators (Bolade 1991), revealing the operators' carelessness and low level of training.

The traditional approach to solving transportation problems focused on the development of high capital facilities and often called for high capital outlay. In addition, the approach could generate distributive social and environmental impact. These shortcomings and this paved the way for the modern approach (Fadare 1998). Two advances in treating the problem are needed to obtain satisfactory results. Firstly, it is necessary to view the transportation network in question as part of the total transportation network and the effect that any changes on apart of the network should be traced through the entire network. However, the second aspect is more intractable; it concerns the effect of changes in the transportation system on the other systems, notably the overall urbanization.

2.2 Problems of Commuters and Public Transport Operators in Nigeria

Commuters and public transport operators in Nigeria face a wide range of problems. Ndikom (2008) identified poor state of roads and poor road design as one of such problems. The author pointed out that both rural and regional roads in Nigeria today are in such a state of disrepair that the maintenance cost to vehicles operating on the roads is extremely high. It may also be surmised that the harsh economic climate in Nigeria has resulted in the lack of economic power to maintain vehicles. Most of the vehicles are too old for meaningful maintenance, and in any case, Nigerian maintenance culture is poor. These have led to a regular break down of

most public transport vehicles. Oyesiku (2002) suggests that road traffic accidents which are in most cases caused by human error arising from recklessness, excessive speeding, and motorists' lack of experience and knowledge of the workings of the transport system constitute a major problem to commuters and public transport operators in Nigeria. The author further argues that 95% of public transport vehicles in Nigeria are second hand vehicles, some of which are rickety with smoking engines emitting poisonous gases like carbon-monoxide, nitrogen oxide, volatile compounds, lead etc. into the environment and which pose health risks to motorists and commuters and even the ecosystem. The situation in FCT today is similar to the aforementioned; this requires an urgent and radical response before the situation becomes unmanageable.

3. Methodology

Data were collected on public transport operators types (private or government owned), types of vehicles in use for public transport operation (mini, midi and maxi buses), public transport vehicles operational characteristics (passenger capacity, age, methods of acquisition, etc.), operational conditions, and number of return trips made per day and forms of public transport usage (work, business, schools, markets leisure etc.) by commuters. The data were primarily sourced from the FCT public transport commuters, and the researcher's personal observations and direct experience on a public transport ride in the FCT.

Five of the six FCT Area Councils accounting for about 96% of the territory's population were selected. The Area Councils were: Abuja Municipal Area Council (AMAC), Bwari, Gwagwalada, Kwali and Kuje. In addition to their population strength, these Area Councils were also the closest to the city centre as well as the location of most of the public transport operators. In each of the five Area Councils, all the major settlements and terminals that serve as public transport operating points were considered for questionnaire administration.

Considering, the target population which consists of the public transport operators, it is certain that the easiest means of contact with them will be at their respective public transport terminals. To this end, fourteen public terminals which were operated by private concerns i.e. National Union of Road Transport Workers (NURTW), Road Transport Employers Association of Nigeria (RTEAN) and three terminals which are operated by government owned public transport company - Abuja Urban Mass Transport Company (AUMTCO) were covered. In an attempt to arrive at a scientifically acceptable sample size of public transport operators on which the questionnaire will be administered, a one-week pilot survey was conducted in each park from 7:00am-6:00pm from Monday to Sunday ascertain the types of buses in use by the operators, the bus capacity and number of trips that were made at each terminal per day. This helped the researcher to arrive at the average number of trips from each terminal per day, upon which the operators sampling size was based. The procedure was performed for all the categories of public transport terminals selected for representative coverage. In all, a total of 1040 operators were estimated under the privately owned public transport while 10 operators were estimated under the government-owned public transport. Therefore, a total of 315 operators representing 30% of both the private and government operators were adopted for survey as the sample size.

The adoption of 30% sample size is justified on two grounds. Firstly, Borg (1971), suggested a minimum of 10% for population of 5000 and below, especially where the population of study is homogenous as it is the case with the FCT commuters and public transport operators. Secondly, the need to reduce the likelihood of double sampling, bearing in mind that a single vehicle can make multiple trips between and along a route within and between days of the

months which the survey lasted. The stratified sampling method was used to select public transport vehicles, based on two classes of private and government operators. This is sequel to the preliminary understanding that there are different public transport operators and vehicle types (small, medium and large), which must all be captured in the survey. The stratified random technique was then used by convenience to identify the specific vehicle types and of operators to be surveyed. This is because there is no comprehensive sampling frame from which random numbers can be generated for the adoption of simple random scheme.

The data were analyzed through tables of percentage, mean, graphical charts and maps to show proportional representation of each observation and for good pictorial expression.

4. Discussion of Results

Many factors can be used to identify operational characteristics of public transport vehicles used in the FCT; such factors further distinguished the public transport bus from other types of vehicles used for commuting. This study adopts the use of bus type, capacity, age, colour, method of operation, fare determination and collection mechanisms, route allocation modalities and general maintenance practices.

4.1 Forms of Public Transport Ownership

The result of the field survey shows that public transport vehicles could either be owned by private individuals, cooperatives/associations including unions, and government establishments. Table 1 shows that most FCT public transport vehicles (59%) are owned by individuals who operate them on a for-hire basis. This is followed by corporate bodies like registered companies (18%) and government (9%), cooperatives/associations (3%), while 9.5% did not respond to the question. The implication of this ownership structure is that the FCT public transport system could be vulnerable to disruption as these private operators could easily withdraw their buses from the road or change their routes without any warning to commuters who depend on their services.

Table 1: Forms of Public Transport Ownership

Type of owner	Frequency	Percentage
Individual	185	58.7
Cooperatives / Associations	10	3.2
Corporate body	56	17.8
Government	28	8.9
Others	6	1.9
Missing Values	30	9.5
Total	315	100

Source: Fieldwork 2014

This is possible as there are no regulations that make it mandatory for operators to inform government agencies of their intention to withdraw their services from a particular route. This can lead to long waiting time at bus stop or overcrowding of existing buses on particular route.

4.2 Structure of Public Transport operation in FCT

The public transport services in the FCT are provided by two categories of operators: the private sector making up the predominant operators (comprising individuals, cooperative organizations, companies and transport unions) and the government mass transit outfit, operated by Abuja Urban Mass Transit Company (AUMTCO). The first category is largely unregulated while the second is regulated in terms of schedules, routing of buses, and fare charge.

4.3 Public Transport Vehicles Carrying Capacity

Three main types of buses that were in used during the time of survey for public transport with varying capacities and peculiar attributes are shown in Table 2. The three types of buses are grouped using Addenbrooke, Davies and Tophan, (1989) classification in their study of public transport planning in the United Kingdom in conjunction with the Nigeria equivalent length in meters and the passenger carrying capacity. In terms of carrying capacity, the vehicles were predominantly small in size (69% were 14-18-seater mini buses; the big buses were slightly over a quarter of the total. Plate 1 shows the common public transport bus type in the FCT.

Table 2 Public Transport Bus Types and Dimensions

Bus Type		Length of Bus (metres)	Bus Passenger Capacity		
Conventional Type	Local Name		Manufactured Capacity	Approved carrying Capacity	% Excess Capacity
Mini Bus	HiAce		14-18		
Midi Bus	Volkswagen		28		
Big bus / Omni Buses	Toyota Coaster, Nissan Civilian, Mercedes Benz 911, 1414				

Source: Authors Compilation, 2014



Plate 1: Common Public Transport Bus in the FCT

4.4 Practice of Bus Overloading

One of the reasons highlighted by commuters as being responsible for poor level of public transport service is the issue of overloading. The yes or no question posed to the operators' shows that the operators had the tendency (69%) to exceed the capacity of their vehicles through vehicle seat redesign. The result shows that a little above half of the operators exceed their official capacity at different periods of operation. The result of further investigation with regards to the periods when such act is perpetrated is shown in Table 3.

As can be seen in Table 3, FCT public transport operators exceed their bus carrying capacity under different traffic situations and days of the week. The most prevalent period was during peak period (rush hours) of week days (Monday-Friday) when offices and business centres open and there are enough passengers above the supply capacity of the existing public transport vehicles.

Table 3: Period of Bus Overloading

Period	Frequency	Percent
Peak periods of the weekdays	78	46.7
Every time of weekdays	32	19.2
During Weekends	41	24.6
Occasionally	16	9.5
Total	167	100

Source: Fieldwork (2014)

Furthermore, the high rate of bus overloading (about a quarter of the total) recorded against weekends (Saturday and Sunday) can be attributed to the low presence of law enforcement agents such as the police, Federal Road Safety Corps (FRSC), and VIO personnel during the period to enforce compliance. Again, fewer vehicles are deployed for operation by the operators against the background of fewer commuters' movement. In order to appreciate the magnitude of the problem of overloading by the operators, a follow-up question was put to the operators to know the average number by which the operators exceed the bus capacity. The result is presented in Table 4.

Table 4: Average Number of Passenger Overloaded by Operators

Number of Passenger	Frequency	Percent
1-2	221	70.2
3-4	56	17.8
5-6	5	1.6
Above 6	33	10.4
Total	315	100

Source: Fieldwork (2014)

Table 4 shows that most operators (71%) exceeded the approved passenger carrying capacity for their vehicles by 1-2 passengers, 17.8% exceeded by 3-4 passengers, while 10.4% carried above six extra passengers based on the background that most of their operating vehicles were of small capacity. Thus, the level of overloading is high. Regarding the number of vehicles in the operator's fleet, 72.7% had 1-2 buses, while 15% had 3-4 buses. Those with more than five buses were fewer (Table 5). This is a pointer to the fact that the operators had limited capacities to meet the public transport needs of the FCT commuters. This is to be expected as the operators were dominated by the individuals (operators) with very limited financial capability.

Table 5: Operators Fleet Size

Fleet Size	Frequency	Percent
1-2	229	72.7
3-4	47	14.9
5-6	15	4.8
7-8	8	2.5
9-10	16	5.1
Total	315	100

Source: Fieldwork (2014)

4.5 Average Age of Public Transport Vehicles

This paper investigated how long the operators have been using their buses for public transport service by asking them whether the vehicle(s) were purchased newly or second hand. This is because; the length of bus usage can influence its service efficiency, especially where adequate maintenance is lacking. The result as indicated in Table 6 shows that 36.8% of the operators have been operating their buses for 3-4 years, about one-quarter for 5-6 years and less than one-tenth have an operational vehicle that is less than 1 year.

Table 6: Average Age (in years) of Public Transport Buses

Age (years)	Frequency	Percent
Less than 1	25	8
1-2	69	22
3-4	117	37
5-6	75	24
Above 6	29	9
Total	315	100

Source: Fieldwork (2014)

In an operating environment like Nigeria where most of the vehicles are procured from second hand sources, with poor maintenance culture and inadequate road from infrastructure, it might be safe to assume that most FCT public transport vehicles are old.

4.6 Methods of Public Transport Vehicle Acquisition

Further investigation on how the operators acquired the buses revealed five options as can be seen in Table 7. Outright purchase through personal savings ranked highest (34%), followed by loan from cooperatives and banks which accounted for about 29% and hire purchase with 20%. The highest figure of bus acquisition through personal savings may have accounted for the very low level of fleet size by public transport operators. The hire purchase option is not commonly adopted as a method of bus acquisition because of the long duration and high cost of repayment. It is often common to find some bus operators still paying back the hire purchase term even when their vehicles have been grounded. Again, it is partly the need to meet the hire purchase term that made some operators overstretch their buses beyond the limit of safe operation; and this could be responsible for high rate of depreciation of such bus.

Table 7: Methods of Public Transport Vehicles Acquisition

Method	Frequency	Percent
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Personal Savings	113	35.9
Bank / Cooperative Loans	90	28.5
Hire Purchase	63	20
Leased from Private Companies / Individuals	26	8.3
Leased from Government Agencies	23	7.3
Total	315	100

Source: Fieldwork (2014)

4.7 Vehicles Maintenance Practices

The frequency of maintenance could help prolong the life span of a bus, thereby guaranteeing a profitable return on investment and providing reliable access to commuters. Apart from the general daily inspection of the vehicle, routine servicing is also important. Commercial bus operators are compelled to take the vehicle to the Directorate of Road Traffic Services (DRTS) twice a year (every six months) for general inspection to ascertain whether or not the bus is still 'road worthy'. The essence of this is to promote safety on roads. Routine bus services investigation as shown in Table 8 indicates that about one-fifth undertook servicing only as the occasion demanded; about one-fifth did servicing once a week, while those who serviced their vehicles fortnightly and monthly accounted for more than half of the total. This indicates that there is no uniform standard for bus maintenance amongst the FCT public transport operators.

One major consideration regarding frequency of bus service maintenance is the cost involved in the exercise. Table 9 shows that vehicle servicing involved the purchase of certain consumables like engine oil, fuel filter, treatment, brake pads among others. The estimate of the cost ranges from as low as ₦3000 to more than ₦12, 000.

Table 8: Vehicles Maintenance Intervals

Regularity	Frequency	Percent
As Occasion Demand	66	21
Weekly	71	22.5
Every Two Weeks	94	29.8
Monthly	84	26.7
Total	315	100

Source: Fieldwork (2014)

Table 9 shows that nearly half of the operators expended between ₦3001- ₦5000 and about one-quarter spent less than ₦3000.

Table 9: Estimated Cost

Estimated Cost (Naira)	Frequency	Percent
Below 3000	82	26
3001- 6000	144	15.7
6001 – 9000	53	16.8
9001 – 12000	15	4.8
Above 12000	21	6.7
Total	315	100

Source: Fieldwork (2014)

Given the pattern of expenditure, it could be understood why about half maintain their vehicles about once in a month or as the occasion demands that is, delaying maintenance for as long as the vehicles are moving. The situation was compounded by the cost of spare parts; that rose sharply within the last one year.

Table 10: Prices of Operational Input for Commercial Bus Operation (2012 And 2013)

S/N	Inputs	2012 (Naira)	2013 (Naira)	% Increase
1	Tyres (9.00X20) big buses	33500	48500	44.8
2	Tyres (7.50X16) big buses	22000	28500	29.5
3	Tyres (7.50X14) big buses	24000	30000	25
4	Petrol per litre	65	97	49.2
5	Diesel per litre	165	195	18.2
6	Engine Oil per gallon	2800	3500	25
7	Engine Oil per drum	46760	58450	25

Source: Fieldwork (2013) and (2014)

While the cost of tyres for big buses increased about 49%, petrol per litre at the official pump price rose by 49% and four litres (1gallon) of engine oil rose by 25%, yet the fares charged along the routes have not changed correspondingly to the increase in the price of these inputs, especially for the government owned buses.

4.8 Methods of Money Remittance

Table 11 shows how the operators of the buses remit fund to the bus owners. Thus, about two-thirds of the operators remit the agreed daily returns to the bus owner at the end of the day's work, while one quarter do so at the end of the week. As the vehicles age, depreciation set in and only a careful estimation of certain amount (about 10% of the vehicle value yearly) as depreciation value can guarantee the sustainability of the public transport operation. Investigation through a yes or no question posed to the respondent shows that about half of the public transport operators do not set money aside for vehicle depreciation while 48% do. Indeed, majority of the operators (61%) did not know what depreciation was all about. Even the 30% that knew what it is did not see the need for setting aside funds for the purpose.

Table 11: Methods of Remitting Money to Bus Owner

Method	Frequency	Percent
Every Evening	125	40
Every Weekend	76	24
Every Month	79	25
Others	35	11
Total	315	100

Source: Fieldwork (2014)

4.9 Methods of Fare Determination and Collection

The average bus fare on FCT routes (Wuse-Kubwa, Wuse Nyanya/ Karu, Wuse-Gwagwalada, Wuse Zuba and Wuse Bwari) ranges from N130- N210 as attested to by about 63% of the operators. Once decided, the fare standard was applied by all operators, as confirmed by 84% of the operators. In the FCT, the factors guiding how fares are determined are unclear, even to the bus operators themselves, as no clear indices have been set out for fare determination along routes. An interview with private operators and union officials revealed that, the decision were mostly by bus owners who were said to consider the costs of

inputs (fuels, tyres, servicing, licensing and reasonable profit gap to recoup their investment on bus purchase etc). On the part of government owned operators, it was revealed that AUMTCO relied strongly on the recommendations and suggestion put forward by the Transport Secretariat in fixing the fares. Such recommendations took into consideration its own social responsibility to residents.

Table 12: Determinants of Public Transport Fare

Determinant	Frequency	Percent
Bus Operator / Owner	66	21.0
Government	32	10.1
Transport Unions	199	63.2
Others	18	5.7
Total	315	100

Source: Fieldwork (2014)

As indicated in Table 12, about two-thirds of the operators arrived at the transport fare on the route based on decision reached by the relevant unions (NURTW, NARTO and RTEAN), one-fifth of the total take the decision by themselves, while one-tenth arrived at the fare based on government decision. This latter group is likely to be the government (AUMTCO) vehicles.

Transport fare is collected in many ways and in any form. It is collected in the form of pre-paid tickets issued when boarding a bus like the AUMTCO and by the exchange of Naira adopted by the private bus operators with obvious weakness. Recognizing the weakness of their collection methods and the need to reduce the loss of revenue and fraud, private bus owners normally engaged the service of a close family relation to participate in the bus business as a member of the crew especially as bus conductors. Yearly retirement, loss of employment, loss of family head as well the weaknesses in the fare collection system has equally aggravated the need for the owner/operator system in the private/public bus operation. The entire bus operators interviewed, made use of bus conductors whose primary responsibility was to oversee the adequate and efficient collection of travel fare. In the process of doing this, the bus conductor (depending on the type of bus) have to walk around in the bus by squeezing himself round the passengers to collect fares. In essence, there was no way one could have known the daily revenue collected other than the amount so declared by the conductor since it is virtually impossible to determine the number of passengers carried per trip and on daily basis, because of the intermittent stopping to pick and drop passengers along the route.

4.10 Methods of Route Allocation and Change

Bus route allocation is important because it can influence the level of bus service supply and access in one route relative to another. The responses received from interviews shows about 74% of the operators had a route which they plied, while about 20% indicated having no permanent route. The choice of route especially by private operators was solely a personal choice of the bus owner having done a route assessment based on factors such as: availability of commuters, drivers' understanding of the route and registration with relevant unions.

However, the routes' choices were not permanent. Operators could at any stage decide to change, if the earlier baselines of profit margin did not reflect their projection as indicated by about half of the operators. A yes or no response by the respondents revealed that about 43% could not change. Furthermore, they gave some reasons for their inability to change route, as

indicated in Table 13 include bad road and traffic congestion along the other routes (35%), or resistance by the transport labour unions (33%) which constitute patrol teams who vehemently resist any operators who do not register to ply certain routes. One other reason had to do with the drivers not being familiar with a route and the associated bus stops (14.1%), while resistance by bus owners and government policy also influenced the choice. Information on why some operators cannot change their routes is important and can provide deep insight into the understanding of the existing operation of the public transport system while it also aids future public transport planning of the city because it provides the basis for adherence to assigned bus routes; therefore promoting effective route planning analysis in particular and for public transport improvement generally in the Territory.

Going by the result above, the FCT public transport can be said to be demand responsive as referred to by many studies about public transport in Nigeria (Odumosu, 2004; Kukah 2007). This implies that public transport operators are aware of the need to run these buses along the routes where they were likely to pickup passengers all the time. Furthermore, the operators were also conscious of the implication of delays along the route during bus operating hours and such delays might come from law enforcement agents and traffic congestion. Some private operators indicated that some of them practice ‘route shifting’, a situation whereby operators abandoned their assigned/registered route to patronize other routes which offer more passengers. This practice was common in the evening hours when route enforcement by the union is low.

Other factors encouraging change of route are listed in Table 14. First is incessant harassment from law enforcement agencies (Police, VIO or FRSC) for non compliance with vehicle road worthiness requirements and other traffic rules and regulations which accounts for 34.8% of the responses. Because the operators are likely to be at one time or the other guilty of this, they will seek any route where the presence of the law enforcement agents is less visible.

Table 13 Barriers to Change of Route

Barriers	Frequency	Percent
Government Policy	96	6.7
Resistance by bus owner	47	11.1
Traffic Congestion on routes	19	34.8
Non-familiarity with other routes	19	14.1
Transport Unions	45	33.3
Total	315	100

Source: Fieldwork (2014)

Secondly, the road condition and congestions associated with their existing route could also be the cause of the change, as opined to by about one-fifth. Thirdly, low passengers to guarantee full vehicle loads in both leg of the trip as a result of over saturation by many operators is also a factor (20.1%).

The other reasons why operators change their routes include previous familiarity with the route, proximity to the home of the bus operator or owner who might want to exercise closer supervision over how the bus is being used or operated, and the belief (on the part of the particular bus operator) that the route is profitable and less dangerous to run. This finding can be supported by that of Odumosu (2004) in the study of bus provision and use in metropolitan Lagos.

Table 14 Factors Encouraging Route Change

Factors	Frequency	Percent
Low Passenger	33	20.1
Many Operators on the Route	13	7.9
Law Enforcement Agents Harassment	55	33.6
Bad Roads	14	8.5
Traffic Congestion on Assigned Route	39	23.8
Others	10	6.1
Total	164	100

Source: Fieldwork (2014)

4.11 Duration of Public Transport Operation and Number of Return Trips Made

The length of time and the number of days that public buses operate could increase or decrease the availability and utilization rate of the existing public transport service thereby widening/closing the accessibility gap. As revealed in Table 15, not all operators in the FCT work seven days in the week; only one-third did. Indeed, a great majority (60%) operated from Monday to Friday only and a few operated on week-ends. This pattern could be explained from the pattern of commuters' movement especially to the city centre which is the major generator of work-related traffic which is high between Monday-Friday and very low on weekends (Saturday - Sunday). Operators have to reduce the supply of their services so as to minimize empty runnings which will translate into loss.

Table 15: Days of Operation by Public Transport Operators

Days of Operation	Frequency	Percent
Monday - Friday	190	60.3
Saturday – Sunday	17	5.4
All days of the week	102	32.4
Others	6	1.9
Total	315	100

Source: Fieldwork (2014)

The duration of private bus operation i.e. what times of the day the bus operators start and stop operating bus service, is planned around the entire economic and working system of the city. This is because the number of working hours in workplace determines the duration of transport service supply by operators. Thus, as shown in Table 16, more than half (55%) of the operators run their buses between 5 and 8 hours per day, probably to tally with the operating hours (8:00am- 4:00 pm) of most government offices and businesses; about 23% operate for 9-12 hours; while only 16% operate for less than 4 hours per day. Generally, it can be inferred that public transport operators in the FCT operate many hours. However vehicles need not run all the time.

Operators made deliberate attempt to allow the bus engine to cool down in order to reduce the pressure on the bus engine during these hours of operation. As shown in Table 16, the cooling duration per day ranges from 1 -3 hours, especially when the bus operators have to wait for their turn; queuing at filling station, changing shift between drivers or when a new crew is taking over the bus, in the case of transporters that operate shifts.

Table 16: Duration of Daily Bus Operation

Days of Operation	Frequency	Percent
1-4	61	19.4
5-8	173	54.9

9-12	71	22.5
13-16	6	1.9
Above 16	4	1.3
Total	315	100

Source: Fieldwork (2014)

The average daily trips of the buses, during peak and off peak periods on weekdays revealed similar pattern as slightly over half (55%) of the operators made 5-6 return trips per day, about 31% and 23% 3-4 return trips in peak and off peak period respectively, while only about 5% operate between 7-8 trips per day.

The pattern for weekends somehow differs (Table 17), as more than 70% made 1-4 trips both at peak and off peak period. This implies that the round trip during the weekend was lower because the volume is also very low on weekends.

Table 17: Operators Daily Trips on Weekdays (Peak and Off Peak Periods)

Days of Operation	Peak period		Off peak period	
	Responses	Percent	Responses	Percent
1-2	25	7.8	45	14.3
3-4	97	30.8	72	22.7
5-6	173	54.9	171	54.3
7-8	16	5.1	18	5.6
Above 8	4	1.3	9	2.9
Total	315	100	315	100

Source: Fieldwork (2014)

4.12 Bus Scheduling and Time Tabling

No privately operated public transport in the FCT provided a scheduled bus service and therefore there was complete absence of time tabling in public transport operations. Subsequently, what operators do as an alternative to scheduled bus service was what is popularly referred to as the 'turn-by-turn' arrangement based on the order of first arrival.

Table 18: Operators Daily Trips on Weekends (Peak and Off Peak Periods)

Days of Operation	Peak period		Off peak period	
	Responses	Percent	Responses	Percent
1-2	91	28.9	101	32
3-4	151	47.9	121	38.4
5-6	46	14.6	64	20.3
7-8	26	8.3	20	6.4
Above 8	1	0.3	9	2.9
Total	315	100	315	100

Source: Fieldwork (2014)

But, under keen competition and where there were many passengers along the route, the buses kept moving trying to outrun each along the routes. The essence of time scheduling for bus is to reduce waiting time at bus stops as much as possible and improve the quality of bus service provided for bus commuters.

4.13 Bus Appearance

Bus appearance is not a strong measure of public transport accessibility. However, when the issues of safety, risks and hazards are considered, then the bus appearance become paramount in judging the quality of service provided. Many of the buses used by private operators in the FCT were dilapidated vehicles; some buses had broken windows which admitted rain drops, making the bus commuters to be wet in the course of their trip during the rainy season. Some of the buses also had damaged doors and as such could not be closed. This made some bus passengers to hang on the bus entrance. All public transport vehicles in the FCT were painted green with two white stripes by the side being the official colour for all public transport vehicles.

4.14 The Use of Bus Stops

Facts gathered on observation rides with the bus operators indicated that the usage of both the designated and undesignated stopping points was common in the Territory's public bus service system because the buses stopped at any point along the route to pick-up as well as discharge passengers (Plate 1).



Plate 1: Illegal bus stop in Abuja City

4.15 Recommendations and Conclusion

From the discussion above, it is clear that the FCT public transport system requires urgent interventions by all the stakeholders. Therefore, the FCT administration should galvanized action through their respective unions and associations to ensure that not only should the fleet size of the operators increase and the vehicles ages decrease., but the operators of the bus service put up a decent and professional conduct in which buses will be neat, and overloading and frequent stops on transit, filling stations will be avoided. Lane indiscipline and meandering on the road while scouting for passengers should also stop. Furthermore, policy makers in FCT like the FCT Transport Secretariat, Ministry of Federal Capital Territory, and Federal Ministries of Works and Transport should conscientiously strive to make public transport attractive to commuters by setting minimum safety and operational standards for the operators and backing them up with strict monitoring and enforcement with a view to ensuring that erring operators are severely sanctioned.

In conclusion, this study has shown the operational characteristics of the public transport in FCT which can in a way be used to explain the current service level. The study has shown that the public transport is at the moment facing numerous operational and management challenges which may in a way expand the demand and supply gap in the public transport service provision in the FCT. It is therefore believed that the implementation of the recommendations

above will assist in alleviating the current commuting challenge in the FCT which might further improve the quality of life and the rate of general productivity and development within and around the Territory.

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References

- Addenbrooke P., Davies E. M. and Tophan N. (1989), *Urban Planning and Design for Public Transport Bus and Coach*, London
- Andeleeb, S.S., Mohmadul, H. & Ahmed, R.I (2007) "Reforming Intercity Bus Transportation in a Developing Country: A Passenger Driver Model" *Journal of Public Transportation* Vol. 10, No. 1 p1-25
- Bolade, T (1998) Long Range Plans for the Development of Urban Mass Transit in Nigeria. In Ikya, S.G. (ed), *Urban Passengers Transportation in Nigeria*. Ibadan: Heinemann. pp 51-78.
- Bayliss B. (1981), *Planning and Control in the Transport Sector*, Gorvel Publishing Companies-Heinemann Educational Publishers.
- Borg, W. R. (1971) *Educational Research: An Introduction*, (2nd Ed.) New York: David Mckay Company Inc.
- Ekong B. U. (1977) Urbanization and Transportation Problems, A Case Study of Nigeria, In *Urbanization and Nigeria Economic Development*, Proceeding of 1977 Annual Conference of the Nigeria Economic Society p2-7-220.
- Fadare O. (1998) Analysis of Formal and Informal Public Transport Demand at Ibadan, Oyo State Nigeria, *Ife Journal of Environmental Design and Management* Vol 1-2.
- Hillings D. (1996), *Transport and Development Countries*, London: Routeledge.
- Ikya S. G. (1993), The Urban Transportation Problems in Nigeria, In *Urban Passenger Transport in Nigeria*, Heinemann Educational books, Nig. PLC.
- Kukah S. (2007), *Public Transport Supply and Demand in the Federal Capita Territory- Abuja*. Unpublished MTL Thesis, Nigerian Institute of Transport Technology- Zaria
- Nigeria Infrastructure Advisory Facility (NIAF), (2010), DFID Funded Programme Implemented by Adam Smith International for FCT Transport Secretariat, Abuja.
- Ogbazi J. U. (1992) *Urban Transport Planning in Chike Mba et'al (ed), Urban and Regional Planning in Nigeria*, Awka: Mekshlink Publishers Nigeria;
- Odumosu A. O. (2004); *A Study of Bus Provision and Use in Metropolitan Lagos*; Unpublished Ph.D Thesis, Geography Department, University of Lagos.
- Oniyangi A: (2012). *Bus Mass Transit Services in Abuja*, A paper presented at Workshop on a *Framework, Road Map and Financing Options for National Mass Transit in Nigeria*, organized by Technical Committee on Mass Transit Development with the assistance of the Nigerian Infrastructure Advisory Facility (NAIF) Transport, Hilton Total Abuja, May 7 – 8.
- Oyesiku O. K. (2002): "Sustainable Transportation Strategies on Intermediate Cities in Nigeria", *Journal of the Nigerian Institute of Town Planner*.
- Tolley R. S. (Ed.) (1988) *Transport Technology and Spatial Change*, Transport Study Group, *Institute of British Geographers*, London.
- Tyson B. (1991), *Transport Policy: Constraints and Objectives in Metropolitan Areas*, Rec Jaffers Discussion Papers 26, transport Policy Units, University of Oxford.
- Wilson A. G. (1973) *Urban and Regional Models in Geography*, Willey and Sons Limited.