A FACTOR ANALYTIC APPROACH TO USERS PERFORMANCE EVALUATION OF ONDO STATE LAND REGISTRY

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Abstract
Land registry worldwide provides best service for guaranteeing ownership of land and facilitates property transactions. The development and sustenance of effective land registry is vital for creation of free movement of interests in land. The land registry provides ready access to up-to-date land information and ensures confident dealings in property and security of title. One of the goals of land registry in developing economy and in Nigeria in particular, is to render services to users in satisfactory ways. This study therefore aimed at examining the users' performance evaluation of Akure Land Registry.
One hundred and fifty (150) users of the Akure Land Registry, in Ondo state, Nigeria, comprises of professionals in the built environment were randomly selected and a structured questionnaire was administered on them. Data collected were rated on a five-point Likert scale and analyzed using factor analysis by principal component. The result of the factor analysis reduced the variables necessary for optimum performance of Akure Land Registry which may influence users' patronage of service into four factors: namely environmental factor and impact of bureaucracy; staff strength and competence; Users' friendliness of service provided; and organizational structure suitability. The four factors produced a cumulative loading of 73.84%. Therefore, the registry should pay attention to these factors to enhance the success in their service delivery to the users.
Keywords: Performance evaluation, Land Registry, Factor analysis.

1. INTRODUCTION

It is very difficult to obtain detailed spatial information on public lands in government possession. Challenges are faced while collecting land information on properties that are placed in public domain. Such challenges include slow response rate to data request from government officials. The desired land information is not readily available in required format and can only be provided after several request and visit to the agencies in charge.

Records of detailed information on government land acquisitions, secure legal titles to land, verification of inventory of land allocation, the actual development on land and uses of land are not readily made

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available. Due care are not always taken in keeping these vital records. These records have not been archived. On the part of land information users, statistics on land from government land inventory are often pieced together with deliberate search and collation. Akure Land registry is substantially analogue in operation and the archival infrastructures are not modern. There exist records of land registration and interest on these parcels of land, as well as, the biodata of allotees but such information are documented in separate books in uncoordinated manner. (Arnot and Meadows, 2006). Greater proportions of land are still operating in informal sector and are not brought within land registry records.

There are dearth of infrastructure such as digital cadastral databases (DCDBS), spatial data infrastructure (SDIS), geographic information system (GIS), and web mapping services to facilitate title document production in the land registry. The poor state of maintenance of archival data in Akure Land Registry creates uncertainty in guaranteeing security of land record. The records in this registry are still capable of being damaged by fire, water and insect attack. (Arnot and Meadows, 2006). Akure land registry has not commenced a modernization of working process and computerization of her land records. There is functions overlap between related government agencies on how to administer certain information on land. The official bureaucracy problem is also real. Officials still hide under the cover of official secrecy to delay release of information on land. (Bisiriyu, 2008). Customer service standards are rarely established in most of the land registries in Nigeria and where they exist, they are not enforced. Customers still encounter delay in the processing of transfer of properties. The cost of doing business with the land registry is still very high. It exceeds 5% of the property value and there are varieties of extraneous fees especially the consent fee and fees charged by intermediaries.(World Bank Group, 2011). According to the survey conducted by World Bank on doing business in Nigeria in 2011, it is noted that on average it takes 82days to register a property in Nigeria.

2. MOTIVATION FOR THE STUDY

An average Nigerian is beginning to realize the investment potentials of its landed property. Most often the vast majority of the properties are still operating in informal sectors. Over the years, due to more enlightenment campaign and government incentives, property owners are now more aware of the need to make use of their asset in form of collateral to secure access to credits for further economic activity. Therefore, there is need to facilitate security for their property titles and rights on land. The need for modern land information system entails effective land records keeping on registrations and transfer processes in a transparent manner to ensure effective land market development.

3. THE STUDY AREA

Akure is a traditional Nigerian city and like other traditional Yoruba towns in the country, it exists before the advent of the British Colonial rule in the country. Akure, the capital city of Ondo state is located in South Western part of Nigeria. It lies approximately on latitude 70171North of the Equator and longitudes 50141 East of Greenwich Merdian. The population of the city according to the census conducted by the National Population Commission in 2006 put the population at 353,211 (NPC,2006). The population of Akure is made up of civil servants, professionals, artisans, traders', farmers and students. Being a state capital, Akure is the hub of economic, social and political activities. The Akure land registry is situated at the Ministry of Lands and Housing of state. Figures 1 show the geographical location of Akure city.

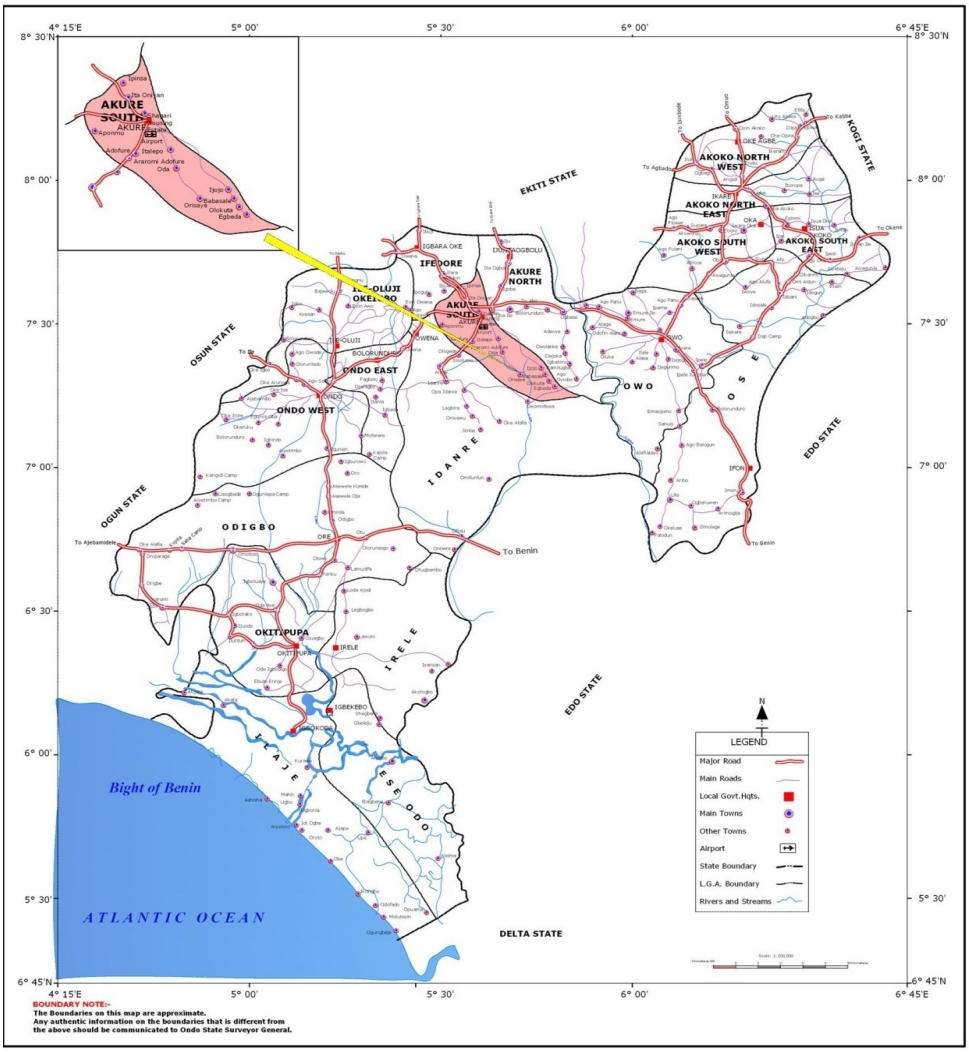

FIGURE 1 - MAP OF ONDO STATE SHOWING POSITION OF AKURE
Source: Abuja Geographic Information System, Maitama, Abuja.

4. METHODOLOGY AND MATERIALS

The data used for the study was derived from primary source by means of a structured questionnaire. The research population consists of 150 professionals in the built environment who source for land information from Akure Land Registry. The professionals comprise 35 Architects, 20 Estate surveyors and valuers, 28 land surveyors, 52 lawyers and 15 town planners operating in Akure. This population is considered sizable and a structured questionnaire was administered on them. In all, a total of 150 respondents were covered by this study. The questionnaire centres on two demographic characteristics of the respondents and 20 variables that could influence the performance of the Akure Land Registry. Respondents were asked to give their opinion on the importance of each variable that affect the performance of Akure Land Registry on a five point Likert scale: Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree = 2, Strongly Disagree = 1.

Factor analysis by principal Components was adopted in the data analysis for the purpose of partitioning the variables into factors that influence performance in Akure Land Registry service provision. The factor analysis is to summarize the interrelationship and establish levels of variance in decision variables as they influence the given phenomenon. A factor is a linear combination of variables. The linear combination is not chosen arbitrarily, but in order to capture the relationship among the variables, factor analysis uses the correlation or covariance among a set of observed variables to describe them in terms of a smaller set of unobservable variables (Tucker and MacCallum, 1993, Olorunleke, 2006).

The factor Analysis model is given as

$$\underset{(P \times 1)}{(Xi/\tilde{y}, \lambda, fi\ m)} = \underset{(P \times 1)}{\tilde{y}} + \underset{(P \times m)(m \times 1)}{\lambda fi;} + \underset{(P \times 1)}{\varepsilon i} \qquad (1)$$

Where: $\tilde{y}$ is the overall populations mean Vector

λ is the factor – loading matrix,

fi is the factor score

m is the number of factors

p is the observed variables

εi is the error variance

i is the number of observation.

In factor analysis, attention is paid to the central limit theorem. Here the errors (εi) are assumed to be normally distributed with mean 0 and constant variance. Factor scores and errors are independent. Factor analysis also assumes that all variables are dependent and there are no independent variables.

5. VARIABLES USED IN THE ANALYSIS

The following variables, which are considered to affect the performance indices of the Akure Land Registry to render effective service to the professionals, were used.

(a) Cost of Service Provided (CSP)

(b) Efficiency of Service (EFS)

(c) Availability of Required Service (ARS)

(d) Land Information Access Time (LIAT)

(e) Reliability of Information Provided (RIP)

(f) Competence of Staff (COS)

(g) Availability of e – land Facility (ELF)

(h) Land Information Storage Safety (LISS)

(i) Organizational Structure Suitability (OSS)

(j) GIS Application to Land Information Data Management (GIS)

(k) Provision of Satelite Image of Akure (IMAGE)

(l) Staff Strength to Manage Land Information (SSM)

(m) Corrupt Practices among Staff (CPS)

(n) Impact of Bureaucracy on Service (IBS)

(o) Environmental Quality (e.g. office space, Housing) (EQL)

(p) Number of Computers and Software in Use (NCSU)

(q) Functional Internet and Intranet Service (NET)

(r) User's Friendliness Service (UFS)

(s) Electric Power Reliability (EPR)

(t) Satisfaction with Service Provided (SWS)

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6. DATA ANALYSIS AND DISCUSSION OF RESULTS

The analysis of the demographic characteristics of the respondents is presented on Table 1 above. Concerning the frequency of usage/patronage of Akure Land Registry by the professionals, table 1 revealed that 30% made use of land registry in search of land information very often, while 56% made use of it often and 14% of the respondents' made use of it rarely. This inferred that the Akure land registry is highly patronized by the professionals for information on land. A close look at Table 1 also revealed that the professionals who constitute the users of Akure Land Registry consists of Architect, (23.0%), Estate Surveyors and Valuers,(13.0%), Land Surveyors,(18.0%),Lawyers,(36.0%) and Town Planners. (10.0%)

TABLE 1 - DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS.

Variable	Frequency	Percentage (%)
(c) Frequency of usage		
Very often	**45**	**30.0**
Often	**84**	**56.0**
Rarely	**21**	**14.0**
(d) Users (Professionals)		
Architects	**35**	**23.0**
Estate Surveyors and Valuers	**20**	**13.0**
Land Surveyors		**18.0**
Lawyers	**52**	**36.0**
Town Planners	**15**	**10.0**

N = 150. Source: Field Work (2011)

6. TEST OF SAMPLING ADEQUACY

The Bartlett's test of sphericity was used in the test for the appropriateness of the sample from the population and the suitability of factor analysis. It tests for the adequacy of the sample as a true representation of the population under study (Alese and Owayemi, 2004).

TABLE 2 - KMO AND BARTLETT'S TEST OF SPHERICITY

Kaiser-Meyer-Olkin measure of sampling Adequacy		0.601
Bartlett's test of Sphericity	Approx. Chi Square	522.960
Df.	45	
Sig.	0.000	

The Bartlett's test in Table 2 shows a chi-square of 522.960 and a significant level of 0.000, which is an indication of the adequacy of the sample. The Kaiser-Meyer-Olkin (KMO) test is another measure of sample adequacy. It is an index for comparing magnitudes of the observed correlation coefficients between all pairs of Variables. It is small when compared to the sum of the squared correlation coefficient. A KMO value of 1 represents a perfectly adequate sample. A KMO of O represents a

perfectly inadequate sample. The KMO value in Table 2 is 0.601, which shows that the sample is reasonably adequate.

7. COMMUNALITIES

The communalities are shown in Table 3. It shows the proportion of the variance explained by the common factors. The communalities are in the range of 0 and 1, with 0 indicating that the common factors explain all the variance in the variable. It could also be expressed as a percentage. For instance, the efficiency of Service provided (EFS) 0.717 which indicates that 71.7% of the variance is accounted for by the common factors while the remaining 28.3% is accounted for by unique (unexplained) factors. The initial communalities are always 1.00 before the extraction of factors because at that initial stage every variable is regarded as a factor with a mean of 0 and standard deviation of 1.

TABLE 3 - COMMUNALITIES.

	Initial	Extraction
Efficiency of service provided (EFS)	1.000	717
Competence of staff (COS)	1.000	727
Organizational structure suitability (OSS)	1.000	719
Staff strength to manage land information (SSM	1.000	572
Impacts of bureaucracy on service delivery (IBS)	1.000	798
Environmental quality (office space, housing etc) (EQL)	1.000	753
Number of computers in use (NCSU)	1.000	778
Functional Internet and Intranet facility (NET)	1.000	716
User's friendliness service (UFS)	1.000	821
Cost of service provided (CSP)	1.000	785

8. EXTRACTION METHOD: PRINCIPAL COMPONENT ANALYSIS

Twenty variables were used in this study. When subjected to factor extraction by principal component only ten of the variables were found to be useful for this study due to low variance value of the common factors. The variables are highly correlated leading to multicollinearity. The output of the analysis in the initial component matrix was subjected to rotation in order to fine tune the loadings on each factor. The initial Eigen values, the percentage variance explained, and the rotation sum of square loading are presented on Table 4.

There are two forms of rotation viz: Orthogonal and oblique rotation. Orthogonal assumes that the factors are uncorrelated whereas oblique rotation allows for some minor correlations among factors (Abdi, 2003). The rotation methods explored were Varimax, Quartimax and Oblimin. Varimax, which is an orthogonal rotation method, was adopted because it produces more meaningful loadings and the

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rotation converged after six iterations; which happened to be the least. The Varimax rotation result was used for interpretation. The rotated component matrix is presented in Table 5

TABLE 4 - TOTAL VARIANCE EXPLAINED (ROTATION SUMS OF SQUARED LOADINGS)

	Initial Eigen values			Rotation Sums of Square Loadings		
Component	Total	% of variance	% Cumulative	Total	% of variance	% Cumulative
1.	3.231	32.313	32. 313	2.661	26.614	26. 614
2.	1.869	18.690	51.003	1.982	19.817	46.430
3.	1.206	12.060	63.063	1.388	13.881	60.311
4.	1.078	10.780	73.843	1.353	13.532	73.843
5.	0.714	7.143	80.986			
6.	0.618	6.182	87.169			
7.	0.471	4.711	91.880			
8.	0.399	3.994	95.874			
9.	0.253	2.528	98.402			
10	0.160	1.598	100.000			

TABLES 5 - ROTATED COMPONENT MATRIX VARIMAX

	Factor 1	Factor 2	Factor 3	Factor 4
EQL	0.857			
NCSU	0.823			
NET	0.698			
IBS	0.693			
CSP		0.786		
SSM		0.750		
COS		0.691		
UFS			0.839	
OSS				0.836

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
Rotation Converge in 6 iterations

The number of factors to be retained was specified on the basis of social science rule which state that only the variable with a loading equal to or greater than 0.4 in absolute terms and percentage of Variance greater than 1 should be considered meaningful and extracted for factor analysis. The result presented in Table 5 was obtained based on this rule. A total of four factors were extracted and the following four factor groupings were obtained.

Factor 1: Environmental quality, Number of Hard wares, and bureaucracy

a. Environmental quality (e.g. office space, equipment, Housing)

b. Number of computers in use

c. Impact of bureaucracy on service delivery.

Factor 2: Cost of service, staff strength and competence

a. Cost of service provided

b. Staff strength to manage land information

c. Competence of staff

Factor 3: Friendliness of service

a. User's friendliness

Factor 4: Organization Structure

a. Organizational Structure Suitability

From the factor loadings in Table 4, it could be observed that the environmental quality, numbers of hardware and bureaucracy (factor) contributes 26.61% to performance, while cost of service, staff strength and competence and other factors contribute 19.82%, 13.88% and 13.53% respectively. The four factors contribute a total of 73.84% while the remaining 26.16% is accounted for by extraneous factors which are unique to the variable and other variables outside the control of the research.

9. PERFORMANCE EVALUATION OF AKURE LAND REGISTRY

Factors can be estimated as a linear combination of the original variables. From the component score coefficient matrix as shown in Table 6, we can form such linear relationships.

This can be used to estimate the performance of Akure land registry based on the four factors extracted. This can be achieved by forming a linear equation of the weighted standard scores of the variable.

TABLE 6 - COMPONENT SCORE COEFFICIENT MATRIX .

	Component			
	1	2	3	4
EFS	0.192	0.273	-0.628	0.460
COS	0.322	0.691	-0.377	-0.061
OSS	0.016	0.141	0.027	0.836
SSM	0.081	0.750	-0.044	0.180
IBS	0.693	0.333	0.377	-0.253
EQL	0.857	0.950	-0.054	-0.085
NCSU	0.823	0.259	0.054	0.175
NET	0.698	-0.021	0.080	0.427
UFS	0.281	0.013	0.839	0.196
CSP	0.012	0.786	0.122	0.390

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

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If the standard scores of the ith of the Land Registry in the 10 variables under consideration are Si.1, Si.2, Si.3,---------- Si.10, then the assessment of the performance of the Akure land registry considering the four factors, denoted by Cj, j = 1,2,3,4 and are defined by:

C1 = (0.192) S1.1 + (0.3222) S1.2 + (0.016)1.3--------- + (0.012) S1.10_____ (1)

C2 = (0.273) S2.1 + (0.691) S2.2 + (0.141) 2.3--------- + (0.786) S2.10 _____ (2)

C3 = (0.628) S3.1 – (0.377) S3.2 + (0.027) S3.3--------- + (0.122) S3.10 _____ (3)

C4 = (0.460) S4.1 – (0.061) S4.2 + (0.027) S4.3--------- + (0.390) S4.10 _____ (4)

For each of the factors, a system of equations for the sample population of the following general form is obtained.

$$\begin{pmatrix} b_{1,1}S_1 + b_{1,2}S_2 + b_{1,3}S_3 + \text{----------} b_{1,10}S_{10} \\ : \qquad\qquad : \\ : \qquad\qquad : \\ b_{m,1}S_1 + b_{m,2}S_2 + b_{m,3}S_3\text{----------} b_{m,10}S_{10} \end{pmatrix} = \begin{pmatrix} C1 \\ : \\ : \\ Cm \end{pmatrix}$$

In an attempt to evaluate the percentage contribution of each factor to the performance of Akure land registry, the Eigen values and percentage variance of each factor after extraction of factors are exhibited in Table 4. The social science rule earlier referred to stipulates that only factor with Eigen values of 1 and above are considered meaningful for interpretation.

10. CONCLUSIONS AND RECOMMENDATIONS

By using factor analysis approach, this research focus on the performance evaluation of Akure land registry, Nigeria. The result of the factor analysis reduced the variables necessary for the optimum performance of Akure land registry service delivery into four factors, namely environmental factors and impact of bureaucracy; staff strength and competence; user's friendliness of service provided and organizational structure suitability. The four factors produced a cumulative loading of 73.84%. There is the need for these factors to be critically looked into in order to reposition the Akure land registry into an enviable height. The organizational structure for the land registry should be re-organized to suit stakeholders' user friendliness. The staff strength and the needed competence for running the registry should be looked into for better service delivery. The required technology and training needed by the

staff need to be provided by government. If such technology and trainings are not available locally, government should be prepared to make funds available for acquisition of such skills. The staff strength and competence can be tackled by recruiting more experts with needed skill to man the land registry efficiently.

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