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Factors Influencing Tenants' Choice of Location of Residence in Bosso Local Municipality, Minna, Nigeria

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Abstract

Residential location choice (RLC) is key to the pattern of urban development in any city. This paper investigates factors influencing the choice of residential location by tenants in Bosso Local Government Area (LGA), Minna. The objective of the paper is to establish the roles played by a variety of housing attributes, and thus the design is an analytical survey. Data was collected from 277 structured questionnaires completed by household heads who are tenants in Bosso LGA neighbourhoods. This data was further investigated through factor analysis to reduce the variety of housing variables to a smaller set of influential components. The results reveal that the principal component in the determination of residential location of tenants is dwelling attributes comprising of the number of bathrooms, number of toilets and number of bedrooms. In addition, the second principal component, named accessibility attributes, plays a modest role with proximity to a secondary school and/or primary school loading very high. The study recommends that property owners should respond to the desires of tenants by paying attention to the provision of the right ratio of bathrooms and toilets to the number of bedrooms. Also, urban planners and policymakers should efficiently allocate educational properties like secondary and primary schools across all the neighbourhoods in the study area. With these recommendations, it is hoped that residential locations across Bosso LGA will be equally attractive to tenants.

Keywords: Housing Attributes; Dwelling Attributes; Accessibility Attributes; Neighbourhood Attributes; Residential Location Choice

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1. Introduction

The concept of Residential Location Choice (RLC) assumes a prominent position when households are planning their lives. As the name suggests, RLC is the locational choice made by an individual household in relation to residential property and is informed by a variety of factors. Traditional residential location models have typically employed housing and commuting costs to describe households' RLC (Alonso, 1964; Lowry, 1964; Muth, 1969). Modern discourse suggests that as cities' complexities grow, urban spatial structures have become polycentric due to many economic focal points. Other than housing and commuting costs, there are multiple factors influencing household's residential location decisions (Blijie, 2004; Curtis & Montgomery, 2006; Kim, 2010).

McFadden (1977; 1978) working within this contemporary time, introduced a discrete modelling framework. This model suggests that consumer housing location analysis provides insight into the variance of preferred dwelling types despite similar dwelling alternatives for a population. The study also noted that individual taste for housing attributes vary by households' types and from one geographical location to the next. Consequently, the circumstances under which households select their residential locations in different geographical areas needs empirical investigation.

Minna is the capital city of Niger State. The city houses two local government areas (LGAs). Bosso LGA, which is the study area, is one of these LGAs, while the other is called Chanchaga LGA. In Minna, varying outcomes have continued to trail the RLC of tenants as they satisfy their location desires. The study of Ogunbajo et al. (2018) on the contributory effect of externalities to the void periods for residential buildings in Minna, suggests that while some tenants are satisfied with their residential locations in a reasonable time-period, others have shown an intention to move. Thus, identifying the housing attributes that influence tenants' decisions to move or stay is of concern. Against this background, this study examines factors influencing tenants' choice of residential location by a variety of housing attributes using Bosso LGA as a case study.

2. Literature Review

2.1. Conceptual Issues of Choice in Residential Location

One of the dynamics of urban development is RLC. The definition of the term residential location could sensibly refer to the exact house or apartment that a household chooses (Sanit et al., 2013). According to Giuliani (2004), residential choice involves an assessment wherein the desires of an ideal environment are evaluated and used to make a choice among alternatives. The literature outlines various techniques or approaches to studying housing choice. The two major techniques are the revealed and stated (expressed) preferences (Zondag & Pieters, 2005; Kirkpatrick, 2011; Bocarejoa et al., 2017).

The revealed preference approach relates to observed or actual behavior of individual respondents to estimate housing choices that have taken place. Contrastingly, stated preference estimates utility functions based on peoples' opinions – what they like or dislike in a set of alternatives (Giuliani, 2004; Lazarow et al., 2007; Pendleton et al., 2007; Wittink, 2011; Wildish, 2015). In this study, revealed preference information from the tenants' survey was used. The tenants were asked to assess the influence of certain housing attributes on their housing decisions when they moved to their current residential locations.

Studies by Kim et al. (2005a), Zondag and Pieters (2005) and Curtis and Montgomery (2006) suggest that irrespective of the stated preference and revealed preference approaches, household's decisions consist of two major stages, namely the residential mobility stage and the housing choice stage. Kim et al. (2005a) add that the residential mobility stage and housing choice stage as shown in Figure 1 are interdependent and hierarchical. Furthermore, Curtis and Montgomery (2006) explain that a household's decision to move or stay in a current home is influenced by a range of push factors (crime and housing affordability) and pull factors (access to quality schools and employment). In the residential mobility stage, once the decision to relocate is made, it leads to the housing choice stage which involves a series of interconnected decisions about dwelling and location attributes. In the first stage, the decision to relocate or stay by a household is ascertained after weighing housing attributes. If the household's assessment of housing attributes is satisfying, then the current house is maintained. On the other hand, households will consider moving from the current house if the push factors outweigh the pull factors. This results in the housing choice stage which involves residential searches and choices between various available residences.

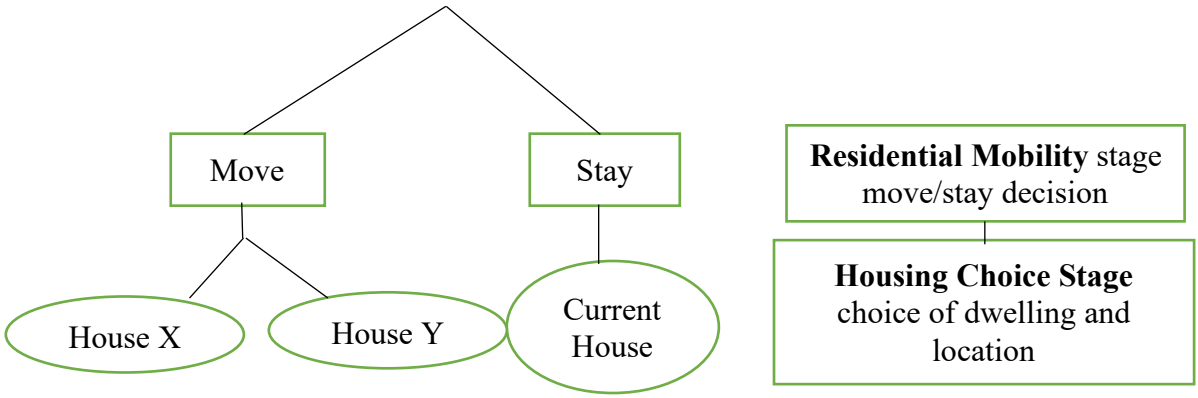

Figure 1. The Sequence of the Housing Choice Decision-Making Process
Source: Adapted from Kim et al. (2005a)

Subsequently, a large part of housing preferences/choice theory suggests that a household's residential location decision is a function of dwelling (dwelling type, house price and size of dwelling unit), socio-demographic (household income, household size and workplace location), a variety of accessibility (travel time and cost to work), neighbourhood (neighbourhood type and

availability of community facilities), environmental (air quality and size of natural areas) and socio-cultural attributes (racial diversity and dependence on decision) (Kim et al., 2005a; Kim et al., 2005b; Zondag & Pieters, 2005; Jun & Morrow-Jones, 2011; Sanit et al., 2013; Shawal & Ferdous, 2014; Opaluwa & Aribigbola, 2015).

2.2. Factors Influencing Choice of Residential Location

RLC is key to the pattern of urban development in any city. A household chooses its location by evaluating the housing attributes of each available dwelling unit and selecting the one which offers the highest possible utility. International literature highlights various empirical factors as influential in the RLC of households.

Research by Rivera and Tiglao (2005) study the choice preferences of households having only two workers that moved into a new home two years prior to the survey in Metro Manila. The authors employed nested logit models to analyse a variety of accessibility, dwelling, socio-demographic and neighbourhood variables. Their study notes that accessibility variables such as shorter commuting times and lower commuting costs are prioritised in household decisions compared to other attributes such as location to residence and workplace, land values and population density. They also suggest that households prefer to live in neighbourhoods far from their workplaces which contrasts their preference for shorter commutes and lower commuting cost.

Zondag and Pieters (2005), in their study of the Netherlands, utilised a multi-nominal logit model to analyse various household types. Their results indicate that the role of accessibility in explaining RLC of the different household types is significant but comparably less when compared to demographic factors, neighbourhood amenities and dwelling attributes. Similarly, a study by Kim et al. (2005a) employed a nested multinomial logit model to estimate the nested structure of housing choices in terms of the intention to change residential location by home-owners in Oxfordshire, in the UK.

This study makes use of the stated preference approach which models the intention to move according to the tradeoffs between accessibility, neighbourhood, dwelling and household characteristics. This contrasts the variables included in the empirical model of the housing choice which are house price, accessibility and neighbourhood. The authors therefore find that the probability of a household moving increases with more expensive housing costs, higher travel times, higher costs to work, higher costs to shop, higher population densities and residence in the central city. When they estimate the indirect random utility functions of RCL, Kim et al. (2005a) conclude that individuals prefer a residential location with a combination of shorter commuting time, lower transport costs, lower density, higher quality schools and lower house prices.

Kim et al.'s findings are challenged by Zondag and Pieters (2005) and Jun and Morrow-Jones (2011). Both studies did not attempt to define the level of contribution of the categorised housing attributes to the RLC of households.

Instead they conclude that both accessibility and neighbourhood amenities are significant in residential mobility and housing location choice behaviour.

Furthermore, Jun and Morrow-Jones (2011) use regression analysis to describe a homeowner's choice of denser neighbourhoods in Columbus, Ohio. In contrast with Kim et al. (2005a), Jun and Morrow-Jones provide a specific role for each of the explanatory variables employed in the model; neighbourhood characteristics rank the lowest with a limited role while accessibility factors and household characteristics play moderate and important roles respectively. Following this trend to rank characteristics, the multinomial logit model used by Sanit et al. (2013) shows that socio-demographic characteristics, particularly income and workplace location, play a significant role in explaining the location decisions of people to live near a rail transit system in Bangkok, Thailand. Unlike Rivera and Tiglao (2005), Sanit et al. (2013) find that transportation variables such as travel costs and travel time are significantly less important in the minds of households.

Similarly, African scholars have investigated the theory surrounding RLC. In Ghana, a study by Acheampong and Anokye (2013) notes that family relations, proximity to workplace, relatively low land price and house rentals are the most important explanatory variables for RLC in two of Kumasi's peri-urban settlements. The study suggests that socio-cultural, dwelling and accessibility considerations are significantly more important than the housing attributes related to the neighbourhood. Similarly, the findings of Nkeki and Erimona (2018) reflect on the role of socio-cultural cohesion and accessibility as the most prominent determinants of household choice of residential location in Benin City, Nigeria. This view is supported by Acheampong and Anokye (2013). Contrastingly, these authors critique the work of Jun and Morrow-Jones (2011) who suggest that the role of neighbourhood characteristics are significantly more important than housing attributes. Nkeki and Erimona (2018) did not take into account the function of dwelling attributes in their study. They considered socio-economic attributes, and like Zondag and Pieters (2005) and Opaluwa and Aribigbola (2015), find the component to be significantly less important.

The multinomial logistic regression used by Opaluwa and Aribigbola (2015) shows that accessibility to work, distance to health facilities and housing costs in particular have a strong impact on households' RLC for all dwelling types in Lokoja, Kogi State, Nigeria. The findings of the study suggest that accessibility and dwelling attributes are almost constant explanatory variables for the considered dwelling types while attributes related to socio-economic factors are less important. In another study, Ubani, Alaci and Udoo (2017) use a variety of push and pull factors to explain housing decisions of households in Port Harcourt Metropolis, Nigeria. They find that highly ranked push factors include ownership of a home in a new location, high levels of crime and insecurity. Highly ranked pull factors comprise of the new destination's security, household's change in the level of income and home ownership status in a new destination. The study did not attempt to

statistically identify the significant determinants of RLC of households in the study area.

A careful look at studies in Africa reveal the importance of socio-cultural attributes in the RLC of households unlike studies in continents like America and Europe. The possible reason for this could be as a result of the cultural affinity of many people in an African setting. The findings from the above empirical studies suggest that the factors that influence households' residential location preferences vary from one geographical area to another and by household types. However, the important role played by dwelling attributes in RLC remain constant across these studies (see, Zondag & Pieters, 2005; Acheampong & Anokye, 2013; Opaluwa & Aribigbola, 2015). Moreover, the findings give a sense of how individuals and households select their residential locations. By understanding households' needs, policymakers can work to better policy in a real and meaningful way. Hence, it is justifiable to research the RLC of different household types across different geographical areas. It is on this premise that this study employs a variety of housing attributes to examine their influence on residential location choices of tenants in Bosso Local Municipality of Minna in Nigeria.

3. The Study Area

The study area is Bosso LGA in Niger State, Nigeria. Bosso LGA and the Chanchaga area are the two main local government areas in Minna, the capital of Niger State located on latitude 9º 36' 22" North and longitude 6º 33' 15" East. Figure 2 shows the map of Niger State with Bosso LGA. The LGA has geographical coordinates of 9º 39' 12" North and 6º 30' 58" East. According to the Population and Housing Census Figures, the local government has a population of 148 136 and occupies a land area of 1 636.33km^2 (National Population Commission, 2006). Bosso LGA houses seven urban neighbourhoods, which are: Bosso Estate, Bosso Town, Chanchaga, Jikpan, Maitumbi, Shango and Tudun Fulani. All these neighbourhoods are included in this study so as to have a holistic measure of RLC of tenants.

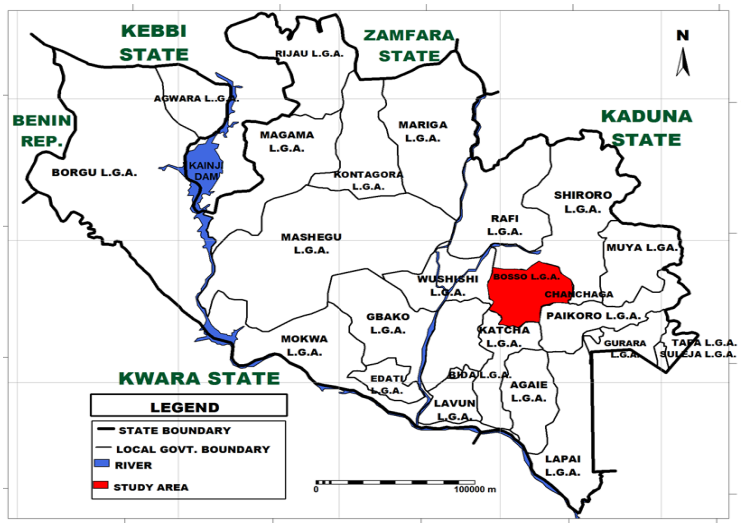

Figure 2: Minna of Niger State Showing Bosso Local Government Area

Source: Ministry of Lands and Housing, Niger State (2013)

4. Methodology

This paper's emphasis is on the perception of tenants regarding the influence of certain housing attributes on RLC. The objective is to understand the contributory effect of housing attributes on the housing choice decisions of tenants. The survey research is quantitative and employs a revealed preference approach. The survey-based technique involves a designed 14-item structured questionnaire. It was employed to investigate the influence of the various housing attributes on tenants' RLC in the study area.

The 2003 household data for Bosso LGA was retrieved from Sanusi (2006) and subsequently projected at an annual growth rate of 3.80% (National Population Commission, 2006) for the 14-year period between 2003 and 2017. The total number of households in the local government area is 31 599. The details are as shown in Table 1.

Table 1: Neighbourhood Household Size for Bosso Local Government Area

Neighbourhood	Household Size (2003)	Projected Household Size (2017)
Bosso Estate	306	552
Bosso Town	6 717	12 003
Chanchaga	4 505	8 050
Jikpan	1 475	2 636
Maitumbi	2 377	4 248
Sango	512	915
Tudun Fulani	1 788	3 195
Total	**17 680**	**31 599**

Source: Adapted from Sanusi (2006)

Furthermore, according to Amenyah and Fletcher (2013), roughly 40% of the world's population lives in rented housing. With that in mind, 40% of the total households of Bosso (31 599) amounts to 12 639 rented households as of 2017's sampling frame (Table 2). The sample sizes of the tenant questionnaire at the local government level is determined by the formula for a finite population as propounded by Kothari (2004). This formula is;

$$n = \frac{Z^2 \times N \times \sigma^2}{(N-1)\, e^2 + Z^2 \sigma^2}$$

n is the sample size, Z is the standardised normal value and for this study it is taken as 1.96 for a 95% confidence interval, σ is the standard of deviation which was put at 0.5 depicting a safe decision enhancing large enough samples, N is the number of rented dwellings and e is the margin of error put at +/- 5%.

Thus, 372 tenants represent the sample size in the study area for questionnaire. 277 questionnaires were subsequently retrieved representing a response rate of 74%. Table 2 shows the breakdown of the questionnaires' administration and retrieval.

Table 2: Questionnaire Distribution to Tenants in the Study Area

Neighbourhood	Proportion of Rented Dwellings	Sample Size	Questionnaire Retrieved
Bosso Estate	221	7	6
Bosso Town	4 801	141	96
Chanchaga	3 220	97	76
Jikpan	1 054	30	25
Maitumbi	1 699	49	36
Sango	366	11	8
Tudun Fulani	1 278	37	30
Total	**12 639**	**372**	**277**

Source: Authors' Computation (2017)

The resulting survey provided a perceptual rating of the identified factors as they influence tenants' choices of residential location during the search period. Respondents were asked to assess each of the factors on a 5-point Likert scale with "not important" assigned a score of 1; "less important" rated as 2; "moderate" as 3; "important" as 4 and "very important" rated as 5. For the factor analysis, data reduction statistics was performed on the housing variables to extract the factors influencing the choice of residential properties for the seven neighbourhoods in the study area. The analyses was achieved through SPSS Statistics Version 21.

The use of factor analysis in this paper is to assess and determine whether the study dataset is suitable. According to Pallant (2005), sample size and the strength of the relationship among variables (or items) are crucial to the suitability of a dataset for factor analysis. The authors argue that the overall sample size of a factor analysis study should be more than 150 while each of the variables should have a ratio of at least 5 cases. Umeh (2018) suggests that the size of the sample respondents to be used for the Principal Component Analysis (PCA) should be at least 4 to 5 times the number of variables.

On the required number of variables for factor analysis, Alabi and Anifowose (2018) mention that 20 to 50 variables are suitable, but emphasize that fewer variables can be used. They adopt 17 variables and sample size of 59 to assess the factors influencing ICT facilities deployment in quantity surveying firms (QSFs) in Abuja, Nigeria. Similarly, Kuma et al. (2018) employ 15 variables and sample size of 400 to study the challenges facing effective land acquisition exercise in Durumi, Abuja, Nigeria. In their study, Saidu and Oyewobi (2018) use 15 variables and 105 respondents to assess the impact of contractual claims on public building projects performance in Abuja, Nigeria. In Benin City, Nigeria, Nkeki and Erimona (2018) employ 12 variables and a sample size of 1 078 to study the determinants of household choice of residential location. Thus, the 14 housing variables and sample size of 277 employed in this study are considered adequate for the factor analysis. The housing attributes utilised to assess the factors influencing the choice of residential location are as shown in Table 3. The data was obtained from the tenants' survey conducted in May 2018.

Table 3: The Study Housing Variables

Variable Code	Variable Type
V_1	Floor level
V_2	Adequacy of public rooms
V_3	Number of bedrooms
V_4	Number of bathrooms
V_5	Number of toilets
V_6	Number of garage/parking space
V_7	Adequacy of floor area
V_8	Availability of fence wall
V_9	Location of property in a particular neighbourhood
V_{10}	Proximity to clinic or hospital
V_{11}	Proximity to primary school
V_{12}	Proximity to secondary school
V_{13}	Proximity to workplace
V_{14}	Neighbourhood security

Source: Authors Survey (2018)

The Cronbach's Alpha (α) reliability test, correlation matrix, Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) and Bartlett's test of sphericity were employed to test for the suitability and factorability of the data obtained. The Cronbach's Alpha (α) reliability test was conducted on the questionnaires administered to the tenants to measure the internal consistency and the reliability of the scale used. Cronbach's coefficient alpha values range from 0 to 1. The Cronbach alpha coefficient of a scale should be 0.7 or above for the items of the instrument to be considered reliable for analysis (Cronbach, 1947; 1951; Saidu & Oyewobi, 2018).

Pallant (2005) notes that for the study data to be considered suitable for factor analysis, the correlation matrix should show at least some correlations of r=0.3 or greater. Pallant also mentions that the KMO index ranges from 0 to 1. She suggests 0.6 as the minimum value while noting Bartlett's test of sphericity should be significant ($p < 0.05$) for data obtained for the factor analysis to be considered good and appropriate. Other studies have proposed that a sample with a KMO value between 0.5 and 0.7 is marginal, and thus reliable for factor analysis. A sample with a KMO value lower than 0.5 is considered to be unsuitable for factor analysis (Hair et al., 2006; Stern, 2010; Alabi & Anifowose, 2018).

Furthermore, the PCA which is the most commonly used extraction technique (Pallant, 2005) was used to ascertain the smallest number of components or factors that can represent the correlations amid a study's set of variables. The Kaiser's criterion and Cattell's scree test constitute techniques that were utilised to help establish the number of components to retain. While Kaiser's criterion recommends that components with eigenvalues of 1.0 or more be retained, given their high relativity. Cattell's scree test suggests plotting eigenvalues of the components and finding a point where the curve changes direction, becomes horizontal, thus retaining the components above the point (Pallant, 2005).

5. Results and Discussion

5.1. Summary Statistic of the Characteristics of the Respondents for the study

Table 4 provides a statistical summary characteristics of the study's respondents. As expected, with the gender of household head, the male population is almost twice the female. The household heads with family (42.2%) and single person households (52.3%) are the major categories of the household type in the sample. Occupation components of the sample are almost equally distributed between government employees (28.5%), students (31.0%), private employees (16.2%) and self-employed (21.7%). The statistics also show that a reasonable percentage of the respondents (41.2%) moved into new homes three years prior to the survey which points to the fact that they will still remember the circumstances that informed their current residential locations. Also, 29.6% of the respondents have lived in their current homes between three and six years which appears good for a clear response to the items of the questionnaire. Income distribution indicates that the percentage of respondents in low levels of income are much higher than those in higher income levels.

Table 4: Descriptive Summary of Socio-Economic Characteristics of Respondents

Variables	Variable Type	Mean ($1=NG₦ 361.92)	Standard Deviation
PANEL A (Continuous Variable)			
Annual Rent	Continuous	₦ 84 687.27 ($234.00)	₦ 64 370.42
PANEL B (Binary/Categorical)		**Frequency**	**Percentage**
Gender of Household Head	Binary		
Male		174	62.8%
Female		103	37.2%
Marital Status	Categorical		
Single		145	52.3%
Married		117	42.2%
Separated		6	2.2%
Divorce		2	0.7%
Widowed		6	2.2%
Missing Response		1	0.4%
Occupation	Categorical		
Government Employee		79	28.5%
Private Employee		45	16.2%
Self Employed		60	21.7%
Student		86	31.0%
Unemployed		7	2.5%
Length of Stay	Categorical		
Less than 3 years		114	41.2%
Between 3 – 6 years		82	29.6%
Between 7 – 9 years		35	12.6%
10 years and above		43	15.5%

Missing Response		3	1.1%
Range of Monthly Income	Categorical		
Less than N10 000		15	5.4%
N10 000 - N29 999		81	29.2%
N30 000 - N49 999		63	22.7%
N50 000 - N69 999		38	13.7%
N70 000 - N89 999		13	4.7%
N90 000 - N109 999		23	8.3%
N110 000 and above		24	8.7%
Missing Response		20	7.2%

Source: Field Survey (2018)

5.2. Reliability Test and Factorability of the Study Instrument

As evident from Table 5, the reported Cronbach's alpha value of 0.719 is an indication of an acceptable level of correlation among all items of the questionnaire. This value justifies the reliability of the instrument to adequately measure the information obtained.

Table 5: Reliability Test

Test Technique	Value
Cronbach's Alpha	0.719
Number of Items	14

Source: Authors Analysis (2018)

Table 6 provides a correlation matrix which indicates that factor analysis can be used to analyse the study data as the variables exhibit some correlations of r=0.3 and more. In Table 7, the KMO value is 0.673 and the Bartlett's test of sphericity is significant ($p<0.05$). The results of the reliability test, correlation matrix, Kaiser–Meyer-Olkin measure of sampling adequacy (KMO) and Bartlett's test of sphericity show that the data obtained is reliable and sufficient to conduct a factor analysis.

Table 6: Correlation Matrix

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
V1	1.000	.181	.156	.114	.082	.169	.159	.128	.134	.223	.035	.085	.081	.003
V2	.181	1.000	.370	.336	.330	.306	.187	.207	.046	.072	-.050	-.014	.021	.213
V3	.156	.370	1.000	.693	.587	.248	.266	.314	.066	.150	.120	.087	-.026	-.002
V4	.114	.336	.693	1.000	.881	.349	.244	.283	.014	.100	.133	.110	-.074	.068
V5	.082	.330	.587	.881	1.000	.333	.167	.251	.001	.016	.062	.016	-.117	.108
V6	.169	.306	.248	.349	.333	1.000	.299	.281	.033	.050	.059	.044	-.047	.233
V7	.159	.187	.266	.244	.167	.299	1.000	.218	.122	.214	.047	.038	.022	.232
V8	.128	.207	.314	.283	.251	.281	.218	1.000	.198	.210	-.080	-.087	-.070	.071
V9	.134	.046	.066	.014	.001	.033	.122	.198	1.000	.309	.065	.011	.212	.153
V10	.223	.072	.150	.100	.016	.050	.214	.210	.309	1.000	.423	.386	.334	.249
V11	.035	-.050	.120	.133	.062	.059	.047	-.080	.065	.423	1.000	.813	.180	-.048
V12	.085	-.014	.087	.110	.016	.044	.038	-.087	.011	.386	.813	1.000	.305	.021
V13	.081	.021	-.026	-.074	-.117	-.047	.022	-.070	.212	.334	.180	.305	1.000	.170
V14	.003	.213	-.002	.068	.108	.233	.232	.071	.153	.249	-.048	.021	.170	1.000

Source: Authors Analysis (2018)

Table 7: KMO and Bartlett's Test

Statistical Measures		Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.673
Bartlett's Test of Sphericity	Approx. Chi-Square	1 322.567
	df	91
	Sig.	.000

Source: Authors Analysis (2018)

The results of the various tests in this section form the foundation of the analysis of factors influencing RLC of tenants in Bosso LGA of Minna.

5.3. Factors Influencing Residential Location Choices in Bosso Local Government Area, Minna

The results of the principal component analysis are shown in Table 8 and the Scree plot (Figure 3). Based on Kaiser's criterion, four components were extracted for having eigenvalues above 1.0 (3.393, 2.308, 1.582 and 1.072). Component 1 with an eigenvalue of 3.393 accounts for 24.24% of the variance in the dataset. Component 2 with an eigenvalue of 2.308 accounts for 16.48% of the variance. Component 3 with an eigenvalue of 1.582 accounts for 11.30% of the variance while Component 4 with an eigenvalue of 1.072 accounts for 7.86% of the variance. Subsequently, all the four components account for 59.68% of the variation in the factors influencing RLC in Bosso LGA, Minna.

Referring to the Cattell's scree plot in Figure 3, there are four components above the point where the curve changes direction and becomes horizontal. These four components should therefore be retained. This further confirms the result in Table 8 where four components with eigenvalues greater than one were extracted based on Kaiser's criterion.

Table 8: Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.393	24.24	24.24	3.393	24.24	24.24	2.886	20.61	20.61
2	2.308	16.48	40.72	2.308	16.48	40.72	2.250	16.07	36.68
3	1.582	11.30	52.02	1.582	11.30	52.02	1.631	11.65	48.33
4	1.072	7.66	59.68	1.072	7.66	59.68	1.589	11.35	59.68
5	.970	6.93	66.61						
6	.913	6.52	73.13						
7	.748	5.34	78.47						
8	.686	4.90	83.37						
9	.648	4.63	88.00						
10	.639	4.57	92.57						
11	.413	2.95	95.52						
12	.368	2.63	98.15						
13	.163	1.16	99.31						
14	.097	.69	100.00						

Source: Authors Analysis (2018)

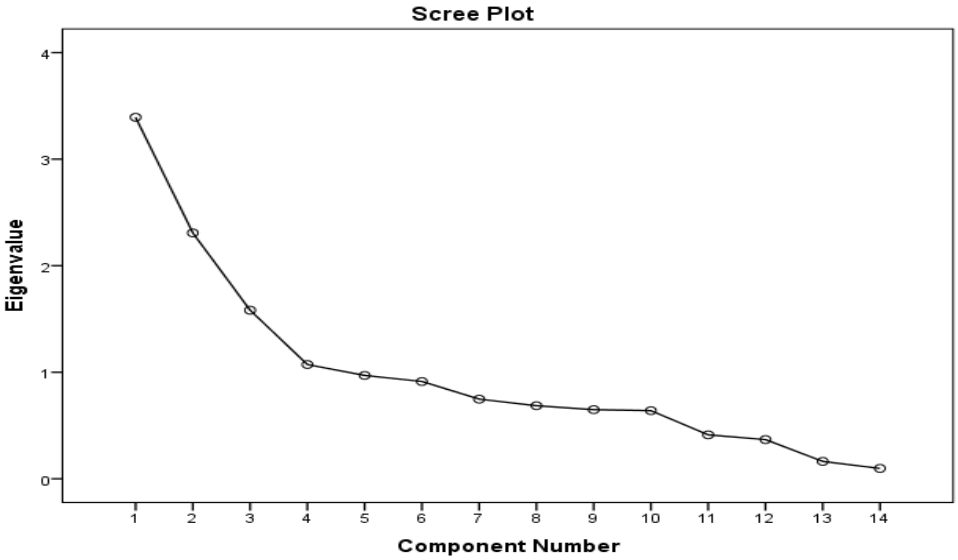

Figure 3: Scree plot of the Components Influencing Residential Location Choices in Bosso LGA

Source: Authors Analysis (2018)

Kaiser's criterion and Cattell's scree test were used to determine the four factors to retain. Factor rotation based on the Varimax Orthogonal rotational technique was employed to reveal the pattern of loadings in a way that it would be easier to explain. Following previous studies by Pallant (2005) and Kuma et al. (2018), factors with absolute values less than 0.3 correlation loadings were sorted by size and suppressed to make the output easier to explain. The results of each of the four extracted components and their variables are shown in Table 9.

Table 9: Rotated Component Matrix

	Variables	Component			
		1	2	3	4
1	Number of bathrooms	.908			
2	Number of toilets	.869			
3	Number of bedrooms	.794			
4	Proximity to secondary school		.916		
5	Proximity to primary school		.899		
6	Proximity to clinic or hospital		.567		
7	Proximity to workplace		.459		
8	Neighbourhood security			.853	
9	Number of garage/parking space			.530	
10	Adequacy of floor area			.494	
11	Adequacy of public rooms			.448	
12	Location of property in a particular neighbourhood				.711
13	Availability of fence wall				.558
14	Floor level				.549

Source: Authors Analysis (2018)

From Table 9 four components are extracted as factors influencing RLC of tenants in the study area. The first component has significant correlation loadings for a group of three variables, namely: the number of bathrooms, number of toilets and number of bedrooms. These variables are based on

previous studies and are referred to as *dwelling attributes* (Component 1). The second principal component has four variables with proximity to a secondary school and proximity to primary school loading very high. Others are proximity to a clinic or hospital and proximity to one's workplace. All these variables are based on previous studies and are related to *accessibility attributes* (Component 2).

Furthermore, four items comprising of one neighbourhood attribute (neighbourhood security) and three dwelling attributes (number of garage/parking space, adequacy of floor area and adequacy of public rooms including living room, dining room and kitchen) were loaded onto principal Component 3. Based on the content of the variables, the component was named *neighbourhood cum dwelling attributes* (Component 3). A careful look at Component 4 reveals the loading of three items onto it, namely: location of the property in a particular neighbourhood (an *accessibility attribute*) with the availability of fence wall and floor level which are *dwelling attributes*. The component was named *accessibility cum dwelling attributes* (Component 4) based on its content.

The roles played by each of the components vary as they account differently for variations in factors influencing tenants' RLC in the municipality. The first component, *dwelling attributes* with an eigenvalue of 3.393, accounts for 24.24% variation in the factors influencing RLC of tenants in Bosso LGA, Minna. This component constitutes the largest variation of the total variance (59.68%) explained by the dataset. Hence, it plays an important role in determining the RLC of tenants in the study area. The second component, *accessibility attributes*, has an eigenvalue of 2.308. The component accounts for 16.48% of the total variance. On these accounts, the component can be said to play a modest role in determining the RLC.

The third component played a limited role with an eigenvalue of 1.582. This accounts for 11.30% of the total variance explained. In a similar manner, the fourth component, with an eigenvalue of 1.072 and variance of 7.86%, can be said to play an even more limited role. Although the component had the least variance of the total variance explained, it has an accessibility item named *location of the property in a particular neighbourhood* loading high. These findings suggest that irrespective of the neighbourhood, the accessibility level of a property is of primary concern to any prospective tenant during the search period. A short distance from the property to major roads or bus stops and an access road to property enhance the accessibility level of a property. These aspects are crucial to the RLC of prospective tenants.

Overall, the findings imply that *dwelling attributes* play an important role. *Accessibility factors* and *neighbourhood characteristics* play moderate and limited roles respectively in determining RLC of tenants in Bosso LGA of Minna. These corroborate Jun and Morrow-Jones (2011) submissions that *neighbourhood characteristics* play a limited role while accessibility factors play a moderate role in RLC. The findings are also consistent with previous findings of Acheampong and Anokye (2013), Oyetunji and Abidoye (2016) on the roles of dwelling and accessibility attributes as significantly more

important than housing attributes related to the neighbourhood. Furthermore, the results agree with Zondag and Pieters (2005) on the role of accessibility being significant but rather limited compared to the effect of dwelling attributes in explaining RLC of different household types, but contradict the authors on the role of neighbourhood attributes as more important than attributes related to accessibility. Notably, the results reaffirm studies like Zondag and Pieters (2005), Archeampong and Anokye (2013) and Opaluwa and Aribigbola (2015) on the role of dwelling attributes as very important in a residential choice location.

6. Conclusion and Recommendations

This study examined the factors influencing the choice of residential locations by tenants in Bosso LGA to ascertain the roles played by a variety of housing attributes in decision-making. Considerably, the findings of this study align with the findings in literature.

The results of this research reveal that the component of housing attributes that played the most important role in influencing tenants' residential location is *dwelling attributes.* These include the number of bathrooms, number of toilets and number of bedrooms. This implies that tenants are attracted by these attributes in terms of their quantity and quality. To considerably improve desire for properties by tenants across the neighbourhoods in the study area, property owners and real estate developers should therefore ensure the provision of the right ratio of bathrooms and toilets to the number of bedrooms.

The results also show a modest influence of *accessibility attributes* on RLC. Dominant explanatory variables of the *accessibility attributes* influencing RLC in Bosso LGA are the proximity to a secondary school and/or a proximity to primary school. These findings may be useful for policymakers and planners to better comprehend and respond to local desires and thus necessitating direct policy implications. To satisfy the residential location desires of tenants, urban planners and policymakers should efficiently allocate educational properties like secondary and primary schools across all the neighbourhoods in the study area.

This study contributes to the RLC literature. It has included a variety of housing attributes to the discourse and has increased the knowledge surrounding residential location choices of tenants' households in a Local Government Area in Minna, Nigeria. A limitation of the study is that the data is based on an incomprehensive list of housing attributes. Furthermore, the impact of housing attributes categories such as socio-economic, socio-cultural and environmental on the RLC have not been accounted for. Analyzing a comprehensive list of variables may reveal a more robust result. Going forward, studies should consider examining the effects of all groups of housing attributes on RLC. In addition, there is a need to employ comparative analysis of data from different local government areas.

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