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Indexing



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Planning for Sustainability: Transportation and Land use in Ilorin, Nigeria

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Abstract

The increase in the growth of cities and the number of people moving to cities in the last two decades have led to a sharp increase in transportation demand, development of slums, and urban sprawl. Cities like Lagos, Ibadan, Kano, Port-Harcourt, Ilorin, and other areas in Nigeria are experiencing much pressure on land use such as; free-space, transportation facilities, and a host of urban-related problems that urgently deserve planners' attention. Ilorin is one of the fastest-growing cities in Nigeria. The problems of transportation and land use in Ilorin can be summarized into the following: long queues of people daily at 'bus stops', the problem of old narrow streets in most of the unplanned areas of the city and the emerging incursion of transport infrastructure facilities into the residential areas. To address these and other urban land-use problems world-wide, various governments have put in place different urban renewal programs, but in the case of Nigeria, little impacts on the city transportation and land-use systems have taken place. This research used Exploratory method to justify the essence of planning in the transportation system and land-use in order to enhance and maintain sustainable development. The paper also suggests some measures like; expansion of existing narrow roads and provision of necessary infrastructural facilities, intermodality light rail/tram, creation of modern parks at specified locations as well as enlargement of public and private partnerships involving the Government, transport associations, financial institutions, the available universities and some other professional bodies to serve as a panacea to problems highlighted.

Keywords: development-planning, government, infrastructure, land-use, planning, sustainability, transportation, urban-spread

Introduction

The current trend in the world today is to regard development as being sustainable. Among the indices that can sustain development in any urban area or city environment in the world are to bring about good transportation systems and sustain

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land-use for proper development (2005). There is growing interest in the concepts of sustainability and sustainable development. Sustainability generally refers to a balance of economic, social, and environmental goals, including those that involve long-term, indirect and non-market impacts. In other words, sustainability is a typical development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Relatively, in the last ten years in Ilorin one of the major cities in Nigeria, there has been a massive build-up of vehicular movements and pressure on land use infrastructural facilities. Among major and typical land uses in Ilorin include institutional, commercial, residential, open space, and transportation. Like other growing cities of the world, Ilorin city had been experiencing various transportation and land-use problems. Ogunsanya (1985) opined that when we talk about city transportation problems, what people consider are such problems as urban traffic congestion, parking problems, traffic delays, etc. It is important to note that these are mere symptoms of a malfunctioning urban traffic system, which can be explained by some basic reasons and underlying.

In the first place, the basic reasons are route inadequacy, human misuse of transport infrastructure, poor traffic management, absence of traffic and transportation planning, while the second is an upsurge in urban travel demand. The problem of transportation and land use in Ilorin city can be summarized into 'Old Narrow Street' in most of the unplanned areas, haphazard city development and slum expansion'. Others are; limited infrastructural facilities for the non-motorised transport system, poor parking spaces, the nonexistence of modern parking spaces, and residential quarters that have eaten into transportation land use, among others (Aderamo, 1990). This paper suggests various ways to ameliorate these highlighted problems facing Ilorin one of the traditional cities in Nigeria. Therefore, this work focuses attention on the misuse of lands mainly allocated for urban infrastructural development in Ilorin city Nigeria. Such mistreatments include; land use for transportation, residential, commercial, industrial, green-acre, among others. Ilorin like many other cities in Nigeria is experiencing successive thrive pressure on land-use like, free-space, and a host of urban-related problems that urgently deserve planners' attention. The explanation so far on the roles being played by transportation and other land-uses in the city anywhere in the world denotes that land-use of all types are potent to influence any city growth and development. But on the contrary, what is being witnessed today in the emerging city like Ilorin and many others in Nigeria, is beleaguered by different associated problems mostly on transportation and this is what Ogunsanya (2002) declared as "negative externality" or "maker or breaker of the cities".

The increase in the influx of migrants is becoming more difficult to ease not only the traffic flow but a mistreatment, that added more pressures on residential land-use, housing the newcomers into the city (Ahmed, 2013). This work used an Explanatory method to assess the impacts of the work on the residents of Ilorin and put forward some likely solutions to ease the challenges observed in the work. It is expected that the outcome of the work shall be useful not only to the planning agencies but would be a useful guide to the government in future city sustainable planning and development.

Major Urban Land use/Transportation Problems in Ilorin

Land use and Transportation problems are getting inextricable issues simultaneously with the existing development trend. However, as a result of increasing population, growing cities of the world, and increasing car ownership, have caused transportation and land use problems to become significant issues due to their economical effects (Gorkem & Huseyin, 2016). Wey and Hsu (2014) stated that urban sprawl and city congestion have become the inevitable development trend in the process of economic growth. Transport-oriented problems and land use planning problems are directly interdependent fields and have a highly interrelated iterative interaction.

The use of the term "land use" is based on the fact that through development, urban space accommodates a great variety of human activities. Transport is a land use in itself and has the uniqueness of relating intimately with all other land uses. This interaction is understood when the Town Planners and City Engineers are able to predict the types and locations of future land uses and transportation travel patterns. This interactive relationship serves as the basis for travel-demand forecasting, which uses the output of land-use models as input, assuming that different land uses generate different levels of activity and travel. This interaction also produces diverse transportation problems which Black (1995) described as a complex bundle of interrelated problems with traffic congestion as the most visible manifestation.

Cities generally are the engine of everyday life and essential for the future of environmental protection of any country, as they are the sources of economic growth and development. But the environmental implications of such growth and development need to be thoroughly managed in order to suppress its consequences which are copious and hazardous (Ahmed, 2013).

Ilorin city is one of the fastest-growing cities in Nigeria with a population of less than one hundred thousand before 1967 when it became the state capital. As

oftoday, it has a population of about 600,000 from the last census in 2006 (NPC, [2006](#)) but more than one million by projection and still with a capacity to overtake various communities surrounding its administrative boundaries. The town's new administrative status from 1967 onward has attracted to its other complimentary services. The creation of additional roads has opened doors to new development and the city witnessed a significant sprawl along the road. This development was further facilitated by the development and expansion of intra-city roads such as Murtala Mohammed way, Taiwo road, Unity, and Tanke-University roads among others.

The improvement of these roads has led to sporadic development as they open up new built-up areas. Today, Ilorin has absorbed virtually all its one time surroundings settlements. Among them are Oke-oyi, Eye-nkorin, Ganmo, Amayo, Tanke, and GaaAkanbi among others, making them part of Ilorin Metropolis. The development of public transportation in Ilorin has been an ongoing project in the last few decades resulting from the increasing population influx to the city. This has increased vehicular fleet and inadequacy of transport facilities within the metropolis. Various governments (the State, the Local, and the Federal) and private partners have been investing and financing the development of facilities as to upgrade the city into a modern area.

Traffic Congestion Problems

Traffic congestion occurs when the urban road network is no longer able to accommodate the volume of traffic that uses them. Congestion results in longer travel time, which is one of the main areas of transport dysfunctions observed in many large cities of the world. "Travel time, cost and how difficult it is for people to get to and from work have often played a key role in whether a city is able to attract business" (Auclair, [1999](#)). Adeniji ([1993](#)) observed that, throughout the history of human settlements, transportation has always been closely related to the structure and density of settlement and the use of land which transport route generates different land uses on its sides. The conflict between them stems from the physical structure of towns as a result of the structural conversion of buildings (Banjo, [1984](#)). The chaotic situation is virtually becoming a daily affair in Ilorin today (see table 1).

Table 1*Problem Areas, their Locations, and Peak Periods of experience in Ilori*

Location	Associated problems	Peak period
Post office/ Station	Traffic holdup, congestion, pedestrian safety, and poor parking space	8-9am, 5-6pm and 8-9pm
Challenge Book shop Areas	Traffic hold-ups, parking space	8-9am, 3-4pm and 6-7pm
A-Division Roundabout	Traffic congestion	5-6pm
Unity Road	Parking Space, Traffic congestion, Pedestrian safety	2-3pm, 4-6pm
Tanke-University road	Parking space, Traffic congestion, Holdup, Pedestrian safety	8-9am, 4-6pm and 7-8pm
Pipeline/ Garage Offa road	Traffic hold-ups, Congestion	8-9am, 4-6pm, 7-8pm
BabokoMarket road	Traffic congestion, Holdups,	9-11am, 4-6pm
Ipata Market area	Pedestrian Safety, and Parking problems	8-10am, 3-6pm
Sawmill/GarinAlimi		3-7pm
Oja Oba Market area	Traffic Congestion, Traffic holdups, Pedestrian Safety	7-10am, 3-7pm
Maraba/Amilegbe area	Traffic congestion, Parking space, Sanitation, and Pedestrian safety	8-9am and 4-6pm
	Traffic congestion, Pedestrian Safety, Sanitation, and Parking space	

Road Traffic Accidents/ Flow Conflicts

Road traffic accidents are almost a daily occurrence in most of our cities in Nigeria, especially in the traditional city of Ilorin. Also, major cities like, Lagos, Ibadan, Ilorin, Kaduna, Benin, and Port- Harcourt, to mention but a few, are cities environment that is prone to motor traffic accidents due to enormous concentration of vehicles on major roads/narrow routes, and traffic-mix which leads to resultant flow conflicts. Ahmed (1996), corroborates that in Ilorin, road traffic accidents occur as a result of the proliferation of illegal parks in narrow roads in some nook and crannies of Ilorin city and this often leads to avoidable/unavoidable accidents and clogging in the city (see Fig.1&2).

Figure 1

Traffic accident in Post Office Area of Ilorin City



Traffic Delays/Clogging

Many times delays result from the inability of existing buses and cabs to meet the daily growing population in Ilorin. The fading away of intra-city buses only add to this problem as the routes leading to the center of the city lack mass urban transit facilities. This leads to long queues in bus stops like Sango area; Challenge Bookshop area, Oja-Oba, Tipper Garage, and Ipata area (see Fig.3).

Figure 2

Traffic Congestion in Ilorin due to on-the-street Parking



Figure 3

Street Parking in Ilorin City causing Traffic Clogging



Adopted from Ahmed ([2015](#))

Environmental Pollution

Environmental pollution can be described as the contamination of the environment by biological, chemical, and or physical agents that are harmful to human, animal or plant, life and the general environment (Olawepo, [2010](#)). The

automobile is a significant contributor to environmental pollution problems in urban centers. Its effects on the health of people, community values, and environmental ecology are deplorable. This pollution range from the air from unserviceable or poorly serviced vehicles, (with excessive carbon monoxide, oxides of nitrogen, lead, etc), noise pollution [from indiscriminately use of the horn, and unmaintained vehicles] to indiscriminate dumping of refuse near the road and drainage systems.

Figure 4

Environmental Pollution through Emission of Carbonmonoxide from Vehicles



Traffic Clogs

Figure 5

*Showing walkway taken over-
by street traders /hawkers*



Figure 6

Street Trading



There are other negative impacts of urban transport in most of our cities. Such problems include; traffic clogs, pedestrian insecurity, roadside hawking, enlargement of pitfalls and potholes pressure on existing roads, insecurity, psychological stress, incursion of market at the roadside, and housing /shop accidents resulting from extension of land use on urban roads. For instance, sidewalks along the post office area in Ilorin have been taken over by the street traders who sometimes claim more right to trade at the sidewalks than pedestrians that the infrastructure is meant for. (See Figs 5&6).

Methodology

This research used an exploratory method (EM) for the study and no rigorous analysis was involved but specifically explained the essence of planning transportation and land use in order to enhance sustainability in Ilorin city Nigeria. Many visits were carried out at different affected study areas and Traffic Counts Assessment (TCA) method was carried out at different big round-about/ major junctions around Ilorin cities by the authors. This was to enable us to carry out.

‘On-the-spot assessment especially during low traffic flow hours (6am), and by (9am-3.30pm Monday to Fridays) and at rush hours (7am-8.30am 4pm-6pm Monday-Friday) respectively. The areas under closed within Ilorin city involved; Ilorin Post Office area, Challenge Book-shop area, Unity road, Maraba garage area by Amilgbe round-about, Ipata-market area, Emir’s market/Idiape, Gambari road, Tanke/Tipper garage, Oke-Odo area-University of Ilorin road, End of Pipeline-road by Offa garage, Oloje road by Mount Camel College, Akerebiata road by Gambari road among others. All these areas experienced low and peak periods of transport rush hours in Ilorin city than any other areas on a daily basis. Some of the major roads/ streets mentioned are associated with all illegality you can think about and depicted a lot of misuse of infrastructural facilities like streets trading and under-aged hawking of all government agents warnings (see Figs 4-6). Also, the areas displayed visual rendering some illegal or unauthorised parking, construction of illegal shops, and building of petrol stations on populated areas among others. The menace of these un-authorized parks and untenable constructions occasionally resulted in free streets-fight among road users include motordrivers, motorcyclists, and pedestrians in some places around the city hub (Ahmed, [2005](#); [2013](#)).

Impacts of Land Use Planning on Transportation

Effects of the increasing traffic capacity in growing cities need adequate

investigation and this should be done by traffic impact analyses in as to find out if the present link capacities are convenient or otherwise. The predictable land use planning paradigm is inclined to generate land-use decisions by evaluating social and economical parameters. Whereas, traffic impact analyses should be evaluated as one of the basic elements of land use planning parameter set (Gulhan et al., [2014](#)). The degree of different types of deficiencies brings along new planning methods such as new urbanism and smart growth. The increase of new urbanism brings new vigor, aliveness, and ideas to communities' growth. City design, therefore, becomes more discernible within planning since the design is incorporated into growth management programs. Comprehensive planning will also start to connect more strongly with reasonable housing advocates and other public infrastructural facilities broadening their focus beyond the more traditional set of issues revolving around land-use, transportation, and the environment (Chapin, [2012](#)).

Conclusion

This study used an exploratory method to corroborate that adequate planning is more necessary to enhance transportation and land-use sustainability accuracy in Ilorin city Nigeria. Ilorin is one of the fastest-growing cities in Nigeria today and is beaming with various in-migrants from all walks of life and this result in too many pressures on land use and transportation/infrastructure facilities. Our roads are alarmingly being suffocated and impassable due to clogging in commercial activities in cities, increase in the volume of traffic movement, urban physical expansion, and problems of parks and space. Some major areas of our cities have as a result of haphazard development become chaotic as to constitute a serious concern for the security of lives and properties. The present situation in Ilorin is a typical consequence of development without consideration for sustainability. Sustainable planning for land use and transportation involving Public-Private Partnership (PPP) is therefore required for all-round development. Sustainable planning/development will not only secure a better tomorrow but will also sustain our roads and open up more spaces for new development. While solving today's problems and investing for tomorrow will make our cities a better place to live like other modern cities in the world.

Suggestions and Recommendations

Despite the fact that the debate about the most effective strategies on planning for sustainability on both transportation and land use prevails in this work, and as research has helped us understand better the features of less developed countries that make them differ from more developed countries (and they differ in many

ways). We also now understand better what features of less developed countries act as a hindrance to sustainable development. Currently, the debate is moving on to the far deeper question of how to foster change. We recognize, for instance, that all-around development can through proper planning and policies foster faster all-around sustainable planning which is believed tenable. The challenge now is to foster it in ways that would benefit the poor, strengthen democratic processes, heighten the overall sense of well being, and widen economic and political freedom (Olawepo, 2010). It is suggested here again that it is not easy to demarcate Ilorin city by either as zones, Emirate councils, or even by Local government Authority as some authors had used in the past for their researches because many of these zoning areas or demarcated as Local Government Authority areas are interwoven as a name of a zone or could be found inside one place and in another bearing the same name. Therefore, in order to achieve better goals that can lead to accomplishing a better understanding of land-use for sustainability in the study area, the following suggestions are put forward as appropriate measures:

- Developing a well-projected 'Master Plan' for Ilorin city aside from the old and obsolete colonial plans that lacked appropriate and modern social infrastructure that are presently in use. This will involve survey, design, architectural drawing of structure [Layouts, shopping complex, parks, and gardens, movement space, etc]. Proper channelization of drainage and underground waterways should also be considered.
- Creation of Building Zones and according to location. This will identify appropriate Government Reservation Areas; High and low-density areas, low-income areas, and the city cores with appropriate building types.
- New Town for Sustainable Development could be projected at the edges of Ilorin city; this will serve as satellite towns in places like Ganmo, Amayo, Ogbondoroko, Oke-Ose, Okeoyi, Eiye-nkorin, Jimba-oja, Agbabiaka, and Idofian extension. Development of housing estates in these and other locations will ease transportation and movement of people to the inner city. Public-Private Partnerships will be essential here with the government providing social infrastructure like schools, clinics, markets, and recreational facilities among others.
- Land reclamation and turning landfills into wealth creation centers, and location of power generation to boost electricity and other small and medium scale enterprises could also be established in the peri-urban to ease pollution.
- Beautification of the inner city, roadsides, provision of pedestrian walkways and overhead bridge for crossing at appropriate location as well as strategic locations of bus stops will enhance free pedestrian and vehicular movement.

- Provision of designated and specified parks for different vehicles plying different routes, as well as off-street parking for inter-city transport, would also ease traffic clogging in the inner city and suburb.
- Re-organization of the market system so that all forms of street-hawking and roadside selling are dislodged, while government should provide a ready-made alternative place for commercial activities.
- Expansion of our existing roads and creating necessary infrastructure. Some of our major roads in Ilorin need expansion. Examples include; turning the major roads into four-lane carriage with pedestrian bridges, sidewalk roads, and modern bus stops at appropriate locations.

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