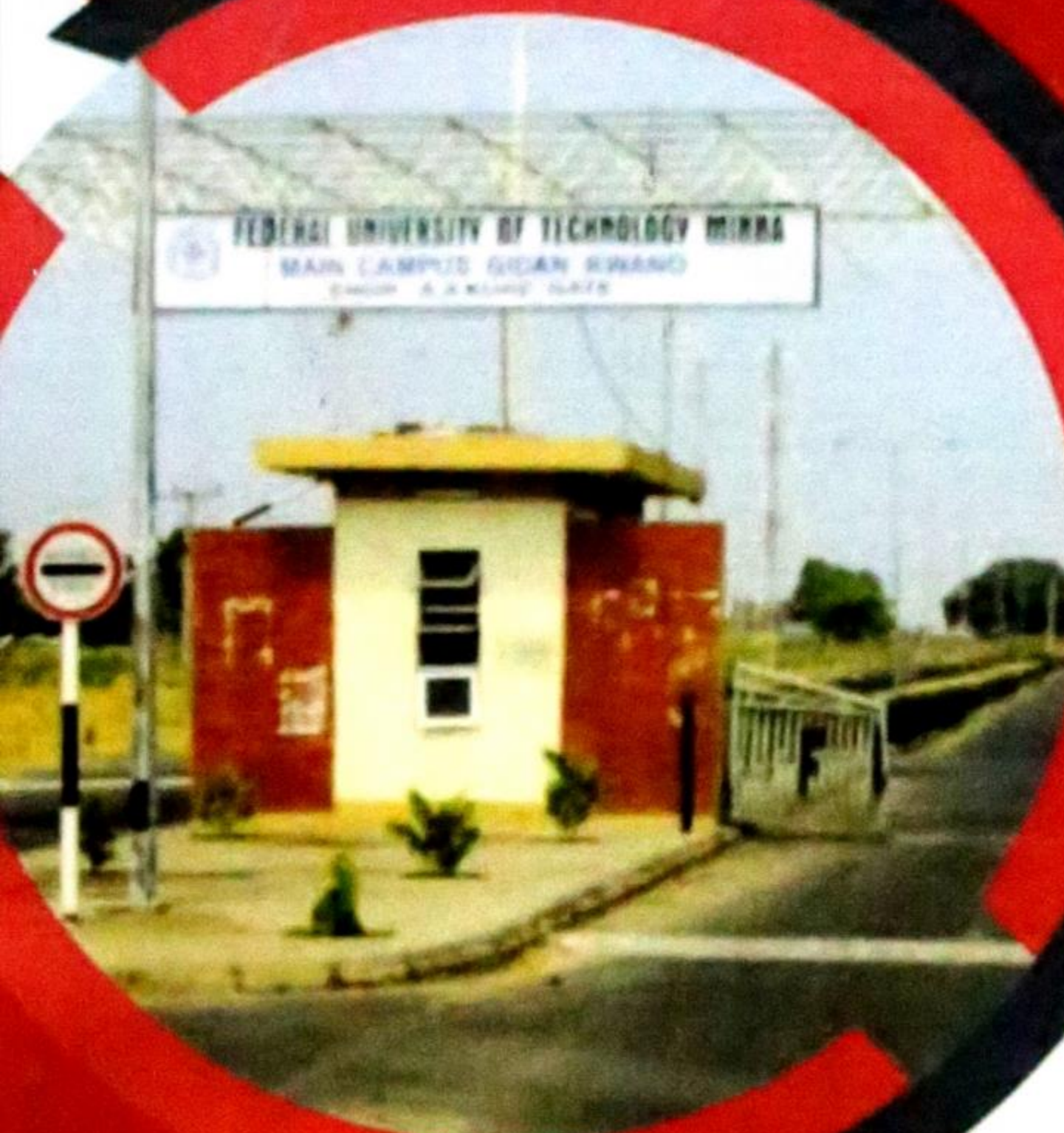




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Aim and Scope

The Environmental Technology and Science Journal (ETSJ) is devoted to the publication of papers which advance knowledge of practical and theoretical issues that daily plague our society. The aim of the journal is to provide an avenue for the dissemination of academic research findings from various disciplines of the environment, engineering, pure and applied sciences, arts and social science which have materials that emphasize on environmental issues.

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Correspondence

All correspondence should be addressed to

The Managing Editor

Environmental Technology & Science Journal

SET, FUT, Minna, Nigeria

Email: etsj@futminna.edu.ng

Phone: +234 805 170 3663, +234 803 653 4507

Published By

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Editorial

In helping to push the frontier of knowledge forward, on behalf of the Editorial Committee members of Environmental Technology and Science Journal (ETSJ), I present volume 9, issues 1 and 2, June 2018 edition of our Journal to our expanding audience. The decision to have two issues stemmed from two valid but unrelated issues. Firstly, the Editorial Committee members for some time have been mulling the idea of increasing the yearly publications to three and secondly, the need to accommodate our staff that submitted articles for the purpose of using them to boost their journal points during the 2018 promotion evaluation process. In all, there were 26 articles that met all the requirements prior to publication; hence the need to have two issues in the current edition. Research by United Nations Population Fund in 2007 has predicted that by 2030, the urban population is expected to increase to almost 5 billion. Breaking it further, it is estimated that Africa's urban population will increase from 294 million to 742 million. Many of the new urbanites will be poor. Their future, the future of cities in developing countries, the future of humanity itself, all depend very much on decisions made at present in preparation for this growth. The traditional city is being replaced by the global city region in terms of governance, trade, communications and spatial organisation. As a result of these expansions in the global city regions, several structural challenges have been thrown up for researchers and policy-makers in the 21st century. A fallout of these challenges are the 14 articles

contained in issue one; the articles ranged from leadership styles in the construction industry, development and evaluation of solar yam dryer, floods management to land use changes, health and safety compliance level of European Union (EU) directive for EU construction firms in Nigeria, city growth and alternative building materials.

Richard, Idris and Bobbo in the 1st article investigated the significant role of **project managers' leadership style** on design consultant satisfaction in the Nigeria construction industry. The study concluded that design consultant satisfaction and overall efficiency and performance of a project can be improved by selecting a leader with participation, inspirational and charismatic leadership behaviour.

Solar drying according to Akanmu and Ajani in the 2nd article affirmed that it is a potentially decentralized thermal application of solar energy particularly in developing countries. The paper showed that the system performed better than direct and indirect dryers with efficiency values of 56.5% and 61.5% respectively. It also reduced the drying time of yam by 50% against what was obtained in direct sun drying. Exegetic analysis of the dryer has shown that the system is effective and efficient from energy point of view.

The 3rd paper by Oladejo and Ojo on the study of contributory factors to flood hazards in Ifelodun Local Government Area, Osun State stated that the use of high resolution DEM and rainfall data to improve the

accuracy of modelling and generation of flood inundation map is recommended for better accuracy and visualization.

Future land use simulations indicated that if the current land use trends continue in the study area without holistic sustainable development measures, severe land degradation and possibly land fragmentation will ensue as argued by Duchi and Habila in the 4th paper titled scenario simulation and prediction of land use changes in Metropolitan Kano, based on the Markov-Cellular Automata Model (CA-MARKOV)

Otaru *et al.* based on their findings in the 5th paper titled assessment of the cost impacts of health and safety practices on construction projects in Abuja, Nigeria concluded that the costs of health and safety programmes and practices are significant in increasing the costs of building projects. The paper therefore recommended that health and safety practices and programmes should always be given priority at the initial project estimating stage of a project, as they constitute a reasonable percentage of project cost.

Analysing socio-economic characteristics of households in Plateau State, Nigeria by Zogore in the 6th paper recommended the need for government at all levels and the private sector to address the issue of the differences identified in the study with a view to promoting environmental safeguards and ameliorating the poverty level of households in the state.

The 7th paper by Saidu *et al.* on the impact of construction claims on public

building projects performance in Abuja concluded that improved projects performance can only be achieved if contractual claims are eliminated. It is therefore recommended that stakeholders should improve on contractual procedures in order to eliminate avoidable omissions or changes during construction through effective communication and application of new technologies.

Mohammed's paper on assessing the compliance to EU Directive 92/57/EEC of June 1992 among EU construction companies in Nigeria concluded that the compliance level among the EU construction companies operating in Abuja, Nigeria to the EU directive 92/57/EEC of June 1992 was at an average level. The paper recommended that the Nigerian government needs to establish an agency that will oversee or ensure the compliance to safety and health rules and regulations at workplace as contained in the EU directive for the EU construction companies operating in Nigeria.

Assessment of spatial distribution and range of service of public health facilities in Jos South Local Government Area of Plateau State, Nigeria by Ojo, Owoyele and Idowu is the 9th paper that established that health facilities in Jos South Local Government were spatially dispersed, the pattern which was tending to be more pronounced in the southern part than in the northern part. The development of a strategic plan, which is to integrate non-government stakeholders in the planning of health service delivery was therefore recommended.

Nwuba and Kalu in the 10th paper titled housing affordability: A review of the diversities of definitions and concepts concluded that in spite increasing research on housing affordability, there was yet to be consensus as to how it should be defined or conceptualised or the standard to measure it.

Idowu *et al.* pondered in the 11th paper that the search for an optimum residential location has been a source of chronic problem to the urban dwellers hence it studied the factors influencing the decisions of peri-urban residents on where they live in Minna, Niger State, Nigeria. The study concluded that most of the residents were motivated to live in their present neighbourhoods mainly because of the comfort derived from where they lived. It therefore recommended that serious attention of the Government to reviewing the outdated Minna Master Plan and rejuvenates the peri-urban areas with massive infrastructure development.

The 12th paper by Salahudeen and Sadeeq on the performance of corncob ash as partial replacement of Portland cement in lateritic soil stabilization. The result indicated that an optimum corncob ash content of 9% by weight of the dried lateritic soil and 9% Portland cement can be recommended for better results and stability.

Onuwe *et al.* in the 13th paper on overview of kenaf fibre as a bio composites material in fabrication process for sustainable construction stated that the application of kenaf fibre is fundamental to sustainability and improvement in building and construction materials. The possibility

of substituting synthetic and glass fibre with cellulose fibre contributes to the effort to reduce global warming, promotes a bio base economy and achieve a cleaner environment.

The last paper by Abidoye *et al.* on demystifying the effects of final accounts settlement on building contractors in Abuja, Nigeria argued that the final account stage of a building project is sometimes rarely settled or even being delayed by some of the project parties, thereby posing serious challenges on contractors. The study concluded that proper management of the identified factors would translate into effective settlement of final accounts in building projects. The paper therefore recommended that construction clients and consultants should exercise restraint when selecting procurement option to be adopted.

Finally, in the next edition, some changes will become evident; yours sincerely has been made the Editor-in-Chief by the owners (Academic Board members of the School of Environmental Technology) and Dr Bashir Ganiyu, the Editorial Secretary. Dr Bala Muhammad is still a member of the Editorial Committee. At this juncture, the Committee members wish to appreciate Professor O. O. Morenikeji, the immediate past Editor-in-Chief for bringing his Midas touch to bear on the Journal. The same goes to Dr Bala Muhammad for his unalloyed commitments especially "harassing" reviewers and contributors in order for deadlines to be met. Dr O. F. Adedayo, a Committee member is currently in Rwanda on a national assignment but in spite the distance,

has been very helpful in more than one way, we are grateful.

R. A. Jimoh, PhD
Managing Editor

In a bid to expand the Journal's reach, visibility and to serve you better, the Journal is gradually migrating to online platform and can be found at this web address: <http://etsj.futminna.edu.ng>

The taste of the pudding is in the eating, fasten your seat belts as you navigate through the articles!

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Factors Influencing the Decisions of Peri-Urban Residents on where they live in Minna, Niger State, Nigeria

^aIdowu, O. O., ^bAbdulyekeen, A. O., ^cMoyo, U.T.O and ^dAdeogun A. S

^a Urban and Regional Planning, Federal University of Technology Minna

^b Department of Surveying and Geoinformatics, University of Ilorin

^c Department of Architecture, University of Ilorin

^d Department of Estate Management, University of Ilorin

olu.idowu@futminna.edu.ng

Abstract

The search for an optimum residential location has been a source of chronic problem to the urban dwellers. In Nigeria, household residential choices are dependent on a wide range of housing and location attributes, which reflects various household characteristics. However, efforts made by different scholars have provided explanations on different reasons why residents prefer and choose some residential neighbourhoods to others. This study analyzed the factors influencing residents' decision to change their neighbourhoods in peri-urban areas of Minna. The data used were generated from the peri-urban residents through questionnaire administration. The systematic random sampling technique was employed in the selection of 825 respondents from 14 peri-urban neighbourhoods and the data from questionnaire administration were subjected to inferential statistical technique using factor analysis method. The study revealed three factors: comfortability (28.83%); homeownership (15.89%); and low rent (12.58%) as the major factors influencing the decision taken by peri-urban residents to live in their present neighbourhoods. The study concluded that most of the residents were motivated to live in their present neighbourhoods mainly because of the comfort derived from where they lived. It therefore recommended that serious attention of the Government to reviewing the outdated Minna Master Plan and rejuvenates the peri-urban areas with massive infrastructure development.

Keywords: development, neighbourhood change, peri-urban, urban area, residential location

Introduction

Rapid urban growth and development of the peri-urban areas across the world is one of the most attractive features of the contemporary research in urban studies. The pattern of migration has increased the levels of urbanization, urban agglomeration and peri-urban development (Pacione, 2005). Lawanson *et al.* (2012) among several authors, maintained that the impacts of economic growth and physical expansion of the urban area are not confined within urban boundaries; but reach into much wider areas surrounding urban centres, creating so-called urban areas, urban fringe areas, or facilitating peri-urban expansion. Apart from the studies on patterns of development

in peri-urban area; especially on location and arrangement of residential buildings, investigation of the factors influencing the decision taken by urban residents to live in the peri-urban areas had long been of interest to the academia and urban managers (Olatubara, 1995; Idowu, 2017).

Several studies on housing in the recent time are centred on residential mobility or resident's locational preference (Okpala, 1981; Olatubara, 1995; Florez, 2002; and Abdulraheem *et al.* 2017). The efforts of scholars like Okpala (1981), Olatubara (1995) and Abdulraheem *et al.* (2017) among others have provided explanations on the occasional intra-urban change of

residences by urban households and the different reasons why residents prefer and choose some residential districts to others. Meanwhile, accessibility among other opportunity is considered to be the prime factor influencing the choice made by urban residents (Popoola & Aliyu, 2010; Abdulraheem *et al.*, 2017).

On the contrary, Florez (2002) admitted that the choice of residential location is not only a function of accessibility, but also the interaction of a set of other factors, such as neighbourhood with its dwelling attributes and even the household characteristics. In a related study on Ibadan, Olatubara (1995) employed activity pattern to explain urban residential location decisions in the city centre of Ibadan. The study revealed that the choice of residential location by households appeared to show a tendency toward proximity to their activity centre. Also, in other similar studies, Rivera and Tigalo (2005), maintained that travel time and travel cost were significant in choice of residential location in Manila. Also, Isaac *et al.* (2006) admitted that job location, residential filtering, household income and lifestyle, high crime levels significantly contributed to the natural migration of households to city suburbs in Columbus Ohio area in 1995.

Lamond *et al.* (2015) noted the continuation of massively-scaled peri-urban expansion under a variety of guises to meet the demand for space for urban accommodation, business and services. In Nigeria several factors have been adduced for the rapid expansion of the peri-urban areas. These factors, which range from physical, economic, social and political have not only influenced peri-urban expansion, but has contributed to residential mobility. The dynamic and integrative nature of peri-urban areas has been a major constraint, exhibiting sprawled pattern development (Ravetz, *et al.*, 2013; Johnson, 2001). The search for an optimum residential location has been a source of chronic problem to the urban dwellers (Olatubara, 1995). As observed by Kim *et al.* (2003), household residential choices are dependent on a wide

range of housing and location attributes, which reflects various household characteristics.

Since the colonial days, Minna had been central to the operation and activities of the railway system of transportation and colonial administration within the region. The functions which the town played by then, attracted the infrastructure for economic, socio-cultural and political development, all which facilitated the declaration of the town as the capital of Niger State in 1976. Thereafter, the increase in the size of Minna over the years has been phenomenal (Morenikeji *et al.*, 2015; Idowu, 2017), thus, transforming the land use of just a serene railway town with only one major road passing through it, to a variant of the land use system of typical urban setting, which is of global reckoning. Remarkably, Minna is the capital of Niger State. The town has experienced an induced mass drift of people, not only from its nearby towns and settlements, but also from the cities and towns across Nigeria. The locational preference for Minna residents, hereby, becomes the issue to address in this study. Therefore, this study examines the factors influencing residents' decisions on where to live in the peri-urban area. The outcome of this study corroborates the system conceptualizing peri-urban interface, dynamism and process of generating uncoordinated physical development in peri-urban areas, like Minna.

The Study Area

Minna lies between Latitudes 9° 33' and 9° 40' North of the Equator and Longitudes 6° 29' and 6° 35' East of the Greenwich Meridian (Figure 1). The town spanned along the main spine road that separates the city into West and East. This road is from Chanchaga in the South to Maikunkele in the North, covering a distance of about 20km. The West - East pattern, spanned from Gidan-Kwano along Bida axis in the West, to Maitumbi to Gwada axis, in the East, over a distance of 15km (Figure 2). The delineated areas that are referred to as the peri-urban neighbourhoods of Minna

Table 1 Sixteen Factors used in Determining Residents' Change of Neighbourhood

S/No	Factor	S/No	Factor
1	Ethnic /religion	9	Redevelopment of the former neighbourhood of residence
2	Reduction in the price of land	10	Informal economy
3	Low housing rent	11	Voluntary change in neighbourhood
4	Proximity to place of work	12	Proximity to city centre
5	Availability of community facilities	13	Interesting architecture and building design
6	Security of the Neighbourhood	14	Shift from rental tenure to homeownership
7	Avoidance of the influence of government policy	15	Change in profession or employment
8	Availability of personal/private means of transportation	16	Tenure composition

Results Discussion

Suitability of Data Used

An assessment of the suitability of the data for factor analysis was carried out. This involved inspecting the correlation matrix of coefficients of 0.3 and above and calculating the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity. Pallant (2005) suggested that the Bartlett's test of sphericity could be significant at ($p < .005$) and the Kaiser-Meyer-Olkin (KMO) index could range from 0 to 1, while the minimum value of KMO should not be less than 0.6. Table 2 shows the result of the analysis: Kaiser-Meyer-Olkin (KMO) index is 0.928, while the Bartlett's test of sphericity is significant at ($p = .000$). This implies that the data is suitable for factor analysis.

Variables Extracted on the Factor Analysis

The factors that have eigenvalues of 1 (Table 3) were extracted. These factors are I (6.864); II (1.275); and III (1.029) and they account for 42.903%; 7.967% and 6.429% of the variance, respectively. When put together some 57.299% of the total variance can be explained by these factors.

Table 2: Reliability of Data

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.928
Bartlett's Test of Sphericity	Approx. Chi-Square	4493.394
	df	120
	Sig.	0.000

Source: Author's Analysis (2016)

The factors were 'rotated' so that it presents the pattern of loadings in a manner that is easy to interpret. The three factors after rotation became Factor I (28.83%), Factor II (15.89%) and Factor III (12.58%). Consequently, only the three factors were extracted. In other words, the variables that are loaded on these three factors would indeed appear sufficient to explain the factors that influence the decision of respondents to change their neighbourhood to where they live in the peri-urban area of Minna.

As a matter of fact, the Scree Plot (Figure 4) revealed a clear break after Factor I, because it explained more of the variance than Factors II and III. It would appear appropriate, therefore; to use Factor I, but on rotation, Factors II and III became more relevant (Table 4). In any case, the rotation does not change the underlying factors rather it presents the pattern of loadings in a manner that is easier to interpret.

Table 3: Total Variance Explained

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% Variance of	Cumulative %	Total	% Variance of	Cumulative %
1	6.864	42.903	42.903	4.613	28.829	28.829
2	1.275	7.967	50.870	2.542	15.889	44.718
3	1.029	6.429	57.299	2.013	12.581	57.299
4	0.815	5.096	62.395			
5	0.805	5.032	67.427			
6	0.715	4.469	71.896			
7	0.618	3.865	75.761			
8	0.59	3.687	79.448			
9	0.503	3.143	82.591			
10	0.493	3.079	85.67			
11	0.471	2.945	88.615			
12	0.457	2.858	91.473			
13	0.414	2.589	94.062			
14	0.344	2.15	96.213			
15	0.328	2.052	98.265			
16	0.278	1.735	100			

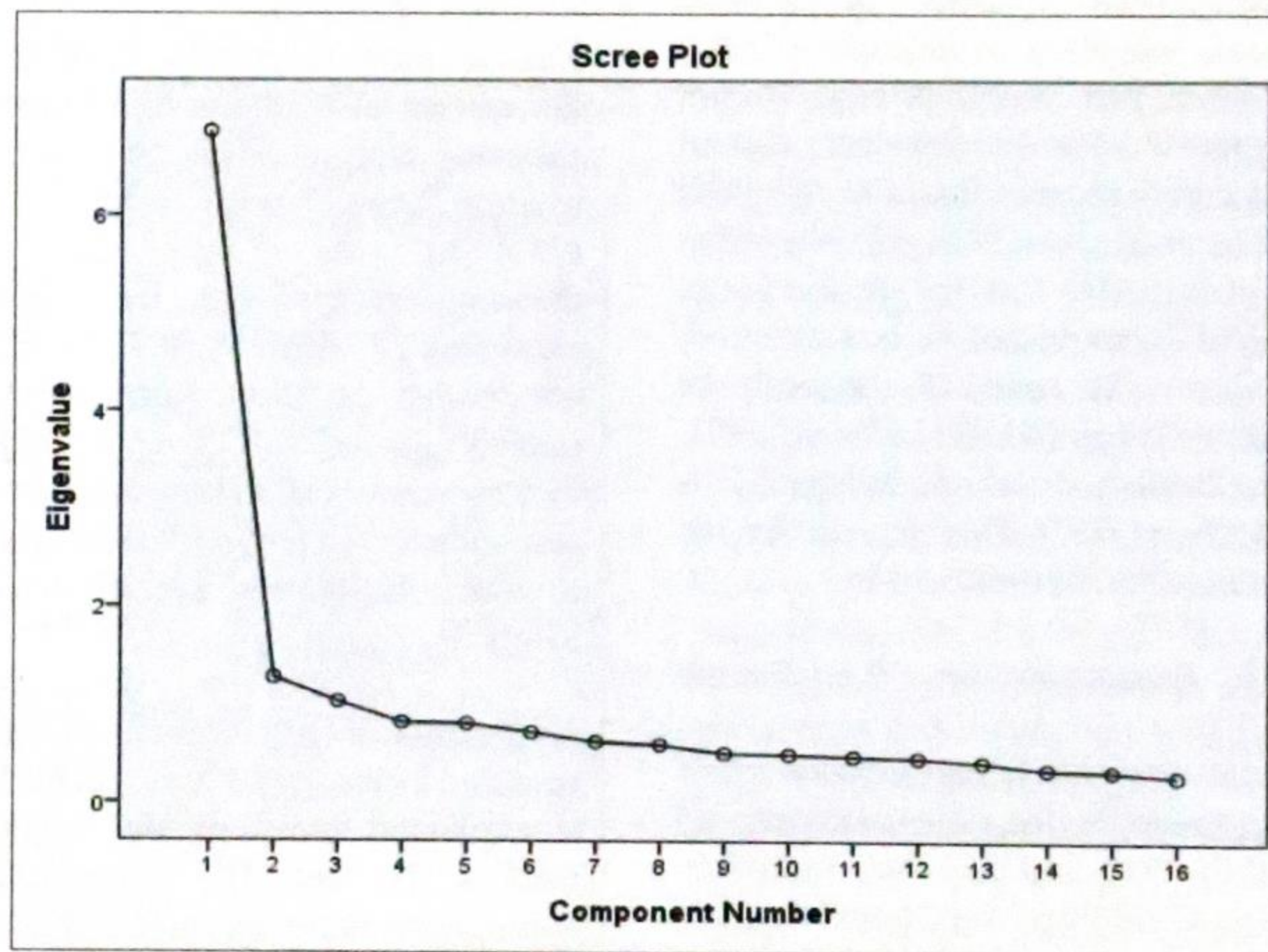


Figure 4: Scree plot of the factors influencing respondents' decisions on where they live
Source: Author Analysis, (2016).

Factor I have the highest numbers of loadings, with highest loadings on the security of the neighbourhood (0.752). Other variable loadings on Factor I are availability of infrastructure/community facilities (0.742); avoidance of the influence of government policy (0.732); and availability of private and/or personal means of transportation (0.724). Factor contributed 28.83% of explanation to the variance that influenced the decision of

residents to live in their present neighbourhoods. This can be appropriately labeled as comfortability.

Factor II has an Eigenvalue of 2.542 and contributed 15.89% to the variance that explained how home ownership influenced residents' decision to live in their present neighbourhoods. Apart from the shift from rental tenure to home ownership occupier (0.744) that contributed the highest,

similarly, reduction in the price of land (0.721) also contributed to the increase in the rate of home ownership.

Factor III has the highest loadings on low housing rent (0.815) and followed by proximity to place of work (0.743). This factor has an Eigenvalue of 2.013 and contributed 12.558% of explanation of the variance on the influence of low rent on the decision taken by the residents of the peri-

Table 4: Value Loading on Factor 1 - 3

Variable	Factor		
	1	2	3
Ethnic/religion	0.561	0.324	
Reduction in the price of land*	0.141	0.721	0.255
Low housing rent*		0.236	0.815
Proximity to place of work*	0.321		0.743
Availability of community facilities*	0.742		0.304
Security of the neighbourhood*	0.752	0.127	0.189
Avoidance of the influence of government policy*	0.732	0.333	0.115
Availability of private or personal means of transportation*	0.724	0.224	
Redevelopment of the formal neighbourhood of resident	0.666	0.332	0.243
Informal economy or disposable income	0.54	0.377	0.253
Voluntary change in neighbourhood	0.563	0.356	0.168
Proximity to the city centre	0.596	0.118	0.407
Interesting architecture and building design	0.338	0.563	0.31
Shift from rental tenure to home ownership*	0.208	0.744	-0.139
Change in profession or employment	0.451	0.344	0.378
Land tenure composition	0.478	0.544	0.12
Variance Explained	4.613	2.542	2.013
% Explained	28.829	15.889	12.581
Cumulative %	28.829	44.718	57.299

Note: The * indicates the factor loading, while the bold indicates the significant value loading

Table 5: Factors Influencing the Residents' Decision to live in the Peri-urban Area

Factor Description	Factors	Loading	%Variance Explained
Factor I: Comfortability	Security of the neighbourhood	0.752	28.83%
	Availability of community facilities	0.742	
	Avoidance of influence of government policy	0.732	
	Availability of private/personal means of transportation	0.724	
Factor II: Home ownership	Shift from rental tenure to home occupier ownership	0.744	15.89%
	Reduction in the price of land	0.721	
Factor III: Low rent	Low housing rent	0.815	12.58%
	Proximity to place of work	0.743	
Sum of Variance Explained		57.30%	

Source: Author's Analysis, 2016.

urban areas of Minna to live in their present neighbourhoods.

Factors Influencing Residents' Decision on where to live in the Peri-urban Areas

The factors that influenced the decision of peri-urban residents in Minna as deduced from the analysis are attributed to three components, namely, comfortability; home ownership; and low rent (Table 5).

This implies that most of the respondents were motivated to choose their present neighbourhoods mainly because of the comfort derived from where they live, which may not be unrelated to the change in status of being a tenant to that of home-ownership and low rent. The ease of land acquisition for personal houses due to the informal system of land ownership in the peri-urban areas appear to be the reason for the majority of the people to reside in these parts of Minna. The implication of the decision of urban dwellers to a certain extent, has led to the increase in demand for developable land in the peri-urban areas, the development has been without planning, exhibiting ribbon, scattered and leapfrog pattern of development in the peri-urban areas of Minna. The movements of people to peri-urban areas were the result of the security of the environment; availability of community facilities; avoidance of influence of the government policy; availability of personal means of transportation; shift from rental tenure to home ownership; reduction in the price of land; low housing rent; and proximity to place of work.

Conclusion and Recommendations

The study has observed the factors that influenced the decision of peri-urban residents to live in their present neighbourhoods in Minna. Using factor analysis technique, three factors: comfortability, home ownership and low rent were identified to be important in the decision taken by respondents. The analysis shows that most of the residents were motivated to live in their present neighbourhoods mainly because of the comfort derived from where they lived. In order to make the peri-urban areas of Minna sustainability, the need for proper planning of the areas and control of development is imperative. Foremost, the government should give a serious attention to the review of the outdated Minna Master Plan and initiate the planning, design and implementation plan for peri-urban rejuvenation and massive infrastructure upgrading in all the peri-urban neighbourhoods of Minna.

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