



ASSESSING THE LEVELS OF DIGITALISATION AND INVENTORY MANAGEMENT OF BUILDING PLAN APPROVALS IN ZONAL PLANNING OFFICES, OGUN STATE

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Abstract

Digitalization of environmental inventories plays critical role in the management of geospatial data. Digitalization enables environmental professionals to collect, store and process, analyze and visualize geospatial information such as infrastructures, land use land cover types, and topography, and building use and so on. There exist uncoordinated development pattern in some major towns in the country due to non-digitalization data on building plan approval. This work studies the existing level of digitalization of Zonal Planning Offices with a view to promote E-planning and effective development control. A purposive sampling method was adopted in which three out of the ten Zonal Planning offices in the Senatorial District were selected and data on their operations with respect to the level of information technology was collected through interview guide and a checklist. Assessment was done on; data storage, retrieval, analysis and presentation. Results showed that the level of digitalization is very low due to the low level literacy among staffs and inadequate computer devices and software. It is therefore recommended that the adoption of IT is imperative for the enforcement of planning regulations and achieving effective development control.

Keyword: Environmental, Geospatial, Inventory, Digitalization, IT

INTRODUCTION

One major aspect of Physical Planning with respect to Development Control is the Approval of Building Plans, in which the Local Planning Offices, under the Ministry of Physical Planning are statutorily saddled with the roles of ensuring the compliance of building development to approved planning standards. In Ogun State, there are thirty-two (32) Zonal Planning Offices, while the Ogun West Senatorial District has ten (10) Zonal Planning Offices. Each of these offices has specific geographical area limit as the operational jurisdiction area. It is important to note that Building Plan Approval is a process which involves the submission of necessary documents of a proposed building development to the Planning Authorities, and the investigation of the site and the documents whether they are in line with the Physical Planning Laws, Regulations and Standards, before granting approval by the Authority.

For a Building Plan Approval, the following documents are to be provided and submitted to the Planning Office; Evidence of payment of lease (the receipt for the purchase of the land; 5 sets of Architectural drawings signed and sealed by a Registered Architect of the Federal Republic of Nigeria; 5 sets of Structural/Civil Engineering drawings signed and sealed by a Registered Structural Engineer and 5 sets of Mechanical /Electrical drawings signed and sealed by a Registered Engineer of the Federal Republic of Nigeria, where applicable (for residential buildings with one or more suspended floors, Commercial and Industrial Buildings); Original copy of the Survey Plan; Passport photograph; Stamp duty; Tax clearance; Development levy, Environmental Impact Assessment Report written, signed and sealed by a Registered Town Planner of the Federal Republic of Nigeria, where applicable; and any other document as stipulated under the Ogun State Urban and Regional Law No 20 of 2005 as amended, and the Ogun State Building Codes of 2010.

According to Tamani and Kadmiel (2018), problems of development control with respect to data management of all physical developments both at the proposal and completed levels have been identified to be a bane to the effective control of all physical developments in Nigeria. The non-effective adoption and utilisation of digital technologies for Physical Planning in the Planning Authorities have resulted into low level of monitoring and tracking of physical development, poor stock taking of all physical development with respect to specific time frame and poor storage and retrieval of physical development data. Xufeng et al (2023) noted that technologies in data management within the context and content of physical development planning are basic to the actualisation of the Sustainable Development Goals such as the creation of Smart Cities while Lasisi and Olapeju (2012) have earlier pointed out that the benefits of IT penetration in development control activities are numerous and that these are to facilitate effective and efficient development control activities. However, there exist many digitised software used in physical planning, and the most commonly used in urban planning includes; the Geographic Information System (GIS), Computer-Aided Design (CAD), 3D Modelling Tools. The importance of this software cannot be overemphasised as they contribute to data analysis, design and communication within physical planning schemes.

It is important to note that problems associated with digitalization and inventory management include; network failure which can disrupt network services, impacting productivity, infrastructure and power supply, and data security expressed in terms of data privacy breaches, and skill gap. However, hardware failure can disrupt connectivity and lead to packet loss in

network downtime, and these failures include; failures in routers, switches, cables and network interface cards (NICs).

The aim of this research is to assess the levels of digitalisation and inventory management of building plan approvals by the selected Zonal Planning Offices. Hence, the objectives include; the identification of the Operational Area of the Zonal Planning Offices and the staff composition with their levels of literacy on Information Technology; the Types and Number of Existing Computer Devices; the Methods of Building Plan Approval Storage and Retrieval; the Types of Software used for Building Plan Approval Analysis; and the Assessment the Level of Digitalisation of Building Plan Approval Data.

LITERATURE REVIEW

In data collection, much of the data for integration and conversion projects are obsolete, analogue and maybe inaccurate. This necessitates the need for a robust system to host the field records of the urban facilities in order to maintain accuracy, reliance as well as positional accuracy of the records. The adoption of GIS is no more news and previous studies have utilized GIS in solving environmental problems.

Shoukat & Kiran, (2021) used remote sensing and GIS to detect changes in land use in Taluka Mirpur Mathelo Ghotki, Pakistan. The maximum likelihood classification algorithm to carry out supervised classification on 2013 – 2020 Landsat imageries is used to determine the land use classes and the coverage of each land use class was then determined and stored in Arc GIS database. In the works of Emre & Erbas ,(2020), an alternative method for transferring the archaeological and geological data was adopted for the Preservation-Oriented Zoning Practice using GIS. Geo-referencing and overlay analysis was performed on the elevation data as well as specialisation of the archaeological data. The study emphasizes the need for utilizing archaeological data integration for future predictions of the historical urban settlement.

In another report by Santos, *et al.*, (2023), GIS is adopted to support inventorying, safeguarding, tourism, and cultural promotion of the traditional Portuguese glazed tile. The project included data collection, organization, treatment and analysis of data. An accessibility study was conducted using the pedestrian infrastructure network to test the promotion capabilities of the instrument. The outcome was a geo-referenced inventory of alphanumeric, graphical, image and drawings which were validated by Covilhã municipality and the research team. Othman, et al., (2020) identified the user requirement for a proposed

system, designed and developed the systems and tested the capability of the systems performance using Arc GIS and Microsoft Visual Basic (MsVB). ArcGIS software was used to store, create databases, manipulate and analyze datasets while MsVB was used for the creation of the system's interface and menus. The resulting system is cost effective and is applicable to the whole local authority in Malaysia especially for urban planners, engineers, landscape architects, and urban foresters.

Morris et al., (2020), examined current local agency practices in Minnesota to seek better ways to manage public assets and existing mobile technologies were reviewed to recommend best practices for the efficient, cost-effective use of GIS mobile technology by different types of local agencies. The study addresses the questions of what type of agencies are in existence; what can be developed for what is currently in existence for mobile technology as well as how these agencies develop great asset management systems? In a recent study to develop interactive GIS map of all trees, bushes and other urban inventory in Novi Grad Sarajevo municipality, Otoka, the QField application was used for data collection and QGIS for creating interactive map with database.

METHODOLOGY

This research focused on Ogun West Senatorial District, and out of the ten (10) Zonal Planning Offices the Senatorial District, the Atan, Ilaro, and Ota Zonal Planning Offices, are purposively selected; hence, the study area is defined as the operational areas of the selected Zonal Planning Offices.

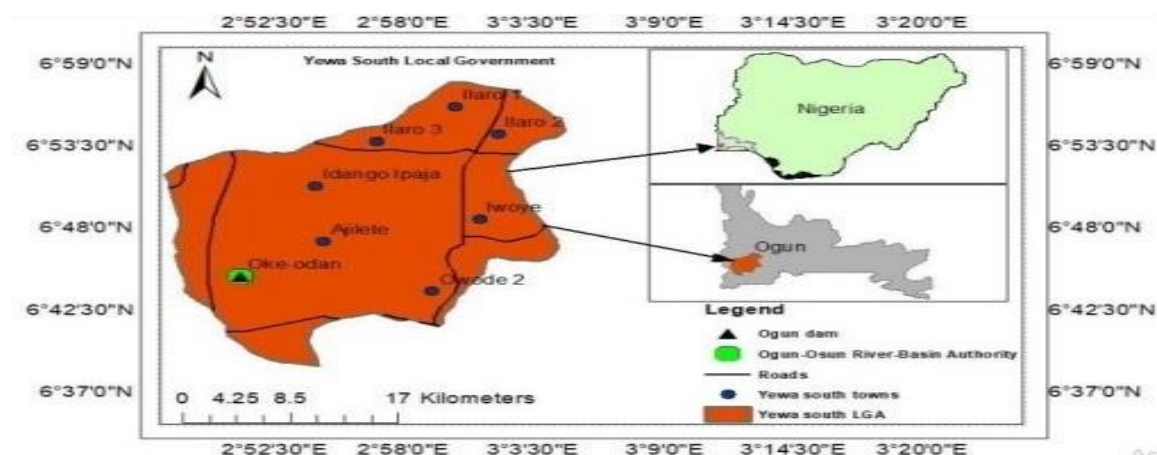


Fig 1: Map of Nigeria showing Ogun State and Yewa South Local Government Area



Fig 2: Map of Ogun State showing Ogun State Senatorial Zones

Data on the area of operation for building approval, storage of building plan approval, retrieved and utilised for planning purpose(s) were collected from the Town Planning Offices through an interview guide. A checklist was used to collect data on the type and number of computer devices used, and the type of computer software used.

RESULTS AND DISCUSSION

RESULTS

Operational Area of the Zonal Planning Office

Atan Planning Office has areas such as Agbedi, Iju, and Obere, while Ilaro Planning Office has area such as Ilaro, Oja Odan, and Idogo and Ota Planning Office has areas such as Ota, Iloawela, and Itele within their area of jurisdiction.



Fig 3: Area of Jurisdiction of Atan Zonal Planning Office. Source: Atan Zonal Planning Office (2025)

2	Ilaro	Town Planner	3	2 literate and 1 not literate
		Land Surveyor	1	Literate (GIS)
		Architect	1	Literate (CAD)
		Civil Engineer	1	Literate (CAD)
		Technical Officers	3	1 literate (MS) and 2 not literate
		Executive Officers	2	Not literate
		Secretary	1	Literate (MS)
		Total	12	
3	Ota	Town Planner	3	3 literate
		Land Surveyor	1	Literate (GIS)
		Architect	1	Literate (CAD)
		Civil Engineer	1	Literate (CAD)
		Technical Officers	3	2 literate (MS) and 1 not literate
		Executive Officers	3	Not literate
		Secretary	1	Literate (MS)
		Total	13	

Source: Zonal Planning Offices (2025)

Types and Number of Existing Computer Devices

The number of computer devices varies in each of the planning offices as shown in Table 2.

Table 2: The Computer Devices available in the Selected Planning Offices

S/N	Zonal Planning Office(s)	Office	Laptop	Printer	Scanner	Photocopier
1	Atan	Room 1	1	1	-	-
		Room 2	1	-	-	-
		Room 3	-	-	-	-
		Room 4	-	-	-	-
2	Ilaro	Room 1	1	1	-	-
		Room 2	1	-	-	-
		Room 3	1	-	-	-
		Room 4	-	-	-	-
		Room 5	-	-	-	-
3	Ota	Room 1	1	1	-	-
		Room 2	1	1	-	-
		Room 3	-	-	-	-
		Room 4	-	-	-	-

Source: Authors' field work (2025)

Methods of Building Plan Approval Data Storage and Retrieval

Data on the methods of building plan approval, data storage and retrieval revealed that the traditional method is still in operation whereby a register is opened for all entries of building plan approval applications, with the submission of necessary documents and stored in the computer for further processing.

Assessing the Levels of Digitalisation and Inventory Management

The assessment of the levels of digitalisation was carried out on the basis of the number of computer devices and their applications in the building plan approval processes. Four (4) major areas of assessment were considered in this research, namely; the storage of all data on building plans submitted to the office.

Retrieval of Data is done from the register where data relating to building approval plan are compiled, while other vital data on the documents on approval are retrieved from the computer system through the flash. The assessment is therefore rated in three levels, namely; high, average and low performance.

Table 3: Assessment of the Levels of Digitalisation and Inventory Management

S/ N	Planning Office(s)	Activity	Devices Used	Others (Specify)	Software App.	Levels I T
1	Atan	Data Storage	Desktop & Laptop	Register	None	low
		Data Retrieval	Flash Drive	Register	None	low
		Analysis	None	Report	None	low
		Presentation	None	Report	None	low
2	Ilaro	Data Storage	Desktop & Laptop	Register	None	low
		Data Retrieval	Flash Drive	Register	None	low
		Analysis	None	Report	None	low
		Presentation	None	Report	None	low
3	Ota	Data Storage	Desktop & Laptop	Register	None	low
		Data Retrieval	Flash Drive	Register	None	low
		Analysis	None	Report	GIS & CAD	Fair
		Presentation	None	Report	CAD	Fair

DISCUSSION

The levels of literacy on Information Technology and the number and type of computer devices are major basis for assessing the levels of digitalisation and inventory management of building plan approvals in the study area. It is important to note that the low level of digitalisation has greatly affected negatively the enforcement of the planning regulations in the study area. Through the GIS, the geographical location of the buildings in the study area can easily be visualised and those with approval can easily be identify through appropriate coding method. Other software such as CAD is veritable tool both for analysis and presentation.

It is important to note that the damage of documents due to heat and other factors are eliminated when data are stored in the computer. However, the importance of easily mobility of data on site through the use of laptops and flash drive cannot be over emphasised. Hence proper digitalization and inventory management are recommended.

CONCLUSION AND RECOMMENDATIONS

The low level of digitalisation and inventory management are bane to the effective development control of the areas under the jurisdiction of the planning office, and E-Planning can only be achieved through proper digitalisation of the data on building plan approval and the storage of these data in the computer system through the use of relevant computer devices and software.

It is therefore recommended that the office should be equipped with relevant and adequate computer systems and software, with proper training of staffs. The achievement of the goal of E-Planning is dependent of the digitalisation and inventory management, hence, various development should be enlightened on the merits of this innovation in planning.

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