# Impact of Digital Land Administration on Land Tenure Security in Nasarawa State, Nigeria

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***Abstract***
*This study examined the impact of digital land administration on land tenure security in Nasarawa State, Nigeria, focusing on the efficiency of the Nasarawa Geographic Information Service (NAGIS), and trends in mortgage registrations and Certificates of Occupancy. Data were obtained from 520 respondents comprising NAGIS clients, landowners, and relevant stakeholders, alongside administrative records. Descriptive statistics, Pearson correlation, regression analysis, and time-series analysis were used to examine the relationships and trends. The findings revealed a significant positive relationship between NAGIS efficiency and land tenure security $r=0.445$, $p<0.001$. Customer satisfaction $r=0.682$, $p<0.001$, deed-record efficiency $r=0.721$, $p<0.001$, and access to services among rural and vulnerable groups $r=0.681$, $p<0.001$ also showed significant positive relationships with land-administration outcomes. The descriptive findings indicated favourable perceptions of documentation efficiency, transparency, accessibility, and service reliability, although operational challenges persisted. Administrative records indicated increasing trends in mortgage registrations and Certificates of Occupancy over the study period. The study concludes that digital land administration is positively associated with land tenure security, but its effectiveness depends on reliable records, efficient service delivery, and equitable access. It recommends strengthening NAGIS operations, improving deed-record management, expanding access for underserved groups, and monitoring registration trends to support evidence-based land-administration policies.*

***Keywords:*** *Digital Land Administration, Land Tenure Security, Nagis, Deed Records, Mortgage Registration, Nasarawa State.*

## 1. Introduction

Land administration encompasses the processes through which land rights, restrictions, responsibilities, land use, value, and related transactions are recorded, managed, and made accessible. Efficient land administration supports property transactions, land-use planning, revenue generation, and dispute resolution, with the quality of land records and administrative services influencing the reliability of these functions (Steudler et al., 2004). Akingbade et al. (2012), in their study of electronic land administration in Abuja, found that computerised services improved certain land-record verification processes and reduced some forms of corruption, although other governance problems persisted. This illustrates that the effectiveness of digital land

administration depends not only on technology but also on the institutions responsible for operating it. Land tenure security concerns the extent to which individuals and communities can exercise their land rights without the threat of arbitrary interference or dispossession. In Nigeria, the relationship between statutory land administration and customary ownership remains important, particularly for rural populations and vulnerable groups. Babalola and Hull (2019), examining the effects of the Land Use Act in Ekiti State, identified shortcomings in implementation and the protection of customary land rights, with implications for the tenure security of poorer households. Similarly, Nwuba and Nuhu (2018), in their investigation of land registration challenges in Kaduna State, identified affordability, inadequate awareness, inefficient procedures, corruption, and shortages of skilled personnel as barriers to registration. These findings suggest that formal registration and documentation must be supported by accessible and reliable administrative systems to strengthen land tenure security.

Digital land administration uses information and communication technologies, geographic information systems, digitised cadastral records, and electronic platforms to manage land information and transactions. Evidence from Nigeria indicates that digitalisation can improve the verification and management of land records, but its benefits are not automatic. Akingbade et al. (2012) found that electronic services improved some verification processes in Abuja, while Thontteh and Omirin (2020), evaluating the Electronic Document Management System in Lagos State, reported continuing institutional and technical constraints and limited evidence of improvements in dispute reduction. The contrasting findings demonstrate why digital land-administration systems should be evaluated through their actual service outcomes, including documentation efficiency, transparency, accessibility, customer satisfaction, and the perceived security of land rights. In Nasarawa State, reliable land information and accessible registration services are increasingly important in the context of settlement growth and the State's proximity to the Federal Capital Territory. The Nasarawa Geographic Information Service (NAGIS) provides an appropriate institutional setting for examining the relationship between digital land administration and land tenure security. However, findings from Abuja, Lagos, Kaduna, Ekiti, and other parts of Nigeria cannot automatically be generalised to NAGIS users because of differences in institutional arrangements, administrative practices, and users' experiences. This study therefore examines the perceived efficiency of NAGIS in strengthening land tenure security, alongside trends in mortgage registrations and Certificates of Occupancy in Nasarawa State.

## 2. Materials and Methods

### 2.1 Study Area

Nasarawa State is located in the North-Central geopolitical zone of Nigeria, within the Middle Belt region. It lies approximately between latitudes 7°45′N and 9°25′N and longitudes 7°00′E and 9°37′E. The state shares boundaries with Kaduna State to the north, Plateau State to the northeast, Taraba State to the east, Benue State to the south, Kogi State to the southwest, and the Federal Capital Territory (FCT), Abuja, to the west. Its capital is Lafia, and the state comprises 13 Local Government Areas: Akwanga, Awe, Doma, Karu, Keana, Keffi, Kokona, Lafia, Nasarawa, Nasarawa Eggon, Obi, Toto, and Wamba (Nasarawa State Government, Ministry for Local Government, Community Development and Chieftaincy Affairs, n.d.).

The landscape comprises undulating plains, lowlands, hills, and rocky outcrops. Elevated terrain is prominent in parts of Nasarawa, Nasarawa Eggon, Wamba, Keffi, and Akwanga, while relatively extensive plains occur around Lafia, Doma, Awe, and Keana. The Benue River and its

tributaries form important components of the state's drainage network, supporting agricultural activities and other land-based livelihoods (Federal Ministry of Environment, n.d.).

Nasarawa State experiences a tropical climate characterised by distinct wet and dry seasons. The rainy season generally begins around April or May and extends to October, while the dry season occurs approximately from November to April. Annual rainfall varies across the state, with estimates ranging from about 1,100 mm to 1,600 mm. These climatic conditions influence agricultural production, vegetation distribution, surface runoff, and seasonal water availability (Mecon Geology and Engineering Services Ltd., n.d.).

Agriculture is a major livelihood activity in the state, alongside trading, mining, public service, and other commercial activities. The state's proximity to Abuja has also encouraged urban expansion, population movement, land-market growth, and increasing demand for residential, commercial, and institutional land. These changes have increased the importance of effective land administration, reliable land records, transparent property transactions, and secure land tenure.

The Nasarawa Geographic Information Service (NAGIS) supports land administration through the application of geographic information systems and related geospatial technologies. Its activities include the management of spatial land information and support for land documentation and related administrative processes. The state's combination of expanding urban settlements, peri-urban development, and rural landholding systems provides a relevant setting for examining how digital land administration influences land tenure security.

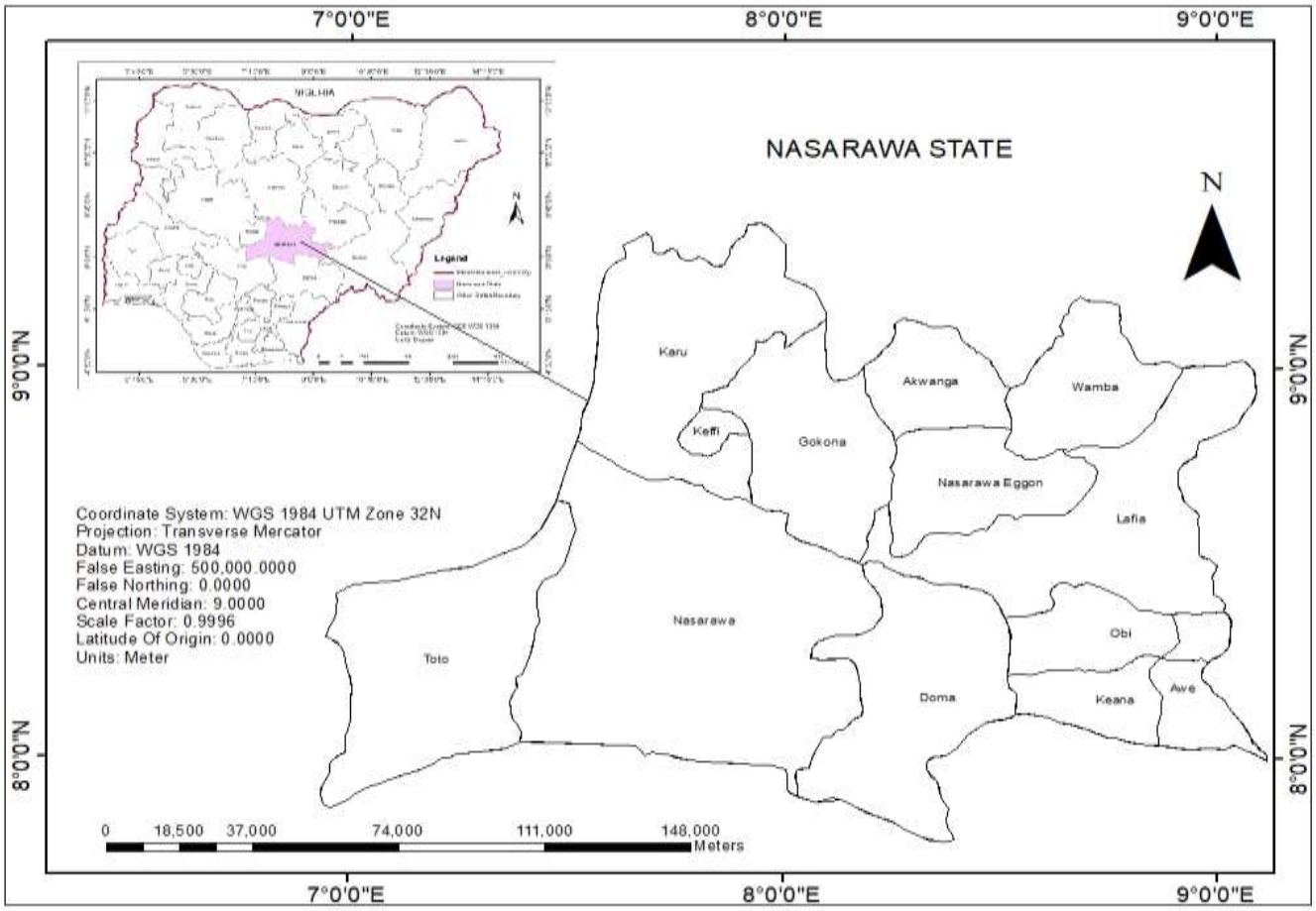



Figure 1: Nasarawa State, Nigeria, showing its Local Government Areas

**Research Design**

The study adopted a survey research design to examine the impact of digital land administration on land tenure security in Nasarawa State, Nigeria. The design facilitated the collection of data from clients of the Nasarawa Geographic Information Service (NAGIS) and relevant stakeholders regarding land documentation, service delivery, transparency, accessibility, and tenure security.

A total of 520 respondents were selected through purposive sampling from NAGIS clients and key stakeholders. The sampling frame was based on approximately 25,000 Certificates of Occupancy generated between 2012 and 2025. Questionnaires were administered to respondents at the NAGIS offices in Lafia and Karu. Participants were selected based on their experience with or knowledge of land administration processes relevant to the study.

Eligible participants included NAGIS clients aged 18 years and above who had accessed land administration services, landowners or applicants involved in land documentation and registration, and relevant stakeholders with professional or administrative knowledge of land administration. Participation was voluntary, and respondents were expected to provide information relevant to the study objectives.

**Sampling Technique and Sample Size**

The study employed purposive sampling to select 520 respondents from NAGIS clients, land administration professionals, and other key stakeholders in Nasarawa State. The sampling frame was based on approximately 25,000 Certificates of Occupancy generated between 2012 and 2025. Questionnaires were administered at the NAGIS offices in Lafia and Karu.

The sample comprised 400 NAGIS clients and 120 land administration professionals and other key stakeholders, with 260 respondents allocated to each office. The distribution is presented in Table 1.

**Table 1: Distribution of Respondents by Category and NAGIS Office**

| Respondent category | Lafia office | Karu office | Total |
|---|---|---|---|
| NAGIS clients | 200 | 200 | 400 |
| Land administration professionals and other key stakeholders | 60 | 60 | 120 |
| **Total** | **260** | **260** | **520** |

The distribution provided equal representation of the two NAGIS offices within the study sample. NAGIS clients constituted 76.9% of the respondents, while land administration professionals and other key stakeholders accounted for 23.1%. The resulting sample of 520 respondents provided the basis for assessing perceptions of digital land administration and its relationship with land tenure security in Nasarawa State.

**Sources and Methods of Data Collection**

Primary data were collected through a structured questionnaire designed to obtain respondents' views on land-administration accessibility, efficiency, transparency, service reliability, and perceived land tenure security. The questionnaire used a five-point Likert response scale ranging from Strongly Agree to Strongly Disagree. The draft also describes focus group discussions with stakeholders, potentially including representatives of agricultural development agencies, market associations, and the Nasarawa Urban Development Board

Secondary information was reportedly obtained from official land-administration records and NAGIS, including deed-register information, mortgage registrations, and Certificates of Occupancy. Other materials included an administrative map and relevant books, journal articles, reports, and government documents.

**Method of Data Analysis**

Descriptive statistics, including frequencies, percentages, means and standard deviations, were used to summarise respondents' assessments of NAGIS efficiency and land tenure security. Pearson Product Moment Correlation (PPMC) was employed to examine the relationships between NAGIS efficiency and perceived land tenure security, customer satisfaction, deed-record efficiency, and access to land administration services among rural and vulnerable groups. Statistical significance was assessed at the 0.05 level, with probability values displayed as 0.000 reported as $p < 0.001$.

Regression analysis was used to examine the relationship between NAGIS efficiency and perceived land tenure security, while time-series trend analysis was applied to annual mortgage registrations and Certificates of Occupancy from 2012 to 2025. The linear trend model was expressed as:

$$Y_t = a + bt + \varepsilon_t$$

where $Y_t$ represents the annual number of mortgage registrations or Certificates of Occupancy, a is the intercept, b is the estimated annual trend, t represents time, and $\varepsilon_t$ is the error term. The trend analysis assessed the direction and magnitude of annual changes, percentage increases over the study period, coefficients of determination $R_2$, F-statistics and associated significance levels.

The regression relationship between NAGIS efficiency and perceived land tenure security was represented as:

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

where $Y$ represents perceived land tenure security, $X$ represents NAGIS efficiency, $\beta_0$ is the intercept, $\beta_1$ is the regression coefficient, and $\varepsilon$ is the error term. The statistical results were interpreted to establish the strength, direction and significance of the relationships examined. Descriptive findings were presented in tables, while the correlation, regression and time-series results were interpreted in relation to the study objectives.

## 3. Results and Discussion

### 3.1 Respondents' Perceptions of NAGIS Efficiency and Land Tenure Security

Respondents generally evaluated NAGIS positively across several aspects of digital land administration. As shown in Table 2, 93.7% agreed or strongly agreed that land-ownership documentation had become more efficient (mean = 4.09, SD = 0.739). A total of 78.9% agreed that NAGIS had reduced land disputes and overlapping claims (mean = 3.83, SD = 1.213), while 79.8% agreed that it provided adequate tenure security (mean = 3.79, SD = 1.101). These results indicate favourable perceptions, although the comparatively larger standard deviations for dispute reduction and tenure security suggest greater variation in respondents' experiences.

Accessibility and ease of use received a mean score of 4.16, with 89.8% agreeing or strongly agreeing. Increased transparency recorded the highest mean (4.23), with 92.7% agreement. In addition, 92.5% agreed that landowners felt more confident under the system (mean = 4.05), while 94.6% considered NAGIS services timely and reliable (mean = 4.11). A total of 92.7% agreed that NAGIS had reduced corruption in land dealings (mean = 4.13), and 95.6% expressed satisfaction with its handling of land information (mean = 4.12). At the same time, 85.2% agreed that major

challenges continued to limit NAGIS efficiency (mean = 4.09). Thus, favourable assessments coexisted with recognition of continuing operational constraints.

Table 2: Respondents' Assessment of NAGIS Efficiency and Land Tenure Security

| Indicator | SA(%) | A(%) | UD(%) | D(%) | SD(%) | Mean | SD |
|---|---|---|---|---|---|---|---|
| Ownership documentation more efficient | 118 (22.7) | 369 (71.0) | 9 (1.7) | 11 (2.1) | 13 (2.5) | 4.09 | 0.739 |
| Reduced disputes / overlapping claims | 161 (31.0) | 249 (47.9) | 14 (2.7) | 52 (10.0) | 44 (8.5) | 3.83 | 1.213 |
| Adequate land tenure security | 116 (22.3) | 299 (57.5) | 23 (4.4) | 45 (8.7) | 37 (7.1) | 3.79 | 1.101 |
| Accessible and easy to use | 192 (36.9) | 275 (52.9) | 15 (2.9) | 18 (3.5) | 20 (3.8) | 4.16 | 0.927 |
| Increased transparency | 204 (39.2) | 278 (53.5) | 10 (1.9) | 11 (2.1) | 17 (3.3) | 4.23 | 0.859 |
| Landowners feel more confident | 103 (19.8) | 378 (72.7) | 16 (3.1) | 8 (1.5) | 15 (2.9) | 4.05 | 0.741 |
| Services timely and reliable | 104 (20.0) | 388 (74.6) | 15 (2.9) | 8 (1.5) | 5 (1.0) | 4.11 | 0.604 |
| Reduced corruption in land dealings | 139 (26.7) | 343 (66.0) | 15 (2.9) | 12 (2.3) | 11 (2.1) | 4.13 | 0.751 |
| Satisfied with information handling | 104 (20.0) | 393 (75.6) | 10 (1.9) | 8 (1.5) | 5 (1.0) | 4.12 | 0.594 |
| Major challenges still limit efficiency | 198 (38.1) | 245 (47.1) | 25 (4.8) | 31 (6.0) | 21 (4.0) | 4.09 | 1.012 |

**Note:** SA = Strongly Agree; A = Agree; UD = Undecided; D = Disagree; SD = Strongly Disagree. Percentages are as reported in the source manuscript. Some displayed percentages may not sum to exactly 100 because of rounding.

**Relationships between Digital Land Administration Indicators and Land Tenure Security**

The reported Pearson correlation coefficients shown in Table 3 indicate positive associations between most perceived NAGIS efficiency indicators and land tenure security. Ownership-documentation efficiency was positively associated with tenure security ($r = 0.309$, $p < 0.001$), as were reduction in disputes ($r = 0.294$, $p < 0.001$), accessibility ($r = 0.246$, $p < 0.001$), transparency ($r = 0.266$, $p < 0.001$), landowners' confidence ($r = 0.218$, $p < 0.001$), timely and reliable services ($r = 0.309$, $p < 0.001$), reduced corruption ($r = 0.379$, $p < 0.001$), and satisfaction with information handling ($r = 0.291$, $p < 0.001$). The strongest item-level association was observed for reduced corruption in land dealings. Perceived continuing challenges were negatively associated with tenure security ($r = -0.143$, $p = 0.001$), suggesting that greater recognition of operational barriers tended to accompany weaker perceptions of security.

Table 3: Correlations between NAGIS Efficiency Indicators and Land Tenure Security

| Indicator | Pearson's r | p-value | Interpretation |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Ownership documentation more efficient | 0.309 | < 0.001 | Positive, statistically significant |
| Reduced disputes/overlapping claims | 0.294 | < 0.001 | Positive, statistically significant |
| Accessible and easy to use | 0.246 | < 0.001 | Positive, statistically significant |
| Increased transparency | 0.266 | < 0.001 | Positive, statistically significant |
| Landowners feel more confident | 0.218 | < 0.001 | Positive, statistically significant |
| Services timely and reliable | 0.309 | < 0.001 | Positive, statistically significant |
| Reduced corruption in land dealings | 0.379 | < 0.001 | Positive, statistically significant |
| Satisfaction with information handling | 0.291 | < 0.001 | Positive, statistically significant |
| Major challenges limit efficiency | −0.143 | 0.001 | Negative, statistically significant |

**Test of the Overall Hypothesis**

The stated hypothesis was that NAGIS efficiency is significantly related to land tenure security. The source manuscript reports a positive correlation between the composite measure of NAGIS efficiency and land tenure security ($r = 0.445$, $N = 520$, $p < 0.001$). At the 0.05 significance level, this result supports rejection of the null hypothesis of no association. The finding indicates that respondents who assessed NAGIS more favourably also tended to report stronger land tenure security. Because the study is based on survey associations, this result should not be interpreted on its own as proof that NAGIS caused improved tenure security.

### 3.2 Trends in Mortgage Registrations and Certificates of Occupancy

The trends in mortgage registrations and Certificates of Occupancy were examined to assess changes in land-administration activities in Nasarawa State between 2012 and 2025. Mortgage registration increased from 145 transactions in 2012 to 418 in 2025, while Certificates of Occupancy increased from 820 to 2,300 over the same period. These changes represent increases of 188.3% and 180.5%, respectively, indicating an upward pattern in both categories of land-administration activity. Table 4 presents the annual figures for mortgage registrations and Certificates of Occupancy during the study period.

**Table 4: Annual Mortgage Registrations and Cof O (2012–2025)**

| Year | Mortgage registrations | Certificates of Occupancy |
|---|---|---|
| 2012 | 145 | 820 |
| 2013 | 158 | 910 |
| 2014 | 171 | 990 |
| 2015 | 184 | 1,080 |
| 2016 | 201 | 1,175 |
| 2017 | 219 | 1,270 |
| 2018 | 238 | 1,375 |
| 2019 | 259 | 1,490 |
| 2020 | 281 | 1,605 |
| 2021 | 304 | 1,730 |
| 2022 | 330 | 1,860 |
| 2023 | 357 | 2,000 |
| 2024 | 386 | 2,145 |
| 2025 | 418 | 2,300 |

The annual figures show a sustained increase in both administrative indicators. Mortgage registrations rose by 273 transactions, while Certificates of Occupancy increased by 1,480 between 2012 and 2025. The growth in Certificates of Occupancy reflects an increase in the volume of formal land-title documentation recorded during the period. Similarly, the rise in mortgage registrations indicates increasing activity in the formal registration of land-related financial transactions. To examine the strength and statistical significance of these patterns, separate linear trend regression analyses were conducted for the two series.

**Linear Trend Regression Analysis**

The linear trend model was used to estimate the average annual change in mortgage registrations and Certificates of Occupancy over the study period.

The results in Table 5 indicate positive annual trends for both indicators. Mortgage registrations recorded an estimated annual increase of 20.82, while Certificates of Occupancy increased by an estimated 112.68 per year. The respective coefficients of determination were 0.982 and 0.990, indicating that the fitted linear trends accounted for approximately 98.2% of the variation in mortgage registrations and 99.0% of the variation in Certificates of Occupancy over the observed period.

**Table 5: Linear Trend Regression for Mortgage Registrations and C of O (2012–2025)**

| Statistical measure | Mortgage registrations | Certificates of Occupancy |
|---|---|---|
| 2012 count | 145 | 820 |
| 2025 count | 418 | 2,300 |
| Absolute increase | 273 | 1,480 |
| Percentage increase | 188.3% | 180.5% |
| Average annual trend | +20.82 | +112.68 |
| $R^2$ | 0.982 | 0.990 |
| F-statistic | 644.863 | 1,249.113 |
| Significance | $p < 0.001$ | $p < 0.001$ |

The F-statistics of 644.863 for mortgage registrations and 1,249.113 for Certificates of Occupancy indicate statistically significant linear trends $p < 0.001$ in both series. The results establish that the annual counts followed strong upward patterns over the period examined. The comparatively higher annual increase in Certificates of Occupancy suggests that title documentation expanded more rapidly in absolute numbers than mortgage registration.

These trends are relevant to assessing the development of digital land administration in Nasarawa State because formal title documentation and mortgage registration are important components of land-record management. Nevertheless, the results demonstrate changes in administrative activity rather than proving that digitalisation alone caused the increases. Their implications for land tenure security should therefore be considered alongside the questionnaire findings on documentation efficiency, transparency, accessibility, service reliability, and respondents' confidence in land rights.

**4. Discussion**

The findings indicate that respondents generally perceived the Nasarawa Geographic Information Service (NAGIS) as improving land documentation, transparency, accessibility, service reliability, and the management of land information. The high agreement recorded for documentation

efficiency (93.7%) and transparency (92.7%) suggests that digital land administration is valued for making land records more accessible and administrative processes more traceable. This finding is consistent with Akingbade et al. (2012), whose study of the Abuja Geographic Information Systems found that electronic verification services reduced certain forms of corruption, particularly in legal searches and title recertification. Similarly, Thontteh and Omirin (2015) found that electronic document management in Lagos improved access to land information, public confidence in transactions, and managerial efficiency. These studies reinforce the administrative benefits reported by NAGIS users, although improvements in information management do not necessarily guarantee the elimination of land disputes or the protection of every landholder's rights.
The positive correlation between perceived NAGIS efficiency and land tenure security $r = 0.445$, $p < 0.001$ demonstrates a statistically significant, moderate positive association between the two variables. This suggests that respondents who evaluated NAGIS more favourably also tended to report stronger tenure security. The positive item-level correlations further indicate that documentation efficiency, reduced disputes, transparency, reliable services, and reduced corruption are relevant to users' perceptions of secure landholding. The strongest item-level association was recorded for reduced corruption $r = 0.379$, $p < 0.001$. This is consistent with Akingbade et al. (2012), who found that electronic verification could reduce certain corrupt practices in land administration. Nevertheless, the findings should be interpreted as associations rather than proof of causation because tenure security also depends on legal recognition, effective dispute resolution, enforcement of property rights, and institutional accountability.
Despite the generally favourable assessments, the finding that 85.2% of respondents agreed that major challenges continued to limit NAGIS efficiency highlights the coexistence of perceived benefits and implementation constraints. The negative correlation between continuing challenges and land tenure security $r = -0.143$, $p = 0.001$ suggests that respondents who perceived more operational difficulties tended to report weaker tenure security, although the relationship was weak. This finding is comparable with Thontteh and Omirin's (2015) study of Lagos State, which identified inadequate institutional arrangements, ambiguity in the legal framework, and shortages of technical expertise as constraints on land-registration reform. Nwuba and Nuhu (2018) similarly identified affordability, limited awareness, inefficient registration procedures, corruption, and inadequate skilled personnel as barriers to land registration in Kaduna State. These studies suggest that digitisation must be supported by effective institutional procedures, competent personnel, reliable records, and accessible services if its potential benefits are to translate into stronger tenure security.
The reported positive correlations between customer satisfaction and land-administration effectiveness $r = 0.682$, $p < 0.001$, deed-record efficiency and land-administration outcomes $r = 0.721$, $p < 0.001$, and access for rural and vulnerable groups and improved outcomes $r = 0.681$, $p < 0.001$ further highlight the importance of service quality, reliable documentation, and inclusive access. Of these relationships, deed-record efficiency recorded the largest coefficient. This suggests that dependable records management may be particularly important to users' assessments of land-administration outcomes. However, these coefficients alone do not establish the mechanisms underlying the relationships. Their interpretation should therefore remain focused on the strength and direction of the reported associations rather than assuming that any single factor independently determines tenure security.
The time-series results indicate an upward trend in mortgage registrations and Certificates of Occupancy between 2012 and 2025. Mortgage registrations increased from 145 to 418, while Certificates of Occupancy increased from 820 to 2,300 over the period represented by the annual

series. The trend-regression results also indicate positive annual changes in both indicators, with $R^2 = 0.982$ for mortgage registrations and $R^2 = 0.990$ for Certificates of Occupancy. These results indicate that the fitted linear trends explain a large proportion of the variation in the respective annual counts. The growth in certificate issuance suggests an expansion in recorded formal land-title documentation, while the increase in mortgage registrations indicates greater activity in the formal registration of land-related financial transactions. However, as Akingbade et al. (2012) demonstrate in the Abuja context, the expected benefits of electronic land administration do not always translate uniformly into broader social and governance outcomes. In Nasarawa State, the observed increases should therefore be interpreted as evidence of expanding administrative activity, not as conclusive proof that digitalisation alone caused the growth or that tenure security improved equally across all population groups.

Taken together, the findings suggest that digital land administration in Nasarawa State is associated with favourable user perceptions and increasing volumes of recorded land-administration transactions. The positive assessment of documentation, transparency, and service reliability supports the continued development of NAGIS, while the reported operational challenges point to the need for sustained institutional improvement. The central implication is that digital land administration should be assessed not only by the number of records processed or certificates issued, but also by the reliability of those records, the accessibility of services, the resolution of disputes, and the extent to which statutory and legitimate customary land interests are protected.

## 5. Conclusion

This study examined perceived NAGIS efficiency in relation to land tenure security and assessed trends in mortgage registrations and Certificates of Occupancy in Nasarawa State. The findings indicate that respondents generally viewed NAGIS favourably, particularly in relation to documentation efficiency, transparency, accessibility, service reliability, and land-information handling. The statistically significant positive correlation between perceived NAGIS efficiency and land tenure security $r = 0.445$, $p < 0.001$ demonstrates that more favourable assessments of digital land administration were associated with stronger reported tenure security. However, the continued recognition of operational challenges and their negative association with tenure security show that digitalisation alone cannot resolve all land-administration problems.

The annual series also indicates substantial increases in mortgage registrations and Certificates of Occupancy between 2012 and 2025, suggesting an expansion in recorded formal land-administration activity. Nevertheless, increases in administrative transactions should not be equated automatically with improved tenure security, equitable access, or reduced land disputes. Overall, the findings support the importance of maintaining reliable digital land records, improving administrative performance, and ensuring that land-administration services are accessible to rural and vulnerable groups. The contribution of NAGIS to tenure security should ultimately be judged by both the efficiency of its services and the extent to which those services provide dependable and equitable protection of land rights.

## 6. Recommendations

Base on the findings of the study, the following recommendations were made:

i. Strengthen NAGIS operations: Improve digital infrastructure, staff capacity, and record verification to enhance land documentation and tenure security.

ii. Improve service delivery: Simplify registration procedures, ensure timely processing, and

strengthen customer feedback and complaint-resolution mechanisms.

iii. Monitor registration trends: Regularly analyse mortgage registrations and Certificates of Occupancy to assess administrative performance and identify gaps in access and tenure protection.



**References**

Akingbade, A. O., Navarra, D. D., Georgiadou, Y., & Zevenbergen, J. A. (2012). A case study of geo-ICT for e-government in Nigeria: Does computerisation reduce corruption in the provision of land administration services? *Survey Review,* 44(327), 290–300

Babalola, K. H., & Hull, S. A. (2019). Examining the Land Use Act of 1978 and its effects on tenure security in Nigeria: A case study of Ekiti State, Nigeria. *Potchefstroom Electronic Law Journal,* 22, Article 1. https://doi.org/10.17159/1727-3781/2019/v22i0a5803

Mecon Geology and Engineering Services Ltd. (n.d.). Shemankar–Katsina-Ala catchment management plan: Baseline report, Annex I1. Agro-Climatic Resilience in Semi-Arid Landscapes Project.

Nasarawa Geographic Information Service. (n.d.). About NAGIS. https://www.nagis.na.gov.ng/about-us

Nasarawa State Government, Ministry for Local Government, Community Development and Chieftaincy Affairs. (n.d.). About the ministry. https://mlgcda.com.ng/about

Nwuba, C. C., & Nuhu, S. R. (2018). Challenges to land registration in Kaduna State, Nigeria. *Journal of African Real Estate Research*, 3(1), 141–172.

Steudler, D., Rajabifard, A., & Williamson, I. P. (2004). Evaluation of land administration systems. *Land Use Policy*, 21(4), 371–380. https://doi.org/10.1016/j.landusepol.2003.05.001

Thontteh, E. O., & Omirin, M. (2020). Land administration reform in Lagos State: An evaluation of the effectiveness of the Electronic Document Management System. *Unilag Journal of Humanities*, 8(2).

Thontteh, E. O., & Omirin, M. M. (2015). Land registration within the framework of land administration reform in Lagos State. *Pacific Rim Property Research Journal*, 21(2), 161–177.