International Journal of Arts,Humanities and Social Studies (IJAHSS)
Volume 1 Issue 1 || Sep-Oct 2019.
www.ijahss.in ‖ ISSN 2582-3647 (Online)

Infrastructure Development and City Redevelopment in Nigeria: A Case of Akure

Akinbamijo, O.B[1]* and Aladetuyi, O.I[2]
Department of Urban and Regional Planning, Federal University of Technology, Akure

***Corresponding author**
Akinbamijo, O.B

ABSTRACT: This research dwells on an assessment of infrastructure development in Akure, Nigeria due to the huge infrastructure deficit arising from a number of factors in Nigerian cities. These factors include nonchalance of residents, agencies' negligence and poor maintenance routine. To achieve the study aim, this paper embarks on an assessment of the functionality status of infrastructure, assessment of residents' living standard, investigation of the challenges and the performance levels of infrastructure agencies in the town.

Survey research design was employed for this study; the major sources of data collection were secondary and primary data sources. The secondary data sources include: peer reviewed journals, reports and population statistics - sourced from library, internet, archives and institutions. The primary data sources include: demographic characteristics, infrastructure assessment, appraisal of living standards and agency performance; sourced through personal observations, interviews and use of copies of structured questionnaire.

The study revealed that almost all existing infrastructure were fast depreciating and in bad states. From these infrastructure, 53% of roads were bad, 46% consumers affirm that electricity supply was fairly regular, among other poor assessments. The infrastructural development could have contributed better to a more decent environment, physical outlook and enhanced living standard but a quite dormant performance was noticed from agency's response. Notwithstanding, the residents are ready to embrace adequate development from their responses. Therefore, recommendations were made to further involve the private sector, focus on revitalization, prioritize projects, adequately fund and employ other strategies like EIA in the development of the infrastructural components.
Keywords: Infrastructure, City, Development, City Development Index, Environment, Redevelopment**.**

INTRODUCTION

The availability of infrastructural services is critical to the functioning of the modern urban environment. The absence or presence and the quality of infrastructure services affect the well-being of residents and determine the efficient operation of the City system [1]. As various factors have been considered as the motivators for City redevelopment; decaying infrastructures, poor drainage, poor environmental conditions, transport congestion etc. [2], adequate provision of basic facilities such as electricity, water supply, good roads, schools, and other services is paramount to engender the functioning of any urban system as well as for the stability and development of individual family life. The state of infrastructure of any state is directly related with the quality of life and according to recent statistics, the quality of life for most people in Africa appears to have either not improved or only done so marginally [3]. Therefore, the provision and continuous management of infrastructure are fundamental to concept of sustainable urban development.

Infrastructure refers to the building of permanent installations necessary for the support, redeployment and operation of businesses and other social services. Science Daily, [4] defined the concept as those physical component of interrelated system that provides commodities and services which are essential to enhance and sustain societal good living conditions. By its very nature, physical infrastructure must be responsive to social objectives such as health, safety, economics, employment and recreation in that studies have shown that infrastructure can have a significant impact on output, income, employment, international trade, and quality of life while infrastructure development can reduce stress, promote good health and also reduce crime level [3].

Several factors are responsible for the present state of infrastructure in Nigeria. These include: poor funding, poor governance, corruption and economic sabotage, poor maintenance culture, and population explosion. Other factors include neglect of urban and regional planning standards, poor levels of technology for development, design and maintenance, deviations from international best practices and requirements that make projects to be sustainably developed, infrastructure investments, demand and supply, project management, and procurement methods among others. [3]. The change of infrastructures is complicated by such issues as high sunk cost of existing infrastructures, the

large installed base of users, the requirement of maintaining compatibility with the installed base when making changes, the learning required to use new infrastructural services and the inter-dependence of different infrastructures [5].

Growth being an irreversible increase in size, number, value, or strength [6]; refers to a positive change in size, often over a period of time and can occur as a stage of maturation or a process toward fullness or fulfillment in terms of development. Cities can take a new role in our political economy, creating stronger, and more inclusive and sustainable growth. Often time, as reported by City Growth Commission, in driving city growth, there should be focus on skills, infrastructure, fiscal devolution and the role of universities and research institutions.

This study is based on the conceptual development of infrastructure development in City redevelopment that has the ability to include social, environmental, health and economic impacts on Man and the environment. This paper is focused to offer this alternative approaches whose outcome can be used to improve general outcomes of the infrastructure projects in Nigeria and the main purpose of this report is to assess the infrastructural development as it can contribute to City redevelopment in Nigeria, using Akure as a case study. In view of the extensive nature of studying all infrastructures in a highly complex geographical area as the Akure City, this study was restricted to Ijapo Estate, a fairly mature residential estate in Akure.

LITERATURE REVIEW

Development of infrastructure is a basic need of any environment in order to make it enjoyable and functional for the citizens. Essential infrastructure such as transportation, education, power and water supply among others must be present in a city. Infrastructure is seen as a wide range of economic and social facilities crucial to creating an enabling environment for economic growth and enhancing quality of life [7]. Infrastructure services are central to the activities of households and to economic production. This reality becomes painfully evident when natural disaster or civil disturbance destroy roads, culverts, bridges, electricity lines, water mains etc; in such circumstances, quality of life and productivity in communities becomes radically reduced [8]. In this same vein, Gatauwa and Murungi [9] describes infrastructure as the cumulative abilities of all facilities that allow a city to function effectively. Therefore, infrastructure can be described generally as the set of interconnected structural elements that provide the framework supporting an entire structure of development. On the other hand, development can be viewed as a transformed growth or an event constituting a new stage in a changing institution which is implicitly intended as something positive or desirable. With reference to a society or to a socio-economic system, development usually means improvement, either in the general situation of the system, or in some of its constituent elements. This may occur due to some deliberate actions carried out by single agents or by some authority pre-ordered to achieve improvement to favourable circumstances in both [10]

As identified by Akujuru [11], it is attributed that infrastructure are durable and capital intensive stocks that yield future incomes, requires large lump sum investment, possesses important network effects, poses difficulties in cost recovery, require regular maintenance and their provision cuts across disciplines. Considering these characteristics, the importance of infrastructure to a nation cannot be overemphasized as efficient infrastructure facilities act as catalysts for development through job creation and increased incomes, tax revenue increase, productive activities enhancement, employment to many citizens of the country, revenue generation, attraction of both local and foreign investors to the country, consumer surplus and enhanced civic pride [12]

There are a number of concepts relating to cities and urban development, these include: development level, liveability, sustainability, relative disadvantage or poverty, congestion and inclusiveness. These multidimensional ideas cannot be encompassed by a single indicator but require a combination of different indicators - corresponding to different aspects of development or city performance to form an index - the City Development Index (CDI). This is used to measure the level of development in cities. It was developed so that cities worldwide could be ranked according to their level of development and as a display of indicators depicting development. It is useful as it provides snap-shot view of how cities are doing with respect to the different indices [13]. It cuts across the different clusters identified in the Urban Indicator Framework as it is based on five sub-indices: infrastructure, waste management, health, education and city product [14]. The CDI is defined at the city level and could also be taken as a measure of average well-being and access to urban facilities by individuals. City development is better achieved through City Development Strategy which is a tool that helps a city harness the potential of urbanization; it enables city to develop a coordinated, institutional framework to make the most of opportunities [15].

Infrastructure is regarded to include the sectors of transport, water and sanitation, power, etc. It represents a large portfolio of expenditure in all countries, ranging from a third to one-half of the public investment [16]. Therefore, the benefits of improved Infrastructure system cannot be meted out in that it plays an important and indispensable role in the economic, physical, social and environmental aspect of life in an urban setting. Research shows it contributes to economic growth (acting through both demand and supply) through opportunities for employments [7]. For a nation to

experience sustainable economic development and growth it must develop an efficient infrastructure system. Adequate provision of infrastructure services meets welfare criteria and fosters economic growth; it helps determine country's success and in diversifying production, expanding trade, coping with population growth, reducing poverty, improving standards of living and environmental conditions [17]. In fact, it has been proven by scholars that the impressive rise in property values in certain areas is largely attributed to the provisions of infrastructural facilities. There is a growing body of evidence that the economic benefits of providing infrastructure far out-weighs the costs of provision and results in a net return on investment. It is essential too, for efficient and proper functioning of urban social system, in that one veritable parameter used in measuring social status of any spatial urban system is the state of infrastructure [18]. Infrastructure, being a major pointer of environmental quality, indicates management of any urban infrastructure is a critical agent for the social-economic development of urban area; this made it have impact on the quality of life. Hence, the improvement of infrastructure in the proper functioning of an urban area cannot be dismissed.

The lack of infrastructure or inadequacy in many developing countries represents one of the most significant limitations to economic growth and achievement of the Millennium Development Goals (MDGs). Infrastructures in Nigeria today are either not adequately provided or in a deplorable condition (Martin, n.d.). In some places, some of the infrastructures are not even available at all, and this is not different from what is happening in Akure the study area meanwhile majority of the users especially in the residential, commercial and industrial areas depend largely on infrastructures for daily activities but the unreliable quality of water, electricity, communication, transportation, postal agencies services among others has led to investments in alternative private systems; whereas an ideal city should be able to take into account not only the physical, architectural and engineering components of the districts and neighbourhoods but also the social, behavioural, cultural, personal characteristics and availability of sufficient and functioning infrastructures for the inhabitants and the arrangements under which these facilities are properly managed. Nevertheless, Nigeria government appears to appreciate the seriousness of the problem associated with poor infrastructure, for it has recognized that dealing with the infrastructure problem is critical to the country's bid to become one of the twenty largest economies in the world by the year 2020, called Vision 20:2020.

The current approach to development of urban infrastructure in Nigeria does not encourage effective maintenance and efficient infrastructure operation. The approach is generally characterized by too much emphasis on new construction with neglect of existing stock, general absence of integration among different infrastructure management agencies, lack of properly defined maintenance policy and standard, inadequate funding among others [19]. Whereas, infrastructure development for city redevelopment involves identifying the right project, carrying out feasibility and viability studies and carrying out physical development of the project but the projects must meet the standard set by international organizations, communities must be bio-diversified, natural environment must be preserved and so on. However, potential approaches to city redevelopment through infrastructure involves sharing best practices, prioritizing innovation, building capacity in the public sector, encouraging direct investment, tapping into infrastructure funds, exploring new models and approaches [20]. Therefore, new approaches of infrastructure development can be used to enhance functioning infrastructure for city development. These approaches include: Infrastructure Planning and Infrastructure Sustainability.

Likewise, Research Development and Deployment (RD&D) of new policies, technologies and strategies or system are three critical dimensions to the success of any attempt to address infrastructure capacity needs. The policy domain includes activities such as identification and evaluation of presently available infrastructure policies, associated institutions, organizational structures and financing mechanisms. The technology domain emphasizes RD&D in areas like new materials, new infrastructure construction technologies and novel technologies to make stock more efficient. Finally, research and related development and deployment activities in the systems dimension emphasize the interactions of different systems and subsystems within the broad domain of physical infrastructure [21].

Livability within communities is enhanced by infrastructures, amenities, services, spaces and community facilities which are accessible and socially, economically and environmentally inclusive. Assessment of infrastructure gives room for checkmating how efficient various infrastructures have helped to improve urban system and status of Akure; so that we can know if the various infrastructures implemented have helped to improve quality and standard of living and rate of city development**.**

STUDY AREA

Akure the capital city of Ondo state is one of the thirty six states of Nigeria (Figs 1 and 2). It has a land area of 318 square kilometres and lies on the intersect of latitude 5°11'42"E and Longitude 7°15'0"N [22] in south-west Nigeria. It is about 370m above the mean sea level and situated in the hub of a 48 kilometre radial wheel of major towns in Ondo State, viz Ondo to the South, Owo to the East and Iju/Ita-Ogbolu to the North. Moreover, its population figure at 387,100 [23], is phenomenal.

Akure falls within the tropical rain forest region of Nigeria where rain fall is high and by virtue of its location enjoys a tropical humid climate with two distinct seasons, the rainy and dry seasons. The mean annual rainfall is about 250cm, the atmospheric temperature ranges between 28°C and 31°C and a mean annual relative humidity of about 80 per cent [24].The topography of Akure is fairly uniform except for some rock domes which dot the whole landscape in no uniform manner. The soil varies from sandy-clay in the north to loamy-clay in the south and is however sensitive to erosion and occasional water logging as a result of the clay sub-soil. Akure terrain is bisected by numerous streams the most important of which are Owena River and Ala stream [24].

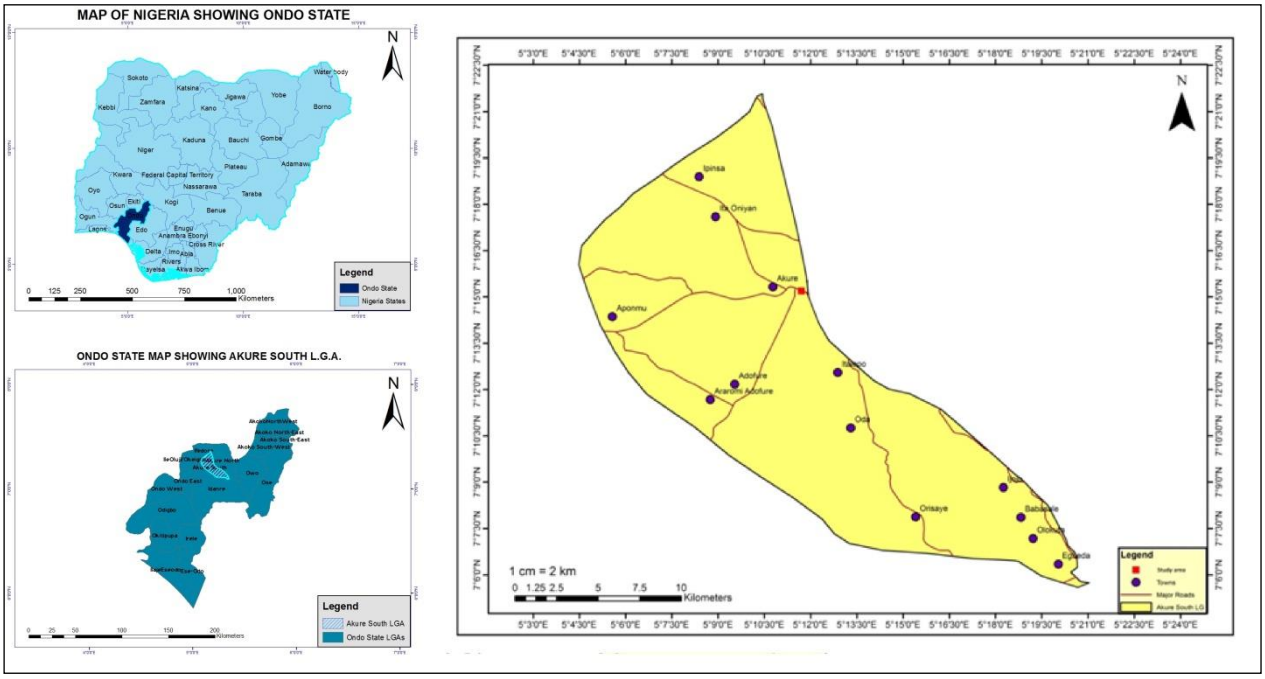

Fig.1: Map showing Akure City within Akure South LGA

Source: Capital Environmental Designs, 2015 [25]

The city is made up of different categories of people and organisations, both governmental and non-governmental, including State and Federal Ministries, manufacturing firms, service sector, and educational institutions. Therefore, it is important in terms of the economy and the commercial profile of the Ondo state [26]. The easy access and geographical centrality of Akure to these towns have enhanced the growth prospects of the city [27]. The increased relative political influence of Akure as a state capital since 1976 had greatly promoted its rapid growth and increased socio-economic activities resulting in spatial expansion from an area of about 16 square kilometers in 1980 to about 30 square kilometers in 2000 [28].

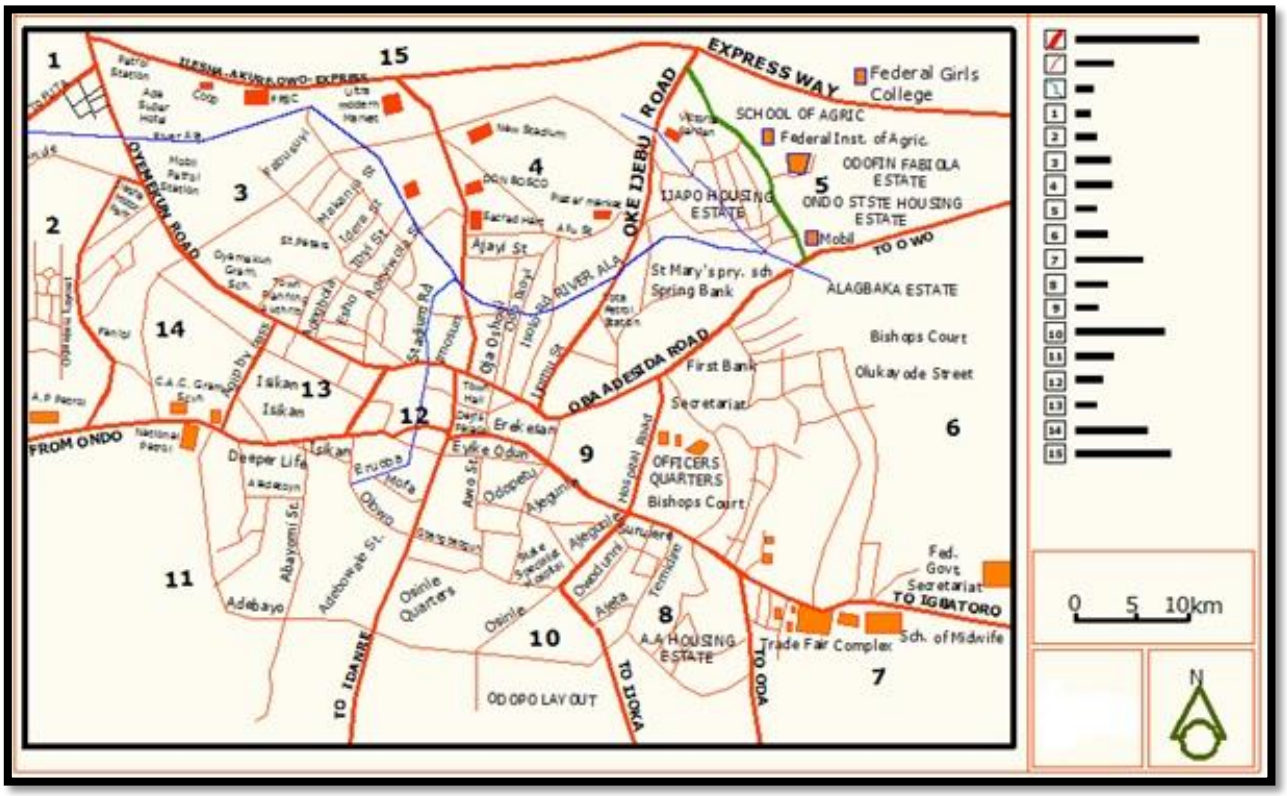

Fig.2: Map showing Districts of Akure Metropolis

Source: Ondo State Ministry of Physical Planning and Urban Development, Akure, 2013 [29].

METHODOLOGY

Data were acquired for the research from inhabitants of the area through primary and secondary sources. Data via primary source is obtained through photographs, personal observations, interview and copies of structured questionnaires.

The secondary source of information include journals, seminar papers, dissertations, published and unpublished books, population statistics, AutoCAD and ArcGIS Software, and maps sourced from the library, internet, archives and institutions.

A reconnaissance survey was carried out in order to make a clear definition of research purpose. The relevant document collected includes maps, land uses analysis of the study area, relevant publication and information on the study area, population size, and total land area covered. These were obtained to assist in deciding the sample size selected for survey. The systematic random sampling technique which involves picking a specific number of samples from households via random selection in a systematic pattern was used in the Study area; while the purposive sampling technique was used for Ondo State Development and Property Corporation (OSDPC); the Agency that manages the Estate. A total of 100 copies of study questionnaire were administered to the households based on 7% sample frame of the 8,400 people which is the sample size as derived from Google Imagery.

Data collected from the field were compiled and analyzed using inferential statistics. Social Package for Social Science Students (SPSS) was used to analyse the data from the field. The SPSS was used to express the information gathered in forms of charts, table, graphs etc. Deductions were made on the various observation of Infrastructure condition and other problems existing in the study area from the frequency via descriptive analysis of all variables contained in the questionnaire.

DISCUSSION OF FINDINGS

The results from findings revealed the functional status of infrastructures (Table 1), it was noticed that 53% dominates the major road stocks that are bad in that they were tarred but broken, moreover, the users are of the opinion that other transport infrastructures were bad considering facilities like streetlights, drainages and car-park are missing in some area; electricity regularity was noted to be fairly regular by 46% residents and by influence 50% of residents

consider it discouraging to their activities; 49% believes the educational infrastructure stocks are good, of which are mostly owned by private bodies; 48% affirmed health infrastructure to be non-existent; 35% considers the public water supply system to be inadequate, nonetheless, 58% well water source forms the reliable water source and 64% regards it to be very accessible source of water; and the waste facilities were considered sufficient by 70% which is evident with the presence of receptacles hanging along almost all streets.

Generally, the state of infrastructural facilities in the study area is disappointedly appalling despite the fact that the Estate is still being coordinated by OSDPC; Ondo state and Akure South local government council should jointly give priority attention to the maintenance of existing infrastructure and provision of new ones in all the zones within the state, where most of the dilapidated infrastructure and other settlements exist.

Table-1: Functional status of the Infrastructures

Road State	**Percentage of Respondents**
Tarred	27
Tarred but broken	53
Untarred	8
Under repair	12
Total	**100**

Electricity Condition	**Percentage of Respondents**
Very regular	6
Regular	14
Fairly regular	46
Irregular	34
Total	**100**

Educational Institution Condition	**Percentage of Respondents**
Very good	20
Good	49
Fair	31
Total	**100**

Health Institution Condition	**Percentage of Respondents**
Very good	11
Good	22
Fair	19
Non-existent	48
Total	**100**

Public Water Supply	**Percentage of Respondents**
Very adequate	22
Adequate	23
Fairly adequate	20
Inadequate	35
Total	**100**

Waste Facility	**Percentage of Respondents**
Sufficient	70
Insufficient	30
Total	**100**

Source: Authors' field survey, 2015

Based on findings in terms of influence exerted by existence of Infrastructure on standard of living, Figure 3 clarifies a directly proportional influence for a balance to be met in the standard of living; as it is noticed that the higher the influence of infrastructure on activities, the higher the development rate and likewise standard of living. Same applies vice versa.

In order to approve a high standard of living, development rate is therefore checked with the existing infrastructures' influence on activities which is a function of living standard. When the influence of infrastructure rates low (less significant), the development also rates low (less significant) but when the infrastructures' influence is very high (highly significant), the development rate was also at pal (highly significant). This in turn affects the standard of living. Inasmuch, the fairly available Infrastructure has contributed to the development recorded, a very adequate infrastructure development will result in fast development and bring about higher standard of living

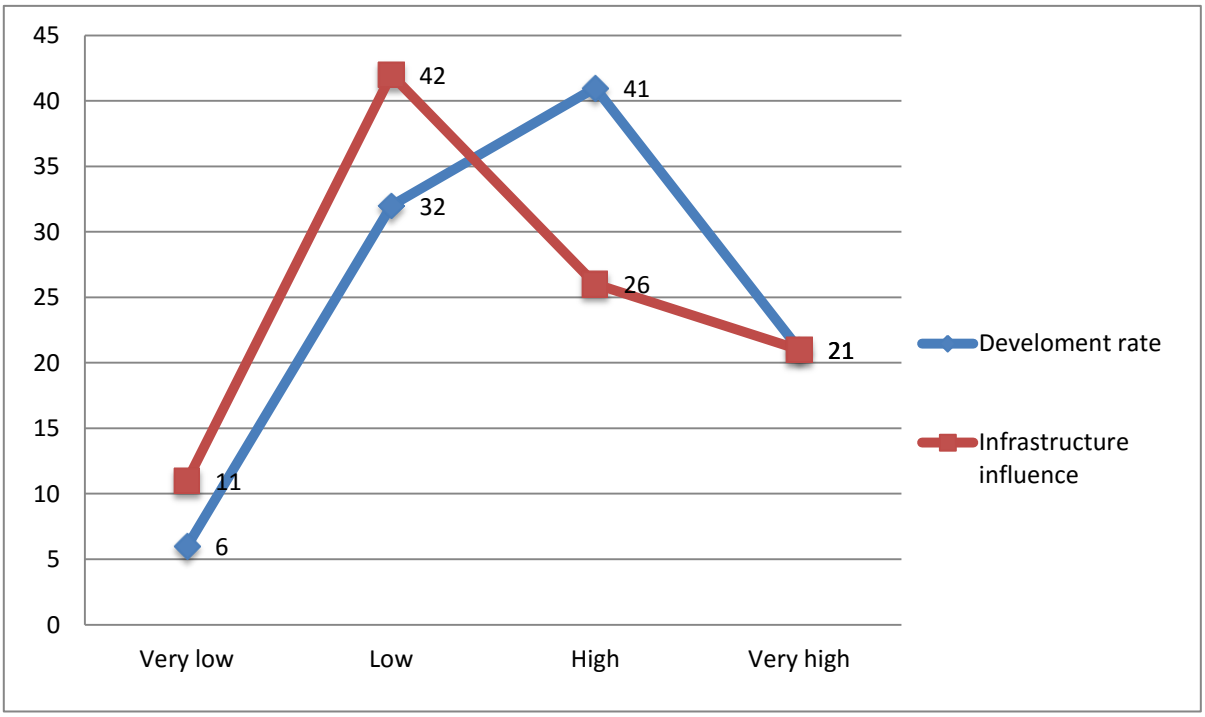

Fig. 3: Comparison between Development rate and iof nfluence Infrastructure

According to Figure 4 below, it is evident that the Agency (OSDPC) has been negligent towards upgrade approach to infrastructure improvement. This is a pointer to dormancy in functionality. The situation is made worse by the various challenges like: inadequate funding or finance, political instability, lack of continuity and corruption. Furthermore, the Agency in charge of this Estate has not helped the infrastructure development matter as there is no specific routine check to the area but awaits complaints before any upgrade is carried out. This may not be lodged due to the nature of some residents' job and human by nature tends adapt faster to any situation by devising alternatives or substitute services from which they derive same satisfaction rather than complain. For instance, most residents have their children in private schools instead of public, they run on generator or solar power source when public power is inconsistent, they improvise bucket bins instead of regulated waste bins, they rely on their bore-holes or well in place of public water source and so on. These options and good maintenance culture of the residents is attested to by the Agency. Where there are cases of complaints, the approach adopted mostly is partial upgrading as surveyed and that these upgrades are done when the need arises and resources are available to meet such needs.

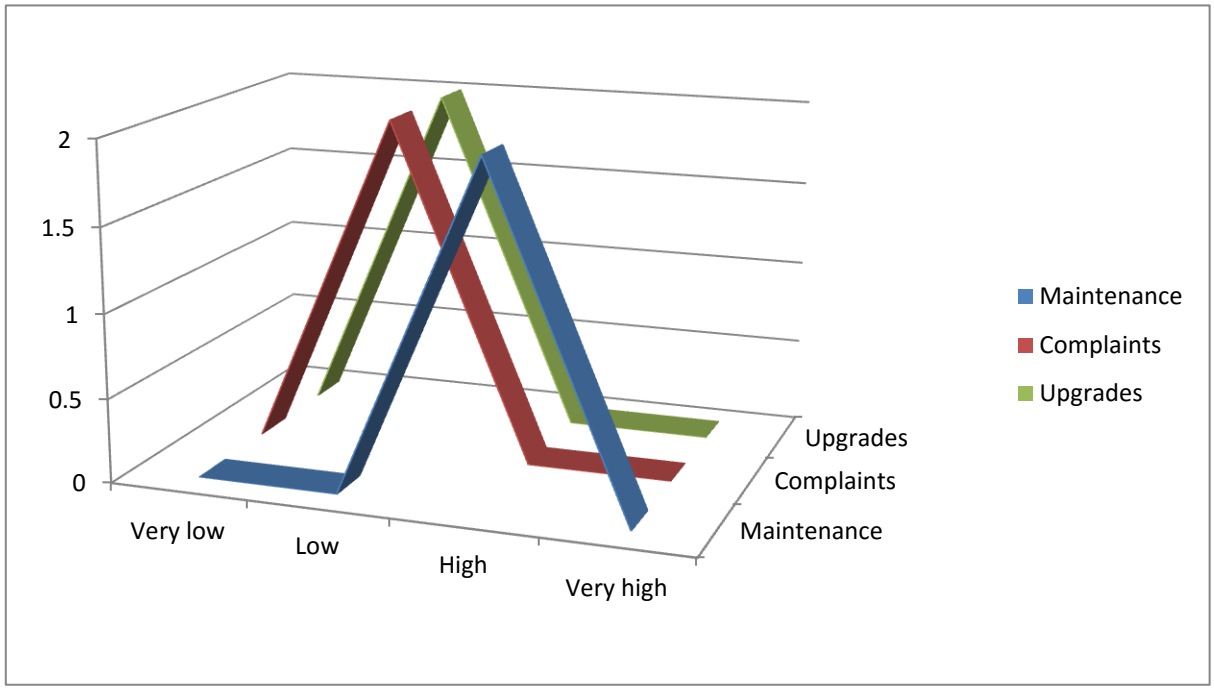

Fig. 4: Comparison between Maintenance, complaints and Upgrade rate of Infrastructure

The regard for improvement by residents is commendable due to the fact that among populace with dominating response for new infrastructure provision, 44% of the populace are in dare need of improved road among the transport infrastructures need; 46% of the residents also consider the basic health centre a pressing need of all health infrastructures; 65% wants exploitation of new resources for better public water supply; 39% sees need for fire-station in the area and, due to the fact that majority of the residents are satisfied with waste facility, 56% see no need for it and the remaining 44% still see need for it. It is of no doubt that the community is willing to embrace further development of infrastructure.

Also, Figure 5 has shown 41% quite impressive concern shown by government has resulted in 41% fast development. It is glaring that when the level of government's concern peaks on the platform that is not impressive, the development rate drops to a very slow one but at a point of optimization, it is discovered that the development was fast as the government's concern rates quite impressive. It is therefore no doubt that government's concern tells on the level of development. The lesser the government's concern, the slower the development and vice versa.
Thus, concern government shows tells on the rate of any development expected.

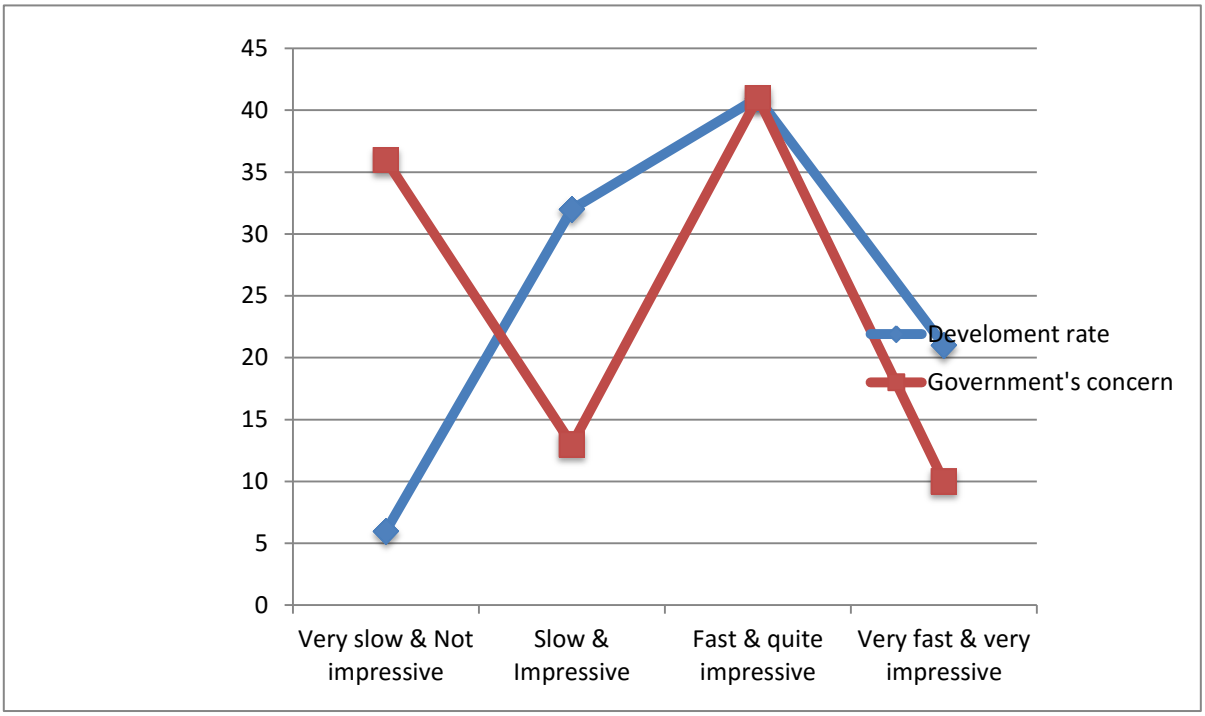

Fig. 5: Comparison between Development rate and Government's concern

Source: Authors' field survey, 2015

The situation in this area could have been far better if a wide gap is made in the rate of development, though development is a relative term- what is considered developed in an area may be seen as undeveloped to another area; despite the fact that the area is rated to be fast developed, there are still that some deficiencies noticed with the development of infrastructure in this area due to the facts that government agencies have been less active in some aspects as pointed out by the residents. The summary on Infrastructure condition includes:

- Inadequate transport infrastructure belittles the area's outlook which is a function of physical development;
- Fairly regular power supply tells on commercial activities which is a function of economic development;
- High demand for social infrastructure shows deficiencies of social development;
- Sufficient waste infrastructure gives an edge of environmental development.

RECOMMENDATIONS

After the assessment of the infrastructural development in Akure using Ijapo estate as a case study, the following recommendations were made, to help in tackling the problems facing infrastructure development and maintenance structure in the study area and Nigeria as a whole.

The Research reveals a deficiency in improvement capabilities due to the fact that the functional state of most infrastructures is depreciating, bad, poor and inadequate. Therefore, Community and stakeholder should be engaged to enhance a greater understanding of existing conditions, unmet needs, local values, aspirations and concerns. Agencies, service providers, community organizations and other stakeholders can help to identify existing gaps or deficiencies, confirm future facility requirements and identify opportunities for future provision through a process of collaboration.

It is also advisable that worn out infrastructures like roads, be maintained, renewed rehabilitated and upgraded through strategic asset management techniques; Local government should be required by legislation to strategically manage their asset portfolios to ensure continuing viability, long term financial stability and that community needs could be addressed in a way that is affordable and effective.

The fact that some infrastructures like waste system and educational infrastructure are still in good state, there should be focus on their periodical renovation and revitalization; in that infrastructure if not properly maintained, is prone to damage and can cause environmental degradation. All infrastructure investments should include budgets for maintenance and support for agencies, to strengthen management of infrastructure through technical assistance and capacity building.

Since the most dominant challenge facing the Agency is inadequate funding, there should be an institution framework to provide funding and policies that will enable provision for better infrastructure provision, maintenance and investment in new capacity and new technologies. It is important that the Government commits to a long-term and consistent funding of the costs of improving and providing the various infrastructures. Providing new sources of funding for power, transport, water and sanitation from other sources will reduce the demands on the budget. Infrastructure Leasing and Financial Services (ILFS) to finance infrastructure institutions could be established and funds could also be sourced through the loan facilities of the World Bank, under the international development assistance credit scheme or Public-Private Partnership to help address some of the evident failings of current provision.

Taking a look at the case whereby a shopping plaza construction is abandoned for a construction of new market, it is to be noted that Projects should be prioritized, likewise their funding. A budget should be made for rehabilitation and maintenance over new construction especially when the repair is minor. Shifting funds from new infrastructure in this case towards maintenance can contribute to City redevelopment. Thus, governments must make decisive changes in maintenance practices and investment priorities.

On the part of the Agency concerned, it is necessary to improve environmental sustainability by integrating environmental and social concerns in their planning; Environmental Impact Assessment (EIA) for infrastructure projects should be made. Likewise, a periodical, comprehensive spatial and temporal inventory alongside monitoring routine should be embarked upon to measure infrastructure, with the purpose of analyzing its effects in terms of competitiveness and development of the territory.

CONCLUSION

The review of the Infrastructure and development literature performed sustains a number of conclusions in that the improvement in performance and resiliency of infrastructure is needed to adapt to the contemporary extreme urban context because a sustainable and efficient infrastructure development is a key component of national competitiveness when organized in related parts to meet the desirable standard, to connect and integrate cities to better serve their citizens or meet the satisfactory need of her citizens. The planning and provision of infrastructure makes physical, social, environmental and economic sense in City redevelopment and can result in significant city outlook and upgraded standard of living to the community in the medium to long term.

This research has shown clearly that infrastructure is critical to the development of any nation. It has also demonstrated that in spite of the current position of Nigeria relative to other nations that are fast developed, the country can indeed still catch up if her vast resources are efficiently channeled, managed and recommendations are adequately applied.

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