DESIGN AND IMPLEMENTATION OF COMPUTERIZED LAND INFORMATION SYSTEM

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**DECLARATION**

I, Suleiman Khalimat Ozohu, hereby declare that this project titled **COMPUTERIZED LAND INFORMATION SYSTEM** has been carried out by me under the supervision of Mal. S.A. Hassan. It has been presented for award of any degree in any institution. All sources of information are specifically acknowledged by means of reference.

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………… .…….

Signature Date

**CERTIFICATION**

THIS project entitled **” COMPUTERIZED LAND SYSTEM INFORMATION”** by “Suleiman Khalimat Ozohu” meets the requirements governing the award of Bachelor of Science in Computer Science and is approved for its contribution to knowledge and literary representation.

………………. ……………

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Signature: ……………………. Date

**DEDICATION**

This work is dedicated to ALMIGHTY ALLAH for his guidance, kindness and protection upon my soul. He has blessed me with abundant gifts and good health, without which my academic pursuits would have been nearly impossible, also to my parents for their supports during my stay in school. And to all who played a crucial role in my quest for wisdom.

**ACKNOWLEDGMENT**

Praise be to Allah (SWT) for preserving my life and for giving me the chance to reach this stage in my educational endeavours. I appreciated the effort of my project supervisor Mal. S.A. Hassan for his guidance and support throughout the entirety of this project." may Allah reward and bless you.

My sincere gratitude goes to my parents and siblings for their continuous support and unconditional love, which have been essential to my success. May Allah bless you all with an abundance of blessings.

And to my friends and course mates, I really appreciate you guys, I love you all.

**ABSTRACT**

Land is a free gift of nature and a factor of production, land tenure is the name given, particularly in [common law](file:///C:\wiki\Common_law) systems, to the legal regime in which land is owned by an individual, due to the fact that Keeping record of lands and their owners has been a great task to government and the governed, access to land information proves difficult that most times people are defrauded due to lack of land information, illegal sales of lands without the consent of the owner are very common etc. This work “Computerized Land information system” is designed to help keep record of land which includes: the size of the land, Location of the land, the type of houses to be built on such lands, the owners of purchased Lands and so on. Therefore this, software is developed to keep record of land information system. As such making it easy to keep detail information on land size, location, ownership and type of house to be built on the land and also easy accessibility of stored records, hence the record in this software will be stored in a database. This application has been developed to run on Hypertext Pre-processor (PHP) and MySQL software.

**Table of Contents**

**DELARATION…………………………………………………..………………...………..ii**

**CERTIFICATION……………………………………………..………………...…………iii**

**DEDICATION………………………………………………………………………….…...iv**

**ACKNOWLEDGEMENT…………………………………………………….…………….v**

**ABSTRACT………………………………………………………………………………....vi**

**LIST OFFIGURES…………………………………………………………………….…...ix**

**CHAPTER ONE…………………………………………………………….………………1**

**INTRODUCTION………………………………………………………………………...…1**

* 1. Background of the study……………………………………………………………....1
  2. Problem Statement………………………………………………………………........2
  3. Aim and Objectives …………………………………………………………..……..2
  4. Purpose/Significance of the study………………………………………………..…
  5. Scope of the study……………………………………………………………………..3
  6. Constraints and Limitation……………………………………………………….…..3
  7. Definition of terms………………………………………………………………….3

**CHAPTER TWO……………………………………………………………………..………4**

**LITERATURE REVIEW…………………………………………………………………....4**

2.0 Land Property……………………………………………………………………………..4

2.1 Land Acquisition and Development Authorities in Kogi ……………………..…………..4

2.2 Land Development ………………………………………………………………………..4

2.3 Land and its Uses …………………………………………………………………………4

2.3.1 Land use……………………………………………………………………………..4

2.3.2 Types of land Use…………………………………………………………………...5

2.3.3 Classification of land use……………………………………………………………5

2.4 The management of Land…………………………………………………………………6

2.5 Land Information System (LIS)………………………………………………………....7

2.6 PHP and Database…………………………………………………………………………7

2.6.1 Advantages of PHP…………………………………………………………………7

2.7 Review of Existing System………………………………………………………………..8

2.7.1 Problems of the Existing System………………………………………………...8

2.8 Review of Proposed System ………………………………………………………………9

2.8.1 Advantage of Proposed System …………………………………………………………9

**CHAPTER THREE…………………………………………………………..10**

**SYSTEM ANALYSIS AND DESIGN……………………………………….10**

3.1 Introduction………………………………………………………………………………11

3.2 System Analysis ................................................................................................................12

3.3 System Design……………………………………………………………………………12

3.3.1Data Flow …………………………………………………………………………12

3.3.2 Use Case Diagram ……………………………………………………………………..13

3.3 Database Design………………………………………………………………………...14

3.3.1. Database Tables…………………………………………………………………….15

**CHAPTER FOUR** …………………………………………………………………………16

**SYSTEM IMPLEMENTATION AND DESIGN…………………………………………17**

4.1 System Implementation…………………………………………………………………..20

4.2 Authentication …………………………………………………………………………...21

4.3 Choice of Programming Tools …………………………………………………………..22

4.4 Database Server (MySQL) Version 5.0.45………………………………………………23

4.5 User Interface Design……………………………………………………………………24

4.5.1 Home Page………………………………………………………………………..25

4.5.2 About Page………………………………………………………………………..26

4.5.3 Contact Page………………………………………………………………………27

4.5.4 Land Owners Registration Page. …………………………………………………28

4.5.5 Land Owners Viewing Page. ……………………………………………………..29

4.5.6 The Edit Owner Page. ……………………………………………………………30

4.5.7 The Lands Viewing Page.. ……………………………………………………….31

4.5.8 The Edit Land Owner Page……………………………………………………….32

4.5.9 The Search Owner Page………………………………………………………….33

CHAPTER FIVE………………………………………………………………………34

5.0 Summary, Conclusion and Recommendations……………………………………34

5.1 Summary……………………………………………………………………………35

5.2 Conclusion…………………………………………………………………………..35

5.3 Recommendation………………………………………………………………….35

REFERENCES 34

**CHAPTER ONE**

**INTRODUCTION**

* 1. **BACKGROUND OF THE STUDY**

A computerized land system is a digital platform designed to manage and maintain land records, including details on ownership, boundaries, usage, and transactions and an expert. It aims to replace traditional, paper-based land record systems with an electronic database, thereby improving the overall efficiency and transparency of land administration processes.

Land use, land valuation, is among the oldest questions in economic theory, (Shavell, 2004). Land is an essential input ([factor of production](file:///C:\wiki\Factor_of_production)) for agriculture, and agriculture is by far the most important economic activity in primitive society. With the rise of industrialization, essential new uses for land emerge, as sites for factories, warehouses, offices, and urban collections. Also, the value of real property taking the form of man-made structures and machinery increases relative to the value of land alone. The concept of real property eventually comes to encompass effectively all forms of [tangible fixed capital](file:///C:\wiki\Capital_(economics)). With the rise of extractive industries, real property comes to encompass [natural capital](file:///C:\wiki\Natural_capital). Land as a resource has to be managed effectively and for this to be achieved, proper understanding of Database Management System has to be adopted. Database Management System associated to Land has to do with the process of acquiring, storing, processing, and distributing of Land Information. If proper Information and Management of Land is implemented then Land will increase in its value of existence.

* 1. **BACKGROUND INFORMATION ON OKENE**

Okene is the major city in Kogi State, as well as being a Local

.

**1.2 PROBLEM STATEMENT**

1. Keeping record of lands and their owners has been a great task to government and the governed.
2. Access to land information proves difficult that most times people are defrauded due to lack of land information.
3. Illegal sales of lands without the consent of the owner are very common.
4. Certificate of occupancy is usually a problem.
5. Problems of misplacing receipts and other records.
6. To avoid building a house that will start cracking in few years of constructing it, due to lack of proper mixing of sand, gravels(stone), cement and water.

1.3 AIM AND OBJECTIVES

The objective of this study is to develop a software that will keep information on:

1. Land size, Land location, Land owners, Land use information.
2. To facilitate the preparation of certificate of occupancy.
3. To assist the prospective buyers to ascertain the ownership and availability of the property.
4. To promote land information security.
   1. **PURPOSE OF THE STUDY**

This purpose of this work is to make land information accessible to both government and individuals who may like to acquire land property.

1.4 SIGNIFICANCE OF THE STUDY

The project work will help in a good number of ways to make land information available to users. The software developed can:

1. Keep a database of all the lands in the state
2. Enable retrieval of land information
3. Guide buyers on how to buy and who to meet
4. Educate buyers or let them know that there is availability of an expert on the type of house to build in an area for proper town planning.
   1. **SCOPE OF THE STUDY**

This research work is designed to primarily computerize the activities of lands information. The software developed will be carried out using Visual Basic to manage the database. And support some features in order to overcome the problems faced by the organization using manual system of doing it.

**1.6 CONSTRAINTS AND LIMITATIONS**

Due to technical difficulties, limited access to confidential data, the information gathered was limited to house acquisition, usage and property ownership laws. All aspects left out were due to time and also confidentiality of some property documents.

1.7 DEFINATION OF TERMS

**Land Record:** Official documents that contain details about land ownership, boundaries, value, and other related information.

**Databases:** A **database** is an organized collection of data that is stored and managed in a way that allows for easy access, retrieval, modification, and use of that data. It is also called databank.

[**Cadastral**](file:///C:\wiki\Fee_tail) **Data:** Information about land parcels, including the size, boundaries, and geographic location.

**Expert:** An **expert** is someone who possesses a high level of knowledge, skill, or proficiency in a particular field.

[**Land**](file:///C:\wiki\Life_estate) **Registration:** The official recording of land ownership and rights in a government register, y automating and digitizing records.

**Data Migration:** The process of transferring data from one system to another, particularly from paper-based to digital systems.

CHAPTER TWO

LITERATURE REVIEW

2.0 LAND PROPERTY

“Land" is a term with many meanings, Property is any [physical](/wiki/Physical_property) or [intangible](/wiki/Intangible_asset) [entity](/wiki/Entity) that is [owned](/wiki/Ownership) by a [person](/wiki/Person) or jointly by a group of persons ([Bethell](/wiki/Tom_Bethell), 1998). Depending on the nature of the property, an owner of property has the right to [consume](/wiki/Consumption_(economics)), [sell](/wiki/Sales), [rent](/wiki/Renting), [transfer](/wiki/Transfer_payment), [exchange](/wiki/Trade) or destroy their property, and/or to exclude others from doing these things. Land information management was performed using manual records and physical maps. However, with advancements in information technology, there has been a shift towards computerized systems. Early systems were primarily focused on digitizing paper records, but modern LIS integrate advanced technologies such as Geographic Information Systems (GIS), database management, and web-based platforms (Miller et al., 2010; McLaughlin & Wainwright, 2012). Land from the origin has been existing as the habitat of man and its wide use is crucial for the economic, social and environmental advancement of all countries indeed for human survival.

Although it is part of man's heritage. "Land" is a term with many meanings. To the physical Geographer, it is a Landscape, the product of geological and geomorphological processes. To the Economist, it is a resource which, along with capital and labour, is to be exploited or conserved in order to achieve economic production and development. To the Lawyer, Land is the physical dimension to which variety and collection of rights are attached. To a lot of people it is simply the space for the human activity as reflected in the many different forms of the Land use. However, the Management of this Land and its Information has been the major concern irrespective of how Land is viewed.

Land Management is the process whereby the resources of Land are put to good effect in order to increase the value of its existence to mankind. While Land Information System gives support to Land Management by providing Information about the Land, the resources upon it and the improvement made to it. The Management of Land and its Information is not a new activity.

Land Information System may be computer based or manual. The traditional Systems have been manually operated and, in many cases, will remain so far many years to come. Land records at the Department of Land Survey and Physical Planning Okene (Okene local government) which is the case study of this project, shows that different registers of the same information are stored repeatedly. This involves a lot of strenuous or demanding work and also constitutes a large amount of inconvenience when it comes to space in the Department or ministries. The present System at both Land Survey and Physical Planning in some Local Government Area, utilizes paper for registration. As these registers are moved regularly in response to clients' queries, the rate of wear and tear is very high. Registration on computer avoids such. Paper copies can always be printed for client on request.

**2.2 LAND ACQUISITION AND DEVELOPMENT AUTHORITIES IN KOGI**

Okene is a local government area in Kogi State, Okene is located in the central part of Kogi State. It operates under the authority of a local government chairman and has defined boundaries. Kogi State consists of several local government areas:

 Adavi

 Ajaokuta

 Ankpa

 Bassa

 Dekina

 Ibaji

 Idah

 Igalamela-Odolu

 Ijumu

 Kabba/Bunu

 Kogi (Koton Karfe)

 Lokoja

 Mopa-Muro

 Ofu

 Ogori/Magongo

 Okehi

 Okene

 Olamaboro

 Omala

 Yagba East

 Yagba West

Okene is governed by the Local Government Chairman. This means that the chairman is the principal authority and may also serve as an authorized signatory for land grants and awards within the local government area, as directed by the state government."

**2.2 LAND DEVELOPMENT**

In Okene Local Government, the **Kogi State Town Planning and Development Board (KSTPDB),** is responsible for regulating and overseeing urban planning, building development, and land use within Kogi State. It functions similarly to other urban planning authorities in Nigeria, ensuring that developments are in line with state policies, land use regulations, and master plans. The KSTPDB plays a crucial role in managing urban growth, infrastructure development, and maintaining the aesthetic and functional integrity of urban areas within Kogi State.

**2.3** **LAND AND ITS USES**

Land as a free gift of nature refer to the various ways in which land is utilized by humans for different purposes. The use of land is determined by various factors including geography, economic activities, cultural practices, and governmental regulations. It includes all the materials, biological and chemical factors which surround mankind and which constitutes the complex ecological system called the biosphere, it is thus; the air we breath; the water we drink and use for creation; the Land we cultivate mine and build on; the city we flock into growing numbers; and the wilderness we seek today and to preserve for future generation.

**2.3.1 Land Use:**

Land can be used broadly to mean;

1. The type of building (Houses, Factories, Schools e.t.c)
2. The legal use to which the Land is put (Residential, Industries e.t.c)
3. Degree of intensity of social and economic activities that takes place on the Land (Population, Employment, Factory output e.t.c)

**2.3.2 TYPES OF LAND USE**

i. Residential Land use

ii. Industrial Land use

iii. Commercial Land use

iv. Public/semi-public Land use

**2.3.3. CLASSIFICATION OF LAND USE**

Land use can be classified as;

i. Compatible Land use and

ii. Incompatible Land use

1. Compatible Land uses are those that can be laid side by side, Compatible land uses are those that can coexist without causing significant conflicts or negative impacts on each other. These uses are often complementary, meaning they can benefit from being near each other e.g. Residential and Recreational, Educational Institutions and Residential Areas.
2. Incompatible Land uses are those that cannot be laid side by side, they are those that can lead to conflicts when located near each other. These conflicts may arise due to noise, pollution, safety concerns, or other negative impacts e.g. Industrial and Residential Land use, Airports and Residential Land use

**2.4 THE MANAGEMENT OF LAND**

Land Management entails decision making and the implementation of decisions about Land. Decisions may be taken singly by individuals or collectively by groups. It is concerned with stewardship of Land, both for the present and future generations. Land Management may involve making fundamental policy decisions about the nature and extent of investments in the Land. At the other end, it involves the routine operational decisions made each day by Land administrators such as surveyors, valuers, and Land registrars matters as:

i. Property assessment and valuation;

ii The development and Management of utilities and services;

iii. Environmental Analysis

iv. The monitoring of all Land based activities in so far as they affect the best use of the

Land.

v. The formation and implementation of Land use policies;

**2.5 LAND INFORMATION SYSTEM**

An Information System may be formally defined as a combination of human and technical resources, together with a set of organizing procedures that produces Information in support of some managerial requirement. A **Land Information System (LIS)** is a specialized information system designed to manage and provide access to detailed information about land and property. It integrates data from various sources to support land management, urban planning, and decision-making processes. An LIS is typically used by government agencies, urban planners, real estate professionals, and other stakeholders involved in land use and development. The operation of Land Information System includes the acquisition and the assembly of data; the processing, storage and maintenance, their retrieval, analysis and dissemination. The usefulness of such a system will depend on its updated-ness, accuracy, completeness and accessibility and also upon the extent to which the system is designed for the benefit of the user rather than for the producer of the Information.

**2.6 PHP AND DATABASE**

PHP, a scripting language designed specifically for use on the web. It is a tool for creating dynamic web pages. PHP is rich in features that make Web design and programming easier, PHP is in use on over 13 million domains according to the Net craft survey at [www.php.ne/usage.php](http://www.php.ne/usage.php). its popularity continues to grow, meaning that it must be fulflling its function pretty well. PHP stands for PHP Hypertext Preprocessor. The core of a web application is the database, which is the long term memory that stores information for the application. A database is an electronic file cabinet that stores information in an organized manner so that you can find (retrieve) it when you need it. After all, storing information is pointless if you can't find it. A database can be small, with a simple structure for example, a database containing the titles and authors of all the books that you own. Or a database can be huge, with an extremely complex structure such as the database that Amazon.com must have to hold all its information.

**2.6.1 ADVANTAGES OF PHP**

The popularity of PHP is growing rapidly because of its many advantages:

1. It is fast, because it is embedded in HTML code, which makes the response time to be short
2. It is inexpensive, in fact free because of open source access on PHP official website.
3. It is easy to use
4. It contains many special features and functions needed to create dynamic Web pages.

**2.7 REVIEW OF EXISTING SYSTEM**

Existing system refers to the system that is in use before the advent of another replaceable system. At present, Okene local government, Okene, Kogi State uses a manual system of storing, retrieving, updating records which are time and energy consuming and lacks efficiency. Using manual system to achieve any task is tiring. So, this very system is been developed in order to circumvent all the problems found in the existing system. And also for people to buy land

**PROBLEMS OF THE EXISTING SYSTEM**

Due to the manual means being used in keeping land information, a lot of problems are encountered which includes:

1. Slow Retrieval of Data: The information of a land owner is stored in different pars of the offices and takes a long time to retrieve the data.
2. Unproductive Use of Storage Space: Paper takes up a massive amount of room in the office. If a computer system was bought, the paper could all go and there would be more free space which could be used for other purposes.
3. Poor Data Storage -: All the data is stored in filing cabinets. Data could be misplaced due to human error.
4. Land Duplication: the same land gets sold over and over because after selling to one person, the documents may be forged and two people come with same same land documents.
5. Lack of security-: since data is stored in filing cabinets it is freely available to anyone. If information falls into the wrong hands it can be misused.
6. Inconsistency of Data-: there will be unavailability for future use, since data might get misplaced during manual filing. So data won't be preserved properly for future use.
7. Confident: Confident in the experts that is building house.

**2.8 REVIEW OF PROPOSED SYSTEM**

The proposed system provides the same service provided by the manual system but on a web-based system which can be assessed anywhere in the world. The system gives room for easy buying and selling of land, storage, retrieval and update of records. The land owners information registered can be updated, also it contains an expert on construction or the building of houses. The system has an admin who is the agent, he/she can update information to the system database, view lands and more.

**2.8.1 ADVANTAGE OF PROPOSED SYSTEM**

The new system is designed to solve problems affecting the manual system in use. It is design to be computerised thereby relieving both the customers and staff from much stress as experienced in the manual system. This system will do the analysing and storing of information either automatically or interactively. It keeps records of an expert on the type of housing one wants to build

The proposed system will also have some other feature like:

1. Accuracy in the handling of data.
2. Fast rate of operation and excellent responses time
3. Easy way of back up or duplicating data in diskettes in case of data loss.
4. Better storage and faster retrieval system.

CHAPTER THREE

SYSTEM ANALYSIS AND DESIGN

* 1. **Introduction**

System analysis and design is aimed to determine how the new system was achieved. It includes the description and analysis of the problems of the current system, and fact finding techniques used in the development of this project. Additionally, it provides an overview of the proposed system and the tools applied in its design.

3.2 System Analysis

The Land Information System for Okene Local Government, is a software developed to allow buying and selling of lands after purchase to meet the local govt agent and register the land.

Including expert in constructions, the admin who is the agent can view all registered data.

3.3 System Design

System design is the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy the specified functional requirements. This section provides the system architecture, the activity diagram, and the dataflow diagram as shown below.

3.3.1 Data Flow

Data flow diagram is a graphical representation of the flow of data through an information system and modelling it’s process aspects. A data flow diagram is often use as a preliminary step to create an overview of the system which later can be elaborated. The data flow diagram below illustrates the flow of data the buyer, seller of land and the admin.

Land Allocation

Director Lands

Director Housing

Secretary

Valuation Unit

Urban Development

Estate Agents

Commissioner for Land

Fig.3.3.1 Data flow

3.3.2 Use case diagram

The use case model of the UML is used to specify the functionality of the system from the users' point of view and show the way the system and the users interact to achieve its stated functions and perform its goal.

The figure below shows the use case of land information system of Okene local government.

Commissioner for land

Directors

Estate agents

Land Owners

Land users

**Fig.3.3.2 Use case Diagram**

**3.3 Database Design**

Database design is the process of producing a detailed data model of a database. It defines the specific fields and structures required for the system. In this project, the database, named "LAND INFORMATION SYSTEM," was designed using MySQL, with tools like Apache, MySQL, and PHP, all running on a local host server.

**3.3.1. Database Tables**

The following section provides a list and overview of the database tables and their roles within the website. These tables are structured to store related information, with connections established through foreign keys and primary keys.

|  |  |  |
| --- | --- | --- |
| Field Name | **Type** | **Size** |
| App No | Text | 20 |
| Name | Text | 50 |
| Address | Text | 100 |
| Date | Date/Time | 8 |
| State | Text | 20 |
| Nationality | Text | 30 |
| Occupation | Text | 30 |
| Block No in Layout | Numeric | 30 |
| Plot No | Numeric | 30 |
| Plot Size | Text | 10 |
| LGA Situated | Text | 20 |
| Use of Land | Text | 40 |
| Amount Paid | Single | 4 |
| Receipt No | Text | 20 |
| Occupancy No | Numeric | 30 |