



(RESEARCH ARTICLE)



## A web-based model to improve internal revenue generation efficiency in Taraba state

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World Journal of Advanced Research and Reviews, 2026, 30(02), 1988-2000

Publication history: Received on 12 April 2026; revised on 18 May 2026; accepted on 20 May 2026

Article DOI: <https://doi.org/10.30574/wjarr.2026.30.2.1349>

### Abstract

The persistent underperformance of Internally Generated Revenue (IGR) in Taraba State remains a critical fiscal challenge, largely attributable to fragmented, manual, and non-integrated data management systems that enable revenue leakages, poor taxpayer identification, administrative corruption, and delayed reconciliation. This research designed and developed a web-based model to improve internal revenue generation efficiency within the Taraba State Internal Revenue Service (TIRS). The Structured System Analysis and Design Methodology (SSADM) was adopted, incorporating Use Case Diagrams, UML Activity Diagrams, Sequence Diagrams, and Entity-Relationship Diagrams (ERD) to model the system's logical and process architecture. The system is implemented using PHP and MySQL, and incorporates functional modules for real-time taxpayer registration, revenue assessment, payment collection and tracking, enforcement action management, audit trail logging, and analytical reporting. The developed prototype was evaluated through unit testing, integration testing, and user acceptance testing, confirming that it meets defined functional and performance requirements. The model successfully addresses the core weaknesses of the existing manual system by centralizing revenue data, automating billing and assessment workflows, and providing real-time management reporting capabilities. The findings demonstrate that a well-designed web-based model is a technically feasible, cost-effective, and operationally viable solution for significantly improving IGR efficiency, transparency, and accountability in Taraba State and across comparable sub-national government contexts in Nigeria.

**Keywords:** Internally Generated Revenue (IGR); Web-Based; Model Design; Tax Administration; Digital Revenue Transformation

### 1. Introduction

In the modern business landscape, effective revenue generation and management are critical for organizational sustainability and growth. This proposal outlines the development of a web-based management model specifically designed to enhance internal revenue generation processes. The system aims to optimize data handling, improve decision-making capabilities, and streamline revenue collection strategies through advanced technological solutions. In the contemporary business environment, organizations are increasingly leveraging digital technologies to optimize their operations and improve financial performance. One critical aspect of this technological shift is the use of web-based systems for database management, which can significantly enhance internal revenue generation strategies. Internally Generated Revenue (IGR) remains the cornerstone of fiscal sustainability for Nigerian states, especially given the volatility of federal allocations and the global push for fiscal federalism (Adekunle & Aregbeshola, 2021). Taraba State is one of the states grappling with low IGR figures, which severely constrain its ability to fund critical infrastructure and social services (Taraba State Budget Office, 2024). This inefficiency is often attributed to systemic weaknesses, particularly the reliance on manual or fragmented data management systems (Akintoye et al., 2022). These systems are prone to revenue leakages, poor taxpayer identification, and delayed reconciliation, leading to a narrow tax base and administrative opacity (Okoye & Ezejiofor, 2020).

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The global trend towards e-governance and digital transformation offers a solution (James et al., 2022). A Web-Based model is a strategic tool for tax authorities to achieve real-time data integration, enhanced transparency, and improved taxpayer compliance (Chandra et al., 2021). This research focuses on addressing the specific data management and efficiency gaps in the Taraba State Internal Revenue Service (TIRS) by developing a technological solution to the challenges in internal revenue generation system in Taraba State. This research will explore how a web-based database management model can be designed and implemented to enhance internal revenue generation. By examining current technologies, best practices, and case studies within Taraba state local Government area, the research will provide valuable insights into how Taraba state local Government revenue can leverage on a web-based model to achieve better financial outcomes. The research will also address potential issues and offer solutions to overcome them, contributing to more effective internal revenue strategies.

This research will explore how a web-based model can be designed and implemented to enhance internal revenue generation. By examining current technologies, best practices, and case studies within Taraba state local Government area, the research will provide valuable insights into how Taraba state local Government revenue can leverage on a web-based model to achieve better financial outcomes. The study will also address potential issues and offer solutions to overcome them, contributing to more effective internal revenue strategies.

### **1.1. Problem Statement**

Taraba State Internal Revenue Service (TIRS) faces persistent underperformance in Internally Generated Revenue (IGR) due to three core challenges: scattered taxpayer records across non-integrated systems, the absence of a centralized and secure database enabling corruption and tax evasion, and existing systems lacking analytical capability for revenue forecasting. These weaknesses result in data inconsistencies, poor decision-making, and financial inefficiency — making the development of a robust, integrated web-based model essential for capturing, processing, and managing revenue data effectively to maximize IGR in Taraba State.

### **1.2. Significance of the Research**

Local Government administration is divided into three departments personnel, bursary, and audit which have transitioned from manual paper-based record keeping to electronic database systems. This shift enables large-scale data storage, faster processing, and improved revenue management. The significance of this to the study is that developing a database-driven model for Taraba State will ensure accurate and timely revenue information, supporting quicker and more informed decision-making in local government revenue generation.

#### *Aim and Objectives of the Research*

The aim of this research is to develop a robust web-based model that enhances internal revenue generation processes within in Taraba State, with the following objectives;

- To determine the essential technical (security, performance) and operational (usability, accessibility) specifications for the proposed web-based model.
- Design a conceptual and logical data model (Entity-Relationship Diagram) for the proposed system to ensure integrated data integrity across all revenue streams.
- Develop a functional prototype of the robust web-based model, incorporating features for real-time taxpayer registration, revenue assessment, collection tracking, and analytical reporting.
- Evaluate the developed model's robustness, security, and potential to enhance internal revenue generation efficiency and transparency compared to the existing system.

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## **2. Literature review**

The Nigerian Constitution (1999, as amended) empowers states to impose and collect a range of taxes, including personal income taxes, property rates, and business premises levies, making IGR generation a constitutional responsibility as much as a developmental one. Revenue generation is a financial Insolvency and Over dependence in Nigeria in states like Taraba State is frequently listed among the lowest IGR-generating states in Nigeria, resulting in a crippling over dependence on Federal Allocation (NBS, 2023; IJBT UniMAP, 2020). The poor IGR performance is a direct reflection of an inefficient collection mechanism, compelling the state to seek technological solutions to widen its fiscal space (IJBT UniMAP, 2020). This is particularly salient for Nigerian states given the well-documented volatility of Federation Account Allocation Committee (FAAC) disbursements tied to crude oil revenues (National Bureau of Statistics [NBS], 2023).

The theoretical underpinnings of digital tax adoption research have been dominated by the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use are primary determinants of technology adoption behavior. Ouma et al. (2025) applied TAM to examine e-filing system adoption among SMEs in Kakamega County, Kenya, finding that perceived usefulness significantly affects tax compliance, with their model explaining 32.9% of tax compliance variance through predictor factors including perceived usefulness, perceived ease of use, perceived risks, and training programs. This theoretical framework has demonstrated cross-cultural applicability and provides a suitable lens for examining taxpayer adoption of web-based tax systems in Taraba State.

### **2.1. Empirical Evidence on Digital Tax Administration Effectiveness**

Recent scholarship has consistently demonstrated positive associations between digital tax platform adoption and revenue generation outcomes. Dagunduro et al. (2025) assessed the effectiveness of digital tax platforms in Nigeria, employing a survey research design with 384 respondents comprising tax officials, government finance personnel, and IT experts. Their multivariable regression analysis revealed that electronic tax filing, automated tax payment systems, and blockchain-based tax solutions had positive and significant effects on both revenue generation and capital projects funding in Nigeria. This finding is particularly relevant for Taraba State, where infrastructure development remains a critical governance priority.

Fasina, Oladejo, and Yinus (2025) investigated factors influencing digital tax administration adoption across six Southwestern Nigerian states, using multiple regression analysis of data from 480 SIRS staff members. Their findings identified Demand for Online Tax (DFOT), Technical Proficiency (TP), Cost of Human Resources (CHR), perceived usefulness, and cost of risk as key drivers influencing technology adoption in tax administration. Notably, their study revealed that the impact of these factors varies across states, suggesting that contextual factors including existing infrastructure, human capital capacity, and taxpayer demographics moderate the relationship between technology adoption drivers and IGR outcomes.

### **2.2. Fragmented and Non-Integrated Data Systems**

Without a unique, system-generated taxpayer identification number (TIN) linked across all revenue streams, the state lacks the informational infrastructure to assess liability, enforce compliance, or monitor collection in real time (Laudon & Laudon, 2020). This informational deficit not only narrows the tax base but also renders revenue forecasting exercises largely speculative, undermining the credibility of state budget processes. The IMF (2022) has consistently emphasized that integrated taxpayer registration is a foundational prerequisite for meaningful digital revenue administration reform. Poor Data Management and Absence of Taxpayer Database is a problem, the reliance on manual or fragmented records, leading to missing records, multiple entries, and data redundancy over the years (ResearchGate, 2020). This results in a weak, non-segmented taxpayer base and outdated revenue projection models (AESS Publications, 2025).

### **2.3. Institutional Corruption and Revenue Leakages**

Despite the demonstrated importance of IGR, persistent administrative challenges limit revenue mobilization capacity across many subnational jurisdictions. Awa's (2024) study revealed widespread perception of inefficiency in administrative systems, with a substantial proportion of respondents indicating lack of familiarity with taxpayer registration processes and dissatisfaction with accurate and timely recording of revenue transactions. These administrative deficits create opportunities for revenue leakage, reduce taxpayer confidence, and ultimately constrain IGR generation. Systemic Corruption and Leakages emphasize that pervasive corruption, misappropriation of funds, and embezzlement by revenue officials are major impediments to IGR effectiveness (Adedeji, 2023; SEAH Publications, 2025). The absence of an automated audit trail means that cash-based transactions can be suppressed or falsified without immediate detection, eroding both revenue yield and public institutional trust. A web-based model, by centralizing transactions and creating an audit trail, serves as a powerful anti-corruption tool (Ekiti State University, 2025). The World Bank (2021) observed that in many developing country contexts, the transition from cash-based to digital revenue collection has been accompanied by measurable reductions in leakage, attributing this to the systemic removal of human intermediaries from the cash-handling chain. This finding from the World Bank's GovTech flagship reports is directly applicable to the Taraba State context and provides a strong empirical rationale for the proposed technological intervention.

### **2.4. Regional Disparities and Structural Constraints**

The persistence of stark regional disparities in IGR performance suggests structural constraints that extend beyond administrative factors. The South West zone accounts for over 50% of all subnational revenues, while Northern states, particularly those in the North-East and North-West, generate substantially lower IGR despite comparable or larger population sizes. Yobe State generated just ₦11 billion in IGR against a wage bill of ₦96 billion in 2024, representing the

widest fiscal gap ratio nationally. These disparities reflect differences in economic structure, urbanization rates, formal sector employment, and historical patterns of revenue administration. However, the Gombe State experience demonstrates that significant improvement is possible even within the Northern Nigerian context, suggesting that political will and institutional reform can overcome structural constraints.

### **2.5. Strategies for IGR Enhancement**

The strategic importance of revenue automation for IGR enhancement has been consistently emphasized in recent scholarship. Adekoya and Olayinka (2023) recommended that “revenue automation is critical for efficient signage and advertisement revenue generation” at the local government level. Digitization enables real-time revenue tracking, reduces opportunities for interception and diversion, enhances transparency, and provides data for improved revenue forecasting and planning. The Gombe State experience, where comprehensive digitization of revenue collection preceded a nearly 500% increase in IGR, provides compelling evidence of automation’s transformative potential.

### **2.6. Institutional Capacity Building**

Strengthening the institutional capacity of revenue agencies through professionalization, meritocratic staffing, and performance-based management has emerged as a key success factor. The Gombe experience illustrates that when “revenue-generating agencies are permitted to function as meritocratic, professional entities rather than as tools for political patronage,” revenue performance improves rapidly. This finding aligns with Awai’s (2024) recommendation that governments should strengthen collaboration and coordination among enforcement agencies and improve dissemination of information about taxpayer obligations.

### **2.7. Importance of IGR for Governance and Development**

The importance of IGR for subnational governance is most fundamentally expressed in its relationship with fiscal autonomy. Analysis by Ripples Nigeria (2025) revealed that only five states Lagos, Ogun, Enugu, Rivers, and Delta could fully cover their personnel costs from IGR alone in 2024. For the majority of states, IGR covers less than half of wage bills, creating persistent dependence on Federation Account allocations and limiting fiscal flexibility. This dependence has direct implications for service delivery, as states with constrained IGR have less discretion in allocating resources to capital projects and developmental priorities. The causal relationship between IGR and infrastructural development has been empirically demonstrated by Alakija et al. (2025), whose ARDL analysis of Kwara State data from 1999 to 2023 found that IGR and loans have significant positive influences on infrastructural development in both the short and long run. Their findings imply that IGR is an essential revenue source for financing capital projects, with non-tax revenue demonstrating particularly durable effects on development outcomes.

### **2.6 Challenges and Barriers to Digital Tax Adoption**

Despite the demonstrated potential of digital tax systems, implementation challenges have been consistently documented across African contexts. Kebede, Tona, and Fitamo (2025) examined the Ethiopian e-tax system from taxpayer perspectives, employing a descriptive research design with 269 taxpayers in Hawassa. Their results indicated significant uptake since implementation in 2021, with taxpayers recognizing benefits including reduced paperwork, lower transportation costs, minimized calculation errors, and shorter wait times. However, persistent barriers emerged, including inadequate internet connectivity, frequent power outages, server congestion, and language discrepancies. These infrastructure challenges are particularly salient for Taraba State, where rural-urban digital divides and electricity reliability issues may impede web-based tax system effectiveness. Technical proficiency has emerged as a critical variable in digital tax adoption literature. Fasina et al. (2025) identified technical proficiency as a key driver influencing technology adoption, suggesting that both taxpayer digital literacy and tax official technical capabilities moderate adoption success. This finding aligns with the Niger State experience, where the Chairman of the Niger State Internal Revenue Service (NGSIRS) identified limited technology adoption and reliance on manual tax administration systems as primary challenges contributing to revenue leakages during the 2020-2022 period.

### **2.8. Regulatory and Compliance Considerations**

The regulatory environment for digital taxation in Nigeria has undergone significant evolution, with implications for state-level implementation. Eriminworosee and Abe-David (2025) critically examined the legal and regulatory framework for taxing Nigeria’s digital economy, analyzing key legislation including the Finance Acts (2019-2023), Companies Income Tax Act, and FIRS Guidelines. Their doctrinal research revealed that although Nigeria introduced Significant Economic Presence (SEP) rules to capture digital revenues, enforcement remains weak due to jurisdictional challenges, inadequate technological capacity, and low compliance by non-resident companies. For Taraba State, this

suggests that a web-based tax model must operate within a broader national regulatory framework while addressing state-specific compliance challenges.

Taxpayer trust and perceptions of fairness constitute additional compliance determinants. Evidence from Taraba's Ardo Kola and Gassol communities indicates that multiple taxation perceived as excessive and unjust has sparked taxpayer resistance, with accusations of mismanagement and corruption further eroding trust. This finding is consistent with Ouma et al. (2025), who recommended that future research examine how characteristics like trust in government institutions and perceived fairness of the tax system affect e-filing uptake. A web-based model for Taraba must therefore incorporate transparency mechanisms and accountability features to address these legitimacy concerns.

## **2.9. Contextual Application to Taraba State**

Taraba State's specific circumstances warrant attention to unique contextual factors. The state's ranking as Nigeria's lowest IGR performer by the Federation Account Allocation Committee (FAAC) for Q1 2025, with a reported decline from over ₦10 billion in the preceding quarter, suggests systemic challenges beyond mere technological deficit. The former State Chairman of the APC in Taraba characterized the situation as reflective of "gross misgovernance," noting that "billions of naira were wasted on a jamboree investment summit". This governance context suggests that technological interventions alone may be insufficient without accompanying governance reforms. The Niger State experience provides instructive parallels. Following the identification of manual systems, pandemic disruption, and limited technology adoption as key challenges, NGSIRS implemented an e-taxation system, achieved agency autonomy, and set an ambitious IGR target of ₦63 billion by 2025. Key strategic initiatives included leveraging Geographic Information Systems (GIS) for ground rent collection and collaborating with neighboring tax authorities to capture cross-border economic activity. For Taraba, similar strategies including integration with federal tax systems, GIS deployment for property taxation, and cross-border cooperation with neighboring states could inform a comprehensive web-based model.

## **2.10. Web-Based Systems in Tax Administration**

The three-tier architecture comprising a presentation layer, an application logic layer, and a data layer (RDBMS) has emerged as the de facto standard for enterprise web applications, including those used in tax administration (Laudon & Laudon, 2020). The security architecture of web-based tax systems has received considerable attention in the literature. Systems handling sensitive financial data must implement multi-layered security controls, including TLS/SSL encryption for data in transit, role-based access control (RBAC), multi-factor authentication (MFA), and intrusion detection systems. These controls are essential safeguards against data breaches, which in tax administration contexts carry both financial and reputational consequences for the affected authority (IMF, 2022).

## **2.11. Impact of Digitalization on Revenue Generation Efficiency**

These findings are corroborated by broader panel evidence: the NBS (2023) data shows that states which have adopted more integrated digital platforms such as Lagos, Rivers, and the FCT consistently generate the highest IGR relative to their populations. At the federal level, the introduction of the TaxPro Max platform by the Federal Inland Revenue Service (FIRS) since 2020 has provided compelling evidence of revenue gains achievable through integrated digital tax administration. The IMF (2022) documented those developing countries implementing comprehensive digital tax systems recorded average revenue growth rates significantly higher than comparable countries that did not, after controlling for macroeconomic variables, attributing this to improved compliance, expanded tax bases, and enhanced enforcement capacity enabled by real-time data analytics.

## **2.12. Transparency, Accountability, and Anti-Corruption Effects**

The shift from discretionary, cash-based revenue collection to automated, system-mediated transactions fundamentally alter the incentive structure for both revenue officers and taxpayers. When all transactions are recorded in real time and accessible to supervisors and auditors through a central dashboard, the opportunities for misappropriation are structurally reduced (World Bank, 2021). Automated audit trails, combined with real-time reporting dashboards accessible to senior management, can produce measurable reductions in officer-facilitated tax evasion and corresponding increases in net revenue. The World Bank (2021) framed this transformation within the broader literature on digital governance, arguing that the adoption of integrated digital platforms in public financial management represents a structural shift in the principal-agent relationship, reducing the information asymmetry that has historically enabled rent-seeking behavior in public sector revenue administration. This analytical insight directly frames the expected transparency gains from the proposed web-based DBMS for TIRS.

### **2.13. Challenges and Contextual Constraints**

While the benefits of digitalization are well-established, the literature documents significant implementation challenges in sub-Saharan African contexts. Poor network connectivity, high costs of ICT devices, and inadequate technical capacity have been identified as significant barriers to e-tax adoption in Nigerian states, findings directly applicable to the Taraba State context (IMF, 2022). The IMF (2022) and World Bank (2021) both emphasize that digital tax system deployments must be sensitive to local infrastructure constraints. Systems intended for deployment in low-connectivity environments must be architected from the ground up to function effectively under constrained conditions, rather than being retrofitted with offline capabilities as an afterthought. This principle has significant implications for the technical architecture of the proposed DBMS, which must handle intermittent connectivity, mobile device diversity, and varied levels of user digital literacy while maintaining the data integrity and security standards required for a financial application.

### **2.14. Empirical Review of Web-Based Systems in Revenue Administration**

The importance of a centralized taxpayer database as a foundational prerequisite for effective digital tax administration is well-established across multiple developing-country contexts (IMF, 2022). Countries and states with unified taxpayer databases consistently show higher rates of taxpayer registration growth and more effective enforcement of compliance obligations than those relying on distributed, non-integrated records. This finding directly informs the design emphasis of the proposed system on a centralized, normalized relational database as its core architectural component. The IMF (2022) synthesized evidence from digital tax administration reforms across multiple developing countries, consistently finding that integrated system deployments produced measurable improvements in revenue collection efficiency, taxpayer registration coverage, and compliance rates. These international findings provide robust cross-contextual validation for the expected impact of a comparable intervention in Taraba State.

### **2.15. Architectural and Functional Requirements of Revenue Management Systems**

Cybersecurity requirements for revenue management systems, addressed by both the IMF (2022) and the World Bank (2021), recommend a defence-in-depth security architecture incorporating input validation, parameterized queries, web application firewalls, network intrusion detection, and regular penetration testing as minimum standards for a financially critical public sector application.

### **2.16. Cloud Computing and Digital Infrastructure in Tax Administration**

The adoption of cloud computing infrastructure in tax administration has emerged as a significant theme in recent literature. Cloud-based deployment models offer elastic scalability, reduced upfront capital expenditure, built-in redundancy, and access to managed security services (World Bank, 2021). For resource-constrained state governments such as Taraba, the ability to deploy a robust tax administration system on a pay-as-you-go cloud infrastructure without the capital investment required for on-premises servers represents a significant operational advantage.

The International Centre for Tax and Development (ICTD, 2025) examined the current state of digital tax infrastructure in Nigeria and found that while federal-level agencies have made significant progress in cloud adoption, most state internal revenue service continue to rely on on-premises or hybrid infrastructure that limits their ability to scale, integrate, and achieve the system availability required for continuous revenue collection. The IMF (2022) further noted that the principal cybersecurity threat vectors facing cloud-based tax administration systems in developing countries including SQL injection attacks, cross-site scripting (XSS), and insider threats require comprehensive, multi-layered security architectures as a minimum standard for financially critical public sector applications.

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## **3. Research methodology**

The web-based database management model for internal revenue generation. The methodology encompasses the design and development phases, including system architecture, database design, user interface development, and integration processes. It also details the approach to data collection, system testing, and evaluation of the system's effectiveness in enhancing revenue generation. In developing the proposed system, the Structured System Analysis and Design Methodology this method involves the application of a sequence of analysis, documentation and design concerned with analysis of the current system, the logical data design, logical process design etc. The steps involved are; the use of the Use Case Diagrams, UML Activity Diagram, Sequence Diagrams and Entity Relationship Diagrams which makes the presentation of data logical and easily understandable by even novice to get the desirable message.

### 3.1. Analysis of the Existing

The existing manual system for consumer registration, billing, monthly charge collection, and report generation is plagued by inefficient consumer information management, delayed or undelivered bills, fraudulent receipt practices by cashiers, poor data storage, and inadequate data generation capabilities, all of which result in significant financial losses and operational inefficiencies to the organization.

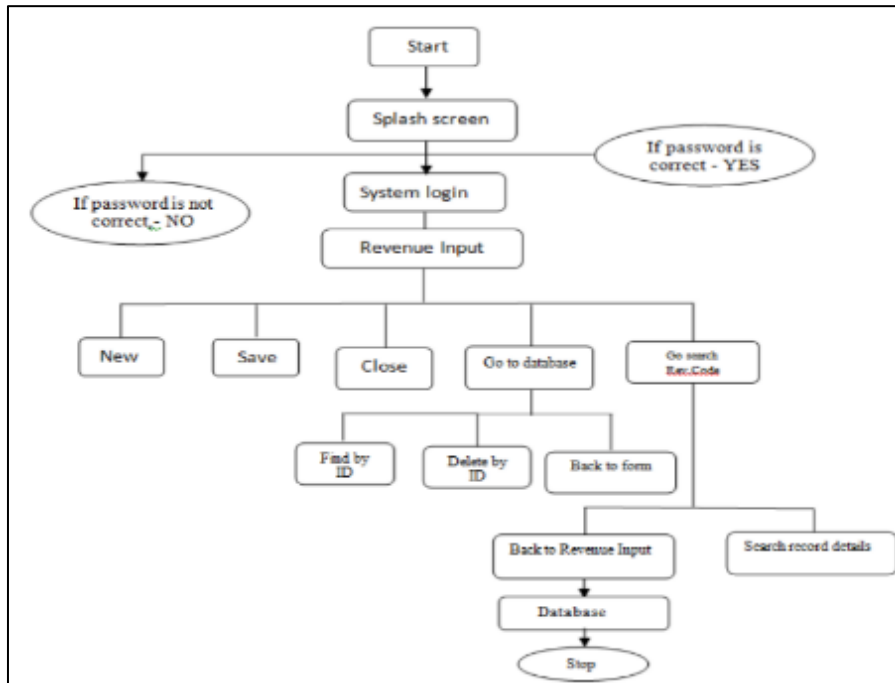
### 3.2. Data Collection

- Data Sources: Data is collected from various sources, including financial transactions, billing records, and user inputs. Data collection mechanisms include automated imports, manual data entry, and integrations with external systems.
- Data Storage: Collected data is stored in the designed database, ensuring that it is securely managed and readily available for processing and reporting.

### 3.3. Analysis of the System Model Development

The first step in the methodology is to conduct a thorough requirements analysis which involves document analysis were reviewing existing financial documents, reports, and processes to understand current practices and identify areas for improvement, and developing the activity unified modeling diagrams to capture the functional requirements of the system. This includes defining scenarios such as transaction processing, revenue tracking, and financial reporting.

The new model is a web-based system which address the problem of structure and lack of availability of data management in this research. This can pave way for increase in the number of customers and economic standardization. This is described in figure 1. Below:



**Figure 1** Activity Model Diagram for Internal Revenue System

### 3.4. Design of the System sequence

A sequence diagram in a web-based model for internal revenue generation management system shows process interactions arranged in time sequence. This diagram depicts the processes and objects involved and the sequence of messages exchanged as needed to carry out the functionality. The sequence diagram illustrates a straightforward user-system interaction for plant disease detection. The process begins when a user requests input, prompting the system to preprocess the input data to get a result. Figure 2. Shows the system model sequence diagram.

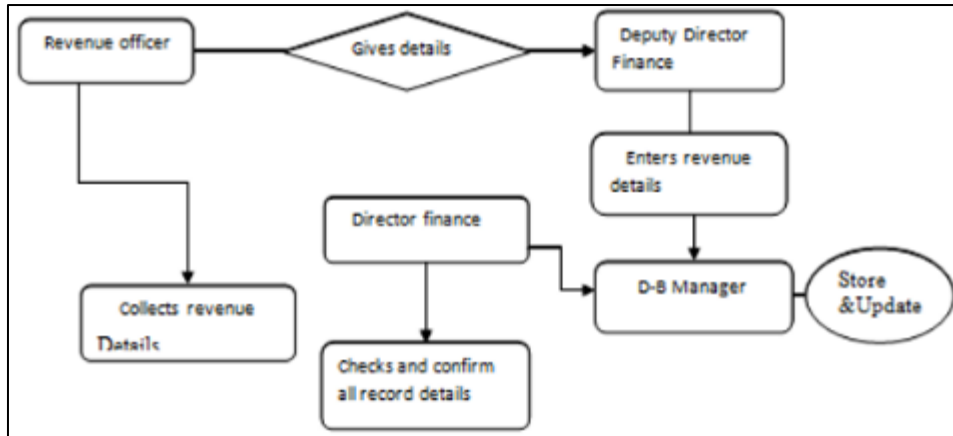


Figure 2 Sequence Model Diagram to Internal Revenue system

#### 4. Result presentation and analysis

System design and implementation is a critical development phase that translates user requirements into a new system through two stages preliminary design and detailed design ensuring the final product meets both functional and performance standards.

##### 4.1. Model Analysis

An ER Diagram (Entity-Relationship Diagram) is a visual modeling tool used in database design to represent the logical structure of a system's data. It shows Entities in a system Things or objects (e.g., Person, Product, Payment), Attributes such as Properties or details of entities (e.g., Name, Date, Amount) and Relationships of how entities connect or interact with each other (e.g., a customer places an Order). The entity Relationship Diagram for Internal Revenue system is seen in figure 3. bellow

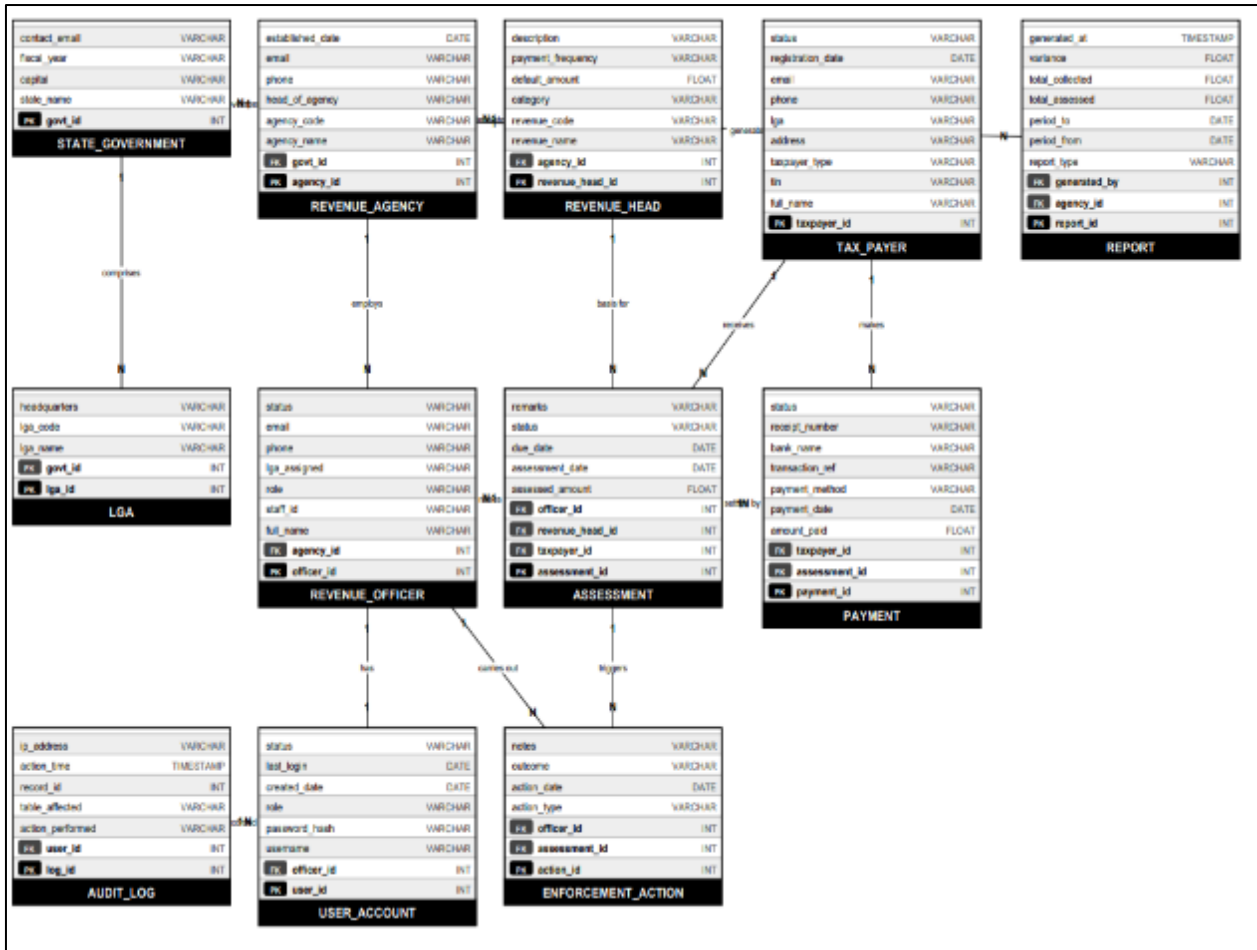


Figure 3 Entity Relationship Model Diagram for Internal Revenue Management

#### 4.2. System Requirement

The following are the hardware and software requirement of the web-based database management model to ensure optimization.

Table 1 System Requirements

|   |   |
|---|---|
| <p>2.1 Software Requirements</p> <p>Operating system (windows 7, and above, 32 or 64 bits)</p> <p>PHP program development kit</p> <p>Database MySQL Server (XAMPP).</p> | <p>Hardware Requirements</p> <p>1GB or higher RAM recommended.</p> <p>80GB or higher of HDD recommended.</p> <p>Minimum of 10GB free space required for the windows Java SDK installation. Standard mouse for desktop PCs.</p> <p>UPS system.</p> |
|---|---|

#### 4.3. Program Coding

Coding is the transformation of data into a form understandable by computer. The source code of a program is specially designed to facilitate the work of computer programmers, who specify the actions to be performed by a computer mostly by writing source code. The source code is often translated into low-level machine code understood by the computer. The machine code is stored for execution later. The software is designed using PHP and MySQL programming language.

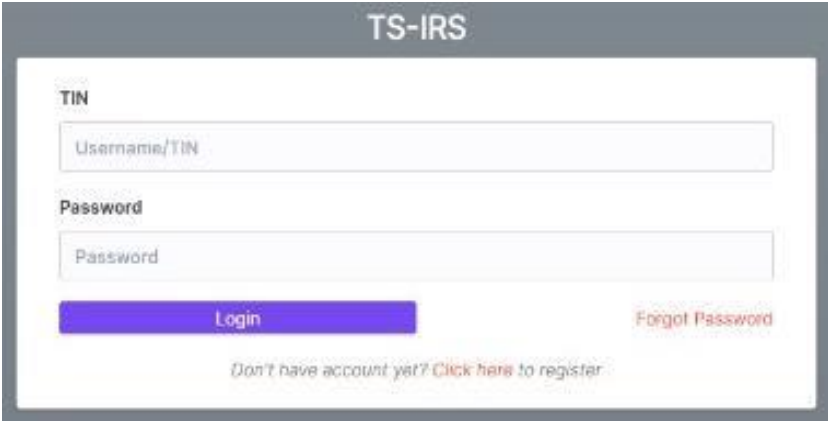
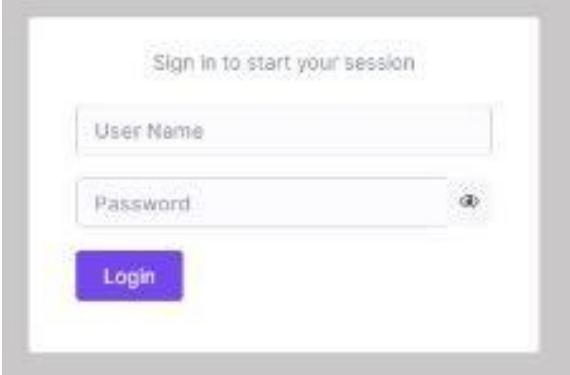
#### 4.4. Program Testing and Debugging

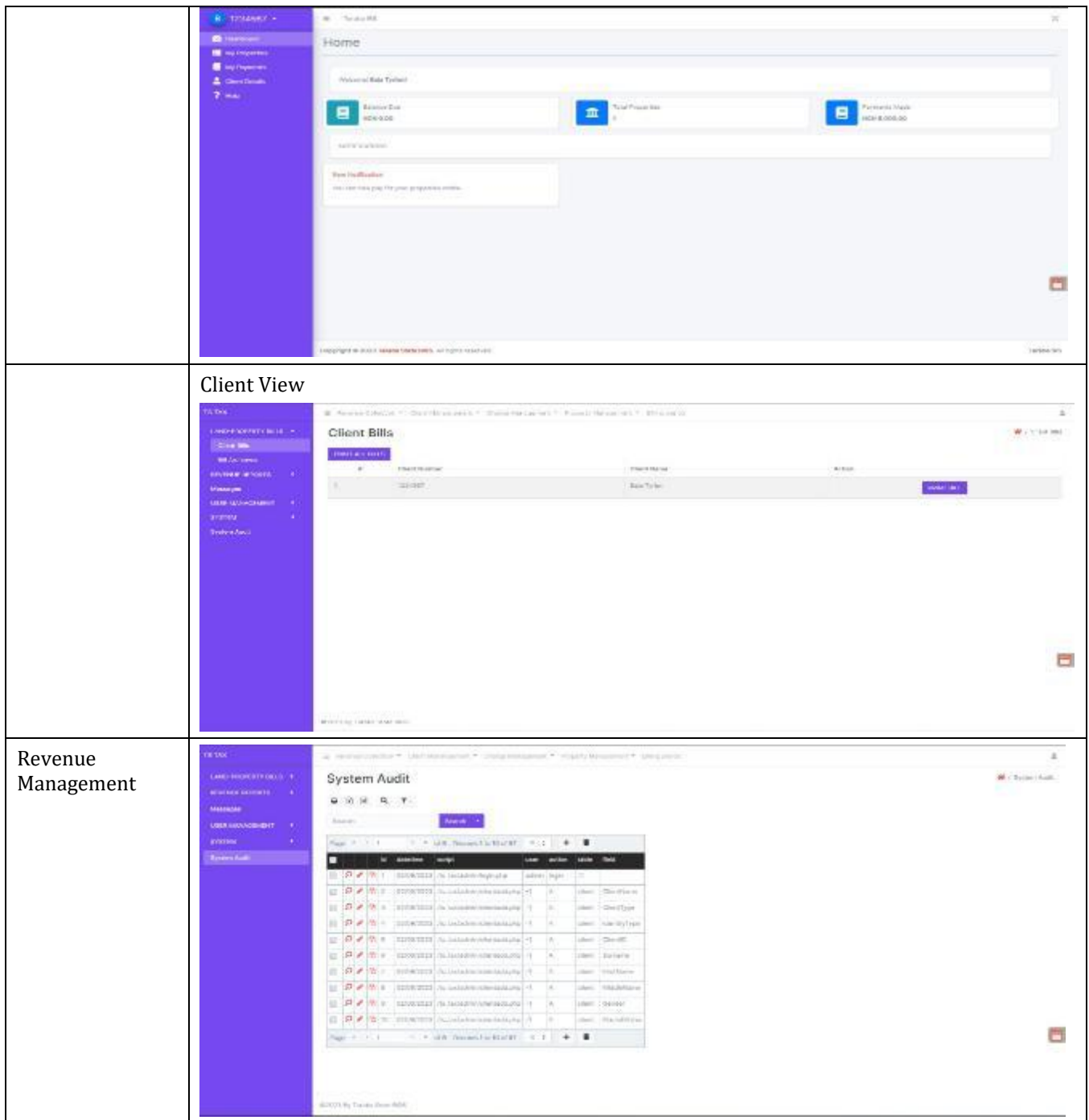
System testing ensures a program runs accurately before going live by executing tests to find and fix errors, while debugging methodically removes those defects to guarantee quality and meet user requirements.

#### 4.5. Model Design

Model design is also called system modeling or data modeling is the process of creating a simplified, structured representation of a real-world system before it is built. It defines how data flows, how components interact, and how business rules are enforced within a software application the model presentation in this research is seen below

**Table 2** System Modelling

| Description | Results  |
|-------------|--|
| Login       | <p>Application access domian is Discribe in A and B</p> <p>UserLog in</p>  <p>Administrator Login</p>  |
| Dashboard   | <p>The GUI application should only display revenue information.</p> <p>GUI support upload of revenue data.</p>   |



## 5. Conclusion

This research develops a robust web-based model to enhance internal revenue generation in Taraba State. By centralizing revenue data, automating core processes, and enabling real-time reporting and analytics, the system addresses the weaknesses of the existing manual system—reducing revenue leakages, broadening the tax base, and improving administrative accountability.

Beyond Taraba State, the model serves as a replicable prototype adaptable by other Local Government Areas and states across Nigeria, contributing to the national agenda of e-governance and digital transformation in public financial management.

In conclusion, the deployment of this system represents a significant step toward fiscal independence and sustainable development for Taraba State, with the potential to transform internal revenue generation into a reliable and transparent pillar of the state's financial structure.

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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