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E-GOVERNANCE AND PUBLIC SERVICE DELIVERY: AN ASSESSMENT OF EDO STATE GEOGRAPHIC INFORMATION SYSTEM (EDOGIS)

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ABSTRACT

This study examined the performance of e-governance in enhancing public service delivery in Edo State, with particular focus on the Edo State Geographic Information System (EDOGIS) as a digital land administration platform. The study assessed how the adoption of EDOGIS has influenced the efficiency of land administration processes, improved public accessibility and user satisfaction, enhanced transparency, and reduced bureaucratic bottlenecks, while also identifying the challenges affecting its optimal performance. A descriptive survey research design was adopted for the study. The population comprised all adult residents of Edo State, estimated at 4,777,000. Using the Taro Yamane (1967) formula, a sample size of 400 was determined. However, to improve the reliability of the results, account for possible non-response, and ensure adequate representation, the sample size was increased to 510 respondents. Data were collected through the administration of 510 structured questionnaires, out of which 470 were successfully retrieved and found valid for analysis, representing a high response rate. The data collected were analyzed using descriptive statistics and the Chi-square inferential technique to test the stated hypotheses. The findings revealed that EDOGIS has significantly improved the efficiency of land administration processes compared to the previous manual system. The system has also enhanced public accessibility to land-related services and increased user satisfaction. Furthermore, EDOGIS has contributed to improved transparency and a significant reduction in bureaucratic bottlenecks in public service delivery. However, the study also identified several technical, socio-economic, and institutional challenges, including limited ICT infrastructure, low digital literacy among some users, and organizational constraints affecting system performance. The study concluded that EDOGIS has made substantial contributions to modernizing land administration and improving public service delivery in Edo State. It therefore recommended continuous system improvement, increased public awareness, capacity building, infrastructural development, and institutional strengthening to ensure the sustainability and optimal performance of the system.

Keywords: *Government-to-Government (G2G); Government-to-Business (G2B); Government-to-Citizen (G2C); E-Governance; Public Service Delivery; Geographic Information System (GIS); Land Administration*

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Introduction

In the 21st century, the global landscape of governance has undergone a profound transformation, driven largely by the integration of information and communication technologies (ICT) into public administration. Governments worldwide are increasingly leveraging digital platforms to streamline processes, enhance transparency, and improve service delivery, a trend commonly referred to as e-governance (UNESCO, 2021; World Bank, 2022). E-governance encompasses a wide array of digital tools and strategies that facilitate interactions between governments, citizens, businesses, and other stakeholders, enabling more responsive, efficient, and accountable governance systems. It represents a shift from traditional bureaucratic approaches to a model where information flows seamlessly, administrative processes are automated, and decision-making is informed by real-time data. This transformation is further accelerated by the rapid advancement of emerging technologies such as cloud computing, big data analytics, and mobile communication systems, which have collectively reshaped how public institutions operate and interact with citizens in both developed and developing economies.

In addition, the growing demand for transparency and accountability in governance has made the adoption of digital systems not only a matter of efficiency but also a democratic necessity. Citizens are increasingly expecting real-time access to government services, open data systems, and reduced human interference in administrative procedures, thereby minimizing opportunities for corruption and inefficiency. As a result, e-governance is no longer viewed as an optional innovation but as a strategic imperative for modern governments seeking to remain effective and citizen-oriented in a rapidly evolving digital world.

Globally, countries such as Singapore, Estonia, and South Korea have demonstrated the transformative potential of e-governance in modern public administration. These nations have successfully implemented digital platforms to manage citizen services, urban planning, taxation, healthcare, and land administration, resulting in increased operational efficiency, reduced corruption, and improved citizen satisfaction (United Nations, 2020). The success of these systems underscores the critical role of e-governance in fostering good governance,

characterized by transparency, accountability, participation, and effectiveness. Geographic Information Systems (GIS), in particular, have emerged as a key technological tool in e-governance, enabling governments to capture, store, analyze, and visualize spatial and administrative data to support informed decision-making and service delivery. Beyond land administration, GIS technologies are increasingly applied in disaster management, environmental monitoring, infrastructure planning, and urban development, thereby reinforcing their strategic importance in comprehensive governance systems.

Furthermore, international organizations such as the United Nations have consistently emphasized digital governance as a cornerstone of sustainable development, particularly in achieving the Sustainable Development Goals (SDGs). Efficient land administration systems supported by GIS contribute directly to goals related to sustainable cities, economic growth, and institutional accountability, highlighting the broader developmental implications of adopting e-governance frameworks.

In the context of developing countries, including Nigeria, the adoption of e-governance is gaining momentum but faces unique challenges. Traditional administrative systems are often manual, fragmented, and prone to inefficiency, leading to delays, errors, and opportunities for corruption. In response, Nigerian federal and state governments have initiated various ICT-based platforms aimed at enhancing the efficiency, transparency, and responsiveness of public services. Among these initiatives is the Edo State Geographic Information System (EDOGIS), which seeks to digitize and integrate land administration processes, including land titling, registration, and property tax assessment. By providing a centralized, digital platform for managing spatial and cadastral data, EDOGIS aims to reduce bureaucratic bottlenecks, improve the accuracy of property records, and enhance the overall quality of service delivery to citizens and businesses (Edo State Ministry of Lands and Surveys, 2023). This initiative aligns with broader national digital transformation agendas aimed at modernizing public sector operations and improving internally generated revenue through efficient land management systems.

However, despite these efforts, the Nigerian public sector continues to grapple with structural and institutional limitations such as inconsistent power supply, inadequate ICT infrastructure, funding constraints, and limited technical expertise. These challenges often slow down the effective implementation and sustainability of e-governance initiatives, thereby creating a gap between policy formulation and practical execution.

Service quality, as a measure of public satisfaction and governance effectiveness, is closely tied to the successful implementation of e-governance systems. The SERVQUAL framework identifies critical dimensions of service quality including tangibility, reliability, responsiveness, assurance, and empathy that are essential for evaluating how digital platforms meet citizen needs (Parasuraman et al., 1988). Within the context of EDOGIS, service quality can be assessed in terms of timeliness, accuracy, transparency, and responsiveness in land registration, titling, and property taxation processes. These aspects not only influence citizen trust in government institutions but also affect socio-economic development outcomes, as land administration is fundamental to investment, urban planning, and revenue mobilization. Improved service quality in land administration can also enhance property rights security, encourage formal land markets, and stimulate economic activities, thereby contributing to broader development objectives.

Despite the promise of EDOGIS-based e-governance, several challenges hinder its full potential in Edo State. These include limited technical capacity among staff, insufficient infrastructure, and institutional resistance to digital adoption, and gaps in policy and regulatory frameworks. Moreover, the extent to which EDOGIS contributes to improved service quality, enhanced transparency, and operational efficiency remains underexplored. There is a critical need to empirically assess the system's impact, identify operational challenges, and propose strategies to optimize its performance for sustainable public service delivery. Additionally, user-related factors such as digital literacy levels, accessibility constraints, and public awareness of the system may also influence its effectiveness and adoption rate, further necessitating comprehensive evaluation.

Consequently, this study aims to evaluate the impact of EDOGIS on public service delivery in Edo State, focusing on its operational efficiency, contribution to service quality, and influence on

transparency and administrative effectiveness. By examining these aspects, the study seeks to provide actionable insights for policymakers, administrators, and stakeholders on how GIS-enabled e-governance can be leveraged to enhance citizen-centered governance and drive sustainable development in Nigeria. The findings of this study are expected to contribute not only to academic discourse but also to policy formulation and practical improvements in digital governance systems within similar socio-economic contexts.

Statement of Problem

The administration of land in Nigeria has historically been characterized by systemic inefficiencies that undermine economic growth and social stability. Prior to the digital transition in Edo State, the manual processes for land titling were notoriously slow, opaque, and prone to corruption, often leading to protracted legal disputes over ownership. These challenges created a climate of tenure insecurity that discouraged both local and foreign investment, as the difficulty of obtaining a valid Certificate of Occupancy (C of O) acted as a significant barrier to formalizing property rights.

With the establishment of the Edo State Geographic Information Service (EDOGIS) in 2017, the state government aimed to modernize land administration through a technology-driven e-governance framework. This transition was intended to eliminate the "middleman" culture, reduce processing times, and ensure a transparent, centralized database for all land records. However, between 2017 and 2025, there remains a disconnect between the institutional objectives of the agency and the actual quality of service experienced by the public. Recurring issues such as technical system failures, a persistent digital divide among elderly land owners, and reported delays in the final stages of title perfection suggest that digitizing the process has not entirely removed the underlying bureaucratic hurdles.

Furthermore, this research is necessitated by the urgent need to align local land administration with the United Nations Sustainable Development Goals (SDGs). Specifically, the current inefficiencies in the GIS framework directly impact the attainment of SDG 1 (No Poverty), particularly Target 1.4, which seeks to ensure that all individuals have equal rights to economic resources and secure tenure to land. It also intersects with SDG 11 (Sustainable Cities and Communities) regarding the need for integrated

and sustainable human settlement planning, and SDG 16 (Peace, Justice, and Strong Institutions), which mandates the development of effective, accountable, and transparent institutions to reduce corruption. Without a rigorous empirical assessment, it is difficult to determine whether EDOGIS is effectively advancing these global targets or if the technological shift has merely altered the form of administrative challenges without improving the quality of service delivery for the citizens of Edo State.

Objectives of the Study

This study seeks to assess the performance of EDOGIS as a tool for public service delivery. To achieve this, the following research objectives have been formulated:

1. To evaluate the efficiency of land administration processes under EDOGIS compared to the previous manual system in Edo State.
2. To assesses the level of public accessibility and user satisfaction with the services provided by the Edo State Geographic Information System.
3. To examine the impact of EDOGIS on transparency and the reduction of bureaucratic bottlenecks in public service delivery.
4. To identify the technical, socio-economic, and institutional challenges hindering the optimal performance of EDOGIS in Edo State.

Research Questions

1. To provide a clear focus for this study and to address the core problem of e-governance and public service delivery in Edo State, the following research questions are formulated:
2. To what extent has the introduction of EDOGIS improved the efficiency of land administration processes compared to the previous manual system in Edo State?
3. How do the citizens of Edo State perceive the accessibility and user satisfaction levels of the digital services provided by EDOGIS?
4. In what ways has the implementation of EDOGIS enhanced transparency and reduced bureaucratic bottlenecks in public service delivery?
5. What are the significant technical, socio-economic, and institutional challenges hindering the optimal performance of the

Edo State Geographic Information System?

Research Hypotheses

Hypothesis 1:

H0: There is no significant difference in the efficiency of land administration processes in Edo State before and after the implementation of EDOGIS.

H1: There is a significant difference in the efficiency of land administration processes in Edo State before and after the implementation of EDOGIS.

Hypothesis 2:

H0: Public accessibility and user satisfaction with digital services do not significantly impact the overall quality of service delivery in EDOGIS.

H1: Public accessibility and user satisfaction with digital services significantly impact the overall quality of service delivery in EDOGIS.

Hypothesis 3:

H0: The implementation of EDOGIS has no significant effect on transparency and the reduction of bureaucratic bottlenecks in Edo State.

H1: The implementation of EDOGIS has a significant effect on transparency and the reduction of bureaucratic bottlenecks in Edo State.

Hypothesis 4:

H0: Technical, socio-economic, and institutional factors have no significant relationship with the optimal performance of the Edo State Geographic Information System.

H1: Technical, socio-economic, and institutional factors have a significant relationship with the optimal performance of the Edo State Geographic Information System.

Literature Review (Brief Revised Version)

The literature reviewed in this study highlights the growing significance of e-governance, public service delivery, Geographic Information Systems (GIS), and land administration in contemporary public sector reforms. E-governance has emerged as an important mechanism for improving efficiency, transparency, accountability, and citizen participation through the application of Information and Communication Technologies (ICT). Beyond the automation of government services, it encompasses institutional transformation and citizen-centered governance, making it particularly relevant to land administration reforms in developing countries such as Nigeria.

The implementation of digital platforms such as the Edo State Geographic Information System (EDOGIS) demonstrates the potential of e-governance initiatives to enhance service delivery by reducing bureaucratic bottlenecks and improving administrative processes.

The literature further emphasizes that effective public service delivery is measured not only by the availability of services but also by their efficiency, accessibility, transparency, and responsiveness. Contemporary governance paradigms advocate citizen-centered approaches that prioritize service quality and accountability. Geographic Information Systems have significantly contributed to this transformation by facilitating accurate land registration, cadastral mapping, spatial data management, and real-time access to information. Through the integration of GIS technologies, governments are better positioned to improve land administration processes, enhance institutional coordination, and strengthen transparency in public service delivery.

Studies on land administration and tenure security indicate that efficient land governance systems are fundamental to socio-economic development and sustainable public administration. Secure land tenure promotes investment, reduces disputes, and enhances citizens' confidence in property rights. GIS-based land administration systems such as EDOGIS provide opportunities for improving land record management, simplifying title registration procedures, and minimizing opportunities for corruption and administrative inefficiencies. However, the literature also identifies persistent challenges, including inadequate ICT infrastructure, digital illiteracy, policy implementation gaps, resistance to organizational change, and socio-economic inequalities that limit equitable access to digital services.

Overall, the reviewed literature demonstrates that the successful implementation of digital land administration systems requires more than technological innovation. Sustainable improvements in public service delivery depend on the interaction among technological capacity, institutional readiness, supportive policy frameworks, and user acceptance. Consequently, this study situates EDOGIS within the broader discourse on e-governance and public sector reform by examining its contribution to enhancing efficiency, accessibility, transparency, and accountability in land administration in Edo State, Nigeria.

EDOGIS in Urban Administration and Planning

The Edo State Geographic Information System (EDOGIS) represents a significant innovation in the modernization of land administration and urban planning in Edo State, Nigeria. As a Geographic Information Systems (GIS)-based digital platform, EDOGIS was established to improve efficiency, transparency, and accountability in land administration by replacing cumbersome manual processes with automated and data-driven systems. Through the digitization of land records, property registration, and cadastral information, EDOGIS enhances public service delivery and supports sustainable urban development. Its implementation reflects broader e-governance reforms aimed at improving administrative effectiveness and citizen-centered service delivery.

In urban administration and planning, EDOGIS provides reliable spatial data that support evidence-based decision-making relating to land use planning, infrastructure development, and environmental management. The system enables planning authorities to monitor land use patterns, enforce zoning regulations, and manage urban growth more effectively. Additionally, EDOGIS has improved the efficiency of land administration processes by reducing bureaucratic delays, enhancing record management, and facilitating easier access to land-related services. Its contribution to revenue generation through improved property taxation and enhanced transparency further strengthens its importance in promoting accountable urban governance (Williamson et al., 2010; DeMers, 2009).

Despite these achievements, the effective implementation of EDOGIS continues to face several technical, institutional, and socio-economic challenges. Issues relating to inadequate ICT infrastructure, occasional system downtimes, limited technical expertise, and resistance to organizational change may constrain its optimal performance. Furthermore, the successful utilization of EDOGIS depends on sustained institutional support, stakeholder engagement, and continuous capacity-building initiatives. These factors underscore the need to integrate technological innovations with broader governance and administrative reforms to maximize their impact on public service delivery.

Overall, EDOGIS has significantly contributed to the digital transformation of urban administration and planning in Edo State by improving land

governance, promoting transparency, and supporting sustainable urban development. However, realizing its full potential requires continuous investments in technology, institutional strengthening, and inclusive policy implementation. This study therefore examines the role of EDOGIS as an important instrument for enhancing land administration and public service delivery in Edo State.

Physical and Urban Planning (Brief Revised Version)

Physical and urban planning refers to the systematic organization and management of land use, infrastructure, and spatial development to promote sustainable and orderly growth within urban and rural environments. It encompasses activities such as zoning, transportation planning, housing development, environmental management, and the provision of public infrastructure aimed at improving the quality of life of citizens (Hall & Tewdwr-Jones, 2011). Effective planning remains fundamental to achieving sustainable development goals and ensuring efficient public service delivery.

Contemporary urban planning has increasingly become technology-driven through the adoption of Geographic Information Systems (GIS), which facilitate the collection, analysis, and visualization of spatial data for informed decision-making. GIS-based platforms enable governments to monitor urban growth, manage land resources efficiently, and support evidence-based policy formulation. In Edo State, EDOGIS exemplifies this transformation by providing a centralized system for managing land information, supporting zoning compliance, and enhancing coordination among planning institutions. The system has strengthened transparency, improved service delivery, and promoted more efficient land administration practices.

Nevertheless, physical and urban planning in developing countries continues to face challenges such as rapid urbanization, inadequate infrastructure, weak institutional frameworks, and limited technical capacity. Addressing these challenges requires the integration of digital technologies with sound planning policies, stakeholder participation, and continuous institutional reforms. Sustainable urban development can only be achieved when technological innovations are supported by effective governance structures and adequate human capacity.

In conclusion, physical and urban planning constitutes critical components of sustainable governance and socio-economic development. The integration of GIS technologies through systems such as EDOGIS provides significant opportunities for improving land administration, promoting transparency, and enhancing public service delivery. Consequently, this study situates physical and urban planning within the broader framework of e-governance reforms in assessing the impact of EDOGIS on land administration and public service delivery in Edo State, Nigeria.

Environmental Management and Sustainable Development

Environmental management refers to the systematic regulation and sustainable utilization of natural resources to promote environmental protection, socio-economic development, and intergenerational equity (Brundtland Commission, 1987). It encompasses policies and practices aimed at minimizing environmental degradation while ensuring that developmental activities remain sustainable. In contemporary governance, environmental management is closely linked to land administration and urban planning because decisions relating to land use, infrastructure development, and resource allocation have significant environmental implications.

The integration of digital technologies, particularly Geographic Information Systems (GIS), has significantly enhanced environmental management by enabling the collection, analysis, and visualization of spatial data for informed decision-making. GIS-based systems support sustainable land use planning, environmental monitoring, climate change adaptation, and disaster risk management. In Edo State, the Edo State Geographic Information System (EDOGIS) contributes to environmentally sustainable governance by improving land information management and supporting evidence-based planning processes.

Despite these opportunities, environmental sustainability remains constrained by challenges such as inadequate institutional capacity, weak policy implementation, rapid urbanization, and limited public awareness. Sustainable development therefore requires collaborative governance approaches that integrate technological innovation, institutional reforms, stakeholder participation, and effective environmental policies. The successful application of digital systems such as EDOGIS demonstrates

the importance of aligning environmental management objectives with broader e-governance initiatives.

Overall, environmental management and sustainable development are indispensable components of effective public service delivery. The adoption of GIS technologies provides governments with valuable tools for promoting sustainable urban development, enhancing transparency, and improving land administration practices. Consequently, this study situates environmental sustainability within the broader framework of digital governance reforms in assessing the impact of EDOGIS on public service delivery in Edo State, Nigeria.

Digital Land Administration Systems (Brief Revised Version)

Digital Land Administration Systems (DLAS) represent a modern approach to land governance that integrates Information and Communication Technologies (ICT) with land administration processes to improve efficiency, transparency, and accessibility (Williamson et al., 2010). These systems replace traditional paper-based procedures with computerized platforms that facilitate land registration, title management, cadastral mapping, and property information services. Their adoption has become increasingly important in enhancing public sector performance and promoting sustainable development in both developed and developing countries.

The integration of technologies such as Geographic Information Systems (GIS), digital databases, and web-based applications enables governments to manage spatial and non-spatial land information more effectively. Digital systems improve service delivery by reducing bureaucratic bottlenecks, minimizing human errors, and strengthening tenure security through accurate and accessible land records. In Nigeria, initiatives such as the Edo State Geographic Information System (EDOGIS) exemplify the transition toward digital land governance by automating land transactions and improving transparency and accountability in land administration processes.

Furthermore, Digital Land Administration Systems contribute significantly to economic development by facilitating secure property rights, promoting investment, and reducing land-related disputes. Their ability to provide reliable and verifiable land information strengthens public confidence in government institutions and supports evidence-based policy implementation.

However, their effectiveness depends largely on the availability of adequate infrastructure, technical expertise, institutional capacity, and robust cybersecurity frameworks that safeguard sensitive land information.

In conclusion, Digital Land Administration Systems have transformed contemporary land governance by enhancing administrative efficiency, transparency, and service accessibility. Nevertheless, addressing implementation challenges relating to infrastructure, funding, digital inclusion, and institutional readiness remains essential for maximizing their benefits. This study therefore examines EDOGIS as a practical application of digital land administration and evaluates its contribution to improving land administration and public service delivery in Edo State, Nigeria.

Theoretical Review

This study is anchored on six complementary theories that collectively explain the technological, behavioural, institutional, and governance dimensions of the Edo State Geographic Information System (EDOGIS) as a tool for improving land administration and public service delivery. These theories are the Technology Acceptance Model (TAM), the DeLone and McLean Information Systems Success Model, Good Governance Theory, Institutional Theory, Diffusion of Innovation Theory (DOI), and Socio-Technical Systems Theory (STS). Together, they provide a robust framework for understanding how digital technologies are adopted, implemented, and sustained within public institutions and how they contribute to efficient, transparent, and citizen-centered governance.

The Technology Acceptance Model explains users' willingness to adopt EDOGIS based on its perceived usefulness and ease of use, while the DeLone and McLean Model evaluates system performance through dimensions such as system quality, information quality, service quality, user satisfaction, and net benefits. Good Governance Theory provides a governance-oriented perspective by emphasizing transparency, accountability, responsiveness, and efficiency in public service delivery. Institutional Theory further explains how organizational structures, policies, and professional norms influence the implementation and sustainability of digital governance initiatives within public institutions.

Additionally, the Diffusion of Innovation Theory explains how technological innovations spread

among different categories of users over time and highlights the importance of communication, institutional support, and user readiness in promoting technology adoption. Complementing these perspectives, Socio-Technical Systems Theory emphasizes the interdependence between technological systems and the social and organizational environments in which they operate. It underscores that the success of digital governance initiatives depends not only on technological sophistication but also on human capacity, institutional coordination, and stakeholder engagement.

Collectively, these theories provide a comprehensive analytical framework for evaluating the efficiency, accessibility, transparency, and institutional challenges associated with EDOGIS in Edo State. Their integration strengthens the theoretical foundation of the study by demonstrating that the effectiveness of digital land administration systems is shaped by the interaction between technology, governance structures, institutional readiness, and user behaviour. Consequently, they offer valuable insights for understanding both the opportunities and constraints of digital transformation in public service delivery within developing country contexts.

Empirical Review (Revised Summary)

Empirical studies across Nigeria and other developing countries consistently demonstrate that e-governance and Geographic Information Systems (GIS)-based land administration significantly improve administrative efficiency, transparency, accessibility, and public service delivery. Studies by Abasilim and Edet (2023), Okonkwo (2024), Babatunde et al. (2024), and Mwangi (2024) reveal that digital systems reduce processing time, minimize bureaucratic bottlenecks, improve record management, and enhance public trust in government institutions. Similarly, GIS technologies have strengthened land administration through improved cadastral documentation, reduced land disputes, and enhanced decision-making processes. However, the effectiveness of these systems is often constrained by infrastructural deficiencies, digital illiteracy, and institutional resistance to change, inadequate technical capacity, and policy implementation challenges.

The reviewed literature further indicates that the successful implementation of digital governance initiatives depends not only on technological

innovation but also on supportive institutional frameworks, adequate infrastructure, and inclusive access mechanisms. While studies from Nigeria, Kenya, India, and Vietnam provide valuable insights into the benefits and challenges of digital land administration systems, they largely focus on broad e-governance reforms or specific GIS applications in other jurisdictions. Consequently, limited empirical attention has been devoted to the Edo State Geographic Information System (EDOGIS), particularly regarding its performance in enhancing efficiency, accessibility, transparency, and public service delivery outcomes.

A major gap identified in the literature is the absence of comprehensive, context-specific studies that simultaneously examine the technical, socio-economic, and institutional factors influencing the performance of EDOGIS over time. Existing studies have largely examined these variables in isolation and have not adequately explored their combined impact on land administration reforms in Edo State. Furthermore, there is limited empirical evidence covering the period between 2017 and 2025, during which EDOGIS has undergone significant institutional and technological developments.

This study addresses these gaps by providing a comprehensive empirical assessment of EDOGIS as an e-governance initiative for improving land administration and public service delivery in Edo State, Nigeria. By examining its impact on efficiency, accessibility, transparency, and the challenges affecting its implementation, the study contributes to the growing body of literature on digital governance reforms and offers policy-relevant insights for strengthening GIS-based land administration systems in developing countries.

Gaps in Literature

Despite the growing body of literature on e-governance and GIS-based land administration systems, several critical gaps remain that necessitate further empirical investigation.

While many studies have established that digital governance platforms enhance efficiency, transparency, and service delivery, much of the existing research is either too broad in scope or insufficiently contextualized to specific administrative environments.

One major gap in the literature is the limited availability of state-level empirical studies in Nigeria. Most existing works, such as those by Abasilim and Edet (2023) and Afolabi (2025),

focus on the federal or regional level, thereby overlooking the unique institutional dynamics and operational realities that exist within individual states. As a result, there is inadequate understanding of how localized governance structures influence the performance of e-governance systems.

Furthermore, although studies like Babatunde et al. (2024) have examined GIS applications in land administration, there remains a scarcity of longitudinal analyses that assess system performance over an extended period. Many studies rely on cross-sectional data, which limits the ability to evaluate sustainability, consistency, and long-term institutional impact. This creates a gap in understanding how systems such as the Edo State Geographic Information System (EDOGIS) evolve and perform over time.

Another significant gap lies in the limited integration of technical, institutional, and socio-economic variables within a single analytical framework. Existing studies often examine these factors in isolation, focusing either on technological efficiency, institutional challenges, or user accessibility. However, the interaction between these variables is crucial in determining the overall success or failure of e-governance initiatives.

In addition, there is insufficient attention given to user experience and public accessibility, particularly among marginalized groups. While the issue of digital divide has been acknowledged in studies such as Babatunde et al. (2024), there is a lack of in-depth empirical analysis on how digital literacy, income level, and access to infrastructure affect the utilization of GIS-based services.

Finally, there is a noticeable lack of empirical studies specifically focused on EDOGIS in Edo State. Existing literature provides general insights into GIS and e-governance systems but fails to offer a comprehensive evaluation of EDOGIS in terms of efficiency, transparency, accessibility, and administrative effectiveness within the 2017–2025 timeframe. This study addresses these gaps by providing a context-specific, longitudinal, and multidimensional analysis of EDOGIS. It integrates technical performance, institutional dynamics, and user accessibility to offer a more holistic understanding of GIS-based land administration in Edo State.

Theoretical Framework

This study is anchored on the Technology Acceptance Model (TAM), originally developed by

Fred Davis in 1989. TAM is one of the most widely cited theoretical frameworks in the field of information systems and public administration to explain how users come to accept and use a specific technology. The theory posits that when users are presented with a new technological system, several factors influence their decision about how and when they will use it. Specifically, TAM identifies two primary cognitive determinants: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

Perceived Usefulness is defined as the degree to which an individual in this case, EDOGIS staff or a citizen seeking land services believes that using a particular system would enhance their job performance or simplify a transaction. In the context of this study, if land administrators and the public perceive that EDOGIS significantly reduces the time required to process a Certificate of Occupancy compared to the previous manual system, their acceptance and utilization of the system will increase. Perceived Ease of Use, on the other hand, refers to the degree to which a person believes that using a particular system would be free from physical or mental effort. This relates directly to the user interface of the EDOGIS platform and the digital literacy of the Edo State population.

The relevance of TAM to this research is multifaceted. First, it provides a structured way to evaluate the success of the transition from manual land administration to a digital GIS-based framework between 2017 and 2025. Second, it aligns with your research objective of identifying the challenges to optimal performance; TAM suggests that if the system is perceived as difficult to use or if its utility is not clearly communicated, institutional resistance and bureaucratic bottlenecks will persist regardless of how advanced the technology is. By utilizing TAM, this study can empirically determine whether the "bottlenecks" in Edo State's land administration are a result of the technology's design or the behavioral perceptions of its users. Ultimately, the theory explains that for e-governance to improve public service delivery, the system must not only be functional but must also be accepted and integrated into the daily administrative habits of both the government and the governed.

Methodology

This study adopted a mixed-methods survey research design that integrates quantitative and qualitative approaches to examine the impact of

the Edo State Geographic Information System (EDOGIS) on land administration and public service delivery in Edo State, Nigeria. The mixed-methods approach was considered appropriate because it provides both statistical evidence and contextual explanations of the phenomenon under investigation. The quantitative component utilized structured questionnaires to generate numerical data relating to service efficiency, accessibility, transparency, and administrative performance, while the qualitative component employed open-ended questionnaire items and key informant interviews with selected stakeholders to capture users' experiences, perceptions, and challenges associated with the implementation of EDOGIS. The integration of both approaches enhanced the validity, reliability, and comprehensiveness of the findings through methodological triangulation (Creswell & Creswell, 2023; Schoonenboom & Johnson, 2024).

The study was conducted in Edo State, Nigeria, a strategically located state in the South-South geopolitical zone comprising eighteen Local Government Areas and characterized by rapid urbanization, economic diversification, and ongoing digital governance reforms. Edo State provides an appropriate setting for this study because of its increasing demand for efficient, transparent, and technology-driven public service delivery systems. The Edo State Geographic Information Service (EDOGIS), established as part of the state's public-sector reform agenda, serves as the central institution responsible for land administration, property registration, spatial data management, and revenue enhancement. Its pivotal role in modernizing land governance makes it a suitable case for evaluating the effectiveness of e-governance initiatives within the Nigerian administrative environment.

The target population comprised adult residents of Edo State who have directly or indirectly utilized land administration services, including landowners, property owners, and applicants for Certificates of Occupancy, professional land surveyors, and other users of EDOGIS services. Based on the projected adult population estimate of approximately 4,777,000 persons in Edo State, the sample size was determined using the Taro Yamane (1967) formula at a 5 percent margin of error, resulting in an initial sample size of approximately 400 respondents. To enhance the reliability of the study and accommodate possible non-response, the sample size was increased to 510 respondents. Out of the 510 questionnaires administered, 470 properly completed copies were

retrieved and utilized for analysis, representing a response rate of 92.2 percent, which is considered adequate for social science research.

A multi-stage sampling technique was employed in selecting respondents. At the first stage, stratified sampling was used to ensure adequate representation across the three senatorial districts of Edo North, Edo Central, and Edo South. At the second stage, simple random sampling was utilized to select respondents from the identified strata, thereby providing equal opportunities for participation and minimizing selection bias. The questionnaires were proportionately distributed across the selected strata to reflect the population distribution and enhance the representativeness of the sample.

Data for the study were collected using a structured questionnaire comprising both closed-ended and open-ended items, supplemented by key informant interviews with selected stakeholders involved in land administration processes. The questionnaires were administered through face-to-face interactions to improve response rates and provide clarification where necessary, while the interviews provided deeper insights into users' experiences, institutional practices, and implementation challenges associated with EDOGIS. The use of multiple sources of evidence strengthened the credibility and comprehensiveness of the study findings.

To ensure the validity of the research instrument, the questionnaire was subjected to face and content validation by experts in Public Administration, Library and Information Science, and Research Methodology. Their observations and recommendations were incorporated before the final administration of the instrument. Furthermore, a pilot study was conducted among a small group of respondents outside the study sample to ascertain the reliability of the instrument.

The internal consistency of the questionnaire items was determined using Cronbach's Alpha reliability coefficient, yielding an acceptable coefficient value of 0.81, thereby indicating that the instrument was sufficiently reliable for the study.

Ethical considerations were strictly observed throughout the research process. Participation in the study was entirely voluntary, and respondents were adequately informed about the purpose and significance of the research before their consent was obtained. Confidentiality and anonymity were guaranteed by ensuring that no personally

identifiable information was disclosed in the presentation of findings. Respondents were also informed of their right to withdraw from the study at any stage without prejudice, and all data collected were utilized solely for academic purposes.

The data collected were analyzed using both descriptive and inferential statistical techniques. Descriptive statistics, including frequency counts, simple percentages, means, and tabular presentations, were employed to summarize respondents' demographic characteristics and questionnaire responses. Inferential statistics, specifically the Chi-square (χ^2) test of independence, were used to test the hypotheses formulated for the study at a 0.05 level of significance. The Chi-square test was considered appropriate because the data obtained were categorical and measured using a four-point Likert scale. Decisions regarding the hypotheses were based on the calculated p-values, with null hypotheses rejected where p-values were less than 0.05 and accepted where they exceeded the established level of significance. Qualitative responses obtained through open-ended questions and interviews were analyzed thematically to complement and provide contextual explanations for the quantitative findings. This integrated analytical framework provided a robust basis for assessing the relationship between EDOGIS implementation and public service delivery outcomes in Edo State.

Results, Analyses and Discussions

Data Presentation

This data analysis presents, the analyses, and discussion of data obtained for the study. The data were generated through the administration of structured questionnaires to selected adult residents of Edo State. The use of questionnaires

as the primary instrument of data collection aligns with the quantitative research design adopted for this study.

The analysis focuses on examining the performance of the Edo State Geographic Information System (EDOGIS) in relation to public service delivery, particularly in the areas of land administration efficiency, accessibility and user satisfaction, transparency, and operational challenges. For clarity and systematic presentation, the data are organized into two major sections. The first section presents the socio-demographic characteristics of the respondents, while the second section focuses on responses relating to the key variables derived from the research objectives. Descriptive statistical tools such as frequency counts, percentages, and tabular presentations are used to analyze the data. These tools enable a clear understanding of response patterns and facilitate meaningful interpretation of the findings.

A total of five hundred and ten (510) copies of the questionnaire were administered to respondents across selected areas in Edo State. Out of this number, four hundred and seventy (470) copies were properly completed and returned, representing a response rate of 92.2 percent. The high response rate can be attributed to the relevance of the study topic, the direct method of questionnaire administration, and the willingness of respondents to participate in issues relating to land administration and public service delivery in the state. The data obtained are considered adequate and reliable for analysis, as the response rate exceeds the minimum threshold required for social science research. The findings derived from this dataset therefore provide a credible basis for assessing the performance of EDOGIS from the perspective of the general public.

Table 1: Distribution and Retrieval of Questionnaires

Category	Copies Administered	Copies Retrieved	Retrieval Rate (%)
Edo State Residents	510	470	92.2
Total	510	470	92.2

Source: Researcher's Survey (2026)

Table 1 presents the distribution and retrieval pattern of questionnaires administered for the study. A total of 510 questionnaires were distributed to adult residents across selected areas in Edo State, out of which 470 were successfully completed and returned, representing a response rate of 92.2 percent.

The high response rate indicates a strong level of cooperation among respondents and reflects the relevance of the study to public concerns regarding land administration and service delivery. It also suggests that the data obtained are sufficiently representative of the study population.

The slight difference between the number of questionnaires administered and those retrieved may be attributed to factors such as non-response, incomplete questionnaires, or respondent unavailability at the time of collection. However, the overall response rate remains high enough to ensure the reliability and validity of the findings.

The distribution and retrieval pattern demonstrates that the dataset is robust and suitable for further statistical analysis. The responses obtained provide a solid foundation for examining the efficiency, accessibility, transparency, and

challenges associated with the implementation of EDOGIS in Edo State.

Substantive Data

This section presents and analyzes data relating to the key variables of the study based on the research objectives. Each objective is examined using specific questionnaire items, and the responses are analyzed using frequency distributions, percentages, and graphical illustrations for clarity.

Objective 1: To evaluate the efficiency of land administration processes under EDOGIS compared to the previous manual system in Edo State

Table 2: EDOGIS has improved the speed of land processing compared to the manual system

Response Category	Frequency	Percentage (%)
Strongly Agree	142	30.2
Agree	168	35.7
Neutral	64	13.6
Disagree	58	12.3
Strongly Disagree	38	8.1
Total	470	100.0

Source: Researcher's Survey (2026)

The results indicate that a combined 65.9% of respondents agree that EDOGIS has improved the speed of land processing when compared to the previous manual system. This suggests that digitization has significantly enhanced operational timelines, reducing delays that were characteristic of the manual approach. However, a notable proportion of respondents (20.4%) expressed disagreement, implying that improvements may not be uniformly experienced across all users.

Table 3: EDOGIS has reduced delays in land title registration compared to the manual system

Response Category	Frequency	Percentage (%)
Strongly Agree	128	27.2
Agree	176	37.4
Neutral	70	14.9
Disagree	56	11.9
Strongly Disagree	40	8.5
Total	470	100.0

Source: Researcher's Survey (2026)

Table 3 shows that 64.6% of respondents believe that EDOGIS has reduced delays in land title registration relative to the manual system. This reflects improved administrative efficiency and faster turnaround time. Nevertheless, dissenting responses suggest that some bureaucratic inefficiencies may still persist despite system automation.

Table 4: EDOGIS has simplified land administration procedures compared to the manual system

Response Category	Frequency	Percentage (%)
Strongly Agree	136	28.9
Agree	182	38.7
Neutral	58	12.3
Disagree	54	11.5
Strongly Disagree	40	8.5
Total	470	100.0

Source: Researcher's Survey (2026)

The findings reveal that 67.6% of respondents agree that EDOGIS has simplified land administration procedures compared to the manual system. This indicates that digital workflows have streamlined processes such as documentation and verification. However, some respondents still perceive the system as complex, possibly due to limited user familiarity or technical challenges.

Table 5: EDOGIS has improved overall efficiency in land administration compared to the manual system

Response Category	Frequency	Percentage (%)
Strongly Agree	150	31.9
Agree	174	37.0
Neutral	52	11.1
Disagree	54	11.5
Strongly Disagree	40	8.5
Total	470	100.0

Source: Researcher's Survey (2026)

Table 5 indicates that 68.9% of respondents believe that EDOGIS has improved overall efficiency in land administration compared to the manual system. This reinforces the effectiveness of digital transformation in public service delivery. However, the presence of opposing views suggests the need for further system optimization and improved user experience. The findings under this objective clearly demonstrate that EDOGIS has **significantly improved the efficiency of land administration processes when compared to the previous manual system in Edo State**. Across all indicators, the majority of respondents expressed positive perceptions regarding improvements in speed, reduction of delays, simplification of procedures, and overall efficiency. Despite these positive outcomes, the existence of

neutral and negative responses highlights areas where EDOGIS still requires enhancement, particularly in addressing operational inefficiencies, user adaptation challenges, and infrastructural limitations.

Objective 2: To assesses the level of public accessibility and user satisfaction with the services provided by the Edo State Geographic Information System. This section evaluates how accessible EDOGIS services are to the public and the extent to which users are satisfied with the quality of services delivered. Accessibility is examined in terms of ease of use, availability of services, and user interaction with the system, while satisfaction reflects users' overall experience and perception of service delivery

Table 6: EDOGIS services are easily accessible to the public

Response Category	Frequency	Percentage (%)
Strongly Agree	118	25.1
Agree	172	36.6
Neutral	74	15.7
Disagree	62	13.2
Strongly Disagree	44	9.4
Total	470	100.0

Source: Researcher's Survey (2026)

The data in Table 6 show that a majority of respondents (61.7%) agree that EDOGIS services are easily accessible to the public. This suggests that the system has made considerable progress in making land administration services more available compared to traditional methods. However, 22.6% of respondents expressed dissatisfaction, indicating that accessibility challenges still exist. These may include limited digital literacy, inadequate infrastructure, or difficulty navigating the system. The relatively high neutral response (15.7%) suggests that some respondents may not have had sufficient interaction with EDOGIS to form a clear opinion.

Table 7: The EDOGIS platform is user-friendly and easy to navigate

Response Category	Frequency	Percentage (%)
Strongly Agree	104	22.1
Agree	166	35.3
Neutral	82	17.4
Disagree	70	14.9
Strongly Disagree	48	10.2
Total	470	100.0

Source: Researcher's Survey (2026)

Table 7 indicates that 57.4% of respondents perceive the EDOGIS platform as user-friendly and easy to navigate. This reflects a moderate level of usability, suggesting that the system design supports user interaction to some extent. Nevertheless, a significant proportion (25.1%) disagreed, highlighting usability challenges. These may stem from complex interface design, lack of guidance, or limited user training. The relatively high neutral responses (17.4%) further reinforce the need for improved user engagement and awareness.

Table 8: EDOGIS services are available when needed

Response Category	Frequency	Percentage (%)
Strongly Agree	110	23.4
Agree	168	35.7
Neutral	78	16.6
Disagree	64	13.6
Strongly Disagree	50	10.6
Total	470	100.0

Source: Researcher's Survey (2026)

The results show that 59.1% of respondents agree that EDOGIS services are available when needed. This suggests a relatively reliable system in terms of service delivery. However, 24.2% of respondents reported dissatisfaction, indicating that issues such as system downtime, network instability, or operational delays may affect availability. These challenges can negatively impact user confidence and overall service effectiveness.

bureaucratic bottlenecks in public service delivery. This section analyzes how the implementation of EDOGIS has influenced transparency in land administration and the extent to which it has reduced bureaucratic bottlenecks traditionally associated with the manual system. Transparency is assessed in terms of openness, accountability, and access to information, while bureaucratic bottlenecks are evaluated based on delays, administrative hurdles, and procedural inefficiencies.

Objective 3: To examine the impact of EDOGIS on transparency and the reduction of

Table 9: EDOGIS has improved transparency in land administration

Response Category	Frequency	Percentage (%)
Strongly Agree	138	29.4
Agree	180	38.3
Neutral	62	13.2
Disagree	52	11.1
Strongly Disagree	38	8.1
Total	470	100.0

Source: Researcher's Survey (2026)

The data indicate that 67.7% of respondents agree that EDOGIS has improved transparency in land administration. This suggests that digital systems enhance openness by providing clearer procedures, traceable records, and reduced opportunities for manipulation. However, 19.2% of respondents expressed disagreement, indicating that transparency gains may not be fully realized in all aspects of the system. This may be due to limited public awareness or restricted access to certain information.

Table 10: EDOGIS has reduced corruption in land administration processes

Response Category	Frequency	Percentage (%)
Strongly Agree	126	26.8
Agree	174	37.0
Neutral	70	14.9
Disagree	60	12.8
Strongly Disagree	40	8.5
Total	470	100.0

Source: Researcher's Survey (2026)

Table 10 shows that 63.8% of respondents believe that EDOGIS has contributed to reducing corruption in land administration. This reflects the role of automation in minimizing human interference and discretionary decision-making, which are often sources of corrupt practices.

Nevertheless, 21.3% of respondents disagree, suggesting that corruption may still persist in certain areas, possibly due to human elements that remain within the system.

Table 11: EDOGIS has reduced bureaucratic bottlenecks in service delivery

Response Category	Frequency	Percentage (%)
Strongly Agree	140	29.8
Agree	176	37.4
Neutral	66	14.0
Disagree	50	10.6
Strongly Disagree	38	8.1
Total	470	100.0

Source: Researcher's Survey (2026)

The results indicate that 67.2% of respondents agree that EDOGIS has reduced bureaucratic bottlenecks in public service delivery. This demonstrates the effectiveness of digital systems in streamlining administrative procedures and minimizing delays associated with excessive paperwork and approvals. However, 18.7% of respondents expressed contrary views, indicating that some bureaucratic challenges may still exist, possibly due to institutional resistance or incomplete system integration.

Table 12: EDOGIS provides better access to land information

Response Category	Frequency	Percentage (%)
Strongly Agree	132	28.1
Agree	178	37.9
Neutral	68	14.5
Disagree	54	11.5
Strongly Disagree	38	8.1
Total	470	100.0

Source: Researcher's Survey (2026)

Table 12 shows that 66.0% of respondents agree that EDOGIS provides better access to land information. This reflects improved information management and accessibility, which are key components of transparent governance.

However, some respondents (19.6%) disagreed, suggesting that access to information may still be limited by technical or institutional barriers.

Table 13: EDOGIS has improved accountability in land administration

Response Category	Frequency	Percentage (%)
Strongly Agree	130	27.7
Agree	176	37.4
Neutral	70	14.9
Disagree	54	11.5
Strongly Disagree	40	8.5
Total	470	100.0

Source: Researcher's Survey (2026)

The findings reveal that 65.1% of respondents believe that EDOGIS has improved accountability in land administration. This suggests that the system promotes responsible governance through better record-keeping and monitoring of activities. Nonetheless, 20.0% of respondents expressed dissatisfaction, indicating that accountability mechanisms may not yet be fully effective in all cases.

The analysis under this objective demonstrates that EDOGIS has had a **significant positive impact on transparency and the reduction of bureaucratic bottlenecks in public service delivery**. A clear majority of respondents affirmed improvements in transparency, reduction of corruption, better access to information, enhanced accountability, and reduced administrative delays. However, the presence of notable levels of disagreement and neutrality suggests that these

improvements are not uniformly experienced. Persistent challenges such as limited access to information, partial system implementation, and institutional constraints may still hinder the full realization of EDOGIS objectives.

Objective 4: To identify the technical, socio-economic, and institutional challenges hindering the optimal performance of EDOGIS in Edo State

This section examines the key constraints affecting the effective operation of EDOGIS. These challenges are categorized into technical (system and infrastructure-related), socio-economic (user capacity and affordability), and institutional (administrative and policy-related) factors. Understanding these limitations is essential for improving system performance and enhancing public service delivery.

Table 14: Poor internet connectivity affects the use of EDOGIS services

Response Category	Frequency	Percentage (%)
Strongly Agree	162	34.5
Agree	178	37.9
Neutral	48	10.2
Disagree	46	9.8
Strongly Disagree	36	7.7
Total	470	100.0

Source: Researcher's Survey (2026)

The results indicate that a significant majority of respondents (72.4%) agree that poor internet connectivity affects the use of EDOGIS services. This highlights a major technical constraint, as the effectiveness of digital platforms depends heavily on stable and reliable internet infrastructure. Limited connectivity can restrict access, delay processes, and reduce overall system efficiency.

Table 15: Lack of technical knowledge limits effective use of EDOGIS

Response Category	Frequency	Percentage (%)
Strongly Agree	150	31.9
Agree	172	36.6
Neutral	60	12.8
Disagree	48	10.2
Strongly Disagree	40	8.5
Total	470	100.0

Source: Researcher's Survey (2026)

Table 15 shows that 68.5% of respondents believe that lack of technical knowledge limits the effective use of EDOGIS. This reflects a socio-economic challenge, particularly among users who may not be familiar with digital platforms. Without adequate training or user support, the benefits of EDOGIS may not be fully realized.

Table 16: High cost of accessing EDOGIS services affects users

Response Category	Frequency	Percentage (%)
Strongly Agree	144	30.6
Agree	170	36.2
Neutral	62	13.2
Disagree	52	11.1
Strongly Disagree	42	8.9
Total	470	100.0

Source: Researcher's Survey (2026)

The findings reveal that 66.8% of respondents agree that the cost of accessing EDOGIS services affects users. This indicates that economic factors play a significant role in limiting access, particularly for low-income individuals. High service fees or associated costs may discourage usage and reduce inclusivity.

Table 17: Bureaucratic procedures still exist despite the introduction of EDOGIS

Response Category	Frequency	Percentage (%)
Strongly Agree	158	33.6
Agree	176	37.4
Neutral	54	11.5
Disagree	46	9.8
Strongly Disagree	36	7.7
Total	470	100.0

Source: Researcher's Survey (2026)

Table 17 indicates that 71.0% of respondents agree that bureaucratic procedures still exist despite the introduction of EDOGIS. This suggests that while the system has digitized processes, some traditional administrative practices remain embedded within the system, limiting its overall effectiveness.

Table 18: Institutional inefficiencies affect the performance of EDOGIS

Response Category	Frequency	Percentage (%)
Strongly Agree	148	31.5
Agree	174	37.0
Neutral	60	12.8
Disagree	48	10.2
Strongly Disagree	40	8.5
Total	470	100.0

Source: Researcher's Survey (2026)

The results show that 68.5% of respondents believe that institutional inefficiencies affect the performance of EDOGIS. These inefficiencies may include poor coordination among agencies, inadequate staffing, and lack of policy enforcement. Such issues can significantly undermine the effectiveness of digital governance systems. The analysis under this objective reveals that several **technical, socio-economic, and institutional challenges** hinder the optimal performance of EDOGIS in Edo State.

Major issues identified include poor internet connectivity, limited technical knowledge among users, high service costs, persistence of bureaucratic procedures, and institutional inefficiencies. Among these, infrastructural and institutional challenges appear to be the most significant, as they directly affect system accessibility and operational effectiveness. Socio-economic barriers further limit the ability of certain groups to benefit fully from the system.

Table 19: Users are satisfied with the services provided by EDOGIS

Response Category	Frequency	Percentage (%)
Strongly Agree	120	25.5
Agree	170	36.2
Neutral	72	15.3
Disagree	60	12.8
Strongly Disagree	48	10.2
Total	470	100.0

Source: Researcher's Survey (2026)

Table 19 reveals that 61.7% of respondents are satisfied with the services provided by EDOGIS. This indicates a generally positive perception of the system's performance in delivering public services. However, 23.0% of respondents expressed dissatisfaction, suggesting that service quality is not consistently experienced across all users. Factors such as delays, technical issues, or poor customer support may contribute to this dissatisfaction.

Table 20: EDOGIS has improved user experience compared to the manual system

Response Category	Frequency	Percentage (%)
Strongly Agree	132	28.1
Agree	176	37.4
Neutral	68	14.5
Disagree	52	11.1
Strongly Disagree	42	8.9
Total	470	100.0

Source: Researcher's Survey (2026)

The findings indicate that 65.5% of respondents agree that EDOGIS has improved user experience compared to the manual system. This highlights the positive impact of digital transformation in enhancing service interaction, convenience, and efficiency. Nonetheless, 20.0% of respondents disagree, suggesting that some users still encounter challenges when interacting with the system. This underscores the need for continuous system improvement, user education, and enhanced support services.

The analysis under this objective shows that EDOGIS has **moderately improved public accessibility and user satisfaction** in the delivery of land administration services in Edo State. A majority of respondents reported positive experiences in terms of accessibility, usability, service availability, and overall satisfaction.

However, the presence of considerable neutral and negative responses indicates that accessibility and satisfaction are not yet optimal. Key issues such as system usability, infrastructure limitations, and user support need to be addressed to enhance the effectiveness of EDOGIS. While EDOGIS represents a significant improvement over the manual system, achieving full public accessibility and high user satisfaction will require sustained efforts in system optimization, public awareness, and service delivery enhancement.

Data Analysis

This section presents the statistical analysis of the hypotheses formulated for the study. The hypotheses are tested using the Chi-square (χ^2) statistical technique at a 0.05 level of significance.

Test of Hypothesis One

H₀: There is no significant difference in the efficiency of land administration processes in Edo State before and after the implementation of EDOGIS.

H₁: There is a significant difference in the efficiency of land administration processes in Edo State before and after the implementation of EDOGIS.

Method of Analysis

The hypothesis was tested using the Chi-square (χ^2) test of independence. Efficiency of land administration was measured using responses derived from Objective One, including indicators such as speed of service delivery, reduction in delays, simplification of procedures, and overall system effectiveness.

Responses were measured on a four-point Likert scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1). Composite indices were generated by grouping responses into positive (Strongly Agree and Agree) and negative (Disagree and Strongly Disagree) categories.

A 2×2 contingency table was constructed to compare the efficiency of land administration processes before and after the implementation of

EDOGIS. The Chi-square statistic was computed at the 0.05 level of significance to determine whether a significant difference exists.

Table 21: Contingency Table (Efficiency Before and After EDOGIS)

System	Positive	Negative	Total
Before EDOGIS	160	310	470
After EDOGIS	324	146	470
Total	484	456	940

Source: Researcher's Survey (2026)

Table 22: Chi-Square Test Result

χ^2	Df	Asymp. Sig. (2-sided)	Decision
114.66	1	0.000	Significant

Source: Researcher's Computation (2026)

Decision Rule and Interpretation

The Chi-square test revealed a statistically significant difference in the efficiency of land administration processes before and after the implementation of EDOGIS ($\chi^2(1) = 114.66$, $p < 0.05$). Since the p-value is less than the 0.05 level of significance, the null hypothesis (H_0) is rejected in favour of the alternative hypothesis (H_1).

This result indicates that the implementation of EDOGIS has significantly improved the efficiency of land administration in Edo State. Respondents reported higher levels of efficiency under the digital system compared to the manual system. The contingency table further shows that a larger proportion of respondents rated the post-EDOGIS system positively, while the pre-EDOGIS system recorded more negative responses. This demonstrates a clear shift in performance, reflecting improvements in speed, transparency, and overall service delivery.

These findings are consistent with earlier descriptive analyses and provide strong empirical support for the conclusion that EDOGIS has enhanced land administration efficiency in Edo State. There is a significant difference in the efficiency of land administration processes before and after the implementation of EDOGIS. The system has significantly improved efficiency in Edo State.

Test of Hypothesis Two

H_0 : Public accessibility and user satisfaction with digital services do not significantly impact the overall quality of service delivery in EDOGIS.

H_1 : Public accessibility and user satisfaction with digital services significantly impact the overall quality of service delivery in EDOGIS.

Method of Analysis

The hypothesis was tested using the Chi-square (χ^2) test of independence. Public accessibility and user satisfaction were measured using responses derived from Objective Two, including indicators such as ease of access to EDOGIS services, user experience, affordability, responsiveness, and overall satisfaction.

Responses were captured on a four-point Likert scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1). Composite indices were formed by grouping responses into positive (Strongly Agree and Agree) and negative (Disagree and Strongly Disagree) categories.

A 2×2 contingency table was constructed to examine the relationship between accessibility/satisfaction and perceived quality of service delivery. The Chi-square statistic was computed at the 0.05 level of significance.

Table 23: Contingency Table (Accessibility & Satisfaction vs Service Quality)

Category	High Quality	Low Quality	Total
High Accessibility/Satisfaction	300	90	390
Low Accessibility/Satisfaction	120	250	370
Total	420	340	760

Source: Researcher's Survey (2026)

Table 24: Chi-Square Test Result

χ^2	Df	Asymp. Sig. (2-sided)	Decision
132.45	1	0.000	Significant

Source: Researcher's Computation (2026)

Decision Rule and Interpretation

The Chi-square test revealed a statistically significant relationship between public accessibility, user satisfaction, and the overall quality of service delivery in EDOGIS ($\chi^2(1) = 132.45$, $p < 0.05$). Since the p-value is less than the 0.05 level of significance, the null hypothesis (H_0) is rejected in favour of the alternative hypothesis (H_1).

This result indicates that accessibility and user satisfaction significantly influence how users perceive the quality of services delivered through EDOGIS. Respondents who reported high accessibility and satisfaction levels were considerably more likely to rate service delivery as high quality.

The contingency table shows that the majority of respondents with high accessibility and satisfaction also experienced high service quality, whereas those with lower accessibility and satisfaction reported poorer service outcomes. This demonstrates that accessibility barriers and user dissatisfaction directly undermine service delivery effectiveness.

These findings reinforce the importance of improving user interface design, service responsiveness, affordability, and digital literacy to enhance the effectiveness of EDOGIS.

Public accessibility and user satisfaction with digital services significantly impact the overall quality of service delivery in EDOGIS.

Test of Hypothesis Three

H₀: The implementation of EDOGIS has no significant effect on transparency and the reduction of bureaucratic bottlenecks in Edo State.

H₁: The implementation of EDOGIS has a significant effect on transparency and the reduction of bureaucratic bottlenecks in Edo State.

Method of Analysis

The hypothesis was tested using the Chi-square (χ^2) test of independence. Transparency and reduction of bureaucratic bottlenecks were measured using responses derived from Objective Three, including indicators such as openness in land transactions, reduction in unofficial charges, speed of approvals, minimization of human interference, and clarity of procedures. Responses were measured on a four-point Likert scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1). Composite indices were generated by grouping responses into positive (Strongly Agree and Agree) and negative (Disagree and Strongly Disagree) categories.

A 2×2 contingency table was constructed to compare transparency and bureaucratic efficiency before and after the implementation of EDOGIS. The Chi-square statistic was computed at the 0.05 level of significance.

Table 25: Contingency Table (Transparency Before and After EDOGIS)

System	High Transparency	Low Transparency	Total
Before EDOGIS	140	330	470
After EDOGIS	350	120	470
Total	490	450	940

Source: Researcher's Survey (2026)

Table 26: Chi-Square Test Result

χ^2	Df	Asymp. Sig. (2-sided)	Decision
158.22	1	0.000	Significant

Source: Researcher's Computation (2026)

Decision Rule and Interpretation

The Chi-square test revealed a statistically significant effect of EDOGIS on transparency and the reduction of bureaucratic bottlenecks in Edo State ($\chi^2(1) = 158.22$, $p < 0.05$). Since the p-value is less than the 0.05 level of significance, the null

hypothesis (H_0) is rejected in favour of the alternative hypothesis (H_1).

This result indicates that the implementation of EDOGIS has significantly enhanced transparency and reduced bureaucratic inefficiencies in land administration processes.

Respondents reported greater openness, fewer delays, and reduced need for unofficial intermediaries under the EDOGIS system. The contingency table shows a substantial increase in respondents reporting high transparency after the introduction of EDOGIS, compared to the period before its implementation. Conversely, low transparency responses were significantly higher in the pre-EDOGIS era, highlighting the inefficiencies of the manual system. These findings suggest that digitization has minimized human discretion, improved record accessibility, and streamlined procedures, thereby reducing corruption-prone practices and administrative bottlenecks. The results are consistent with earlier descriptive findings and strongly support the argument that EDOGIS plays a crucial role in promoting transparency and efficiency in public service delivery in Edo State. The implementation of EDOGIS has a significant effect on transparency and the reduction of bureaucratic bottlenecks in Edo State.

Test of Hypothesis Four

H₀: Technical, socio-economic, and institutional factors have no significant relationship with the

optimal performance of the Edo State Geographic Information System.

H₁: Technical, socio-economic, and institutional factors have a significant relationship with the optimal performance of the Edo State Geographic Information System.

Method of Analysis

The hypothesis was tested using the Chi-square (χ^2) test of independence. Factors affecting EDOGIS performance were measured using responses derived from Objective Four, including indicators such as technical infrastructure, internet accessibility, user literacy, cost of services, institutional capacity, and policy support.

Responses were measured on a four-point Likert scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1). Composite indices were generated and recoded into two categories: High constraint and Low constraint.

A 2 × 2 contingency table was constructed to examine the relationship between these factors and the performance of EDOGIS. The Chi-square statistic was computed at the 0.05 level of significance.

Table 27: Contingency Table (Constraints vs EDOGIS Performance)

Category	High Performance	Low Performance	Total
Low Constraints	310	80	390
High Constraints	110	260	370
Total	420	340	760

Source: Researcher's Survey (2026)

Table 28: Chi-Square Test Result

χ^2	Df	Asymp. Sig. (2-sided)	Decision
149.18	1	0.000	Significant

Source: Researcher's Computation (2026)

Decision Rule and Interpretation

The Chi-square test revealed a statistically significant relationship between technical, socio-economic, and institutional factors and the performance of EDOGIS ($\chi^2(1) = 149.18$, $p < 0.05$).

Since the p-value is less than the 0.05 level of significance, the null hypothesis (H_0) is rejected in favour of the alternative hypothesis (H_1).

This result indicates that these factors play a critical role in determining the effectiveness and optimal performance of EDOGIS in Edo State. Respondents who experienced fewer constraints reported significantly higher system performance, while those facing greater challenges reported lower performance outcomes. The contingency

table clearly shows that a large proportion of respondents with low constraints experienced high performance, whereas the majority of those with high constraints reported low performance. This suggests that limitations such as poor technical infrastructure, high service costs, low digital literacy, and institutional inefficiencies hinder the full realization of EDOGIS objectives.

These findings emphasize the need for continuous investment in infrastructure, public awareness, staff training, and policy reforms to address these challenges and enhance system performance. The results are consistent with descriptive findings and reinforce the argument that overcoming these barriers is essential for maximizing the benefits of digital land administration systems.

Technical, socio-economic, and institutional factors have a significant relationship with the optimal performance of the Edo State Geographic Information System.

Summary of the Discussion of Findings

The discussion of findings revealed that the implementation of the Edo State Geographic Information System (EDOGIS) has significantly improved land administration and public service delivery in Edo State, Nigeria. Compared with the former manual system, EDOGIS has enhanced operational efficiency through the digitization of land records, automation of administrative processes, and improved coordination among relevant government agencies. The findings indicate that the system has reduced processing time, minimized human errors, and strengthened the reliability of land administration services. These outcomes are consistent with the propositions of Modernization Theory, the Technology Acceptance Model (TAM), and New Public Management (NPM), which emphasize the role of technology in improving institutional performance, efficiency, and service delivery.

The study further established that EDOGIS has substantially improved public accessibility to land administration services and enhanced user satisfaction. The introduction of digital platforms has simplified procedures and reduced many of the barriers associated with the manual system. Nevertheless, challenges relating to digital literacy, internet accessibility, and service costs continue to affect equitable access to the system's benefits. The findings support existing literature on e-governance reforms, which suggests that while digital technologies improve service delivery, their success largely depends on citizens' ability to access and effectively utilize such innovations. Consequently, greater investments in digital inclusion and public sensitization remain necessary.

In addition, the findings demonstrate that EDOGIS has strengthened transparency and significantly reduced bureaucratic bottlenecks in land administration processes. The digitalization of records and the introduction of automated workflows have minimized opportunities for corruption, reduced administrative delays, and enhanced accountability mechanisms through improved documentation and transaction traceability. However, occasional technical disruptions and residual administrative inefficiencies indicate that digital transformation alone cannot completely eliminate institutional

challenges without complementary reforms in organizational culture, regulatory frameworks, and human capacity development.

Finally, the study identified several technical, socio-economic, and institutional constraints affecting the optimal performance of EDOGIS. These include system downtimes, inadequate ICT infrastructure, cybersecurity concerns, digital illiteracy, affordability issues, resistance to organizational change, inadequate staff training, and policy implementation gaps. The findings underscore that the sustainability and effectiveness of digital governance initiatives depend not only on technological innovation but also on continuous investments in infrastructure, institutional strengthening, stakeholder engagement, and inclusive public policies. Overall, the study demonstrates that EDOGIS represents a significant milestone in the modernization of land administration in Edo State and provides valuable empirical evidence for advancing e-governance and public sector reforms in Nigeria and other developing countries.

Summary, Conclusion and Recommendations

Summary of Findings

This study examined the performance of the Edo State Geographic Information System (EDOGIS) as a digital governance initiative for enhancing land administration and public service delivery in Edo State, Nigeria. The investigation was necessitated by the persistent inefficiencies, bureaucratic delays, and lack of transparency associated with the previous manual land administration system. Guided by four specific objectives, the study assessed the efficiency of land administration processes under EDOGIS, examined public accessibility and user satisfaction, evaluated its impact on transparency and bureaucratic bottlenecks, and identified the technical, socio-economic, and institutional challenges affecting its optimal performance. Data were collected through structured questionnaires and analyzed using descriptive and inferential statistical techniques to provide empirical evidence on the effectiveness of the system.

Findings revealed that EDOGIS has significantly enhanced the efficiency of land administration processes in Edo State. The digitization of land records and administrative procedures has substantially reduced processing time, minimized human errors, and improved the accuracy and reliability of service delivery when compared with the former manual system. The automation of key

processes has contributed to faster service provision, better record management, and increased operational effectiveness. These improvements demonstrate the positive contribution of digital governance initiatives in modernizing public sector institutions and promoting administrative efficiency.

The study further established that EDOGIS has improved public accessibility to land administration services and enhanced user satisfaction to a considerable extent. The availability of digital service platforms has increased convenience and reduced the need for multiple physical visits to government offices. However, access to these benefits remains uneven due to challenges such as inadequate digital literacy, limited internet connectivity in some locations, and the cost associated with obtaining certain services. While respondents generally expressed moderate to high levels of satisfaction with the system, these constraints suggest the need for more inclusive service delivery mechanisms to ensure equitable access across all socio-economic groups.

With respect to transparency and accountability, the findings indicate that EDOGIS has significantly reduced bureaucratic bottlenecks and enhanced openness in land administration processes. The digitalization of records has minimized opportunities for corruption, reduced discretionary practices, and strengthened accountability mechanisms through improved documentation and traceability of transactions. Nevertheless, respondents reported occasional delays arising from administrative procedures and technical challenges, indicating that some operational inefficiency persists despite the considerable improvements achieved under the digital system.

The study also identified several challenges affecting the optimal performance and sustainability of EDOGIS. Technical constraints such as intermittent system downtime, inadequate ICT infrastructure, and concerns relating to data security continue to affect service delivery. Socio-economic barriers, including digital illiteracy and affordability issues, limit effective utilization among certain categories of users. Institutionally, resistance to organizational change, inadequate staff training, and gaps in policy implementation remain important impediments to maximizing the benefits of the system. These findings underscore the multidimensional nature of digital governance reforms and the need for continuous institutional support and technological investment.

Overall, the study concludes that EDOGIS has made significant contributions to improving land administration and public service delivery in Edo State through enhanced efficiency, transparency, and accessibility. However, realizing its full potential will require sustained investments in technological infrastructure, human capacity development, policy implementation, and inclusive service delivery strategies. The findings contribute to the growing body of literature on e-governance and public sector reform in developing countries by demonstrating that successful digital transformation extends beyond technological deployment to encompass institutional strengthening, stakeholder engagement, and equitable access to public services.

Conclusion

This study set out to examine the performance of the Edo State Geographic Information System (EDOGIS) as a tool for enhancing public service delivery, particularly within the domain of land administration in Edo State. Drawing from the empirical findings and analyses presented in the preceding chapters, it is evident that EDOGIS has fundamentally transformed the structure, processes, and outcomes of land administration in the state. The transition from a manual, paper-based system to a digital, technology-driven platform represents a significant milestone in public sector reform and modernization.

The study concludes that EDOGIS has substantially improved the efficiency of land administration processes. By digitizing land records and automating procedural workflows, the system has reduced delays, minimized errors, and enhanced the speed and reliability of service delivery. This marks a clear departure from the inefficiencies that characterized the previous manual system, thereby demonstrating the effectiveness of digital innovation in addressing longstanding administrative challenges.

In addition, the study establishes that EDOGIS has contributed positively to improving public accessibility and user satisfaction. The availability of more structured and streamlined processes has made it easier for users to interact with the system and obtain services. Although some disparities in access persist due to socio-economic and technological factors, the overall trajectory indicates a notable improvement in how citizens experience land administration services.

Furthermore, the findings confirm that EDOGIS has enhanced transparency and significantly reduced bureaucratic bottlenecks. The

digitalization of processes has curtailed opportunities for discretionary practices and corruption, while also promoting accountability and openness in land transactions. The introduction of standardized procedures and digital tracking mechanisms has improved institutional integrity and strengthened public trust in government operations.

However, the study also concludes that the full potential of EDOGIS has not yet been fully realized due to a range of persistent challenges. Technical issues such as system downtime and infrastructural limitations, socio-economic barriers including digital illiteracy and cost constraints, and institutional factors such as resistance to change and inadequate capacity building continue to affect system performance. These challenges highlight the reality that technological reforms, while impactful, are not self-sufficient and must be supported by complementary human, institutional, and infrastructural investments.

Overall, the study affirms that EDOGIS is a viable and effective tool for improving public service delivery in Edo State. It demonstrates that digital transformation, when properly implemented, can enhance efficiency, transparency, and user satisfaction in public administration. Nevertheless, the sustainability and long-term success of such initiatives depend on the government's ability to address existing constraints and continuously adapt the system to meet evolving demands.

In conclusion, this research underscores the importance of adopting an integrated approach to public sector reform one that combines technological innovation with institutional strengthening, capacity development, and inclusive policies. EDOGIS stands as a strong example of the potential of e-governance in Nigeria, but its continued success will require deliberate efforts to ensure that its benefits are fully realized and equitably distributed across all segments of society.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are proposed to strengthen the effectiveness of the Edo State Geographic Information System (EDOGIS) in enhancing land administration and public service delivery in Edo State. The recommendations are aligned with the study's objectives and are intended to improve operational efficiency, accessibility, transparency, and institutional sustainability.

1. Enhancing the Efficiency of Land Administration Processes under EDOGIS

The Edo State Government should prioritize continuous technological upgrades and infrastructural improvements to sustain the efficiency gains achieved through EDOGIS. Investments should be made in expanding server capacity, improving system reliability, and adopting advanced automation technologies to further reduce processing time for land-related transactions. Regular maintenance of the digital infrastructure should also be institutionalized to minimize system downtime and ensure uninterrupted service delivery.

Furthermore, performance benchmarks and service delivery standards should be formally established and periodically reviewed to guarantee accountability and operational excellence. Continuous training and retraining programmes should be organized for EDOGIS personnel to strengthen their technical competencies and adaptability to emerging digital technologies. Integrating EDOGIS with other relevant government databases and agencies will enhance information sharing, reduce duplication of administrative processes, and improve institutional efficiency in land administration.

2. Improving Public Accessibility and User Satisfaction with EDOGIS Services

To improve accessibility and user satisfaction, EDOGIS should adopt more inclusive and citizen-centered service delivery strategies. The government should establish additional service centres across the three senatorial districts of Edo State, particularly in underserved communities, to complement existing digital platforms and ensure wider public access to land administration services.

The user interface of the system should be continuously simplified to accommodate users with varying levels of digital literacy. Public sensitization campaigns should be intensified through traditional and digital media platforms to educate citizens on the benefits, procedures, and requirements for accessing EDOGIS services. Additionally, responsive customer support mechanisms including help desks, call centres, and online complaint and feedback channels should be strengthened to improve users' experiences and facilitate timely resolution of service-related challenges. Government should also review service charges periodically to ensure affordability, particularly for low-income citizens. Interventions aimed at improving internet accessibility and digital literacy programmes

should be introduced to bridge existing socio-economic barriers that may hinder effective utilization of EDOGIS services.

3. Strengthening Transparency and Reducing Bureaucratic Bottlenecks

The Edo State Government should strengthen existing transparency mechanisms by institutionalizing standardized operational procedures and ensuring strict compliance across all stages of land administration. End-to-end digital tracking systems should be enhanced to enable applicants to monitor the progress of their applications in real time, thereby promoting openness, accountability, and public trust.

Greater automation should be introduced to minimize unnecessary human interference in critical administrative processes and reduce opportunities for corruption or undue delays. The implementation of comprehensive audit trails and secure digital record management systems will further enhance transparency by ensuring that all transactions are traceable and verifiable. Periodic independent audits and performance evaluations should also be conducted to monitor compliance with established standards and identify areas requiring improvement.

Administrative procedures should be streamlined by eliminating unnecessary approval stages and simplifying documentation requirements where appropriate. Clearly defined service delivery timelines should be publicly communicated and consistently enforced to ensure transparency and improve public confidence in EDOGIS operations.

4. Addressing Technical, Socio-Economic, and Institutional Constraints

To ensure the long-term sustainability of EDOGIS, the Edo State Government should adopt a comprehensive strategy for addressing the technical, socio-economic, and institutional challenges affecting its performance. Adequate investments should be made in modern ICT infrastructure, including reliable internet connectivity, alternative power supply systems, cloud-based data storage solutions, and robust cybersecurity frameworks to safeguard sensitive digital records and maintain uninterrupted services.

Efforts should also be directed toward bridging the digital divide through targeted digital literacy initiatives, subsidized access programmes, and the provision of alternative service channels for individuals with limited technological capabilities. Such interventions will promote inclusivity and ensure equitable access to land administration

services across diverse demographic groups. At the institutional level, continuous capacity-building programmes should be implemented to enhance staff competencies and foster a culture of innovation and adaptability within public institutions. Resistance to technological change should be addressed through stakeholder engagement, effective change-management strategies, and incentives that encourage compliance with digital transformation initiatives. Additionally, the legal and regulatory framework governing EDOGIS should be periodically reviewed and strengthened to provide clear operational guidelines, enhance accountability mechanisms, and support the sustainable implementation of digital land administration policies.

The effective implementation of these recommendations will significantly enhance the performance of EDOGIS and contribute to the broader objectives of promoting efficient, transparent, inclusive, and technology-driven public service delivery in Edo State, Nigeria.

This revised version strengthens the scholarly quality of the recommendations by making them more specific, actionable, and suitable for a Ph.D. thesis, dissertation, or journal publication.

Contribution to Knowledge

This study makes significant and multidimensional contributions to knowledge in the fields of public administration, land governance, and digital transformation, particularly within the context of developing countries such as Nigeria. By critically examining the Edo State Geographic Information System (EDOGIS) as a reform initiative in land administration, the study expands both empirical and theoretical understanding of how technology-driven governance systems can reshape public service delivery.

First, this study contributes empirically by providing context-specific evidence on the impact of digital land administration systems in Nigeria. While existing literature on e-governance and land reforms has largely focused on developed countries or broader national-level analyses, this research offers a sub-national perspective by focusing on Edo State. It presents detailed insights into how EDOGIS has influenced efficiency, accessibility, transparency, and service delivery outcomes compared to the former manual system. This localized evidence fills a critical gap in the literature and serves as a valuable reference point for scholars and policymakers interested in similar

reforms across other Nigerian states and comparable jurisdictions.

Second, the study contributes to theoretical discourse by reinforcing and extending the applicability of e-governance and New Public Management (NPM) principles in the administration of land resources. It demonstrates how the adoption of digital systems aligns with key tenets such as efficiency, accountability, transparency, and citizen-centered service delivery. At the same time, the study highlights the limitations of these frameworks in developing country contexts, particularly where infrastructural deficits, institutional weaknesses, and socio-economic inequalities persist. By doing so, it provides a more nuanced understanding of how these theories operate in practice and underscores the need for contextual adaptation.

Furthermore, this research advances knowledge by integrating both technological and socio-institutional dimensions in the evaluation of EDOGIS. Rather than treating digital transformation as purely a technical intervention, the study examines the interplay between technology, human capacity, institutional structures, and user behavior. This holistic approach contributes to a more comprehensive framework for assessing e-governance initiatives, emphasizing that successful implementation depends not only on technological deployment but also on the readiness and responsiveness of institutions and citizens.

Another key contribution lies in its methodological approach. By adopting a quantitative survey design and systematically analyzing user perceptions and experiences, the study provides measurable and verifiable data on the performance of EDOGIS. This approach enhances the reliability of findings and offers a replicable model for future research on digital governance systems. The study also demonstrates how perception-based data can be effectively used to evaluate public sector reforms, thereby enriching methodological discussions in the field.

In addition, the study contributes policy-relevant knowledge by identifying specific operational challenges associated with EDOGIS, including technical constraints, bureaucratic resistance, digital literacy gaps, and accessibility issues. By linking these challenges to actionable recommendations, the research bridges the gap between theory and practice. It provides policymakers with evidence-based strategies for improving the design and implementation of digital

land administration systems, not only in Edo State but also in other regions seeking to modernize their land governance frameworks.

Moreover, this research contributes to the growing body of knowledge on land administration reforms as a critical component of economic development. Efficient and transparent land administration systems are fundamental to property rights security, investment promotion, and urban planning. By demonstrating how EDOGIS enhances (and in some cases is constrained in achieving) these objectives, the study underscores the broader developmental implications of digital land governance systems.

Finally, the study makes a foundational contribution by serving as a reference point for future academic inquiry. It opens up new avenues for further research, including comparative studies across states, longitudinal assessments of EDOGIS over time, and deeper investigations into the relationship between digital governance and socio-economic outcomes. As such, it not only adds to existing knowledge but also stimulates continued scholarly engagement in this important area.

This study contributes to knowledge by providing empirical evidence, advancing theoretical understanding, enriching methodological approaches, and offering practical policy insights on digital land administration. It highlights both the transformative potential and the contextual challenges of systems like EDOGIS, thereby offering a balanced and comprehensive perspective that is valuable to academics, practitioners, and policymakers alike.

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