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Road Transport System Management and Traffic in Lagos, South Western Nigeria (Pp. 459-470)

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Abstract

There is hardly any human society or human settlement system that can function efficiently and effectively without adequate, reliable, safe and affordable transport systems management (TSM). The most fundamental reason for this being the catalytic effect of transport development on socio-economic growth and development. Transport can also play a significant role in territorial administration, political development, the defence of territories as well as in promoting regional cooperation. In Lagos State, there is a complex mix of landuses and all the major broad groupings of person movements in urban areas are made between them. Thus, while trips are made for a variety of purposes they are made to and from various landuses. Within any specified geographical area, certain landuses are greater attractors or generators of trips than others. However, the type of landuse in Lagos affects the flow of traffic to and from any location and therefore, the possibility of road traffic accidents.

Introduction

Transport System Management (TSM) is concerned with making existing transport systems as efficient as possible and with making provision for an area's short-range transportation needs. It is a key element in the transportation improvement programme of an urban area. In combination with the long- range comprehensive transportation plan, a suitable package of

programmes and polices for orderly development and operations of an urban area's transportation system is generated (Adebisi, 2004).

In general terms, the principal aim of TSM may be described as ensuring the best overall use of existing transport system and improving safety without impairing the environmental quality. It is a process for short term planning and operating a unitary system of urban transportation with the key objective of conserving fiscal resources, energy, environmental quality and enhancement of quality of life.

Road transport is a catalyst of urban, rural and national development. It is a catalyst by facilitating the movements associated with urban and national development and providing the means by which goods and services are made available to industry and consumers, creating opportunities for social and economic interaction and employment. Indeed, transport could be said to be the key means of giving expressions to policy initiative in such areas as health, education, employment etc. without transport, access to these facilities would not be possible and the services they provide not consumable. Transport is what gives life to development (Gunnarson, 1998; Spaething, 1999; Oni, 2001; Atubi, 2006).

On the other hand, one of the unavoidable negative consequences of transport in Nigeria is the road traffic accidents. Transport is a major cause of death in Nigeria. According to Aderemo (2002), urban environment are the most prone to motor traffic accidents because 75% of traffic accidents take place in built-up areas or cities.

Odedokun (1991) also identified the various negative consequences of high accident rate on the urban environment. These include drainage of foreign exchange, loss of present and future manpower resources, in ability to fulfil social obligation, creation of widows and orphans among others. As long as the urban areas continue to increase the level of use of the automobile, so shall the rate of accident continue to be on the increase. Roads in built-up areas display more accident rate up to three times greater than other roads in other environment (Hoyle and Knowles, 1998).

Roads and Their Structure in Lagos

Road transport is the major mode in Lagos State although air and waterways transportation exist. There are various types of road network, which extend to different parts of Lagos State. By 2001 the total length of tarred roads was 5,514 kilometres which include: Trunk A roads maintained by the Federal

Government; Trunk B roads maintained by the State Government and local roads that are maintained by the Local Governments with aid from the State Government (Lagos Urban Transport Project, 2002; Oni, 2004).

The primary road network (Federal and State roads) which link the major population centres cover some 4,921 kilometres. Majority of the primary roads are 3-lane, while some are 2-lane with width of 1.32 metres. In terms of road surface about one third of the roads in Lagos State are made of concrete deck 43% are asphaltic concrete while some 23.2% are bituminous (Lagos Urban Transport Project, 2002).

The metropolitan Lagos network structure runs through the central section of Lagos main land urban area on a North-south axis (Fig. 1). The gradual termination of western avenue at the National Theatre, which directly links Lagos Island through Eko bridge and continues further south to serve the Apapa Wharf area. These roads link several large centres including Lagos Island, Ikeja and Ketu area. The Lagos – Badagry express way serves as a dual double – laned facility and merges at the eastern end with Apapa road at the National Theatre junction. Another major urban arterial with its north – south comprising of Agege motor road, runs south from Agege to Ijbowu area. It links the Herbert Maculay/Murtala Mohammed corridor running south to Iddo and down to Lagos Island via carter bridge. The only planned formal access to the Ikeja area is the Airport road which links Ikorodu road with Agege motor roads. Lagos State has grown to become one of Africa's largest and most important commercial and industrial centre (Lagos State Chamber of Commerce and Industries, 2004; Egobi, 1999).

One important factor which has affected the maintenance of roads in Lagos State is transport co-ordination among the various governments – the Federal, State and Local Governments. Before independence the Federal Government was responsible for Trunk A roads which link the regional capitals with the national and international centres; the regional governments were charged with the responsibility of maintaining Trunk B roads that link the divisional headquarters with the regional capitals while the local authorities were saddled with the numerous roads that linked the various communities called Trunk C roads.

Since independence, various studies on transport co-ordination in the country has recommended that the states will also relieve the local governments' share of road maintenance (Robinson et al, 1961; Kampsex, 1973).

Traffic Management

The term “traffic management” comprises a variety of techniques for dealing with highway and traffic – related issues. As a concept, it is a process for planning and operating a system of urban highway and street network. It arises from the need to maximize the capacity of existing high way networks with a minimum of new construction. More recently, the emphasis of the process has spanned beyond simple capacity improvements to accident reduction, demand restraint, public transport priority, environmental improvement and restoring the ability to move around safely and freely on foot and by pedal cycle. Thus traffic management may be considered as a means of optimising the available highway network in accord with specified objectives as dictated by the prevailing local issues (Adebisi, 2004).

Traffic management according to Adebisi (2004) involves a package of actions designed to optimise the available highway network in a well focused manner. The package of actions comprises a variety of techniques for dealing with traffic and highway related issues. In general terms, the main features of traffic management measures may be summarised as:

- Be relatively inexpensive and be amenable to early implementation.
- Improved the usefulness of existing facilities while duly accommodating the different requirements of the different categories of road users.
- Improve safety or, and a minimum, maintain the existing level of safety.
- Protect the environment, improving it where possible

Among the relatively inexpensive techniques available for developing comprehensive traffic management proposals are:

- Road capacity enhancement schemes.
- Traffic sign (i.e. pavement, markings, road sign, etc.)
- Guardrails, cross markings etc.
- Traffic calming
- Vehicle parking regulations and controls
- Pedestrianisation measure

- Accident reduction programs
- Bus priority measures
- Application of intelligent traffic systems (ITS)

Any traffic management scheme involves a compromise as different categories of road users have different and sometimes, conflicting requirements. Consequently, surveys should be undertaken prior to introduction of any scheme. Avenues for feedback and appropriate revisions of strategies should also be institutionalised through constant monitoring. More detailed information on traffic management is available in current literature on the subject such as Salter (1996), Slinn et al (1998) and Asheley (1994).

Traffic Generation and Attraction

It has been acknowledged that the typical Nigerian urban problems concerning landuse and transportation revolve around many social, political, cultural, economic, technical and environmental issues, within the context of which future landuse and traffic projections can be made. Abler, Adams and Gould (1972) acknowledged this fact when they stated that land use analysis is a convenient way to study the activities that provide the basis for trip generation because travel pattern (routes and flows) are directed by network structure and landuse arrangement.

Blunden (1972) also related transportation pattern to the route network characteristics. He stated that traffic is a medium of activity. It is a joint consequence of landuse potential and transport capability. If landuse and transport do exist, the traffic that thereby evolves is a result of these two factors.

Landuse pattern on the Lagos metropolis to a great extent influences the traffic situation there. This is true because the routes on the northern, central and eastern portion of Lagos metropolis area which is characterised by a great concentration of residential and commercial activities as well as institutional activities have a heavier flow of traffic than those on the western portion of Lagos State.

Recently, in 2002, when a survey of Lagos urban traffic was conducted, the traffic situation at different times of the day by different modes of transport reveals an ever-increasing vehicular traffic. The three peak periods morning, afternoon and evening were observed (Table 1).

Examining the major study area of third Mainland Bridge, carter bridge, Eko bridge, western avenue, and Murtala Mohammed way; as well as Herbert Macauley, Agege motor road, Ikorodu road; it may be noted that cars generally recorded a remarkable volume between 4,225 and 62,786. Most cars were privately owned, Taxis were between 418 and 6983 in terms of volume in the 12 – hours two-way traffic volume study. Many of these cars were painted, old and rickety.

The number of minibuses ranged between 7,805 and 20,375. These minibuses were owned by private individuals and used by the public. The number of Omnibuses ranged between 354 and 7492. The minibuses have a carriage capacity of between 14-18 seaters, and like the taxi they were old and rickety (Oni and Okanlawon, 2004).

According to Oni (2004), the huge traffic generated between these various areas on the one hand, and residential districts on the other, is one of the main sources of congestion. Another major cause is the traffic between the city and almost the whole of the Nigeria country side. The city's traffic hinterland even extends to parts of neighbouring countries such as Benin Republic, Niger and Chad for which Lagos acts as an entry port. The traffic is handled mainly by trailers, oil tankers, buses, trucks and other cars: since the Nigerian railway and Lagos public ferry services had dwindled. The whole load has been shifted to cars and vans thereby congesting the roads the more.

Roads and Landuse in Lagos: Propensity for Accident

In discussing this section, references is made to figure 2 from it we can observe that the majority of residential, agriculture, transport facilities and industrial areas found in the Lagos area are located on the northern and eastern portion of Lagos metropolis. Their location makes the northern and eastern section more important than the southern section due to the fact that the movement of people, bus routes, and the location of establishments are influenced by this.

The influence this has on the traffic situation therefore, is a heavier traffic flow towards the northern and eastern section and towards the western section. As for the bus routes, it should be noted that most bus routes revolve around the activity areas than to the residential areas.

Traffic situation in Lagos is particularly chaotic. Lagos is the business nerve centre of Nigeria. According to Olukoju (2003) there are about 500,000 cars, buses and other vehicles combined in Lagos out of which 75% are private

cars and taxis. On the average, over 500,000 vehicles i.e. (approximately 1.4 million passenger trips) enter and leave Lagos Island the (central business District, C.B.D.) for metropolitan Lagos every working day of the week.

The estimates of urban transport demand in metropolitan Lagos in 2001 ranged from 7-10 million passenger trips per day (Lagos urban transport, 2002). The share of road transport in this is over 95%. The remaining 5% is shared between the rail and ferry transport system. Both, however, are on the decline. The ferry was responsible for only 82,000 passengers in 1995. If this has increased, it cannot be significant. The total annual passengers for the Lagos State Transport corporation (Bus) fluctuated from a peak of 90 million in 1978 to 82 million in 1983, 76 million in 1986, 67 million in 1987, 60 million in 1992 and 52 million in 2001 (Oni et al, 2004).

The result of the vehicle and passenger count surveys carried out at 15 locations by Aderamo (2004) revealed that the largest vehicle traffic flows were on Ikorodu road (at Maryland), Eko Bridge, Badagry expressway (West of mile 2) and western avenue, with daily traffic ranging from 145,000 vehicles on Ikorodu road to 110,000 on western avenue. The maximum daily passenger flows occurred in carter bridge (700,000 passengers per day); Ikorodu road (530,000 ppd), Eko bridge (512,000 ppd) and western avenue (470,000 ppd). Thirteen of the 15 roads surveyed were carrying over 200,000 passengers per day. These high vehicles and passengers flows reflected the magnitude of the traffic problems facing Lagos.

The traffic situation in Lagos is that bad because of the absence of effective transport planning; human – misuse, poor management route, inadequacy on the street parking, traffic congestion, delay and accident among other contributory factors.

Therefore, in recent years, there has been a growing realisation and landuse planning in Lagos State. This means that it is important to take into consideration the fact that the intensity of activities and therefore of trips originating from or being attracted to a particular landuse influences the volume of traffic attracted to it and consequently the associated occurrence of road traffic accidents in that area and therefore, the entire urban area.

Conclusion

It is clear that transport systems management (TSM), as a process, has become an indispensable tool for efficient urban transport systems management. However, TSM requires strong inter-agency collaborations

such that all relevant institutions and stakeholders groups act in a mutually reinforcing manner. Under such situations actions taken are comprehensive in scope and all are towards established system goals and objectives. Unfortunately, the current practices and institutional arrangements in Nigeria are at variance with TSM requirements.

It is therefore, pertinent to state here that the type of landuse in Lagos affects the flow of traffic to and from any location and therefore, the propensity for road traffic accidents.

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Table 1: Summary of 12 hours two-way traffic volume in Metropolitan Lagos (2002)

Location	Vehicle types			Molue/ minibuses	Staff bus	HGV	M. cycle (okada)	Total
	Car	Taxi	Minibus					
3 rd MLB(AD-LA)	94,189	6,855	18,399	2,322	3,563	3,328	2,771	131,427
3 rd MLB(LA-AD)	86,713	6,983	21,863	2,660	2,831	5,390	2,900	129,340
CAR B(OY-LA)	4,823	720	12,928	1,070	410	645	3,132	23,728
CAR B(LA-OY)	18,139	2,824	18,097	1,999	1,070	1,616	9,562	53,307
EKO B(ML-LA)	62,768	5,468	19,239	2,627	2,400	2,223	8,793	103,518
EKO B(LA-ML)	27,362	4,471	9,545	4,586	2,535	1,413	9,336	59,248
WA (WA-LA)	40,304	8,391	19,741	4,088	2,589	2,904	5,131	83,148
WA (LA-WA)	46,886	8,699	20,375	2,560	6,647	3,177	6,278	94,622
MMW(DENTON)	13,022	2,3751	7,918	7,492	1,389	1,003	9,230	42,429
HMR(AD-LA)	23,758	2,011	6,970	334	701	742	3,919	38,435
HMR(LA-AD)	9,700	782	5,039	102	456	319	1,509	17,907
AMR(OJ-MU)	10,758	1,038	10,646	905	866	634	3,818	28,665
AMR (MU-OJ)	4,225	415	3,876	354	264	257	1,995	11,386
IKDR(PG-FE)	28,313	2,510	12,731	1,072	555	1,452	1,444	48,077
IKDR(FD-PG)	28,083	2,963	10,032	2,252	558	2,690	1,750	48,328
AMR(OSH-IKJ)	15,120	695	9,111	1,561	1,784	626	2,832	31,711
AMR(IKJ-OSH)	13,143	448	7,805	3,413	153	670	1,130	26,762
IKDR(ML-FD)	37,981	2,662	15,490	1,991	1,404	2,971	1,535	64,034
IKDR(ED-ML)	22,926	2,049	13,105	1,200	1,779	6,475	2,804	50,338

Source: Adapted from Lagos Urban Transport Project, 2002)

Key

- | | | |
|--------------------|----------------------------|-----------------------|
| AD: Adekunle | OJ: Ojuelegba | MLB: Mainland Bridge |
| EKOB: Eko Bridge | IKDR: Ikorodu Road | CARB: Carter Bridge |
| ML: Mainland | LA: Lagos | OY: Oyingbo |
| WA: Western Avenue | MMW: Muritala Muhammad Way | AMR: Agege Motor Road |
| MU: Mushin | FD: Fadayi | OSH: Oshodi |
| IKJ: Ikeja | | |

Table 2: Land area of different landuse types in Lagos State (2002)

Landuses	Area in Hectares	Percentage of total
Urban landuses		
Residential and associated uses	54,480	15.23
Industrial	10,290	2.88
Transport facilities	26,570	7.43
Institution and special uses	14,138	3.95
Commercial landuses	2,530	0.71
Non-Urban Landuses		
Agriculture	133,203	37.24
Conservation/preservation	30,235	8.45
Forest and water supply reserves	6,175	1.73
Recreation and tourism	19,240	5.38
Water	60,839	17.00
Gross Total	357,700	100.00

Source: Master Plan Project, Urban and Regional Planning Division, Lagos State Ministry of Economic Planning and Land Matters (2005)

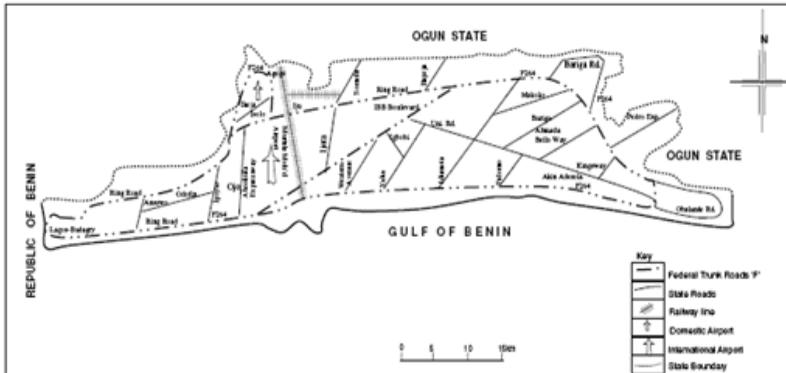


FIG | MAP OF LAGOS STATE SHOWING ROAD TRANSPORT NETWORK

SOURCE: Federal Ministry of Works and Housing (2002), Updated by Fieldwork (2004)

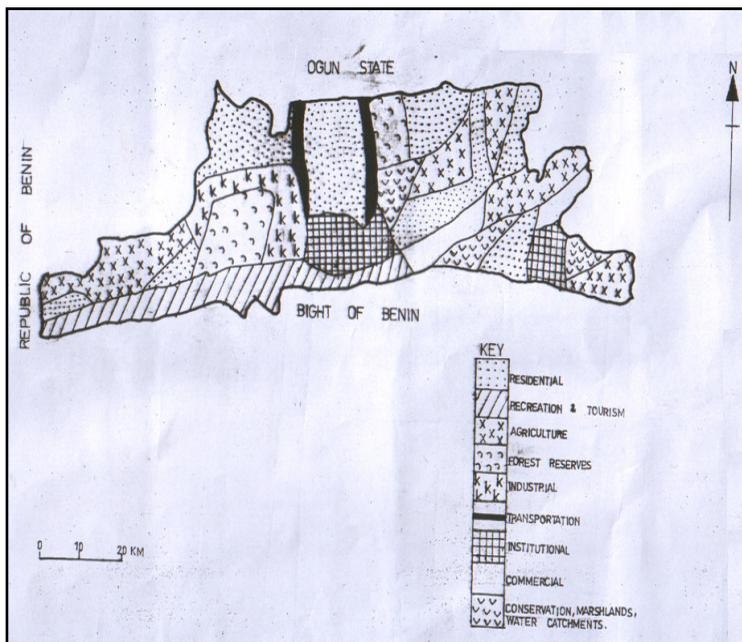


FIG 2: LANDUSE PATTERN OF LAGOS STATE

Source: Adapted from Lagos Urban Transport Project, 2002 (Modified by Atubi 2006)