Car Park Usage and Management in Federal Institutions of Zaria Metropolis, Kaduna State- Nigeria

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Abstract

Parking management is increasingly becoming a major component of surface transport planning needs of public institutions like schools and hospitals, this is because the means of transportation cannot continually be in motion. Zaria metropolis harbors a number of such institutions which generates substantial vehicular traffic. Despite efforts by these institutions to provide parking facilities in the past ten years, persistent incidences of indiscriminate parking, non-usage of prescribed parking lots, double and road side parking is still very common. This study examines car par usage and management in five Federal Institutions (NITT, ABUTH, NCAT, FCE and NARICT) within Zaria Metropolis, it provides information to the number of parking facilities provided by the institutions, type of parking system adopted, users perception of such facilities and challenges of parking management in the Institutions. The study was carried out through field observation, traffic count and administration of 260 copies of questionnaires to determine the types, number, usage and parking duration on the available facilities (tarred, roadside and shaded) across the Institutions. The study revealed that ABUTH has the largest and most organized parking lots amongst all. This is perhaps due to the nature of its operations (tertiary health care service provider) and high level of enforcement instituted by the management. The major challenges faced by users of the car park facilities are long distance of the parking lots to the destination of the users within the institutions as well as poor medium of communication and direction to the available parking facilities. The implication of this study to the usage and management of car park in the study area lies in the provision of additional designated parking facilities to accommodate the increasing number of vehicles, strict enforcement through monitoring and sanctions to discourage parking within undesignated areas as well as integrating parking programmes into the physical development plans of the institutions.

Keywords: Surface Transport, Car Park, Vehicular Traffic, Road Infrastructures.

Introduction

Parking issue has become an integral part of surface transportation system, this is because all road based means of movement cannot continually be in motion, and there will certainly be a time where such vehicle will come to rest either at home, workplace, shops or social centers. Car park management is thus an essential component of any trip and has risen in significance as an issue in local and strategic transportation planning and policy (Hensher and Button, 2000). The socio economic costs of providing parking facilities to the society is significant and sometimes there are some level of conflicts of supply and demand amongst transport operators and managers as observed by Victoria Transport Policy Institute (VTPI, 2013). In Nigeria, car is one of the dominant means of transportation and yet parking management seems to be a neglected aspect of transportation planning and development. Venues of activities such as offices, Institutions, markets, shops and similar places often generate enormous parking demand that is more than what the parking provisions can accommodate thus, creating difficulties of parking vehicles at desired destinations particularly when located within the central areas. Since

illegal parking, roadside and on-street parking is becoming a major feature in Federal Institutions within Zaria, the traffic carrying capacity of the road within them which would have supported an efficient movement of automobiles is greatly limited.

Cities in Nigeria are rapidly growing and the economic patterns of the people in them are equally changing, with these changes there is a dire need for these cities to adequately provide all the infrastructures that would aid ensure and efficient mobility. The use of cars as a means of intra-urban movement in Nigeria has grown appreciable, therefore adequate provision of parking spaces as transportation infrastructures is one issue relevant authorities must adequately address (Cuddy, 2007). Zaria in Kaduna state Nigeria is home to a number of federal institutions like Ahmadu Bello University (ABU), Federal College of Education (FCE), ABU Teaching Hospital (ABUTH), Nigerian College of Aviation Technology (NCAT), Numerous Research Institutes like the Nigerian Institute of Transport Technology (NITT), National Research Institute for Chemical Technology (NARICT) among others. Military formations like the Nigerian Military School (NMS), Nigerian School of Military Police just to mention a few. These institutions have been found to be centers of trip generation and attraction. Despite efforts made by the management to provide parking facilities in the past ten years, persistent incidences of indiscriminate parking, non-usage of prescribed parking lots, double and road side parking is still a major source of worry. All these put together raise some concern about parking facilities, and its management in the study area which if not addressed could lead to great traffic, environmental, safety and security within and around the institutions. The forgoing leads to the examination of car park usage and management in Federal Institutions of Zaria metropolis. The study provides information with respect to the number of organize car park facilities available in the institutions, type of parking system adopted, users' perception of such facilities and challenges to the car park usage and management in the Institutions. It is expected that findings of this study will assist in the planning, designing or re-designing of parking system in the various institution.

Review of Related Literature

Ogunsanya (2002) noted that evidence in literature suggests that one of the major objectives of transportation planning is to ease the movement of passengers and goods. However, in many towns and cities of Nigeria (Kano, Port Harcourt, Kaduna and Abuja), there is an undesirable degree of traffic congestion on urban roads occasioned by unorganized parking. He further observed that, the provision of new roads is often expensive and most municipal government usually considers the option of widening existing roads which involves the demolition of houses and its attendant cost of compensation. As city transportation system expands, it takes up more spaces, the construction of new roads, the expansion of existing ones and the building of parking lot requires the acquisition of part of the exchange space, yet the more space is allocated to road 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 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 (Ogunsanya, 2002).

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. Earlier, Oduola (1981) has exclaimed that most urban congestion problems are caused by the sub-optimal manner in which the roads are used, as road side and on-street parking, street 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. Litman (2011) noted that 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. This 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 environment.

Simon (1996) observed that there are two serious disadvantages facing urban transportation, first was the heavy increase in motor traffic in city centres which often creates almost insolvable parking and garage problems. The second is the vast increase in road congestion, he submitted further that 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 of required spaces. 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 vehicular traffic.

Litman (2011) conceptualized parking problem in terms of a paradigm shift which describes a fundamental change in how a problem is perceived and solutions evaluated. Parking problem and solutions can be viewed in terms of a shift from the old paradigm to the new one. The old paradigm assumes that parking should be abundant and free at most destinations. It strives to maximize supply and minimize price. The paradigm also assumes that parking lots should almost never be filled and that parking facility costs should be incorporated into the costs of buildings or subsidized by governments and that every destination should satisfy its own parking needs The old parking paradigm asserts that parking requirements should be applied rigidly without exception or variation and that parking management should be seen as a last resort to be applied only if increasing supply is not feasible. The new parking paradigm on the other hand strives to provide optimal parking supply and price, it considers too much supply as harmful, as too little, and prices that are too low are as harmful as those that are too high as it strives to use parking facilities efficiently by considering full lots to be acceptable, provided that additional parking is available nearby and any spill over problems are addressed. It emphasizes sharing of parking facilities between different destinations and favours charging parking facility costs directly to users and providing financial rewards to people who reduce their parking demand (Willson and Shoup, 1999).

Management solutions tend to reduce most parking problems, providing a greater range

of benefits and so are supported by more comprehensive planning. It is also important to define parking problems carefully in order to provide solutions. For example, it is important to determine exactly what type of problem, and where, when and to whom it occurs. Increasing supply simply helps reduce parking congestion and spill over problems but increases most other problems (Edwards, 2002). In order to provide optimal parking supply, it is the practice in conventional planning to determine how much parking to be provided at a particular site by planners based on recommended minimum parking standards. This provides an index or parking ratio used to calculate the number of spaces to supply at a particular location. These are unconstrained and unadjusted values, which generally reflect the maximum supply that could be needed. These standards are often excessive and can usually be adjusted significantly downward (Litman, 2009). Conventional parking standards are based on parking demand surveys but the analysis does not usually take into account geographic, demographic and economic factors that can affect parking demand such as whether a site is urban or suburban, and whether parking is free or priced. These standards err toward over supply in many ways. They are derived from parking demand studies that were mostly performed in car-dependent locations. Applying these standards results in far more parking supply than is usually needed at most destinations, particularly where land use is mixed (Bradley,1997).

Better ways are now available to determine how much parking to supply at a particular site. These are the efficiency-based standards which take into account, geographic, demographic and economic factors that affect parking demand (Cuddy, 2007; VTPI, 2008). They also reflect the relative costs and benefits of different options, so less parking is supplied where parking supply is relatively costly to provide and where management programmes are easy to implement. Litman (2007) has also recommended an integrated parking plan which should be adjusted to reflect the needs of a particular situation. The steps include defining the geographic scope of analysis such as the site, street, district/neighbourhood and regional scale; carefully defining the parking problems; parking planning should be coordinated with a community's overall strategic vision and development of a comprehensive evaluation framework.

Methodology

The study collects data on the capacity of parking facilities, Parking System in place, parking facilities compliance level in different institutions and challenges to parking management in the study area. The data required were sourced from the respective Federal institutions parking lots, users and security units. Physical observation, photographic method and administration of questionnaires to staff, students and visitors to the institutions. The study focused on five purposively selected Federal Institutions out of the fourteen major Federal Institutions in Zaria metropolis. Their selection were based on their relative size, the volume of vehicular traffic generated or attracted per day and the relative ease of accessing data. The five selected institutions are:

i.   National Research Institute for Chemical Technology (NARICT).

ii.   Nigerian Institute of Transport Technology (NITT).

iii.   Nigerian College of Aviation Technology (NCAT).

iv.   Ahmadu Bello University Teaching Hospital (ABUTH) and

v.   Federal College of Education (FCE).

Pilot survey was first conducted between 9am- 10am for 3 days to have insight into the average volume of vehicular traffic attributed to each institutions per day. Physical observation was also carried out in the various Institutions' parking lots, where an enumerator was stationed from 7am to 5pm to observe the parking behavior. Information with respect to the duration of the average parking time were obtained by evaluating the time respondents spent on parking lots. The study population considered the average number of vehicles in circulation (staff, students and visitors) in these selected federal institutions and the sample size was determined following Krejcie and Morgan, (1970) table of determination of sample size where it states that a sample size of 248 is sufficient for a population of about 700 at 0.05 level of significance, see table 1 below.

Table 1 Average Vehicular Flow in the Institutions

Institutions	Av. No. of Vehicle	Sample Size
ABUTH	200	70
FCE	150	53
NCAT	130	46
NITT	110	40
NARICT	110	39
Total	**700**	**248**

A total of 260 copies of questionnaires were administered and 248 which represent 96% were returned, only 12 which represent 4% were not returned or filled improperly. The stratified sampling technique was used to select the respondents for the study. The data collected were analyzed using descriptive method involving tables of percentage.

Results and Discussion
Capacity of Parking Facilities
The capacity of parking facilities (marked and covered parking) in the institutions in terms of the number of vehicles it can comfortably accommodate at full capacity was investigated and presented in Table 2.

Table 2 Capacity of Parking Facilities within the Institutions

Capacity of Parking Facilities	NITT	NCAT	NARICT	FCE	ABUTH
Marked Parking space	110	80	50	45	650
Covered parking space	40	60	0	15	80
Total	**150**	**140**	**50**	**55**	**735**

The result revealed that NITT have a total of 150 parking spaces with 110 marked and 40 covered parking space, NCAT have a total of 140 parking space with 80 marked and 60 covered parking spaces, NARICT have a total of 50 parking spaces with all marked while ABUTH has the largest space and capacity (650 marked and 80 covered spaces) compared to the other institutions. The figure of marked and covered parking spaces in table 2 seems proportional to the relative size of the organization and the vehicular traffic it attract. Plate 1 and 2 present a pictorial view of this marked and covered parking spaces.

Plate 1: Shaded Parking Space at ABUTH

Plate 2: Open Marked Space at ABUTH

The result shows that 87.3% of users across the institutions were staff, 8.1%, students/participants, while 3.2% respondent are patients on appointments which could be relatives of the staff to the hospitals and staff clinics within the institutions. It can thus be inferred that staff are the major users of parking facilities in these institutions; this is expected in the sense that they have to commute to work almost on a daily basis.

Users of Parking Lots

The parking needs of users within these institutions varies in frequency, duration and timing, proper management of parking lots demands that information on this should be known, this is presented in table 3. Five categories (staff, students, patients, visitors and other general groups) of users group were noted.

Frequency of Parking Space Usage

The ability of parking facilities to meet the demand to a large extent depends on the frequency of usage per space and time in the respective institutions; this was investigated and presented in table 4. Four scales (once a while, daily, 2-3 times a week and weekly) were used.

Table 3 Categories of Users

	Name Of Institution					Total
	N.I.T.T %	NARICT %	NCAT %	ABUTH %	FCE %	
Staff	59	35	34	38	27	**193**
	26.7	15.8	15.4	17.2	12.2	**87.3**
Student	0	0	4	11	3	**18**
	0.0	0.0	1.8	5.0	1.4	**8.1**
Patients	0	0	1	2	4	**7**
	0.0	0.0	0.5	0.9	1.8	**3.2**
Visitors	0	0	0	0	2	**2**
	0.0	0.0	0.0	0.0	0.9	**0.9**
Others	0	0	0	0	1	**1**
	0.0	0.0	0.0	0.0	0.5	**0.5**
Total	**59**	**35**	**39**	**51**	**37**	**221**
	26.7	**15.8**	**17.6**	**23.1**	**16.7**	**100.0**

Table 4 Frequency of Parking Lots Usage

Frequency	Name Of Institutions					Total
	N.I.T.T %	NARICT %	NCAT %	ABUTH %	FCE %	
Once in a While	24	2	7	1	2	**36**
	11.1	0.9	3.2	0.5	0.9	**16.6**
Daily	26	29	25	37	31	**148**
	12.0	13.4	11.5	17.1	14.3	**68.2**
2-3 Times a Week	7	1	1	8	3	**20**
	3.2	0.5	0.5	3.7	1.4	**9.2**
Weekly	2	0	4	5	2	**13**
	0.9	0.0	1.8	2.3	0.9	**6.0**
Total	**59**	**32**	**37**	**51**	**38**	**217**
	27.2	**14.7**	**17.1**	**23.5**	**17.5**	**100.0**

As observed 68.2% uses the parking lots, 16.6% once in a while (i.e not exceeding twice a month), 9.2% 2-3 times a week and 6% weekly. Across the five institutions daily usage account for the highest percentage, this agrees with table 3 position which indicated that staff of the respective organizations are the major users as they have to commute to work almost on a daily basis and frequently than visitors and students category.

Kinds of Parking System Adopted by Users

The study sought to know the types of parking system adopted by the users at the institutions premises as against what is required by the management, this led to table 5 below. As observed 47.2% of NITT users adopted road side parking. Similarly 22.2% from NARICT, 5.6% from NCAT, 2.8% and 2.2% from FCE and ABUTH respectively equally adopted parking along the road. Furthermore, 38.1% of NITT users parking lot users (which is the highest amongst the institutions) parked in undesignated open spaces found in the Institute, followed by 23.8% from ABUTH, 21.4% from FCE, while 11.9% and 4.8% are from NCAT and NARICT respectively. Compliance level of designated areas parking is higher in NCAT (27.2%) and ABUTH (25.6). this is pointer to the effectiveness of the management team which are most times security personnel. Plate 3 shows road side parking at NITT.

Table 5 Kinds of Parking Lots Adopted by the Users

Kinds	Name Of Institutions					Total
	N.I.T.T %	NARICT %	NCAT %	ABUTH %	FCE %	
Undesignated Open Places	16	2	5	10	9	**42**
	38.1	4.8	11.9	23.8	21.4	**100.0**
Road Side Parking	17	8	2	8	1	**36**
	47.2	22.2	5.6	2.2	2.8	**100.0**
Designated Parking	17	23	34	32	19	**125**
	13.6	18.4	27.2	25.6	15.2	**100.0**
Total	**50**	**33**	**41**	**50**	**29**	**203**
	24.6	**16.3**	**20.2**	**24.6**	**14.3**	**100.0**

Plate 3: Road Side Parking at NITT

Duration at Parking Lots

The average time spent at the parking lots was measured in minutes the outcome is presented in table 6. The table shows that 86.5% of users in the five institutions spends above one hour at the parking lots, 10.2% spends 31- 60 minutes, while 3.3% spends 1-30 minutes. It can thus be inferred that the duration of parking in the lots the study area is long and this is because since most users are staff that spent about 8 hours from resumption to closing. At the comparative level amongst the different institutions, NITT parking lots users spend less time (1-30 minutes) compared to ABUTH. This variation can be attributed to the nature of ABUTH services as a tertiary health care institution which attracted visitors and referrals all over the nation and is open for service 24 hours of the day.

Different approaches are adopted to secure parking space by users, information in this regard can be used to substantiate argument on the degree of orderliness of parking system in each institutions. Table 7 provides insight to this. As indicated 14.1% of respondents from NITT drive in and then start searching for space, followed by NCAT and ABUTH with 8.6% of the respondents each, while 7.3% of respondents from FCE and 6.4% of respondents from NARICT adopt similar approach. The analysis revealed that users from NITT have more problems searching for space, this may be attributed to its small size compared to other institutions. Generally, most respondents in these institutions have less access to private or reserved space for parking in the following order NITT 0.9%, ABUTH 1.8%, NCAT 2.7%, and FCE 3.2%. Further interview with the authorities of this institutions revealed that reserved/private parking spaces are exclusively preserved for top management level staff. The situation of easy access to parking lots location can aggravate the tendency for unorganized parking systems in the institutions premises. Plate 4 below shows unorganized parking at FCE.

Methods of Acquiring Parking Space

Table 6 Duration At Parking Lots

	Name Of Institution					
	N.I.T.T %	NARICT %	NCAT %	ABUTH %	FCE %	Total
1-30 Minutes	2	0	1	4	0	**7**
	0.9	0.0	0.5	1.9	0.0	**3.3**
31-60 Minutes	2	4	8	3	5	**22**
	0.9	1.9	3.7	1.4	2.3	**10.2**
Above 1 Hour	55	27	26	44	34	**186**
	25.6	12.6	12.1	20.5	15.8	**86.5**
Total	59	31	35	51	39	**215**
	27.4	14.4	16.3	23.7	18.1	**100.0**

Table 7 Methods of Acquiring Parking Space

Methods	Name of Institution					Total
	N.I.T.T %	NARICT %	NCAT %	ABUTH %	FCE %	
Always go to the same parking space	14	16	11	22	9	**72**
	6.4	7.3	5.0	10.0	4.1	**32.7**
Have a private or reserved space	2	0	6	4	7	**19**
	0.9	0.0	2.7	1.8	3.2	**8.6**
Drive in and then start to look for space	31	14	19	19	16	**99**
	14.1	6.4	8.6	8.6	7.3	**45.0**
Drive around the institution looking for a free space	12	4	3	4	7	**30**
	5.5	1.8	1.4	1.8	3.2	**13.6**
Total	**59**	**34**	**39**	**49**	**39**	220
	26.8	**15.5**	**17.7**	**22.3**	**17.7**	100.0

Plate 4: Unorganized Parking at FCE Zaria

Users' perception on parking facilities in the Institutions

The overall perception of the parking system in the study area was obtained from the users on a four scale level of strongly agree to strongly disagree. Various issues on parking system management like availability, effectiveness of manpower, safety and security of cars and presence of signage facilities for ease of identification were considered as presented in table. The inference that can be drawn from table 8 is that the general provision and standard of signage for directions, safety and security of vehicles, and quality of parking lots is adjudged suitable as majority of the respondents agreed to the claim. However, it was noted that there is no effective and adequate manpower to guide users of the parking lots. Notwithstanding, car owners are guarantee of minimum safety of their vehicles when parked in their premises and

the respondents will want parking services be provided free of charge.

Challenges of Car Park Usage

The need for the respective institutions to provide a car park system which will meet the need of the users' necessitated enquiry to car park usage from the perspective of the users, the result is presented in table 9. As observed parking space is least a challenge across Institutions, so also is the cost of ticket, this is because investigation during the data collection shows that none of the institutions charges any fee for parking within their premises and each of them have a fairly large land space. The two issues that is fairly a challenge are distance of parking lots to destinations (offices, hostel, classes of hospital words and medium of communication or who to seek direction from with regards to the available and nearest designated parking lots. This development is perhaps one of the reason users will park in undesignated places.

Implications of the Study

The implications of the above findings for a sound and safe car park usage and management in the Federal Institutions of Zaria metropolis are:

- There is the urgent need to discourage parking in undesignated places within their premises, this

policy should be backed up with sanctions like: fines, clamping wheels or detention of erring driver's vehicles.

- More parking lots should be provided within the premises of these institutions, this should be preceded with a periodic car park survey to know the trend of vehicular traffic influx into the institutions.
- Each designated parking areas should be properly marked and directional signs be provided to guide users. In addition security

personnel should be provided to ensure compliance.

Conclusion

In conclusion car park facilities is an important component of surface transportation planning and management and corporate institutions like ABUTH, NITT, NCAT, FCE and NARICT should integrate this into their physical development plans. This is because car par usage and management in each organization can affect the effectiveness of traffic within them as well as adjoining land uses

Table 8 Respondents ranking of car parking issues in the Institutions

Range of perception	SA	A	DA	SD	Total	Median
There is more signage in parking areas	54	63	45	27	189	**Agreed**
There is the presence of standard car parking system	50	72	57	31	210	**Agreed**
There is effective manpower, enforcement officers and efficient car parking service delivery	40	50	63	62	215	**Disagreed**
Car owners assured of the safety, of their cars from theft	66	68	43	36	213	**Agreed**
Parking lots should be free of charge to staffs, students and visitors	118	48	23	20	209	**Strongly agreed**
Parking policy is an important tool to reduce car traffic within the institution	188	69	7	19	213	**Strongly agreed**

Table 10 Challenges of Car Park Usage

Challenges	Not a challenge (1)	Least a challenge (2)	Fairly a challenge (3)	Major challenge (4)	Great challenge (5)	Total	Median	IQR
Parking space	91	38	55	15	15	214	2	2
Cost of ticket	143	21	5	2	5	176	1	0
Distance to Destination	112	36	36	7	6	197	1	2
Insecurity	88	15	17	5	4	129	1	1
Medium for complain	94	33	27	19	9	182	1	2

Source: Authors' Field Survey (2016)

References

Baltimore, C. T. (2009). Department of Transportation [internet] Baltimore. DOT Available from: http: // www.hamdeenhappenings.org/HCC WEB/zoning Pdf/RAP/Angle parking.pdf 1> [Accessed 15 January 2009].

Bradley J, (1997). Toward a Common Parking Policy, Transportation Research Record 1564, Transportation Research Board (www.trb.org).

Cuddy M. R, (2007). A practical method for developing content-sensitive Residential parking standards, Dissertation Rulges University at http/. Transportation edu/news/2007/Cuddy dissertation.

Edwards J. D. (2002). Changing On-street Parallel parking to Angle Parking. Institute of Transport Engineering Journal 72(2), 28-33.

Dan Z. (2005). The Downtown Redwood City Parking Management Plan Available from: ⁢ shoup Bol.ucla.edu/Downtown%20Redwood%20 city 20 parking %plan. Pdf &gt. [Accessed 15 January].

Filani M. O. (2002). Mobility Crises and the Federal Government Mass Transit Programme, Department of Geography and Regional Planning, Olabisi Onabanjo University, Ayo-Iwoye Nigeria; pp 37-51

Indian Institute of Technology (2007). Illustration of 30 degree parking [online image]available from: ⁢ http://www.civil.iitb.ax.in/-vmtom/1106_ce740/112ce740/Plainling 16.f>[accessed is January, 2013].

Indian Institute of Technology (2009). Illustration of 45 Degree Parking. [Online image] available from & it, http://www.civil.iitb.ac. In/vintom/1106_cc740/112cc740/pla inling 18. Gif/gt; [Accessed 18 January, 2015].

Indian institute of Technology (2007). Illustration of 60 Degree Parking. [Online image] available from it; http://www civil.iitb.ac. in/vintom/1106_ce740/112ce740/pla inling 19.gif/&gt. [Accessed 18 January, 2015).

Kim, J. H., Kim, H. W., Heo, D. H., Chang, M., Baek I. J., Yun C. W. (2008) . System and Method for Providing Vehicle Parking Information Using Navigation Satellite [internet], Washington DC. Patent ducs. Available from &igt; http://www.faqs.or/patents/app/2009 0085773> [accessed 15, January 2015].

Krejcie A. and Morgan S. (1970). Table of Determination of Sample Size of Population. University of Minnesota, Duluth.

Litman T. (2011). Parking Management, Strategies: Evaluation and Planning. Victoria Transport Policy Institute. Ng CP, Ma'soem DM, 2005. The Development of Model Estimation to Determine Parking Needs at LT Stations in Suburban Area. *Proceedings of the Eastern Asia Society for Transportation Studies*, 5:877 - 890.

Litman T. (2009). Recommendations for Improving LEED Transportation and Parking Credits, VTPI (available at www.vtpi.og/leedrec.pdf).

Ogunsanya A. A. (2002). Maker and Breaker of Cities 59th Inaugural Lecture, University of Ilorin, Ilorin, Thursday, 27th June 2002.

Ogunsanya A. A. (1986). Traffic Congestion in an Urban Centre: the case of Ilorin Nigeria", *Nigerian Geographical Journal,* 27(1&2), 84-95.

Oduola S.O. (1981) Towards a commuter transport policy for Nigeria', in Onakomaiya, S.O. (Ed.) *Transportation in Nigeria National Development.* Ibadan: NISER.

Online TDM Encyclopedia (2008). online TDM Encyclopedia [internet] Canada TDM. Available from:&it: http://www.vtp.org/Edm/edm28.htm/*gt. [Accessed 15 January, 2015].

Parking Disc (2009). Wikipedia, encyclopedia [online image] available from: *it; http//en.wikipedia.org/wiki/file: zeichen_291.svg/gt. [Accessed 15 January, 2015].

Pay and Display Ticket Machine (2009). Wikipedia Encyclopedia [online-image] available from: & it; http//upload.wikipedia.org/Wikipedia/commons/f/fo/payand_displayticket_machine jpg/& gt: [accessed 15 January, 2015].

Simon D. (1996). Transportation and Development in Third World, Routledge, London.

Victoria Transport Policy Institute (VTPI), Summer- Newsletter 2013.

Wilson R.W. and Shoup D.C. (1990). Parking Subsidies and Travel Choices: Assessing the Evidence. Transportation, 17(2):141−157.

Your Dictionary (2009). Your Dictionary [internet] YD Available from; ⁢ http://www.yourdictionary.com/parallel_parking> [accessed 15 January, 2009].