



## ASSESSMENT OF ELECTRONIC LAND ADMINISTRATION SYSTEM IN FEDERAL CAPITAL CITY ABUJA, NIGERIA

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**ABSTRACT:** *This study evaluated the demand and supply of land parcels at the Federal Capital City Abuja, Nigeria from 2006 and 2015, and as well ascertained the efficiency of service delivery of Abuja Geographic Information System which will help understand the reason for the short falls of the e-LA in the FCT. The primary data sources of this study were from stakeholders of land administration via questionnaire administration as well as data gathered from scheduled interviews to sample the opinion of staff of the Abuja Geographic Information Systems (AGIS), the agency in charge of Land Administration in the Abuja, to determine the overall system of e-LA in the FCT, management of e-LA activities and the operations as well as knowing if the organizations saddled with the responsibility of e-LA have the required number of staff. It recognizes the need for individual workers to function properly through education and training programs and determine the overall vision, efficiency of their implementation of e-LA and the performance of the system in meeting the challenge of e-LA. The result of the SWOT matrix of Abuja Geographic Information System revealed Weaknesses of Abuja Geographic Information System (AGIS) greater than its Strengths. Threats were greater than Opportunities, so it is easy to conclude that Abuja Geographic Information System (AGIS) has not managed e-LA in the FCT effectively and efficiently but it has managed to survive and cope with the management. As established from the study, Abuja Geographic Information System procedures do not engender equality and fairness.*

**KEYWORDS:** Assessment, Land Administration, Questionnaire, Management, Weakness, Strength.



## INTRODUCTION

LA Systems (LAS) provide the foundation for implementing land related policies and land management strategies to deal with challenges of social equity, poverty alleviation, reduction of corruption, economic growth, environmental protection and sustainable management of rapidly growing cities (van der Molen & Tuladhar, 2006). The Abuja Geographic Information System (AGIS) was created in 2003 to replace the past system of land management through a manual land registry. However, AGIS being a completely computerized cadastral system, restored most land uses to the original master plan and with the reform; land speculation and corrupt allocation of land persist (Akingbade et al., 2012). In Nigeria, politicians and bureaucrats observed that to achieve developmental goals, reliable and up-to-date cadastral records are imperative, and this can be achieved through good urban governance and well managed Geographic and Land Information System after the computerisation of land registries (Alkali, 2005; Suleiman, 2009) or, in other words, electronic land administration (e-LA). Generally, e-government is perceived to improve the capacity of the state to respond to citizens' needs and demands (Gauld et al., 2009), to serve as a mechanism for government's administrative reform and to realise state policies and developmental goals (Ciborra & Navarra, 2005).

Technology in general, and especially geo-ICT offer opportunities to improve efficiency of LAS and spatially enable land issues (Williamson *et al.*, 2006). Edward (2014) developed an evaluation model for Geographical Information Systems within the public sector in Uganda. His study was based on field data collected in various public sector organizations such as questionnaires, interviews, observations, photographs and a focus group discussion. He concluded that the model is not a solution to evaluation but can be used as a base to perform evaluation depending on the available variables since evaluation is context dependent. Electronic land administration denotes those information systems used in support of land management activities and also refers to the decision making and implementation of decision about the land and its resources (Lo & Yeung, 2003).

### Research Questions for the Study

- i. What is the extent of land allocation in Abuja?
- ii. What is the situation between demand and supply of land parcels?
- iii. How efficient is the service delivery of Abuja Geographic Information System?

## LITERATURE/THEORETICAL UNDERPINNING

The institutions charged with land administration in Nigeria face a range of challenges and constraints that hamper the effective delivery of land administration services to citizens (Hosaena & Austen, 2016). However, their study further stated that these challenges include, but are not limited to, hierarchical and outdated organizational structures, bureaucratic processes, and high costs and fees for service (Hosaena & Austen, 2016). The lack of a coherent system for recording land ownership leaves the government, be it federal, state or local, with little knowledge about who owns what, in which area, or how the land is used. FAO (2007) stated that good governance in land administration involves more participatory



and transparent processes and aims to protect the property rights of individuals. Land administration will also be successful if the services provided under the system are appropriate, accessible, predictable, and reliable (Hilhorst, 2008).

Findings by Hosaena and Austen (2016) show that land registration processes in Nigeria take a long time and nearly 80 percent of beneficiaries and 41 percent of professionals responded that land registration took more than two years to complete after first application, and implementation of a systematic land titling and registration pilot program in Ondo and Kano states, given the contextual differences (due to religion, culture, tradition and social contexts) in implementation of land management policies amongst states across the nation (Ghebru et al., 2014). A report by Adeniyi (2013) noted that the government has taken only a few steps to improve the land registration system. As a consequence, the costs and requirements of the registration process discourage land users from formalizing their land rights. A study conducted in Ondo State examined governance challenges for public and private sector service providers in land administration (Birner & Okumo, 2011). Their study documented problems related to compensation payments and the lack of standard procedures or avenues to lodge complaints within the LAS, and also indicated the local government's limited role in land registration. Service providers in Nigeria are responsible for administering the process and procedures of granting land rights, associated restrictions, and other responsibilities related to beneficiaries, professionals, policies, and places (Hosaena & Austen, 2016).

Document management system could also be considered as the software that controls and organizes documents throughout an organization (Ahmad et al., 2020). Beginning in the 1980s, a number of software sellers began to develop software systems to manage paper-based documents. These systems dealt with paper documents, which included not only printed and published documents, but also photographs, prints, etc (Oboli, & Akpoyoware, 2010). Later developers began to write a second type of system which could manage electronic documents, i.e., all those documents or files created on computers and often stored on users' files. Digital land documentation requires more than just personal computers, but also serves to house the databases (Oboli & Akpoyoware, 2010).

Any record keeping system may be regarded as an information system. Information technology facilitates the process of transforming raw data into information that is useful to the recipient. Kurwakumire (2013b) developed a pilot webGIS application to enhance spatial data availability and sharing within and outside municipalities. Sandberg (2010) argued that e-conveyance enhances the accessibility of the general public to land registration. Sandberg (2010) indicated that the main challenge in e-registration is the problem of identifying parties to transactions and the authentication of documents. He further stated that an electronic system might be more vulnerable to hackers and electronic fraud or disruption. Bramate and Jones (2006) discussed various methods of recording documents to be used for registration ranging from semi automated methods using scanned images of documents, to the use of XML, and finally to the use of XHTML which allows for data to be automatically checked, accepted or rejected and also allows for electronic signatures.



## MATERIALS AND METHODS

### Methods of Data Collection

#### Interview

The interview schedule consisted of open-ended questions designed to determine the overall system of e-LA in the FCT, management of e-LA activities and the operations as well as knowing if the organizations saddled with the responsibility of e-LA have the required number of staff. It recognized the need for individual workers to function properly through education and training programs and determined the overall vision, efficiency of their implementation of e-LA and the performance of the system in meeting the challenge of e-LA. Statutorily in the FCT, the implementation of land administration action in terms of land application, processing of application and allocation of land is carried out by the Abuja Geographic Information System (AGIS), which is why it was selected for the interview. Therefore, the interview presents the strengths, weaknesses, opportunities and threats of AGIS in managing the e-LA of the FCT.

Also, information was sought from the records of AGIS and from interviews with staff of AGIS. This was to get data on the nature of functions they performed, technical tools used to perform the functions, how much time is spent on processing work given, problems encountered and areas that need improvement, etc.

#### Sampling Technique

Stratified random sampling technique was employed to select the samples for Land Owners because of the heterogeneous nature of the Federal Capital City (FCC). The FCC comprises 4 phases, with these phases comprising 95 cadastral zones. Phase 1 has 10 cadastral zones, Phase 2 has 20 and Phase 3 has 23 while Phase 4 has 42. Half of the total number of cadastral zones was selected randomly from where the questionnaire was administered for both title holders and applicants at a ratio of 1:9 in each of the cadastral zones. The ratio was adopted because in the last 12 months, there were 46,039 applications to 5,071 allocations. This approach has been used by Bello (2011) in her assessment of Abuja Geographic Information System activities.

**Table 1: Sampling Design**

S/N	Phase	Cadastral Zone	Stage 1 (50 % of Cadastral Zone)	Stage 2 (5 questionnaire)	Ratio of Allotees to Applicants
1	Phase 1	10	5	25	3:22
2	Phase 2	20	10	50	5:45
3	Phase 3	23	12	60	6:54
4	Phase 4	42	21	105	11:94
	Total	95	48	240	

The aim of the questionnaire in this study is to measure stakeholders' view on access to formal credits after acquiring land from Abuja Geographic Information System (AGIS), land



disputes on land acquired from AGIS, AGIS processes, registration and transfer processes at AGIS, and access to data at AGIS.

### **Analysis of the Demand and Supply of Land Parcels in the FCC**

The demand and supply of land parcels in the study area was analysed by taking into consideration good governance principles, focusing on issues of equity and fairness, efficiency and effectiveness, affordability, civic engagement, transparency and accessibility. No group within society should be legally or politically excluded from being able to access land. All people should have the same access to land and service, dealing fairly and impartially with individuals and groups. The system should be seen as objective, separated from political processes, even though it may be part of a land policy reform program. Some of the indicators used to measure this include:

- i. The number of applications against the number of allocations
- ii. The number of title applications against the number of allocations of different types of titles
- iii. The number of new allocations in the previous 12 months
- iv. Ease of Access to land before and under AGIS.

These statistical procedures adopted to analyze these data include the use of frequency tables, bar charts and linear regression.

The review of the evaluation areas and aspects was carried out through the interviews with technical and management staff and collection and analysis of indicators, study of reports, papers and other reference materials adequate for the benchmarking principles.

## **RESULTS/FINDINGS**

### **Demand and Supply of Land Parcels in the FCT**

Equity and fairness as a good governance principle in land administration requires that access to land be equitable and fair, that is, e-land administration systems should remove unnecessary barriers to people's rights to a secured tenure for which no group within society should be marginalized. From the survey, it was established that the AGIS framework has not engendered equity or fairness in land administration. Out of about 100% of the respondents, 61.8% believe they have to know someone before land is allocated to them while only 28.8% believe that they do not need to know anybody (Table 2). Also, 78.2% had to make some informal payments to follow up their processing (Table 3).

**Table 2: Response on Need to Know Anybody before a Parcel Can Be Allocated**

Response	Frequency	Percent
Invalid	23	9.4
Yes	148	61.8



No	69	28.8
Total	240	100.0

**Table 3: Response on if There are Informal Payments**

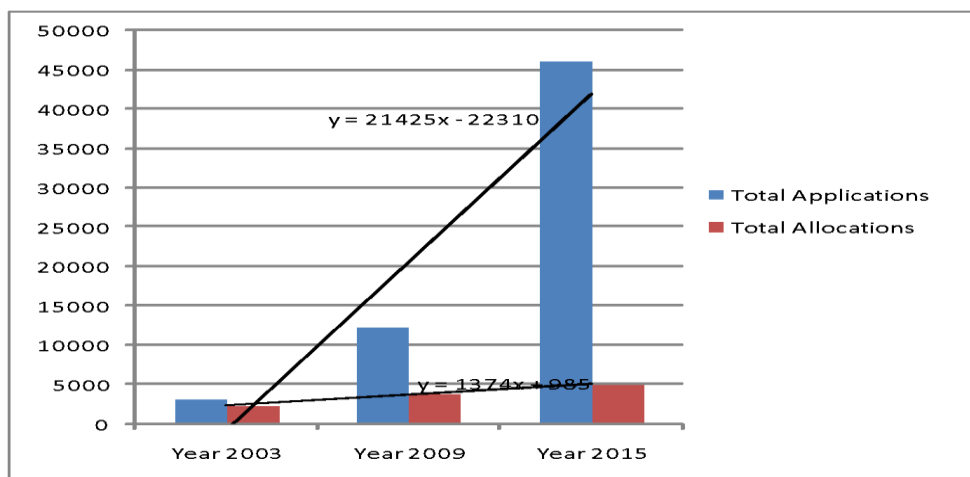
Response	Frequency	Percent
Invalid	11	4.7
Yes	188	78.2
No	41	17.1
Total	240	100.0

Access to land is essential for people to raise and stabilize their incomes and to participate in economic growth. The mechanisms for accessing and acquiring land must be accessible, unbiased and efficient. In this regard, AGIS structure does not comply with the principle of accessibility as shown in the table. It reveals that in 2003, at the inception of AGIS, the allocation rate was 73% and has continued to decrease since then to 31% in 2009 and 11% in 2015 (Table 4).

**Table 4: Total Number of Applications and Allocations in 2003, 2009 and 2015**

Year	Total Applications	Total Allocations	Allocation rate
2003	3,190	2,323	73%
2009	12,387	3,805	31%
2015	46,039	5,071	11%

The linear regression line of the total number of applications and total allocations from 2003 to 2015 shows an increase of 21,425 applications every 6 years and allocations of 1,374 allocations every 6 years. This shows a ratio of 1 to 15.6 of allocation to application, which is too low.



**Figure 1: Bar Chart of Total Allocations and Total Applications in 2003, 2009 and 2015**



Statistics on the Specific Number of Title Applications/Allocated in the previous 12 months reveals a higher allocation rate among other types of land uses (47.13%) that are not residential (9.80%) or commercial (5.4%) (Table 5). However, it reveals approximately the ratio 10:1 residential, 18:1 commercial and 2:1 others of application to allocate.

**Table 5: Specific Number of Title Applications/Allocated in the Previous 12 Months**

Type	Total Applications	Total Allocated	Percentage of Allocated to Applications
Residential	37,292	3,636	9.80
Commercial	6,445	350	5.40
Others	2,302	1,085	47.13
<b>Total</b>	<b>46039</b>	<b>5,071</b>	<b>11</b>

The survey reveals that about 70.6% consider that difficulties have come with the establishment of AGIS (Table 6). Also statistics show that a higher percentage of 66.5% are dissatisfied with the level of land allocation by AGIS (Table 7). 60.0% says it takes 6 months or more before land can be allocated to them (Table 8). The stakeholders suggest that bureaucracy and cumbersome procedures, and an over-centralized system are the perceived reasons. Others suggested administrative bottlenecks and the non-existence of mechanisms for detecting malpractices, as major concerns of land administration under AGIS share similarities with the conventional procurement system.

**Table 6: Response on Difficulty to Secure Land Parcel in the FCT**

Response	Frequency	Percent
Yes	169	70.6
No	71	29.4
Total	240	100.0

**Table 7: Response on Satisfaction with the Level of Service Delivery of Land Information Services/Allocation of Land in AGIS**

Response	Frequency	Percent
Invalid	4	1.8
Very satisfied	30	12.4
Dissatisfied	160	66.5
Satisfied	42	17.6
Very dissatisfied	4	1.8
Total	240	100.0

**Table 8: Response on How Much Time It Takes to Get Land Allocated**

Response	Frequency	Percent
Invalid	13	5.3
2-3 Months	17	7.1
3-6 months	66	27.6
6 months or more	144	60.0
Total	240	100.0

### Assessment of AGIS

The compliance of AGIS to the requirement of supply of plots free from all encumbrances does not exist as established from the survey. Statistics show that 100% of the respondents experienced one or two types of disputes in the land allocated by AGIS. 24.7% experienced ownership disputes, 22.4% experienced boundary disputes with neighbors while 52.9% have experienced both (Table 9). Also, 50% of the respondents claimed that it takes 6 months or more to resolve disputes in land allocation (Table 10).

**Table 9: Response on Types of Disputes Experienced with Land Allocated by AGIS**

Response	Frequency	Percent
None	0	0.0
Ownership	59	24.7
Boundary	54	22.4
Both	127	52.9
Total	240	100.0

**Table 10: Response on How Much Time It Takes to Resolve Land Disputes by AGIS**

Response	Frequency	Percent
2-3 Months	8	3.5
3-6 months	112	46.5
6 months or more	120	50.0
Total	240	100.0

However, interviews show that the management of AGIS cannot specify the length of time for technical process from application to final titling.

The result of the educational status of AGIS staff revealed 48.9% of staff interviewed has attended postgraduate programs (Table 11). However, the issue of professional development may have low priority as only 46.7% belong to professional bodies (Table 12). Only 2.2% do not have adequate knowledge of new technologies in one of GIS, GPS, Remote Sensing,





Internet and DBMS (Table 13), and this same 2.2% are staff that have not been sponsored to training programmes in their time at AGIS (Table 14). However, 68.9% revealed the staff that can use at least one software (Table 15). The interview revealed that efforts have been taken to develop human resource capacity in the existing system. The qualification criterion for the appointment of new staff in the land administration agency is also found very effective to overcome new challenges in human resource development.

**Table 11: Educational Status of Staff Interviewed**

	Frequency	Percent
Ph.D	2	4.4
M.Sc/PGD	22	48.9
B.Tech/B.Sc	12	26.7
HND	7	15.6
OND	1	2.2
Other	1	2.2
Total	45	100.0

**Table 12: Staff Registration with Professional Body**

	Frequency	Percent
	4	8.9
Yes	21	46.7
No	20	44.4
Total	45	100.0

**Table 13: Staff Knowledge of New Technologies**

	Frequency	Percent
	2	4.4
0	1	2.2
1	16	35.6
2	12	26.7
3	3	6.7
4	9	20.0
5	2	4.4
Total	45	100.0

**Table 14: No of Training Programmes Staff Attended**

	Frequency	Percent
	6	13.3
None	1	2.2
1	12	26.7
2	11	24.4
3-5	13	28.9
6 - above	2	4.4
Total	45	100.0

**Table 15: Number of Software Staff Can Use**

	Frequency	Percent
	6	13.3
1	31	68.9
2	4	8.9
3	4	8.9
Total	45	100.0

Furthermore, AGIS shares their data and coordinates in an efficient manner as the users ask for the desired data. Interview reveals that all the land related information is created and maintained in digital form in computers as 88.9% of staff interviewed has access to computers (Table 16). Although different users who request for information exist in the government and private sectors, unfortunately, AGIS did not have any specific list of these users. Eighty percent (80%) said they are able to respond to the demands for land information from these users (Table 18); also, 77.8% of staff said they are able to respond to the request of staff ability to perform information update in 24 hours (Table 17).

**Table 16: Staff Access to Computer**

	Frequency	Percent
	1	2.2
Yes	40	88.9
No	4	8.9
Total	45	100.0

**Table 17: Staff Ability to Perform Information Updates in 24 Hours**

	Frequency	Percent
	3	6.7
Yes	35	77.8
No	7	15.6
Total	45	100.0

**Table 18: Staff Ability to Respond to Demands of Information**

	Frequency	Percent
	3	6.7
Yes	36	80.0
No	6	13.3
Total	45	100.0

The summary of all the assessment is presented in Table 19 while the SWOT matrix of AGIS as analyzed from this study is presented in Table 20.

**Table 19: Summary of Assessment of AGIS**

Benchmarking Principle	Review	Good Governance	Performance Gap
<b>Land Policy</b>	AGIS has been providing access to land in the FCC area and has provided sanity in land transactions. However, some stakeholders own multiple of land while others do not have.	e-LA is to provide land for all	There is lack of equity and fairness of access to land
<b>Land Tenure</b>	i. Boundary problems between the boundary of district occur, there are overlapped on existing layout ii. There is also Non availability of means of identification of land allocated before AGIS iii. Double plot allocation, clash of interest. There is no genuineness and trust in AGIS processes. All this also makes cloning of land paper by fraudsters possible	e-LA is to guarantee security of tenure.	Cadastral system as a whole does not enjoy a strong reputation of reliability and security



<b>Financial and Economic</b>	AGIS has succeeded in gathering revenue from land through sales leasing and taxation. However, the government has not been able to compensate the customary land holders who fight with allottees. The fees attached to C of O for payment is very high and hinders investments.	e-LA is to support land market activities	Allocation is not done with priorities and so lands do not add value to the economy.
<b>Environmental Sustainability</b>	All lands in Phase 1-3 are completely allocated and transfers of land are outside the system. There is also Irregularity in the change of land use	e-LA is to support sustainability in land use change and land transactions	Environmental protection through efficient land-use planning and zoning regulations are absent. Restrictions and responsibilities are not included during allocation
<b>Cadastre</b>	<p>i. Speedy processing of land documents with a computerized system with AGIS. Also, Cadastral mapping is comprehensive and is a very decentralized system. All lands in Abuja are to be issued statutory C of O in the nearest future. Strong political support.</p> <p>ii. FELIS and Land Reforms Erroneous numbering of the plot and site plan</p> <p>iii. Lack of clean data for digitization,</p> <p>iv. Low and slow progressing coverage of spatial cadastral data in digital format</p>	e-LA to have 100% coverage	All lands have not been issued C of O. change in government policies
<b>Institution and organization</b>	<p>i. Lack of synergy between various units and departments.</p> <p>ii. Inadequate information from sister agencies. Delayed workflows due to system privilege issues. No direct access to information by every staff and lack of GIS for database query operations</p>	e-LA should have cooperation between agencies in Land administration	Weak horizontal cooperation between federal offices in the area of spatial data



<b>Human resources and personnel</b>	i. Poor remuneration and lack of incentives for staff who are hardly motivated	e-LA managers should be satisfied.	The salaries and incentives are not appropriate and comparable with the other countries.
<b>Users, Products and Services Satisfaction</b>	i. Lack of published procedure ii. Applications take too long before plot is allocated iii. Size of commercial plot is too small	e-LA should provide customer satisfaction	Data access is not easy when data are needed
<b>Capacity building, education/ professional development and technology adoption</b>	i. Power outage and UPS issues ii. Computers have become very slow iii. Lack of software updates and adequate training and orientation,	Many workshops and seminars be organized for e-LA managers	Change resistance by individuals and lack of interest in the use of computers

**Table 20: SWOT Matrix of Abuja Geographic Information System**

<b>Strengths</b>	<b>Weaknesses</b>
1. Speedy processing of land documents (computerized system) and ensuring security of tenure	1. Weak cooperation between public/private sectors and academic sector
2. Cadastral mapping is comprehensive and is a very decentralized system	2. Weak horizontal cooperation between federal offices in the area of spatial data
3. Cadastral system as a whole enjoys a strong reputation of reliability and security	3. Low and slow progressing coverage of spatial cadastral data in digital format
4. Resolving conflicts about ownership and use of land through legal searches	4. Copyright and privacy issues are not solved as they are dealt with on the cantonal level. This has a confusing impact on the fee structure for map products, especially in digital form.
5. Providing security of tenure regulating land and property development	5. Lack of synergy between various units and departments.
6. Providing access to land	6. There is lack of equity and fairness of access to land
7. Gathering revenue from land through sales leasing and taxation	7. Cadastral system as a whole does not enjoy a strong reputation of reliability and security
8. Providing sanity in land transaction	8. Allocation not done with priorities; so lands don't add value to the economy.



	9. Environmental protection through efficient land-use planning and zoning regulations are absent.
	10. Restrictions and responsibilities are not included during allocation. All lands have not been issued C of O.
	11. The salaries and incentives are not appropriate and comparable with the other countries. Data access is not easy when data are needed. Change resistance by individuals and lack of interest in the use of computers.

<p><b>Opportunities</b></p> <ol style="list-style-type: none"> <li>1. All lands in Abuja are to be issued statutory C of O in the nearest future.</li> <li>2. Strong political support</li> <li>3. FELIS and Land Reforms</li> </ol>	<p><b>Threats</b></p> <ol style="list-style-type: none"> <li>1. Forgeries</li> <li>2. Not being able to compensate the customary land holders who fight with allottees.</li> <li>3. All lands in Phase 1-3 are completely allocated and transfers of land is outside the system</li> <li>4. Power outage and UPS issues</li> <li>5. change in government policies</li> <li>6. Poor remuneration and lack of incentives for staff who are hardly motivated</li> <li>7. Inadequate information from sister agencies</li> <li>8. Computers have become very slow</li> <li>9. Lack of software updates and adequate training and orientation,</li> <li>10. Change resistance by individuals and lack of interest in the use of computers</li> </ol>
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The strengths of AGIS include the speedy processing of land documents (computerized system) within 24 hours of submission. AGIS has in its repository the cadastral map of the whole of the FCT which is comprehensive and sufficient for service delivery. All land dealings with AGIS enjoy a strong reputation of reliability and security as citizens tend to be more secure if their lands were acquired through AGIS.

The weaknesses of AGIS include the weak horizontal cooperation between federal offices in the area of spatial data as it was difficult for AGIS to collect data from other agencies such as OSGOF and Federal Ministry of Works and Housing. Also, the time it takes to convert cadastral plans into digital format for input to the GIS takes a very long time. AGIS has been



accused of granting land to rich men without considering the value the land will add to the environment, as such allocations were not done with priorities.

However, AGIS has opportunities to improve because the government has promised and is offering full support such that all lands in Abuja are to be issued statutory C of O in the nearest future. Also, the current Federal Lands Information System and ongoing land reforms in the country provide opportunities for the development of AGIS.

In AGIS, the documents issued to authenticate land transactions are still being forged by criminals and the transfer of lands after the initial allocation is not brought to the knowledge of AGIS by grantees and grantors.

From the SWOT Table 20 above, it was observed that AGIS strengths were 8, weaknesses 11, opportunities 3 while threats were 10, that is, Weaknesses > Strengths; Threats > Opportunities.

## **CONCLUSION**

This study has assessed the extent of land allocation in Abuja between 2006 to 2015, analyzed the demand and supply of land parcels, and investigated the efficiency of service delivery of AGIS to help understand the reason for the short falls of the e-LA in the FCT. The findings from the result revealed that the weaknesses of Abuja Geographic Information System (AGIS) were greater than its Strengths. Threats were greater than Opportunities, so it is easy to conclude that Abuja Geographic Information System (AGIS) has not managed e-LA in the FCT effectively and efficiently, but it has managed to survive and cope with the management. As established from the study, Abuja Geographic Information System procedures do not engender equality and fairness.

## **FUTURE RESEARCH**

Based on the aim and objectives of this study that have been achieved, further study will be aimed at examining the causes of weakness and threats of AGIS on improper management of the e-LA system in Federal Capital Territory (FCT), Abuja and impact of government and stakeholders on their failure.

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