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Regional Assessment of Public Transport Operations in Nigerian Cities: The Case of Lagos Island

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There is, in many cities of developing countries, a major challenge of adjusting the existing system of mobility to the evolving transport needs of the people. The situation in metropolitan Lagos provides a template of the circumstance in most of these city regions. This paper, therefore investigates specifically the public transport operations in Lagos Island sub-region of Lagos State to ascertain the level of performance. The study adopts simple descriptive statistics such as frequency counts and percentages as well as a pair-wise association between the level of service of the private sector in public transport system and patronage by commuters through the use of the Pearson's Correlation test. Result indicates that the role of the private sector in the public transport services associates highly (0.95) with patronage. As a vibrant sector of the transport system, it represents a major intervention area for a more effective transport operation in the city. Policy measures are recommended based on the research findings.

Keywords: region, public, transport, operations, Lagos Island, Nigerian cities, developing countries

Introduction

Provision of adequate and equitable service for all groups is the essence of urban planning, while transportation is one of the most important elements of such service. Transportation is a process that involves the movement of commuters, goods and services from a given point of origin to a specific destination (Okoko, 2006). It determines the regional patterns of development, economic viability, environmental impacts, and maintenance of socially acceptable levels of quality of life. It is a means to access business activities, education, employment and recreational opportunities, thus contributing to policy effectiveness and enhancement of security through reduced isolation as well as providing job opportunities (World Bank, 2002). White, (2002) opines that public transport is all modes of transportation available to the public irrespective of ownership. Mass transportation systems are varied, they are either land based (rail), road based mass transit system or water based. Common modes of public transport include buses and minibuses, shared taxis, converted pick-up vans, motor scooters (auto rickshaws) and pedal rickshaws (Adesanya, 2011). The dominant mode of public transport in developing countries is road-based. Public transport as an integral back bone of urban life is one of the factors which determine the form and socio-economic development of a city (Santhakumar, 2003).

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The importance of public transport stemmed from the fact that it provides mobility for those who cannot afford to buy a car and helps in creating and maintaining livable communities by relieving highway congestion and assuring long term sustainability in terms of resource consumption and the environment (Paul, 2001).

Transportation provides a very efficient means of moving large number of people with considerable flexibility in order to meet demand throughout the city (Armstrong-Wright, 1999). It plays a key role in shaping urban and rural landscape through its influences on the form and size of settlements, the style and pace of life by facilitating trade, permitting access to people and resources, and enabling greater economies of scale (Santhakumar, 2003). Problems pervading urban transport sector in most developing countries range from inadequate and poor quality of infrastructures, mismatch between demand and supply to increased rate of accident. The problems are triggered by interrelated trends such as urban population growth; rapid, unplanned and uncoordinated growth of cities.

Lagos State has been experiencing huge population increase in the past four decades. This is due to rural-urban migration and galloping urbanization in most developing countries. These have led to enormous challenges in terms of infrastructure provision. Public modes of transportation are provided by either the Federal, State, Local government or Private. The first generation of public transport operators in Lagos came into existence shortly after Nigeria's political independence. These include the Isale Eko Bus

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services, which collapsed in 1976. Many more transport operators sprang up between 1970 and 1980. They include Mainlanders Transport Corporation, Alimosho Line and Ikeja Transport Corporation, which also collapsed because of: inadequate government financial support and qualified staff to manage their operations, political interference and uncontrolled competition with para-transit operators.

This paper takes a look at the public transport operations in Lagos with particular focus on Lagos Island. In the city (region), public transport is not restricted to provision of road passenger service. The Nigerian Railway Corporation provides rail services while the Lagos State Ferry Corporation (LSFC) and Federal Inland Waterways Department (FIWD) were involved in the provision of ferry services within Lagos. In addition, since 1988, virtually every local government area in Lagos State has put in place some complementary activities in meeting the transportation needs of Lagos residents (Lagos Metropolitan Area Transport Authority – LAMATA, 2010).

Literature Review

Cities across the world are in a state of rapid transition. The livability and sustainability of these cities are intrinsically interwoven with not only the degree of efficiency and effectiveness with which existing transport capacity is managed but also how well immediate and future transportation plans and programme are articulated, laid out and implemented, in order to meet the needs of people (Adesanya, 2011). The spatial structure of cities especially in developing countries is highly varied and complex. Some areas are adequately provided with services and facilities while in others such is grossly inadequate. The variation in the spatial structure results in different socio-economic characteristics of urban dwellers with strong challenges of getting equal and efficient urban services for the disadvantaged.

The quality of life in most cities is poor and closely related to accessibility to alternate employment, education and medical facilities, essential public services and nature of recreational open spaces (Vasconcellos, 2011). Generally, car ownership in Nigeria is low. In the cities, there is an average of 4 cars per 1000 population, which translates to about 0.004 cars owned per person (Adesanya, 2011). With such a relatively low level of car ownership, our cities experience so much congestion with public transport. However, the situation is different in some countries. The saturation levels of car ownership is 0.831 in Brazil, 0.8 in Argentina, 0.825 in South Africa, and 0.683 in India. If vehicle growth will be twice the growth of income globally by 2020, and car ownership in Nigeria is to be similar to that of Brazil and South Africa, there will be a greater necessity for proactive measures for traffic management in Nigerian cities' (Ogwude, 2011).

A comparison of government and private operators of public transport shows that the state and local government public transports are more organized while private sector operators are largely unorganized. Private sector operators rely mainly on fare revenue and financial support from informal sector such as friends, relative, money lenders in order to finance their operations. Government-owned public transport have better trained staff and maintenance facilities than most of the private sector operators; their services are often provided on fixed routes, and are relatively cheaper than those provided by private sector operators. Government owned public transport operators also have service schedules, but in practice are rarely followed because of the inadequacy of vehicles, declining fleet utilization rates, growing competition with private and para-transit operators, poor traffic management, congestion especially during peak travel periods and other problems associated with the operating environment (Umar, 2003). Estimates of transport demands in metropolitan Lagos in the 1990s ranged from 7 to 10 million passenger-trips daily, out of which over 95 percent are undertaken by road primarily by car, bus and taxi with some 80-85 percent made by forms of privately provisioned public transport (Mabogunje, 2008). Lagos Island Local Government Area (LGA) is the sub-region chosen for this study due to its centrality within Lagos Metropolis.

The Case Study

Lagos State is the smallest geographically, but the most populous of all the states in South Western Nigeria, and arguably the most economically important in the country. Lagos city ranks seventh among the fastest growing cities in the world and next to Cairo in African continent (UN-HABITAT, 2000). It is located on the Atlantic Coast in the Gulf of Guinea, west of the Niger River Delta. It situates on longitude 3^0 24' E and latitude 6^0 27'N. It has 4,394,480 population according to the 2006 Nigerian Population Census, while Lagos Island Local Government Area (LGA) which situates in the Lagoon has a population of 102,658 (FGN, 2009).

The Lagos Island (LGA) is the Central Business District (CBD) of Lagos metropolis (LAMATA, 2010) that covers an area of about 8.7 square kilometers. It shares boundaries with Lagos Mainland LGA in the North, Atlantic Ocean in the South, Eti-Osa in the East and Apapa LGA in the West. The LGA is made up of fourteen (14) residential quarters. Although, these quarters have some indigenous populations, their major

occupation is trading with a mixture of civil service and professional jobs having represented the commercial nerve centre of Lagos metropolis. The record of the Lagos Metropolitan Area Transport Authority (LAMATA) indicates that the average population of commuters using public transport in Lagos Island LGA daily is about 47,675, where about 800 public transport operators work (LAMATA, 2010). The three existing terminals in the LGA are Idumota, Igbosere and Idumagbo with a total number of 400, 150 and 250 transport operators respectively.

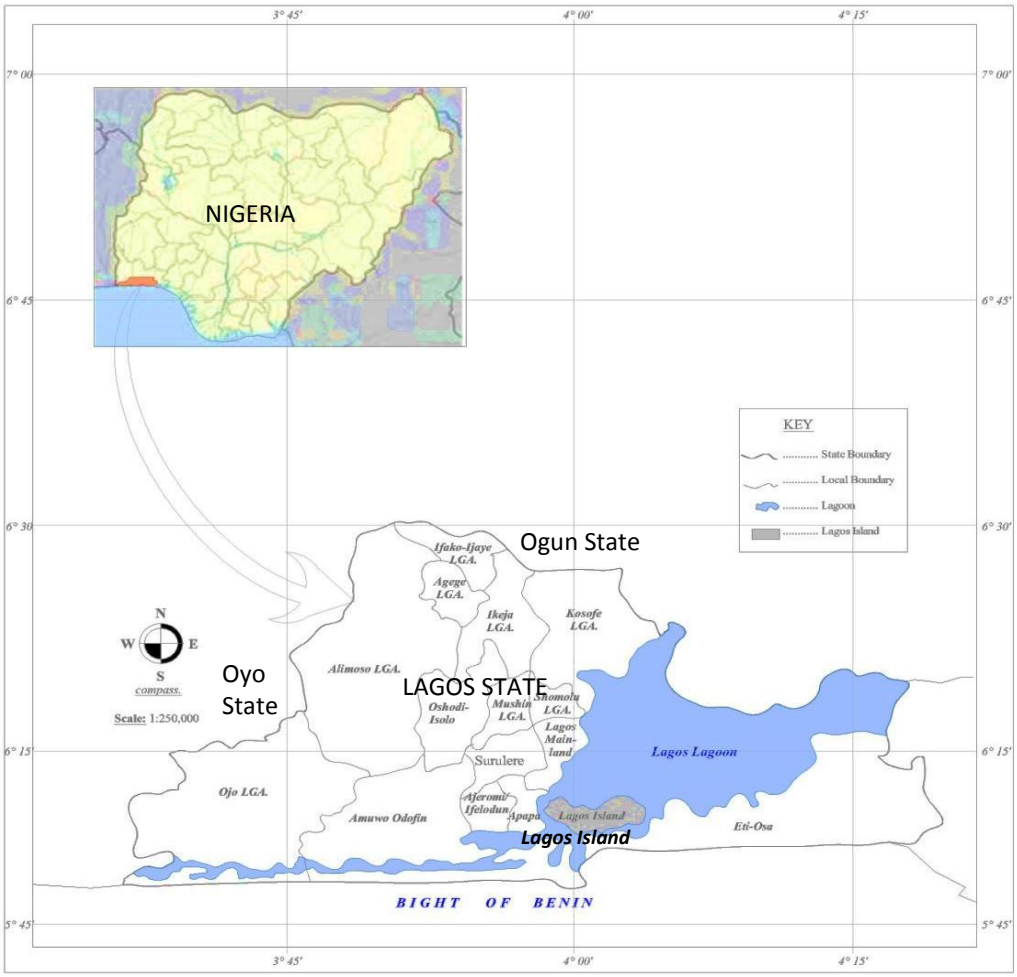

Figure 1. Lagos Island in the regional setting.

Research Methodology

The population under study is that of the users (commuters) and operators of public transport in Lagos Island LGA. The research instrument used was a well-structured questionnaire which was designed to investigate 25 and 20 variables on the commuters and operators respectively in the LGA. The variables were structured in question form and responses were sought in pre-coded alternative given.

The stability and constituency of the instrument used were tested using the "split-half" method. The questionnaire was divided into two parts based on odd-numbered and even-numbered questions and administered separately to a sample of respondents at the same time and scored accordingly. The two sets of scores gave a high correlation coefficient, indicating high reliability of instrument.

Five fifth-year Urban and Regional Planning students of the Federal University of Technology, Akure who acted as research assistants and had earlier been tutored by the authors, administered the questionnaire through face-to-face contact with the respondents (commuters and public transport operators) at the terminals during working hours for two weeks in November, 2011. They were instructed to read and interpret the questions in Yoruba (the local language in Lagos State) in cases where the respondents could not speak English. A sample size of 480 commuters and 160 public transport operators were taken for this study, of the 47,675 commuters and 800 operators previously

determined by the Lagos Metropolitan Area Transport Authority (LAMATA) in 2010. These were disaggregated proportionately to the three terminals in the LGA. The simple random sampling techniques were adopted and data collected were subjected to analysis at two levels. The first was univariate analysis which described the attribute and behavior of each variable. The second was bivariate analysis which described the relationship between pairs of variable. Specifically, the Person Product Moment Correlation Coefficient (R) test was used.

Findings and Discussions

Commuters' profile

Urban trip is affected by variables such as higher occupational status, household, income and level of education. In Lagos Island LGA more men (64.5%) patronize the different modes of transport than women (35.4%) as heads of households who must fend for their families. The occupational distribution reveals that majority are traders (50.6%) followed by civil servants (33.3%) and professionals or artisans (12.2%) most of whose monthly income is below $75.0 or N12, 000 (59.6%).

It is a common knowledge that many of the low class rely heavily on public transport for trips due to cheap fare. The low patronage by the high class is not unconnected with their strong agitation to own a car to avoid the inconveniences associated with public transport services. Majority of the commuters have secondary education (44.7%), 38.8% with elementary education while 14.5% are illiterates. By this, it is evident that the commuters are characterized with low education. Many (86.5%) of them are residents of the LGA, who satisfy short distance mobility demands of home to work. Generally, the prevalent high rate of unemployment, illiterate and semi-illiterate among the medium and low income groups in Nigeria has forced many to establish small scale business activities at or around their residential premises (Odigie, 2005).

Public transport operators' survey

Modal choice

Modal choice is a determinant of commuter's acceptability of the transport medium provided. The modes of transport available to commuters are Molue, danfo, Okada (motorcycle), private-driven Bus Rapid Transit (BRT), Lagos State Government (LAG) BRT bus and train. The proportions of commuters patronizing each are as indicated in figure 2 in which the use of Danfo (39.0%) is dominant. This is expected because the Danfo is a big private commercial bus that conveys large population of commuters at a time with the least fare. About 83.0% of the public transport services in the area are provided by the private (informal) sector while only 17.0% are by government agencies such as LAMATA.

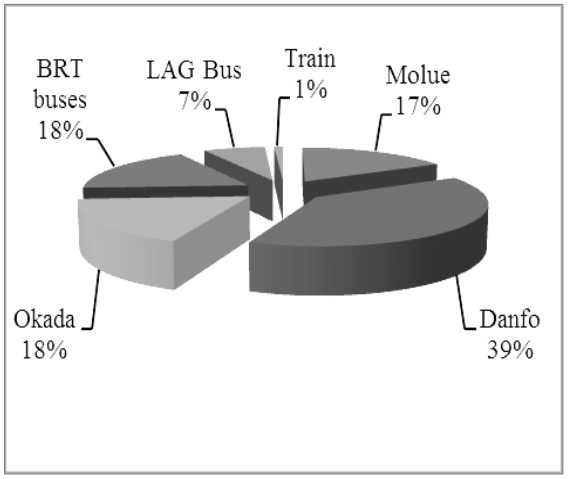

Figure 2. Mode of public transport patronized.

As established in literature, private ownership characterizes the provision of numerous mass transit vehicles used as public transport which are known in Lagos variously as Molue, Danfo or 'kabu-kabu' (Mabogunje, 2008). This implies that the private sector is critical in policies that promote public transportation in Lagos Island LGA.

Waiting time at terminals

In the study area, the commuters experience queues at the terminals. The queues are formed when the rate of arrival of items that require a given service is faster than the rate at which the required service is being provided. It is defined as the waiting time by human being or vehicle. The public transport operators wait for periods ranging from 5 minutes (18.1%), 6-10 minutes (42.5%) to 11-15 minutes (22.5%) and above 15 minutes (6.9%). The long period waiting occurs during the peak hours (7.30 – 9.00 am) and (3.30 – 5.00 pm). On the average, the commuters are delayed for about 10 minutes on account of queuing which is a common phenomenon in transportation studies and analysis in Nigerian cities. This is induced by large population and high economic decline (Basorun, 2005) which widen the gap between car ownership and travel demands.

Trip typology and comfort

The trip typology of the area determines the direction of movement of the transport operators. Evident from the commuters' survey is the journey to work places (95.0%) such as shops, offices,

schools etc where the public transport services are concentrated. Major factors affecting commuters comfort include crowdedness (30.3%), risk of accident (6.2%), poor treatment of commuters by public transport operators (21.5%) and traffic congestion (42.9%). Traffic congestion constitutes the significant factor affecting comfort particularly during the peak periods. This can be attributed to the increased use of automobile and poor conditions of roads in the urban area coupled with the prevalence of on-street parking and inadequate road infrastructure to accommodate different modes of transport. As observed by Garuba (1999), major roads in Nigerian cities are characterized by illegal motor parks, trading activities and overcrowding which create serious vehicle-to-vehicle and vehicle to people conflict.

Operational problems

The public transport sector is dominated by the informal (private) bus transport operators whose services are confronted with some problems. Finance is a major limiting factor to their operations due to the capital intensive nature of the business. These costs are in terms of procurement of buses (55.3%), road infrastructure (20.5%), spare parts and maintenance costs (24.2%). The public transport comprises mainly 48-seater buses and 16-seater mini buses. Most of these are expensive and already used imported buses which quickly become old and rickety with tendency to smoke and break down frequently (Mabogunje, 2008). In addition, there is limited regulatory/institutional effectiveness as well as lack of comprehensive transport policy in the state.

Correlation test of key research variables

Central to the research findings is the high involvement of private operators in the public transport services. A hypothesis was, therefore, established to ascertain if any significant relationship exists between the private-driven public transport services and patronage. In the analysis, two variables were involved viz: the level of private transport operations (X) and level of patronage (Y). The Pearson's Correlation test was employed to determine the degree of association. The 'r' value correlation analysis is highly positive (0.95) – a strong significant association between the level of privately driven public services and patronage by commuters in the study area.

Conclusion

The study highlights the various modes of transport in Lagos Island LGA and their levels of operation. The levels of satisfaction of commuters to the public transport services show that, traffic congestion is intense in the study area particularly during the peak periods and especially along major transport routes. Apparently, the demand on existing public transport system outweighs the capacity of existing transport facilities. The commuter's modal choice is predominantly commercial bus mainly controlled by the private sector. Waiting at terminals of public transports is frustrating thus, reducing the productivity of workers. To acquire more of these buses for effective operation is a major problem occasioned by the limited income of the operators. However, efficient and effective transport system is critical for sustainable development of the study area in terms of economic, environmental and safety considerations.

In conclusion, means of increasing public transport should be explored as a derived demand. It affects the quality of life and rate of development in developing countries. The engine for economic growth in developing countries is the city with public transport service as essential lubricant. In Lagos Island, there is high concentration of commuters on public transport as a major business district. Meeting the travel demands of the commuters, therefore, lies on concise and cogent public transport strategy and policy. The thrust of such policy should be to promote sustainable high-quality links for people by improving the efficiency and effectiveness of the informal (private) operators through workshops, seminars and training for far reaching benefits to the transport system. These informal sectors should also be empowered with funding through soft loans to increase their operations in the area. The recommendations if implemented will contribute significantly to technical capabilities of the operators and lead to more effective public transportation in Lagos Island as well as the city.

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