

DIGITALIZATION: AN INEVITABLE TOOL IN URBAN ADMINISTRATION AND MANAGEMENT IN NIGERIA

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Abstract

The world is currently undergoing massive urbanization with almost 4 billion people out of the 7.6 billion living in town and cities and the figure is expected to rise to 60% by the year 2030. The need for effective urban planning, waste management, curbing crime as well as measuring, monitoring and forecasting land use changes underscore the need to adopt digitalization/computerization in city administration, development and management. The complexity of modern day cities are far more demanding and challenging requiring the adoption or use of computers in city management and administration particularly as it facilitates easy sharing of data/information amongst relevant agencies. The drive towards the creation of smart cities across the world is in line with the digitalization efforts. This paper examines the various ways through which digital technology can be deployed and integrated in administration of towns and cities particularly in Nigeria to address issues of urban poverty, insecurity, waste management, transportation challenges and effective allocation of land use resources. The paper thus, recommends among others, the need to channel financial and material resources to enhance the livability and serviceability of cities in Nigeria using computerization and digital technology.

Keywords: Digitization, Computerization, Smart cities, Urban Planning, Management

Introduction

The global community is experiencing massive rate of urbanization. The proportion of people living in cities globally has changed since the 1950s. Records indicated that the proportion of urban dwellers as at 1950s stood at 30% which translate to equivalent of 750 million (Revi, 2017). As at 2017, it was estimated that out of the 7.4 billion global population, 4 billion are now living in cities and the figure is expected to reach 60% by the year 2030. Revi (2017) opined that the fact that nearly two-thirds of the global economy are found in the cities and there is every likelihood it will rise to three-fourth by the year 2030 made cities to attract both investment and people.

Nigeria being a nation with the highest population in Africa (projected to close to 240 million) is undergoing its own share of urbanization. History has shown that the proportion of Nigeria's population living in urban areas as at 1921 was 4.8%. This figure rose to 19.2% in 1963 and it is expected that by the year 2030 urban population in Nigeria will reach 56-58% (Onyemelukwe, 1977). Urbanization in Nigeria has resulted in changes in settlement patterns and the demographic nature of the population and these are gradually transforming the economies of the

country. It is worth noting to state that the future of Nigeria will depend on how cities are managed and governed and the way they will either be inclusive or discriminatory.

It is increasingly becoming difficult in most cities in Nigeria particularly the fastest growing ones like Lagos, Kano, Abuja, Port Harcourt, Maiduguri etc to provide minimum social services which includes decent and affordable housing, water supply/sanitation, security as well as absorbing the increasing number of labour force into the urban economy. Furthermore, cities in Nigeria experiences challenges associated with access to land and affordable housing, unplanned and informal settlements such as slums, Urban poverty, dearth in infrastructure both in terms of quantity and quality, waste disposal and management, crime and insecurity as well as varied forms of natural disasters such as flooding and outbreak of diseases and all these made urban planning, management and overall urban governance difficult and cumbersome. These complexities underscores the need to adopt digitalization/computerization in city administration, development and management. The complexity of modern day cities are far more demanding and challenging requiring the adoption or use of computers in city management and administration particularly as it facilitates easy sharing of data/information amongst relevant agencies in charge of urban administration and management.

Digitalization simply refers to digital transformation of society and its economy. It denotes a transition or movement from the analogue technologies that characterizes the industrial age to a new age of knowledge and creativity leveraging on digital technologies (Innolytic, 2019). Over the years digitalization has changed the way people live, interact and work globally but sadly, in most developing societies the planning system has remained largely unchanged.

The drive towards the creation of smart cities globally is to enhance the capacity of cities to leverage information and communication technology to enhance service delivery and make cities more effective and efficient. In a nutshell smart city creation is all about adoption of digitalization in city management and administration.

It is on this premise that this paper seeks to examine the role and relevance of digitalization in urban administration and management in Nigeria relying principally on secondary data relating to the subject matter.

Why do we need Digitalization in Urban Planning and Management in Nigeria?

Challenges in Nigerian cities are so numerous and multi-faceted hindering their sustainable growth and development. From Lagos, Kano, Ibadan, Owerri, Sokoto, Kaduna and many other cities, the story is the same. The problems of Nigerian cities are they have materialized ahead of any systematic drive towards modernization (see Figure 1).

The Major challenges confronting cities in Nigeria which digitalization can address are;

i. Difficult access to Land and Affordable housing

In Nigeria access to land and the processes involved in its acquisition are often tortuous, lengthy and full of administrative bottlenecks. In fact majority of the population has to resort to the informal land market for their supply of land (Mamman, 1996 and Dankani, 2008). Government failure to meet the demand of development land of its populace was believed to be responsible for the emergence and the growth of the informal land market. Informal development constitutes up to two-third of all developments in cities in Nigeria (Home, 1986) and the implication of the operation of the informal land market are increased density of the built environment, indiscriminate cutting of trees and vegetal

cover to provide space for building, fragmentation of plots of land and emergence of unplanned neighbourhood.

The housing situation in most cities in Nigeria can be best described as dehumanizing characterized by dearth of basic housing infrastructure and facilities. The cost of housing is so high and beyond the reach of average Nigerians. Private sector property development industry are not well developed and financially equipped to compliment the effort of the state in housing delivery (Dankani, 2008). In fact the various programmes as well as institutions created by the Nigerian state to provide housing or mortgage finance failed woefully in the discharge of their statutory responsibilities (Aluko, 2000)

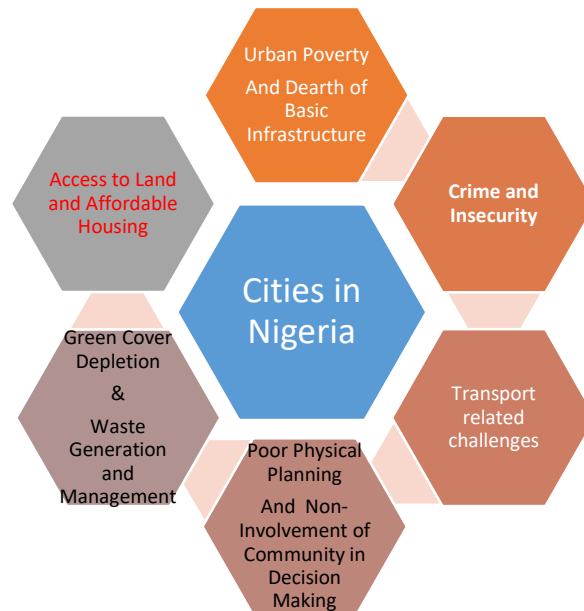


Figure 1: Urban Challenges in Nigeria

ii. Urban Poverty

Most urban centres in Nigeria are populated by the urban poor. These are people in a disadvantaged economic position incapable of affording a decent and affordable housing (Aluko 2003). The numerous slums and shanty towns found in our cities are common examples of housing abode of the urban poor. Majority of the urban poor live in a high density unplanned neighbourhood devoid of municipal services (Tomori, 2014). The various shanty towns and slums in most urban areas are typical abode of the urban poor.

iii. Crime and Insecurity

Crime and Insecurity are becoming so rampant in Nigerian cities. Crime statistics for the period 2000-2008 released by Achumba, et., al, (2013) shows a wide spread and high rates of assassination, armed robbery and Kidnappings in Nigeria.

For instance incidences of armed robbery, Kidnappings and assassination over the years stood at 24, 818, 3,442 and 18,215 respectively.

Table 1: Incidences of selected crimes in Nigeria (2000-2008)

Year	Armed Robbery	Kidnapping	Assassination
2000	1,877.00	243.00	1,255.00
2001	2,809.00	349.00	2,120.00
2003	3,889.00	337.00	2,117.00
2003	3,497.00	410.00	2,136.00
2004	3,142.00	349.00	2,550.00
2006	2,074.00	796.00	2,074.00
2006	2,863.00	372.00	2,000.00
2007	2,327.00	277.00	2,007.00
2008	2,340.00	309.00	1,956.00
Total	24,818.00	3,442.00	18,215.00

Source: Achumba, et. al, (2013)

iv. Waste Generation and Management

Nigeria with a population of over 200 million is among the largest producers of solid waste in the continent of Africa and most of this wastes are generated in urban centres. The annual solid waste for Nigeria stood at 32 million tonnes and unfortunately less than 30% of the waste is collected. Lagos state generates over 10,000 tons of urban waste on daily basis. Oyo, Kano, Rivers and Kaduna states with their large population are struggling to manage and their solid waste. One can argue that the growth in Nigeria's economy fuelled by population increase had a detrimental effect on the urban environment due to increase in number of wastes generated.

v. Transport related Challenges

Transport has been described as the basis of how cities works (Ikya, 1993; Solanke 2005; Ademiluyi and Solanke, 2007). The complex nature of modern cities with their living, functioning and interacting components necessitates the emergence and provision of transport systems. Urban Transportation exist to link and integrate various parts of the city into unified whole. The Nigerian urban transport system is bedevilled with numerous problem or rather defective development approach (Badejo, 2011). Emphasis has been placed on road transport in most of urban areas resulting in prolonged traffic congestion, accidents, parking challenges. Pollution and loss of time and energy on daily basis by commuters.

vi. Depletion of Green cover

The massive uncontrolled and unplanned growth of urban areas in Nigeria is having serious effect on the environment resulting in the destruction of natural resources and ecosystem disruption. A scenario capable of exacerbating several hazards with dire consequences on human and the environment. Akpu (2002) discovered that the rapid growth of Abuja led to encroachment of residential land use (built-up) on areas designated for other uses particularly Green areas, open space, park and recreational land uses. Between 1976 and 2006 the Green Area of Zaria reduced from 55.86 hectares to 46.54 hectares; reducing at the rate of about 0.5hectares per annum (Akpu, 2002). Removal of vegetation destroys wildlife habitat and specie as well as promoting erosion, desertification and pollution (Ladipo, 2010, Adesina, 2001).

vii. Poor Planning

Planners in major urban centers are confronted with so many challenges which affect the effective discharge of their primary responsibility of ensuring orderly and sustainable growth and development of the urban environment (Dankani, 2013). These challenges provide a breeding ground for the various abuses of the planning rules and regulations such as emergence of slums and shanty towns, land use conflicts, land litigations, insecurity of tenure and titles, inadequacy of infrastructure, utility and facilities as well as fragmentation of land lots. It noteworthy to state here that no tangible sustainable growth and development could take place unless concerted effort is put in place to address these constraints squarely. In Nigeria so much emphasis was placed on economic planning with little or no regard to the implication on physical planning of social and economic policies.

Role of Digitalization in Urban Administration and Management

The role of Digitalization in urban administration and management is vital and multifaceted. Cities around the globe are striving to incorporate digitalization in a bid to tackle the multi-dimension challenges confronting cities particularly in developing nations of Africa and Nigeria. Digitalization can aid and enhance city administration and management in the following ways:

i. Improved Physical Planning

The world is fast becoming urbanized and the rate of expansion and growth of cities both in size and population necessitates the adoption of digitalization. It is noteworthy to state that digitalization has a profound effect on cities. Nowadays computers have become inevitable in our societies and daily lives. Information about cities can be acquired in real-time, processed, analysed and transmitted back into cities. This will enhance the understanding, monitoring, measuring and forecasting as well as management of the urban system. Digitalization is now revolutionizing the entire urban fabric; from analysis of energy demand and consumption, water supply and distribution, traffic flow to citizen participation in urban governance and administration. The rate at which the world is becoming urbanized necessitates the need for effective urban planning to be adopted. This is where Geographic Information Systems (GIS) comes in. The complex nature of urban planning and management underscore the need to use a powerful and reliable analytical tools such as GIS. The opportunities of GIS tools are enormous and can be used to solve an array of problems such as monitoring urban environment, conducting feasibility study of a location for a particular project such as waste disposal etc (Paul, 2018).

GIS tools avail planners, engineers and surveyors the opportunity to design maps of urban areas. For instance the most frequent tools of GIS used for making city plan are visualization, spatial modelling and analysis. With GIS one can be able to store, manipulate and analyse the different components of the city system (Social, physical and economic). In a nutshell, tools of GIS can make planners make an informed decision about the growth and management of the city and equally plan accordingly.

ii. Curbing Crime and Insecurity

Government has committed a lot of resources to combat crime, insecurity and insurgency through intelligence gathering unfortunately Geo-Spatial Intelligence (GEOINT) is seriously underutilized in this respect (Dankani et.al, 2017). Geospatial Intelligence is a field of knowledge, a process, and a profession. As knowledge it exists in the form of

information integrated in coherent space-time context that aid descriptions, forecasts, explanation of human actions which aid decision makers to make informed decision. As a process, it is the avenue by which data and information are collected, manipulated and disseminated to decision-makers for effective decision (NGA, 2005).

Aderoju et. al, (2013) posit that

“It is high time the Nigerian security agencies understood the need to explore space technology in its defense. The security agencies must respond fast by exploring the most recent way of managing national security which is Geo-spatial intelligence. The essence of Geo-spatial Intelligence is to combine satellite imagery, ICT, and on ground surveys reports to cut down on field-based work in order to give the Nigerian Security Agencies precise decision to make, so that National Security issues can be well improved and managed. This will make findings less expensive, fast and more precise”

The fact that the Nigerian nation has made huge investment in spatial and space technology such as the NigeriaSat-X, such investment have not been explored and leveraged upon to deal with the activities of terror groups like the dreaded ‘Bokot Haram’ sect. A combination of motivation, training and re training of security personnel coupled with adoption of GEOINT will go a long way in curbing crime and insecurity.

iii. **Enhance Transportation and Mobility**

Digitalization can enhance transport and mobility within and around urban areas being the veins and arteries that link one part of the city with the other. The following are ways through which digitalization can enhance transport and mobility within the city.

Digital Assistance: Passengers not familiar with public transport system can now rely on apps and devices to facilitate digital navigation within cities. With devices like smart phones passengers can be adequately informed about bus, train and flight delays or their ticket’s validity saving them time and resources.

Electronic and Online Ticketing

With Digitalization travellers can now obtain their tickets electronically with a more flexible payment system. Passengers can now check in online saving them the stress of long queue. In this regard, one can argue here that digitalization has brought about flexibility, efficiency and effectiveness to passengers, transportation companies and the society at large.

Furthermore, Intelligent traffic signals can help optimize traffic flow and reducing congestion particularly during the peak periods.

iv. **Improved Waste Management Practices**

One of the major problem of urban areas in Nigeria is waste collection and recovery. Waste management requires deployment of human, financial and technical resources. Digitalization has provided an opportunity to improve waste management and also minimize the impact of waste on the environment. Thanks to data, new technologies are coming up to optimise the logistical collection chain. In particular, these solutions call on the real-time measurement of the content of containers. These containers are equipped with sensors that major the content of the container using infrared or rather ultrasound

technology. The collected data is then compiled together with data from other indicators such as weather and road traffic conditions and forwarded to the truck drivers to guide their movements and ease their routes. This assists in a long way in avoiding unnecessary trips to collect half-empty containers and at the same time facilitates the speedy collection of already filled containers. This technology has been deployed by SigrenEa in Europe and they managed more than 10,000 drop-off containers (Open Resource, 2019)

v. Enhances Public Consultation and Citizen Participation

Governance is about taking the citizens along and informed about government policies and decisions. Digitalization can ease wider public consultation and participation on issues revolving around urban governance and management. Citizen participation entails direct engagement of the members of the community in decision making and service delivery. The advantages of citizen participation are numerous; it strengthen sense of belonging and commitment on the side of the community as well as making the said policies or decisions responsive to the local needs of the society (Garcia-Zamor, 2012; Roseland and Connelly, 2005).

The emergence of E-Governance or Electronic Governance has enhanced citizens' participation and consultation globally. E-Governance refers to the application of Information and Communication Technologies (ICT) in government activities to increase efficiency of service delivery. . It offers citizens with faster, easier access to information and services in a very efficient manner (Lee, Kim and Ahn, 2011). E-Governance mechanism enable stakeholders to deliberate on a particular policy of government with a view to accepting or rejecting it via social media or government's dedicated websites. This gives the government an opportunity to gauge the pulse of the people with respect to a planned government's policy or action and at the same time give a sense of belonging to the citizens that their yearnings and aspirations do matters to the government (Elbahnasawy, 2014).

Conclusion

It is quite obvious from the foregoing discussion that the challenges confronting Nigerian cities are enormous. The nature of urban settings in Nigeria is quite different from what is obtainable particularly in the developed nations of the world. The drive towards digital or smart city in Nigeria is bedeviled with so many challenges and obstacles such as poor Electricity supply, weak internet bandwidth, Illiteracy and financial incapacitation. There is the need to evolve strategies of making our cities safe, productive, resilient and sustainable and this cannot be achieved without digitalizing city administration and governance. The world is fast changing and moving towards the development and emergence of Smart cities hence all efforts should be channeled towards sustainability by adopting digitization and injecting the much needs financial backing to support the deployment of the technology. It is indeed a fact that cities are notoriously difficult to govern, but if managed inclusively, effectively and holistically, it could be one of the most important gateway to a sustainable future. What is needed is simply a positive attitude, right vision and approach to achieve digitalization and sustainability.

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