

Traffic Congestion Problems in Central Business District (CBD) Ikeja, Lagos Metropolis, Nigeria

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Abstract

Central Business Districts (CBD) are indisputable areas of traffic attraction occasioned by the growing population concentration, rapid urbanization, and increasing commercial and economic activities. High population generates heavy vehicular traffic, leading to vehicular conflict and congestion as well as other mobility related challenges, which adversely affect the ultimate goal of people's mobility. The CBD is expected to offer high accessibility and mobility advantages, coupled with the provision of transportation infrastructures which paradoxically, are being threatened by mobility challenges resulting in low productivity and loss of man-hours within Ikeja CBD, thus adversely affecting the overall wellbeing of Lagos residents. This research examines the challenges of traffic congestion and management problems within Ikeja CBD. Data were collected through questionnaire administration, based on 100 per cent physical characteristics survey, while another 200 socio-economic characteristics survey were administered using quota sampling method to gather relevant information on traffic and transportation issues. Also, desk study of relevant documents, and interviews were equally conducted. Inferential and non-inferential statistics were employed for data analysis. Findings revealed a haphazard land use pattern, resulting into traffic and transportation bottleneck, vehicular conflict and avoidable traffic congestion, longer travel time and low productivity among others. The paper considers the need for a review of Ikeja CBD development guide as well as effective traffic management through enforcement and compliance with planning and parking rules and regulations among other suggestions.

Keywords: Central Business District, Commercial activities, Mobility, Parking, and Traffic Congestion

1. Introduction

Urban population growth and urbanization are major factors influencing decisions with regards to Central Business District (CBD) development activities worldwide. Of significance, is traffic congestion issue as a global phenomenon in the management of city's Central Business Districts, giving the level of population and activity concentration. United Nations (2011) first reported the urban population dominance in 2010, revealing that urban areas are home to 3.5 billion (50.5%) of world's population and cities population is expected to increase to 5.2 billion in 2050. Paradoxically, the CBD remains the economic dynamics and geography of city's core activities and businesses, among which are international finance and business, retail and wholesale shopping hierarchy as well as leisure, culture and entertainment, thereby generating thousands of employment opportunities and supporting residences. CBDs are bisected by complex socio-economic problems; such as inadequate housing, social infrastructural facilities and services shortages, as well as traffic and transportation challenges, essentially inadequate public transport provision; resulting in mobility crisis. This has significant implications on traffic congestion, adverse effects on the economic and people's social life-style with increasing social cost of congestion (Willett, 2006).

Road transport infrastructure as a major traffic corridor constitutes an important element providing accessibility to different land uses in the urban areas and proper functioning of human settlement to the extent that human settlements and urban development generally are incapable of proper functioning without it (Aderamo, 2003, cited in Oni, 2007). Therefore, the resultant traffic congestions remain a major problem to socio-economic development and management of CBDs. The trend of the associated problems have resulted in serious nightmare to policy and decision makers, scholars and transport experts who have roles in managing CBDs. One of such challenges is traffic conflict and friction as experienced by motorists and commuters who spend between 2 (two) and 4 (four) hours traversing a distance of 1 (one) and 2(two) km within the city centre during traffic peak periods. For instance, Sao de Paulo (Brazil), a city with 11million inhabitants has recorded an average traffic jams length of 180km (112miles); while the worst scenario could be as long as 295km (183miles), the city is noted to have experienced one of the World's worst traffic congestion situation (BBC, 2012). Similarly, in a rating of ten most congested European cities, leading four traffic congested cities are Istanbul -57 percent; Warsaw - 45 percent; Marseilles 45 percent; and Rome 40 percent (Mail Online News, 2012). In United States, noted for bottleneck scenario include Washington DC, Chicago, Los Angeles, New York City, where traffic crawls more than 90hours each week at an average of only 11miles per hour (INRIX, 2009). In similar

vein, African cities particularly Nairobi (Kenya), Kampala (Uganda), Lagos (Nigeria), are noted for notorious traffic congestion; heavy traffic jam, while motorists and commuters contend with extreme heat, air and noise pollution.

The traffic congestion situation in developing countries; especially in Lagos is mostly compounded by weak enforcement of traffic rules and regulations, especially in Ikeja Central Business District and its environs. Fall-outs of the CBD's traffic congestion negative effects are waste of valuable time and resources of motorists and commuters; delays, leading to late arrivals at important scheduled appointments; inability to forecast travel time and plan journeys; increased pollution and gas emission; with grave implications for sadetu of lives and properties.

This paper investigates the dynamics of traffic congestion and land use planning pattern in Ikeja CBD of Lagos State. The paper analysed the land use pattern, structure and parking activities within Ikeja CBD; examined the nature of traffic congestion problems, and its associated challenges; and developed strategies to ensure functional Ikeja CBD with an overall view of improving the socio-economic wellbeing of Lagos residents; through integration of transportation infrastructure in physical planning and development.

2. Literature Review

The CBD is a downtown within a city centre enclave, where development is compact. The cost of land is considered relatively high, in comparison to suburban areas. The high cost of land with high rise structures, justifies the dense development pattern in the CBDs. This District is the commercial, office, retail, and cultural centre of the city and usually is the centre point for transportation (Rosenberg, 2013, cited in about.com, 2013). Some of the theories and concepts usually adopted in the management of CBDs include central place theory that consider cities as a system; compact city theory, which according to Siy (2004), cited in Hirt (2007) points to initiatives of promoting compact cities that emphasizes higher level of mixing and integration of functions; concept of accessibility that centres on Oproximity of two or more places, emphasizing availability of opportunity in geographical region and freedom of individuals to participate (Burns, 1978).

Researches on city structure, especially dealing with the problems of congestion and traffic jam adopted mathematical theories such as Kemer, (2009) 'three phase traffic theory', which likened traffic flows to the rule of fluid dynamics, noting pipe suddenly freezing representing traffic jam triggered 'butterfly effect' with spontaneous driver's manoeuvring or traffic light control, distorting traffic flow.

Historically, the CBD developed as the market square in ancient cities. The market serves as forerunner and point where people, particularly farmers, merchants and consumers gathered on market days to exchange, buy, sell goods, services, ideas and socially interact. The city's centre later grew and developed as fixed CBD location point for retail trading and commerce. This serves as or near city's oldest point or core area, which often is the convergence point of major transportation nodes. The 21st century CBDs within metropolitan areas characterised by activities such as residential, retail, commercial, university, entertainment, theatres, shopping malls or complexes, government offices, financial institutions, medical centres, professionals' offices and cultural centre etc. CBD is majorly marked by skyscraper structures, high land value, especially at roads intersection. This buttresses the rationale for location of high-rise structures. The existing road networks at the CBDs are usually narrow coupled with inadequate off-street parking facilities that make on-street parking unavoidable. This reduces the road's right of way (row), thus marginalises its design capacity leading to traffic congestion.

Investigation into reasons for the usual traffic congestion at the CBD, Queensland, cited in Glaeser (2003) says "falling real car prices, and improving fuel efficiency, comfort, quality, and reliability of cars have added to usage. Consumers have shown strong preferences for comfort, time saving, convenience, flexibility, reliability, privacy, and refuge from harassment attributes of single-occupant vehicles. So, demand for cars and hence road-space has risen with income and value of time". In addition, cars offer substantial time saving advantage over public transport as passengers must get to a bus pick-up point and wait for a bus or train for 15-20 minutes, and then work from the drop-off point to the destinations (Glaeser et al, 2004). All of these discourage the use of public transport by urban residents.

Examining the modern CBDs in terms of problems and challenges, two major issues were identified. First, is mainly urban decay or run-down, creating undesirable condition to live-in; and secondly, traffic congestion within the city centre. Congestion is said to occur when transport demand exceeds transport supply at a specific point in time and in a specific section of the transport system (Aderamo, 2012). The traffic congestion is propelled by too many people working in the CBD areas, coupled with narrow streets and shortage of off-street parking facilities. This makes on-street parking inevitable and reduces road design capacity resulting in traffic jam. Solutions tried so far have not yielded the desired result in alleviating traffic congestion in cities, these include construction of ring-roads or by-passes, introduction of congestion charges or outright banning of cars from entering the CBD, park and ride schemes, car-pooling, traffic calming, low emission scheme, public transport subsidies, toll road, regulatory changes to increase density, parking levies and restrictions in area well

served by public transport; among others (Queensland, 2007; BBC, 2013; Scalloway, 2013).

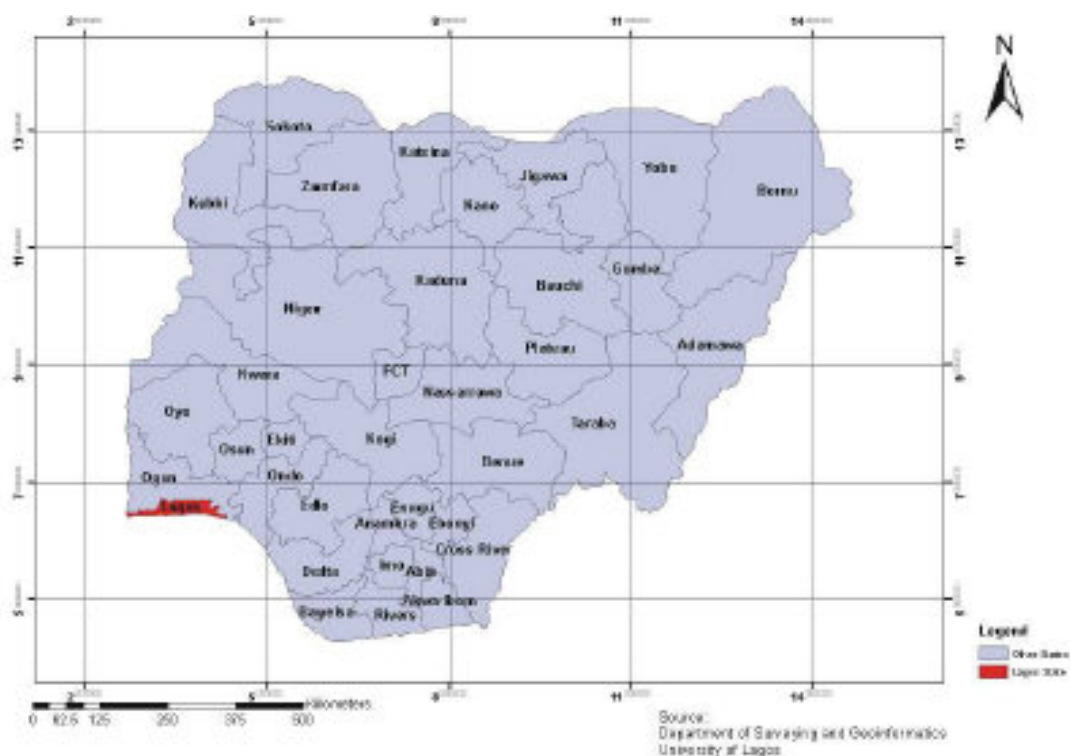
3. The Study Area

Lagos state is one of the smallest of the 36 states in Nigeria, located on south-western corner along the narrow elongated coastal flood plain spanning the Guinea coast of the Atlantic Ocean for over 180km, from the republic of Benin on the west to its boundary with Ogun State in the east (Online Nigeria, 2003). Lagos state lies approximately from latitude $6^{\circ} 2'$ North, to $6^{\circ} 4'$ North; and from longitude $2^{\circ} 45'$ East to $4^{\circ} 20'$ East. The state have one of the largest urban agglomerations, with explosive growth rate of 5.7 per cent annually; growing 2,000 inhabitants averagely daily, which translates into population growth of about 275,000 persons annually; and a population density of 2,594 persons per sq. km. The state's population is currently estimated around 21 million inhabitants (Lagos State Government, 2008; Un-Habitat, 2008, cited in LURG, 2009; Fashola, 2012, cited in Daily Independent, 2012).

Ikeja located in Ikeja local government area is the capital of Lagos State with co-ordinates $6^{\circ} 35' 48''$ North and $3^{\circ} 20' 35''$ East respectively (Google Earth – maplandia, 2005; Online Nigeria, 2003). (Fig. 1.1, 1.2 & 1.3 refers). Ikeja CBD is part of the Ikeja Local government Council Area; its represents one of the city's urban centres with approximately 1,640 km² land mass (Lagos Metropolitan Area Transportation Study, 1976). Ikeja CBD is bounded to the North by Obafemi Awolowo way via Alausa through Aromire on both sides of Adeniji Jones towards the end of Oba Akran area, around Ikeja Industrial area to the south, through Bank Anthony way, from Airport junction into Unity and Toyin Streets to Allen/Opebi junction on its eastern end, bounded by Lagos-Ibadan expressway towards Alausa secretariat, while on the western end is the thick swamp behind International Airport at Onipetesi area in Agege; all forming the physical entity of the study area. Ikeja CBD can be classified as a high class area, with heavy industrial establishments that characterized it as one of the most important manufacturing activity areas in Nigeria (Oduwaye and Enisan, 2011).

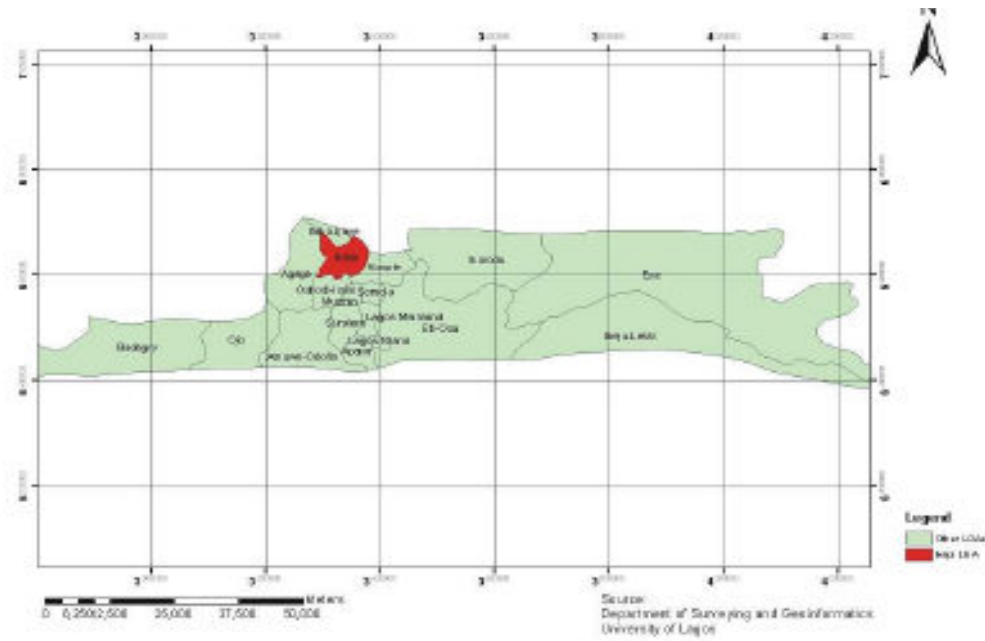
This study is of significance because of the status of Ikeja CBD being the economic, social, commercial, industrial and political nerve-centre of the Lagos State, and by extension Nigeria. Ikeja CBD has a range of shopping malls, complexes, organised market, informal commercial activities, including large computer market, together with arterial road networks and convergence of rail –line and railway station.

Fig. 1.1: Map of Lagos State in its National Setting

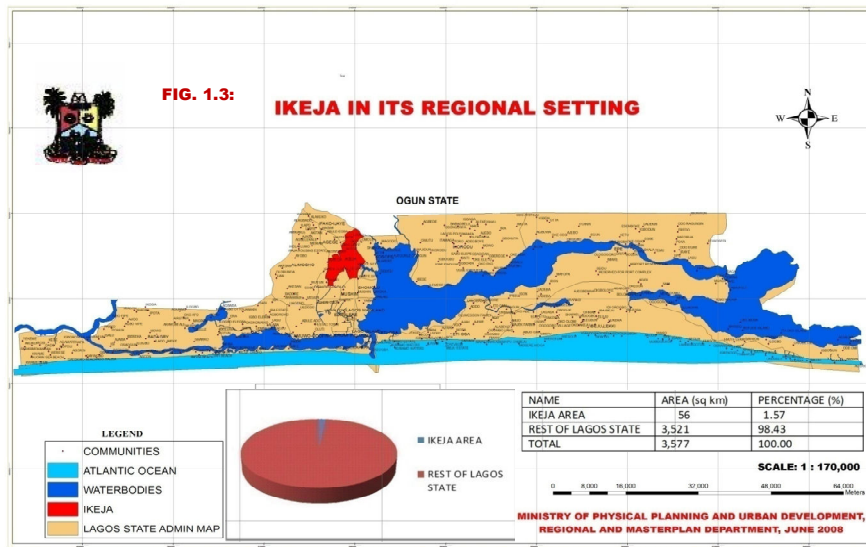


Source: Adapted from Oduwaye and Enisan, 2011

Fig. 1.2: Map of Lagos State Showing Local Government Council Areas



Source: Adapted from Oduwaye and Enisan, 2011



Source: Adapted from Lagos State Model City Plan, 2010 – 2020

Fig. 1.4: Map of Ikeja showing the Major District



Source: Adapted from Oduwaye and Enisan, 2011

4. Methodology

This study was empirically conducted using primary and secondary data. Observation technique, aided by on spot assessment based on a 100 per cent physical characteristics survey of Ikeja CBD existing situation was conducted. The physical characteristics survey zero down on the existing use of buildings and land uses, compactness of structure, level of accessibility and connectivity, indicating parking facility availability, and level of use, walkway provision and usage, travel distance and time taken, horizontal and vertical compactness of buildings in the CBD area; density of buildings and residents among others.

Socio-economic survey made use of structured questionnaires administered on private individual concerned, agencies of government such as Lagos State Traffic Management Authority (LASTMA), Lagos State Ministry of Transportation, and corporate organisations. Issues examined include demographic characteristics of respondents; notably- age, gender and nature of employment, income and auto-ownership status; mobility, connectivity and accessibility considerations; congestion; pedestrian circulation; policy guidelines; management strategies operations; and vehicular traffics flow, as well as parking provision within the CBD area were considered. For parking studies, questionnaires were administered on parkers and operators, and questions asked include the use and operation of parks, trips origin and destination, trips frequency and purpose among others. In all, 200 questionnaires (50 questionnaires per district/sector) were administered randomly, using quota sampling technique (Table 1.1& Fig. 1.4 refers).

Table1.1: Districts/Sector Sub-division and Sampled Population

No	Sector /District	Neighbourhood/Street	No of Questionnaire Administered
1	A	Alawusa Central Business District, Lagos State Secretariat and Agidingbi	50
2	B	Opebi, Allen-Avenue, Toyin Street, Adeniyi Jones and Aromire Avenue, Bank Anthony way	50
3	C	Ikeja Core: Oba Akinjobi, Obafemi Awolowo Way, Balogun, Orishe Street, Anifowoshe area, Ikeja under bridge, Ipodo and Olowu	50
4	D	Wemabod Residential and Industrial Estate. This include: Oba Akran, Adeniyi Jones, Henry Carr, Ajao Road	50

Source: Adapted from Oduwaye and Enisan (2011)

5. Data Analysis and Discussion of Findings

The land use pattern within Ikeja CBD is dominated by institutional development and these include Murtala Mohammed Airport, Lagos State Secretariat, the Nigeria Police College among others and accounts for 2,159.41 hectares (39.94 percent); residential land use account for 1,034.99 hectares (19.14 percent).

Commercial land use are concentrated along major traffic corridors in Ikeja CBD as well as emerging formal and informal markets, it accounts for 392.49 hectares (7.26 percent) of the total land area. Industrial land use covers 567.64 hectares (10.5 percent); recreational land use account for 42.15 hectares (0.78 percent) in land area while circulation land use consist of major arterial roads and other minor roads, this covers 528.89 hectares (9.78 percent) of the total area (Table 1.4 refers).

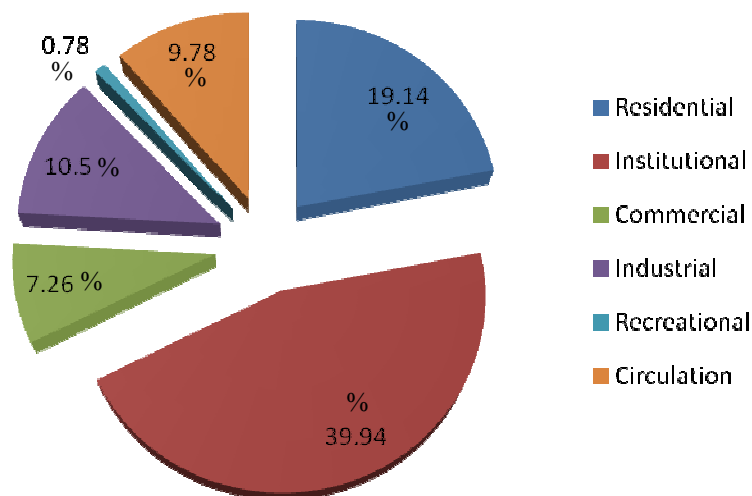


Fig. 1.4: Ikeja CBD Land Use Analysis

Table 1.3: factor(s) Causing Traffic Congestion within Ikeja CBD?

Factors	Strongly Agree (5)	Agree (4)	Disagree (3)	Strongly Disagree (2)	No Response (1)
Increase income of residents	120 (60%)	50 (25%)	16 (8%)	10 (5%)	4 (2%)
Increase in vehicles ownership	116 (58%)	46 (23%)	20 (10%)	16 (8%)	4 (2%)
Indiscriminate building conversion from residential to commercial use	80 (40%)	70 (35%)	30 (15%)	10 (5%)	-
High commercial/trading activities	64 (32%)	64 (32%)	40 (20%)	16 (8%)	16 (8%)
Encroachment of the right of way	140 (70%)	24 (12%)	16 (8%)	14 (7%)	6 (3%)
Illegal on-street parking	130 (65%)	44 (22%)	24 (12%)	2 (1%)	-
Lack of effective development control	120 (60%)	40 (20%)	30 (15%)	10 (5%)	-
Vertical increase in density of buildings	116 (58%)	64 (32%)	20 (10%)	-	-

Source: Authors' Field Survey, 2013.

Table 1.4: Factor(s) promoting motorization in Ikeja CBD?

Factors	Strongly Agree (5)	Agree (4)	Disagree (3)	Strongly Disagree (2)	No Response (1)
Govt. policy on motorization that promote activities in the industries	126 (63%)	54 (27%)	16 (8%)	4 (2%)	-
Govt. liberalization trade and opening of boarders that encourages importation of used vehicles	116 (58%)	50 (25%)	34 (17%)	-	-
increases in people's income encourages spending, thus support motorization	120 (60%)	70 (35%)	6 (3%)	4 (2%)	-
Poor integration of spatial and transportation planning which encourage urban sprawl	100 (50%)	70 (35%)	20 (10%)	8 (4%)	2 (1%)
Inadequate public transport provision for the residents	120 (60%)	36 (18%)	24 (12%)	8 (4%)	12 (6%)
Poor planning strategies which encourages urban sprawl	100 (50%)	60 (30%)	24 (12%)	16 (8%)	-
Inadequate provision of urban infrastructure	100 (50%)	80 (40%)	12 (6%)	6 (3%)	2 (1%)
Inadequate govt. policy and strategy to discourages use of private cars in Ikeja CBD	120 (60%)	36 (18%)	28 (14%)	4 (2%)	12 (6%)

Source: Authors' Field Survey, 2013.

Table 1.5: Major Parking Challenges within Ikeja CBD?

Reason/Rating	Strongly Agree (5)	Agree (4)	Disagree (3)	Strongly Disagree (2)	No Response (1)
Inadequacy of parking lot within the CBD	120 (60%)	50 (25%)	16 (8%)	10 (5%)	4 (2%)
Overzealousness of enforcement agency	114 (57%)	46 (23%)	20 (10%)	16 (8%)	4 (2%)
Poorly design parking spaces	80 (40%)	70 (35%)	30 (15%)	10 (5%)	10 (5%)
Expensive cost of parking within the CBD	64 (32%)	64 (32%)	40 (20%)	16 (8%)	16 (8%)
Inconsistencies in parking policy within Ikeja CBD	126 (63%)	56 (28%)	16 (8%)	2 (1%)	-
Inconsistency of parking management and operation in Ikeja CBD	100 (50%)	50 (25%)	20 (10%)	20 (10%)	10 (5%)
Lack of effective monitoring of use of parking lots	120 (60%)	50 (25%)	16 (8%)	14 (7%)	-
Poor participation of private investors in meeting parking needs within the CBD	64 (32%)	70 (35%)	40 (20%)	20 (10%)	6 (3%)
Inadequate and poor parking research base	128 (64%)	40 (20%)	12 (6%)	14 (7%)	6 (3%)
Poor utilization of parking spaces by parker	64 (32%)	64 (32%)	40 (20%)	20 (10%)	12 (6%)
Inadequacy of parking tools and equipment for effective of operation of parking in Ikeja CBD	100 (50%)	64 (32%)	20 (10%)	12 (6%)	4 (2%)

Source: Authors' Field Survey, 2013.

Table 1.6: Benefits of Improved Mobility as against congestion challenges within Ikeja CBD?

Reason/Rating	Strongly Agree (5)	Agree (4)	Disagree (3)	Strongly Disagree (2)	No Response (1)
Improve the resident quality of wellbeing	124 (62%)	36 (18%)	12 (6%)	28 (14%)	-
Increase income generation of residents through improved accessibility within Ikeja CBD	116 (58%)	50 (25%)	14 (7%)	8 (4%)	12 (6%)
Urban decentralization or sub-urbanization increases accessibility leading to improved mobility	120 (60%)	60 (30%)	6 (3%)	4 (2%)	10 (5%)
Increase labour force and fewer household size, leading to better income, more per capital trips, as well as improve accessibility and mobility demand leading to better socialization	100 (50%)	50 (25%)	40 (20%)	8 (4%)	2 (1%)
Reduce waste of time, human and material resources as well as increase productivity	120 (60%)	36 (18%)	24 (12%)	8 (4%)	12 (6%)
Reduce pollution and environmental degradation	100 (50%)	60 (30%)	24 (12%)	16 (8%)	-
Reduce maintenance cost, vehicular and roadways wear and tear	100 (50%)	80 (40%)	12 (6%)	6 (3%)	2 (1%)
Better planning and programming of residents' activities	120 (60%)	36 (18%)	28 (14%)	4 (2%)	12 (6%)

Source: Authors' Field Survey, 2013.

Table 1.7: Factors That Inform the Nature of Traffic Congestion in Ikeja CBD?

Factors	Strongly Agree (5)	Agree (4)	Disagree (3)	Strongly Disagree (2)	No Response (1)
Poor land use pattern within the CBD	120 (60%)	40 (20%)	24 (12%)	12 (6%)	4 (2%)
Haphazard locational pattern of land use activities within Ikeja CBD	112 (56%)	48 (24%)	20 (10%)	10 (5%)	10 (5%)
Poor state of transportation infrastructure (road, drainages, traffic light etc.) within the CBD	120 (60%)	60 (30%)	16 (8%)	4 (2%)	-
Poor and inadequate of implementation of development guide	100 (50%)	80 (40%)	16 (8%)	2 (1%)	2 (1%)
Inadequate preparation to accommodate unforeseen that affecting traffic and transportation condition (poor weather – rain, accident, vehicular breakdown etc.)	120 (60%)	36 (18%)	24 (12%)	14 (7%)	6 (3%)
Inadequate information and monitoring of urban traffic congestion situation within Ikeja CBD	100 (50%)	70 (35%)	16 (8%)	8 (4%)	6 (3%)

Source: Authors' Field Survey, 2013.

The survey findings revealed in Fig. 1 that Ikeja CBD is dominated by institutional land use mixed with other land uses hence generates significant vehicular traffic, which led to conflict, friction of movement, and traffic congestion in the area. Other issues of concern as shown in Table 1.3 include indiscriminate building conversion, high commercial/trading activities, and encroachment on the road right of ways, illegal on-street parking, and ineffective development control.

Similarly, when the issue of factors promoting motorization within the CBD was considered, the respondents' as presented in Table 1.4 agreed that favourable government policy, importation liberalization, improved income of people, poor physical planning and transport integration, inadequate public transport, favourable strategies to urban sprawl and inadequate urban infrastructure.

Findings on major parking challenges within Ikeja CBD revealed inadequacy of parking lots, overzealousness of officials, poor design of parking lots, high cost of parking, inconsistent parking policy, management and operations, inadequate private investors and investments, poor research base, poor utilisation of parking space, inadequate tools and equipment; all of these were the challenges observed in the area with corresponding agreeing values as presented in Table 1.5.

When question of improved mobility benefits as against congestion challenges was raised within Ikeja CBD, respondents were of the view that improve mobility enhances human wellbeing, income generation, better socialization and time management as confirmed by number of agreed respondents in Table 1.6; thus, leading to overall improved socio-economic wellbeing of the people.

Finally, survey findings revealed the factors responsible for the nature of traffic congestion within Ikeja CBD hinges on haphazard land use location and allocation, inadequate infrastructure, shoddy preparation for emergency, poor information base and lack of effective monitoring activities as revealed in Table 1.7.

6. Conclusion

Urban population growth in developing countries fuels the challenges of traffic congestion. This affects virtually every facet of human endeavours, including socio- economic activities within the CBD area. It is against this backdrop, that an all-inclusive policy measure, essentially integration of vertical and horizontal growth pattern within the CBDs be encouraged. Thus, the need to adopt such planning strategies as smart growth concept, in ensuring that physical and transportation planning efforts are being integrated. This is to alleviate the challenges of traffic congestion in the CBD of major cities. This stands to reduce waste of valuable man- hour and materials resources in traffic congestion, as to improve the socio-economic wellbeing of the people.

7. Recommendations

Based on findings, the need to create a vibrant CBDs environment that rely on sustainable, socio-economic and vibrant environment to support the population at micro and macro levels in the area is considered important. Thus, the following recommendations are put forward that:

Comprehensive vertical and horizontal integrating spatial and transportation planning strategies for CBD development, based on compact city approach, and in accordance to Ikeja model city plan, 2010-2020 be embraced by the government;

Land use location and allocation within the CBD environs should be integrated and planned, as to efficiently and aesthetically enhance the quality and functionality of the environment;

Parking design, construction and operations be re-conceptualized to attract investors, while government create enabling environment, via legislative instruments to ensure adequate investment returns without unduly exploiting beneficiaries and the public at large;

Relevant government agencies needs be empowered for effective monitoring of the CBD's developmental programmes, while trainings and re-trainings of officials be compulsorily offered regularly to facilitate operational efficiency by government and private organisation concerns; and

Government and private establishment to embark on enlightenment programmes, using radio, television jingles, workshops, seminars, and conferences to educate on the relevancy of projects or programmes, revealing its benefits to the community at large; essentially towards improving the people's socio-economic wellbeing.

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