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The challenges of on-street parking in Nigerian Cities' transportation routes

R.A. Asiyanbola *, A.A. Akinpelu

Department of Geography and Regional Planning, Olabisi Onabanjo University, Ago-Iwoye, ogun State, Nigeria

Abstract

Parking is an integral component of the transport system. It plays a crucial role in the management of traffic and congestion. On-street parking constitutes one major problem that makes traffic situation chaotic in Nigeria cities. Most roads in Nigeria cities are narrow and lack pedestrian lanes. There are cases of double parking along these narrow roads thereby causing traffic congestion. This is due to the non-availability of off-street parking facilities along the transportation routes. This study examines the challenges of on-street parking in Nigerian cities' transportation routes using Ibadan North-East Local Government area as a case study. Both primary and secondary data which were collected in 2009 were used in the study. Among the issues examined in the study are the situation of existing parking facilities along the transportation routes in the area; perception of road users (drivers and passengers) about motorist's parking behavior and the effect of on-street parking in the area. Policy implications are discussed in the paper.

Keywords: On-street parking, Urban transport, Urban roads, Ibadan, Nigeria

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* Corresponding author. E-mail address: siyraimi@yahoo.com, akin.david2010@yahoo.com

1. Introduction

The role of transport in our daily activities cannot be overemphasized and without it, the necessities of life would be difficult to achieve. As wonderful as the role of transport may be in our daily activities, it has been noted to possess myriads of negative effects. This is why in the literature transport is described as the maker and breaker of the cities. Ogunsanya (2002) confirmed how transport has built cities over the year in some urban areas in Nigeria and how it has gradually destroyed them. Filani (2002) and Ikporukpo (1994) stated that inadequate and poorly maintained infrastructure facilities, accident; the relative immobility of the disadvantage, waiting for a long period at the bus-stop, pollution from transportation; traffic congestion and parking problems are becoming acute in the city.

Cities function as commercial and industrial centre. Buses, trucks and cars move goods and passengers in and out of cities on daily basis. The way cities are organized constitutes a potential for increasing demand for motor based travel. Parking is vital to ensure people have access to goods and services which they need. It plays a significant role in city's economy. Parking becomes a necessity when one recognizes the fact that urban centre are characterized by interrelated and complex land use activities which requires well-planned and efficient performance of the transportation system.

On-street parking is a form of parking that involves all metered and unmetered parking along the road sides. It is a temporary driving a vehicle or maneuvering a vehicle in a certain location for different purpose e.g. commercial purposes. On-street parking exists as a result of non-availability of space for off-street parking and it is known as nearest to destination routes. On-street or surface parking are located and developed on a place of vacant land. On-street parking tends to be safe in case whereby charges are been paid for each parking space occupied otherwise, it is unsafe. There are two forms of on-street parking, official and non-official parking. The official on-street parking includes bank car parks, administrative car parks, religion car parks, office car parks, and recreational car parks and media car parks. However, non-official on-street parking is referred as kerbs as its nearness to destination. These include commercial parks, shopping parks, etc. Motor Park in the past was designed for reason of prestige to promote a company's image and to give the passengers a feeling of well being and safety. Parking is one of the experience that people have when traveling to a destination and it plays a crucial role in managing traffic and congestion as it is generally recognized that town center depends on a rapid turn-over of parking to meet the demand for short-stay visit. Convenient and affordable parking is considered as a sign of welcome, but the case is the opposite in the study area. It is highly discouraging that parking has become a serious problem that confronted the road users in the study area.

The study examine the challenges of on-street parking in Ibadan North East Local government with a view to proffer measures aimed at finding a lasting solution to the problems. The objectives of the study include: examination of the effect of on-street parking situation in the area; ascertaining the level of existing surface parking facilities along the transportation routes in the area; and evaluation of the perception of road users (drivers and passengers) with respect to motorist's parking behavior and the effect of on-street parking in the area.

2. Brief literature review

The significant role of transport in the movement of people, good and services from origin to destination which thus improved the socio-economic status and the general development of the nation cannot be over-emphasized. Oyesiku (2002) stated that the primary function of any transport is the movement of goods and passengers from point of origin to the various point of destination. Transportation is a process that involves movement of commuters, good and services from a given point of origin to specific destination. As observed in the literature, transport brings people and goods to people, returning enormous benefits to economic.

The literature shows that one of the major objectives of transportation planning is to ease the movement of passengers and goods on urban roads. However, in many towns and cities all over the world, there is undesirable degree of traffic congestion on urban roads. The provision of new roads is often expensive and most municipal government usually considers the option of widening existing roads which involves the destruction of houses and properties. The literature reveals that widening of roads and concomitant destruction of buildings are not necessarily the panacea needed in controlling traffic congestion on our roads.

As observed in the literature, categories of space in urban centre include exchange space and movement space which related to motor park, interchange point etc. As city transportation system expands, it takes up more spaces. The construction of new roads, the expansion of the existing roads, the building of parking lot requires the acquisition of part of the exchange space, the more space allocated to transport, the greater the requirement for more traffic space. Automobile therefore has an insatiable appetite for space, it uses space at home, at work, shopping and even when some spaces are empty, and it is tied up or reserved for the automobile. Automobile do not only have exclusive space for moving, they also have a "zone of influence" which expands as the speed and quantity of traffic increases, thus reducing the effectiveness of exchanges space and the level of interaction.

Unlike other urban problems, crisis in urban transportation quickly manifest itself in congestion, delay, accident, parking difficulties and environmental pollution. Ayeni (1983) described these as the most pressing and most visible urban problem of Nigeria cities. Oduola (1981) explained that most urban congestion problems are caused by the sub-optimal manner in which the roads are used. Road side and on roads parking, roads side trading and total disregard of traffic regulation by road users are significant human contribution to the traffic problem. In Lagos for instance, Ogunsanya (1986) observed that illegal parking alone account for 30 percent of the cause of delay along Bangbose, Igbosere, Ipodo, Bajulaiye, Ereko and Balogun and Ojoo roads in Lagos state.

One of the most fundamental problems in cities as observed in the literature is mobility. Access to transportation that meets the broad scope of economic and social needs of the people is very important. Mobility within the cities is generally the key to economic growth in the developed world. Sustainable mobility need to be among the first problem addressed when talking about ways to make cities more sustainable. As observed in the literature, sustainable mobility development implies that the consumption activities should be able to take into consideration effective utilization of available resource and develop environmental friendly system for the mobility of the people that would not change the natural resources and at the same time have some positive effect on the same environment.

Observation shows that two serious disadvantages facing urban transportation as identified in the literature among others include the following. Firstly was the heavy increase in motor traffic in city centers which often creates almost insoluble parking and garage problems. The second is the vast increase in road congestion. According to Simmon (1996) in the developing countries, parking is a complex and long term problem which cannot be totally eradicated but managed. Buses and trucks have to load and unload passengers and goods. They all need space to park and this pose a problem if required spaces are not available. The usage of vehicle has a direct linkage with parking. This is because after vehicle is driven to a destination, its usefulness greatly diminishes, if there is difficulty in parking. To be effective therefore, transportation system must include adequate parking facilities in all places that attracts vehicle traffic.

The argument in the literature is that the provision of parking for all automobile must be widely recognized as a responsibility where adequate facilities are not otherwise provided. He stressed that major attention should be on on-street parking for passengers cars as parking needs. According to him, to make this possible if there are no available spaces, he proposed for legislation that would be used to acquire land to be devoted to parking lot operation.

3. The Study area

The study area is Ibadan North-East Local Government in Oyo State, Nigeria. It was created on 27th day of August 1991. It has an area of 18 km² with a population of 330,399 at the 2006 census. Ibadan North-East Local government headquarter is located along Iwo road which is one of the major commercial centre in Ibadan land. The Local government is endowed with a wide expanse of land. The population of the Local Government consisted of civil servants, artisans and traders whose business activity is the buying and selling of different kinds of goods. The commercial activities occur on daily basis while spare part market at Agodi-Gate is a life saving market for the motorist in Ibadan.

3.1. Types of road in the study area

There are three types of roads in the area, secondary arterial, distributor or collector and service or access roads. The secondary arterial road serves as primary network for the entire local government. It is a federal road which begins from Iwo-road up to Bere round about from which all traffic connects to serve the entire local government. Distributor or collector road feeds the major land use in the area. It provides link to various residential places at Idi-Ape, Bashorun, Bere, Orita Aperin and Oje, Oremeji etc. Service or access road connects traffic from residential area to the main network of the road.

4. Methodology

The methodology employed consisted of the following stages which are highlighted below.

An in-depth review of relevant literatures on the subject of parking in general and on-street parking in particular to obtain series of information from previous research and extraction from published and unpublished text book, journal, articles and web materials were carried out. The information obtained from the exercise was treated as secondary information.

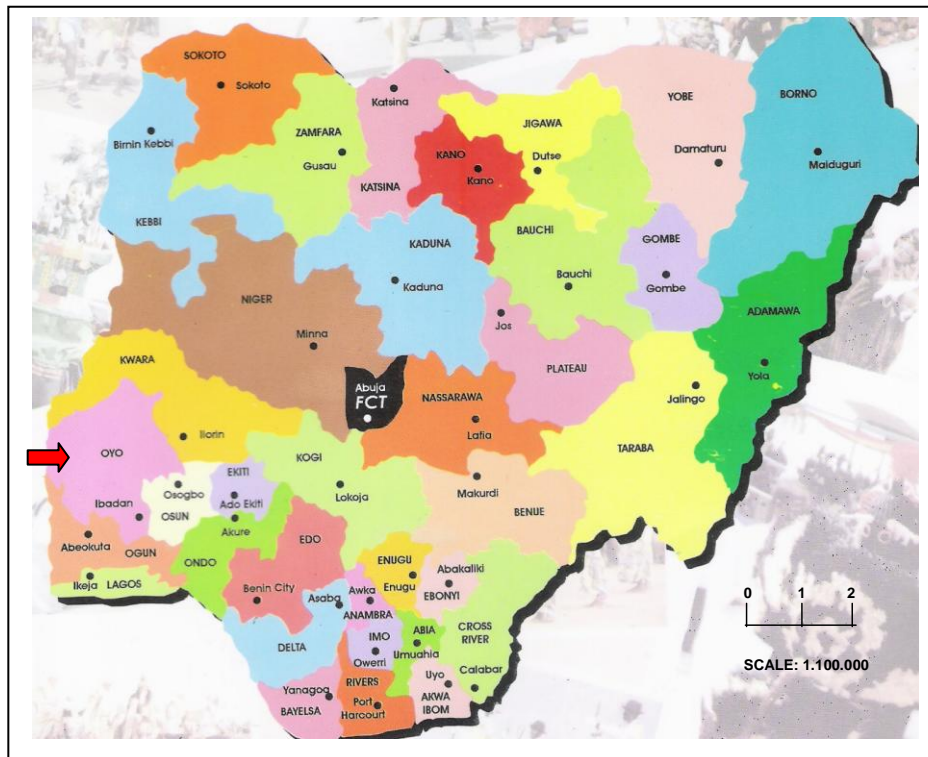


Figure 1. Map of Nigeria showing Oyo state (Source: Ministry of Land, Housing and Dev., Oyo State)

Primary data were collected through the use of questionnaires in line with the objectives of the study and administered to three set of people. The transport operators, commuters and local government official to obtain information as regards to on-street parking problem in the area.

One hundred and fifty questionnaires were prepared in which eighty (80) were designed to get the opinion of transport operators, fifty for commuters and the remaining twenty for the local government official to get their opinion on problems of on-street parking. The questionnaires were administered on weekdays.

Parking space inventory was carried out to obtain information on total length and width of the roads, and other road characteristics. Parking concentration survey was carried out also to obtain information on the number of and the classes of vehicles parked at on-street parking spaces at the period of thirty minutes interval. This was done between 7am - 11am and 3pm - 7pm on Monday, Wednesday and Sunday.

Furthermore, field notes used to record events and observation on research subject were meticulously kept. Photography where necessary were taken although they are not inserted in the paper.

Six areas were selected in Ibadan North East local government which includes Idi-Ape, Agodi-Gate, Oje, Beere, Orita-Aperin and Oremeji (Table1).

A convenience sampling technique was used to elicit information from the respondents. The collected data were analyzed using descriptive statistical techniques.

Table 1. Names of the area and number of Administered questionnaires

Location	Transport operators	Commuters	Local government officials
Idi Ape	10	5	
Gate	20	12	
Oje	15	12	
Bere	15	10	
Orita-Aperin	10	6	
Oremeji	10	5	
Total	80	50	20

Source: Field survey, May 2009

5. Results and discussion

On-street parking facilities include Kerbs, bus-stops for commercial motors and car parks for private cars. It was discovered that none of these facilities is found in the area thereby causing traffic congestion and accident. In the study area roads are narrow and lack pedestrian lanes. There are cases of double parking along the narrow roads thereby causing traffic congestion; this was due to the non-availability of off-street parking in the area. Also, there are no parking bays or loading bays for transit vehicle such as taxi, buses either to pick up load or unload goods and passengers along the routes. Consequently drivers resort to haphazard parking which not only erodes the aesthetic values of the road way and city structure but also constitutes risks to lives and properties

Also, motorist suffers stress in searching for parking space at destination such as Agodi-Gate, Oje, Beere, Idi-Ape Orita-Aperin and Oremeji of the local government area. Lack of loading or parking bay cause illegal on-street parking by motorist which has already reached crisis proportion in the area. Roadside hawking and trading along the road reduces road lane capacity. Rapid increase in the number of motor vehicles in the area has led to serious traffic congestion at peak hours of the day. The problems of on-street parking have made the area inaccessible and reduce the traffic speed and thus increasing traffic congestion as well as longing journey time.

5.1. Road characteristics in Ibadan North-East local government

Table 2 shows the primary distributor road which serves as both intra and intercity movement of traffic. It has very smooth tarred surface with fair drainage channels. It was dual carriage way. The traffic control on stand (traffic warden) varies from 2-4 at each junction and intersection. Pedestrian sidewalk was absent.

District distributor road has rough tarred surface with no drainage channel. It is intra-city carriage way. The traffic control on stand (traffic warden) varies from 2-3 at each junction. It lack pedestrian sidewalk. It was observed that these two categories of road are experiencing chaotic parking problem because they lead to the central Business District (CBD).

5.2. Parking concentration survey

Table 3 shows the parking volume incident on selected areas at the peak period hours of the day between 7am - 11am and 3pm - 7pm on Monday, Wednesday and Sunday. The table shows that the volumes of parking in the evening period of all selected days at almost all the locations are more than the morning period. In some locations, the volumes of motorcycle parking on the road are greater than its counterpart on Monday and Wednesday. Also the table shows that trucks had a greater volume of parking on Monday evening at Bere more than the other locations and than the rest of the day in the week. This is due to the fact that Bere comprises of both commercial and residential landuse thereby encourages parking of trucks on the road. Buses had a greater volume of parking (555) on Wednesday evening at Idi-Ape and Motorcycle (558) at Bere than the rest of the day in the week. The table further shows that at Gate taxi (commercial car) parks on the road to pick up and alight passengers. The evening period had a greater volume of parking in all the days of the week.

Table 2. Road characteristics in Ibadan North-East Local Government

S/NO	Road way	No. of Lanes	No. of traffic Control on Stand	sidewalk Width (m)	Condition of Road Surface & Drainage
1	Primary roads	2	2	NIL	Very smooth tarred surface with fair drainage
	Idi-Ape				
2	Agodi-Gate	2	3	NIL	smooth tarred surface with fair drainage
3	Beere	2	6	NIL	smooth tarred surface with fair drainage
4	District roads	1	2	NIL	Rough tarred surface with no drainage
	Oje				
5	Orita-Aperin	1	2	NIL	Rough tarred surface with no drainage
6	Oremeji	1	3	NIL	Rough tarred surface with no drainage
	Total		18		

Table 3. Parking concentration survey volume of parking on selected areas in the local government Monday traffic count

LOCATION	PERIOD	BUS	PRIVATE CAR	TAX	MOTORCYCLE	TRUCK	TOTAL
IDI-APE AREA	MORNING	211	104	-	232	8	555
	EVENING	207	157	-	237	12	613
OREMEJI AREA	MORNING	355	144	-	396	4	893
	EVENING	511	196	-	338	31	907
ORITA-APERIN AREA	MORNING	428	205	-	404	8	1045
	EVENING	494	226	-	518	14	1252
OJE-IGOSUN AREA	MORNING	401	120	-	247	19	787
	EVENING	476	196	-	460	21	1153
BERE AREA	MORNING	330	217	-	361	25	933
	EVENING	451	269	-	481	43	1244
GATE AREA	MORNING	272	80	124	450	10	396
	EVENING	398	33	237	447	12	1211

Wednesday traffic count

LOCATION	PERIOD	BUS	PRIVATE CAR	TAX	MOTORCYCLE	TRUCK	TOTAL
IDI-APE AREA	MORNING	205	83	-	227	12	529
	EVENING	555	107	-	442	36	1180
OREMEJI AREA	MORNING	305	178	-	348	12	843
	EVENING	311	171	-	389	4	907
ORITA-APERIN AREA	MORNING	449	204	-	446	13	1112
	EVENING	487	202	-	501	14	1197
OJE-IGOSUN AREA	MORNING	430	154	-	294	25	903
	EVENING	461	112	-	492	22	1087
BERE AREA	MORNING	399	119	-	291	18	907
	EVENING	527	347	-	558	21	1453
GATE AREA	MORNING	204	100	199	457	14	974
	EVENING	428	111	261	473	21	1294

Sunday traffic count

LOCATION	PERIOD	BUS	PRIVATE CAR	TAX	MOTORCYCLE	TRUCK	TOTAL
IDI-APE AREA	MORNING	107	62	-	118	2	289
	EVENING	252	96	-	225	3	593
OREMEJI AREA	MORNING	299	95	-	223	9	626
	EVENING	226	113	-	265	15	619
ORITA-APERIN AREA	MORNING	346	103	-	335	4	788
	EVENING	441	88	-	378	7	914
OJE-IGOSUN AREA	MORNING	380	98	-	196	8	682
	EVENING	460	143	-	189	18	810
BERE AREA	MORNING	363	99	-	258	33	753
	EVENING	241	192	-	376	25	834
GATE AREA	MORNING	169	83	159	413	6	830
	EVENING	278	88	199	375	8	948

Source: Field survey, 2009

5.3. Socio-economic characteristics of the respondents

5.3.1. Sex distribution of the respondents

Table 4 shows that majority of the respondents were male.

Table 4. Sex distribution of the respondents

SEX	TRANSPORT OPERATOR N=80	COMMUTER N=50	LOCAL GOVT. OFFICIAL N=20
MALE	84%	64%	90%
FEMALE	16%	36%	10%
TOTAL	100%	100%	100%

Source: Field survey, 2009

5.3.2. Age distribution of the respondents

Table 5 shows that majority of the respondents were between age 21-50 years.

Table 5. Age distribution

AGE	TRANSPORT OPERATORS N=80	COMMUTERS N=50	LOCAL GOVT. OFFICIALS N=20
< 20 yrs	5%	8%	-
21 – 30 years	23 %	46%	-
31 – 40 yrs	35%	16%	30 %
41 – 50 yrs	28 %	27%	50%
50 yrs above	9%	3 %	20%
TOTAL	100%	100%	100 %

Source: Field survey, 2009

5.3.3. Marital status

Table 6 shows that majority of the respondents were married.

Table 6. Marital status

MARITAL STATUS	TRANSPORT OPERATORS N=80	COMMUTERS N=50	LOCAL GOVT OFFICIALS N=20
SINGLE	27.5%	48%	-
MARRIED	65.5%	52%	100%
OTHERS	5%	-	-
TOTAL	100%	100%	100%

Source: Field survey, 2009

5.3.4. Educational status

Table 7 shows that most of the respondents were secondary school leavers.

Table 7. Education status

EDUCATIONAL STATUS	TRANSPORT OPERATORS N=80	COMMUTERS N=50	LOCAL GOVT. OFFICIALS N=20
NONE	4%	10%	-
PRY SCHOOL	29%	18%	-
SECON SCHL	40%	48%	70%
TERTIARY	27%	24%	30%
	100%	100%	100%

Source: Field survey, 2009

5.3.5. Occupation characteristics

Table 8 shows that majority of the respondents were self-employed.

Table 8. Occupational status

OCCUPATIONAL CHARACTERISTICS	TRANSPORT OPERATORS N=80	COMMUTERS N=50
PUBLIC SERVANT	6%	8%
COMPANY EMPLOYEES	11%	10%
SELF EMPLOYED	83%	72%
OTHERS	-	10%
TOTAL	100%	100%

Source: Field survey, 2009

5.4. Purpose for which vehicles are used

Table 9 shows that purpose for which vehicles are used for on the road were commercial purpose (50%), private used (19%), company used (16%) and public used (6%).

Table 9. Purpose for which vehicles are used

PURPOSE	FREQUENCY	PERCENTAGE
COMMERCIAL	40	50.0
PRIVATE	19	19.0
COMPANY	16	16.0
PUBLIC	5	6.0
	80	100

Source: Field survey, 2009

5.5. Respondents' assessments of parking facilities

Table 10 shows that the only available parking facility along the route is light provision and tarred surface along on-street parking. Other parking facilities and parking lots are inadequate.

Table 10. Respondents' assessments of parking facilities

PARKING FACILITIES & PARKING LOTS	AVAILABLE		NOT AVAILABLE	
	OPERATORS	COMMUTERS	OPERATORS	COMMUTERS
	N=80	N=50	N=80	N=50
Waiting shed with sitting provision	13%	10%	87%	90%
Tarred smooth surface	81%	60%	19%	40%
Drainage with concrete slabs	0%	0%	100%	100%
Kerbs	13%	0%	87%	100%
Light Provisions	56%	50%	44%	50%
Dustbins	38%	36%	62%	64%

Source: Field survey, 2009

5.6. Activities engaged in after parking

Table 11 shows that majority of the operators engage in loading and off-loading after parking (50%) followed by business shop (37.5%). This indicates that majority of the operators were commercial motorists.

Table 11. Activities engaged in after parking

ACTIVITIES	FREQUENCY	PERCENTAGE
Shopping	10	12.5
Loading & Off-Loading	40	50
Business	30	37.5
TOTAL	80	100

Source: Field survey, 2009

5.7. Duration of parking and walking

Table 12 shows that most of the operators parked their vehicles for more than 31minutes on the road (35.5%) while most of the commuters walking duration takes between 21 – 30 minutes (56%) which is equivalent to 300 – 500 meters on foot along the road.

Table 12. Duration of parking and walking

DURATION OF PARKING	OPERATORS N=80	COMMUTERS N=50
< 5 minutes	6%	-
6 -10 minutes	17.5%	-
11 -20 minutes	27%	20%
21 – 30 minutes	14%	56%
31 mins and above	35.5%	24%
TOTAL	100%	100%

Source: Field survey, 2009

5.8. Effect of on-street parking

Table 13 shows that the major effect of on-street parking is congestion. Others are accidents, longing time for journey and restricted movement.

5.9. Causes of congestion on the road

Table 14 shows that majority of those that responded to this question are of the view that lack of parking lots (56%), absence of loading bays (36%) are the major cause of traffic congestion on the road.

Table 13. Effect of on-street parking

EFFECT OF ON-STREET PARKING	OPERATOR'S N=80	COMMUTERS N=50	LOCAL GOVT. OFFICIALS N=20
Traffic Congestion	56%	10%	50%
Accident	25%	40%	30%
Longing time Journey	14%	10%	10%
Restricted Movement	5%	40%	10%
TOTAL	100%	100%	100%

Source: Field survey, 2009

Table 14 Causes of congestion on the road

CAUSES OF TRAFFIC CONGESTION	PERCENTAGE
Lack of Parking lots	56.0
Absence of loading bays	36.0
Others	10.0

Source: Field survey, 2009

6. Recommendation and conclusion

The following are important solution towards the improvement of the chaotic parking situation in the area.

- Provision of bus-stops and kerbs for commercial motors and parking lots for private motors.
- Provision of pedestrian walkways and pedestrian overhead bridge crossing at appropriate location.
- Provision of designated and specified park for different vehicles plying different routes as well as off-street parking for inter-city transport.
- Re-organization of market system in the area i.e. street-trading and roadside selling must be totally scrapped while government should provide a ready-made alternative place for commercial activities.
- Strict enforcement of traffic rules and regulations in the area which would involves law enforcement agent to be compelled to do the works with pride and more elements of efficiency and submissiveness in which vehicle found on illegal traffic routes should be punished according to the rules of law.
- Provision of parking guidance system that will cater for parking of vehicle during the peak hours of the city.
- Provision of subsidized mass transit to reduce the use of unconventional commercial vehicle.
- Widening of the existing roads to provide ease flow of traffic in the area.

The efficient movement of people and goods are vital task and upon it rest the quality of life as observed in the literature; there is no escape from transport because immobility perpetrate poverty.

In Nigeria, to derive the maximum benefits from transport, there is need to urgently address the challenges of on-street parking which has become an epidemic to the environment. It affects smooth flow of traffic and causes traffic congestion, lateness to work, accident and hampering other economic activities.

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