The influence of proximate neighbourhood facilities on residential property vacancy periods in Minna, Nigeria.

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Abstract

This study sought to provide evidence on the contributory effect of neighbourhood amenities on vacancy periods for residential buildings in Minna. The research population comprised 9,008 rented residential buildings in thirteen (13) selected areas in Minna Metropolis, while a total of 1,129 housing units were sampled following the Kothari (2004) formula for sample size selection and further adopting ± 10% precision (margin of error), and 90% confidence level. Stratified and random sampling techniques were adopted in order to ensure an unbiased selection of the sample from the population. The data used were generated through two sets of questionnaires which were administered to the household heads of rented dwelling units that fell within the sample group, and the managers of the sampled houses. Questionnaire which was well completed represented an overall 77% response rate were used for analysis. Data analysis involved the use of inferential statistics to address specific objectives of the study. Precisely, collated data were analysed using the optimally scaled categorical regression analysis (CATREG). Nine amenities were found to sustain residential buildings in the study area, which accounted for 32% variance in the vacancy period of tenement buildings and one-bedroom apartments; and 34% & 51% variance respectively in the vacancy period of two and three-bedroom bungalows respectively in the study area. Among other findings, the study revealed that closer distances of shopping centres and health care centres to tenement buildings significantly increased the period of vacancy. Whereas, out of all the amenities measured, only refuse dumps significantly increased the vacancy period of two-bedroom bungalows. Having established the varying degrees of impacts of neighbourhood amenities on the vacancy periods of house types in the study area, it is evident that policy makers need to ensure the equitable allocation of the amenities in question across space.

Key words: *Amenities, neighbourhood, residence, void period*

1. Introduction

Minna, capital of Niger State has experienced rapid urbanization and expansion over the years. The direct implication of this is an increased need for residential accommodation which further necessitated

an increase in housing supply. Recent observations have revealed that massive residential property developments continue to spring up in various parts of the study area. Unfortunately, a number of these residential properties are left unoccupied and suffer longer vacancy periods despite the rising need for residential accommodation. Vacancy period is simply the period between tenancies when buildings are unoccupied. A vacancy period occurs when a property is vacant, unoccupied or without legitimate tenant thereby receiving no rental income.

The notion of vacancy period of residential properties had been a subject of discourse in many academic and professional circles, for example (Remoy 2010, Oladokun 2011, Gabriel and Nothaft 2011 & Akalemeaku and Egbenta 2013. Residential accommodation constitutes a basic necessity to man. Thus, investment in residential properties is considered a major and highly profitable form of investment as it seeks to address the growing housing demand of man. This rising demand for residential accommodation has led to residential property development being considered a major investment in Nigeria. In essence, it has given rise to an increase in the supply of residential buildings/ housing units by both individuals and corporate bodies to cater to the rising need for accommodation. According to Ansah (2012), housing units' development is considered as one of the most important subsectors of the real estate industry. Since the increasing demand for housing units in urban centres have continued to attract the development interests of real estate developers, it is imperative that appropriate measures are taken to ensure that invested capital is profitably recouped. However, a major determinant of the timely recoupment of invested capital is the minimisation or totally eliminating the development's vacancy period (Ogunbajo, 2018).

In recent times, several residential dwelling units across urban areas have suffered longer vacancy periods despite the rising need for residential accommodation. However, research has also shown that the efficiency of any urban area depends largely on the provision of efficient amenities and services (Babarinde 1998). The provision of urban infrastructure in any urban setting has tremendous multi-dimensional impacts on the people and overall property values are well documented (Kiel & Boyle 2001; Adebayo 2006; Zietz, Zeitz & Sirmans 2008, Olujimi & Bello 2009; Ducombe & Yinger, 2010; Boucq & Stratec, 2011; and Cellmer, Senetra & Szczepanska, 2012). With the rapid urbanisation of many Nigerian cities, good quality urban amenities have become increasingly important,

Recent observations have revealed that massive residential property developments continue to spring up in various parts of the study area, with or without a corresponding growth in basic amenities. Neighbourhood facilities in Minna appear to be unevenly distributed across the city, and are at varying distances to dwelling units; while several residential

properties are left unoccupied and suffer longer vacancy periods despite the rising need for residential accommodation. Landlords and real estate investors are sometimes faced with the challenge of replacing tenants within the shortest possible time, without a detailed understanding of the unique factors that determine these delays (Ogunbajo 2018).

The extent to which neighbourhood facilities and amenities determine the vacancy periods of residential properties lacks significant contributions from literature, thus, this research performed a study of the Minna residential property market to determine the primary drivers of vacancy periods with particular emphasis on the availability and proximity to urban facilities and amenities. The research employed different analytical tools to provide evidence on the extent to which neighbourhood facilities contribute to determining vacancy periods or otherwise. It assessed the vacancy periods of tenanted dwellings across the study area, identified neighbourhood facilities sustaining these residential properties, as well as their proximities to the identified facilities. This research addressed the question about the extent to which the duration of vacancy of residential properties in the study area can be explained by differences in availability and proximity to infrastructural facilities. The study is significant in providing empirical evidence on the extent to which the duration of vacancy is influenced positively and/or negatively by the identified facilities. It will aid investors to make more informed decisions on residential property investment with adequate knowledge of the influence of various infrastructural facilities within the various neighbourhoods.

2. LITERATURE REVIEW

2.1 Provision and access to Neighbourhood facilities in Urban centres

Residential buildings and its supporting externalities have become part and parcel of human existence and it is a prerequisite for the development of any urban economy. The provision of amenities such as good roads, electricity, water, telecommunications, sewage and drainages are basic requirements that determine the socio-economic well-being of an area (Anofojie, Adeleye and Kadiri, 2014). Ujoh and Kwaghsende (2014) observed that the provision of adequate amenities and facilities is becoming increasingly difficult due to rapid population growth. However, much concern is increasingly being expressed over the pattern of distribution of amenities and facilities. As observed by Atser and Akpan (2009), the inequality in facilities' distribution is a cause for concern particularly in developing countries where there are problems of personal mobility. While Otegbulu and Adewunmi (2009) described the presence or absence of these amenities as the major difference between a slum and a non-slum area, Saed *et al* (2015), explained that the lack of urban amenities is a good catalyst for squatter

formation and worsening housing conditions in urban districts.

With the rapid urbanisation of many Nigerian cities and parts of other developing countries, good quality urban amenities have become increasingly important. It is pertinent to note that the need to consider end-user priorities in the provision of these amenities /facilities is also important. Due to the unique nature of different geographical areas, as well as end-user preferences, certain infrastructure is highly demanded in certain areas as opposed to other areas. According to the Central Statistics Office, India (2012), measuring the performance of amenities /facilities is required for decision making in order to improve the availability and capacity of these amenities/facilities. In this regard, Otegbulu (2014) examined the implication of infrastructure condition to urban neighbourhood sustainability and how a demand-driven approach can enhance willingness to pay for service improvement in Lagos. The research sampled 1040 households in 8 metropolitan local government areas and elicited information on households' preferences and demand for urban ancillary facilities including willingness to pay and averting expenditure. Findings from the study indicated that different areas of the city have preferences for different ancillary facilities both in specific types and service option, and that demand-driven provision will enhance willingness to pay, and also has implication on neighbourhood sustainability. The study however placed emphases on the condition of the infrastructure clearly excluding the idea of relative proximities of individual households to the infrastructure.

One of the persistent problems facing Nigerian cities in the past decades is the inadequacy of ancillary facilities, as well as the management of existing ones (Ogu, 2005). It is widely accepted that major challenges associated with neighbourhood facilities/amenities result from increased urban growth and density, as well as the inability to effectively manage existing infrastructure. The ability of these amenities to accommodate growth depends on the ability of the urban area to manage and improve the condition of the existing amenities.

2.2 Occurrence of vacancy periods in buildings

A vacant property, which can also be referred to as a void property is one which is unoccupied because it does not have a tenant in occupation (Akalemeaku and Egbenta 2013). As described by Nam, Han and Lee (2016), a vacant house is one that has been unoccupied for an extended period of time. In many developed and developing nations, the prevalence of vacant residential properties has been a course of concern due to its many implications on investment returns and the national economy (Duke 2012). Generally, vacancy periods are inevitable. It however becomes worrisome when the period is elongated. Some consequences of vacant buildings according to Akalemeaku and Egbenta (2013) are loss of rental income to the investor,

loss of professional fees to the property manager, as well as illegal occupation and vandalization of the buildings. A Over the years, studies have attributed vacancy period to several factors. For example, Remoy (2010) established a significant correlation between the amount of facilities in a location and structural vacancy in Amsterdam. The study assessed the travel time from buildings to the nearest highway among others, ,and revealed that vacancy decreased with a farther distance to the highway. Akelemeaku and Igbenta (2013) attributed vacancy/void in commercial properties in Enugu, Nigeria to inadequate infrastructure, high rents, and poor finishing of buildings. Nam, Han and Lee (2016) established a positive correlation between vacant houses (on one hand) and excess supply of houses, and population size (on the other hand). While the above researches recognizes urban infrastructure and amenities as major determinants of vacancy periods, the true relationship and interconnection between proximity to neighbourhood amenities and vacancy periods in Minna, as well as the benefits to government and the society has not been fully addressed and well documented. In the course of this research, a study of existing literature has shown that there has been no documented study to determine the influence of proximate amenities on vacancy period in Minna.

3. Methodology

Residential property markets have received considerable attention worldwide, which may be attributed to the special role of shelter to man. For this study, Minna is chosen because it is the capital of the largest Northern state in Nigeria in terms of land mass (National Population Commission, 2006; Niger State Government, 2011), and also due to the rapid urbanisation and expansion of the town.

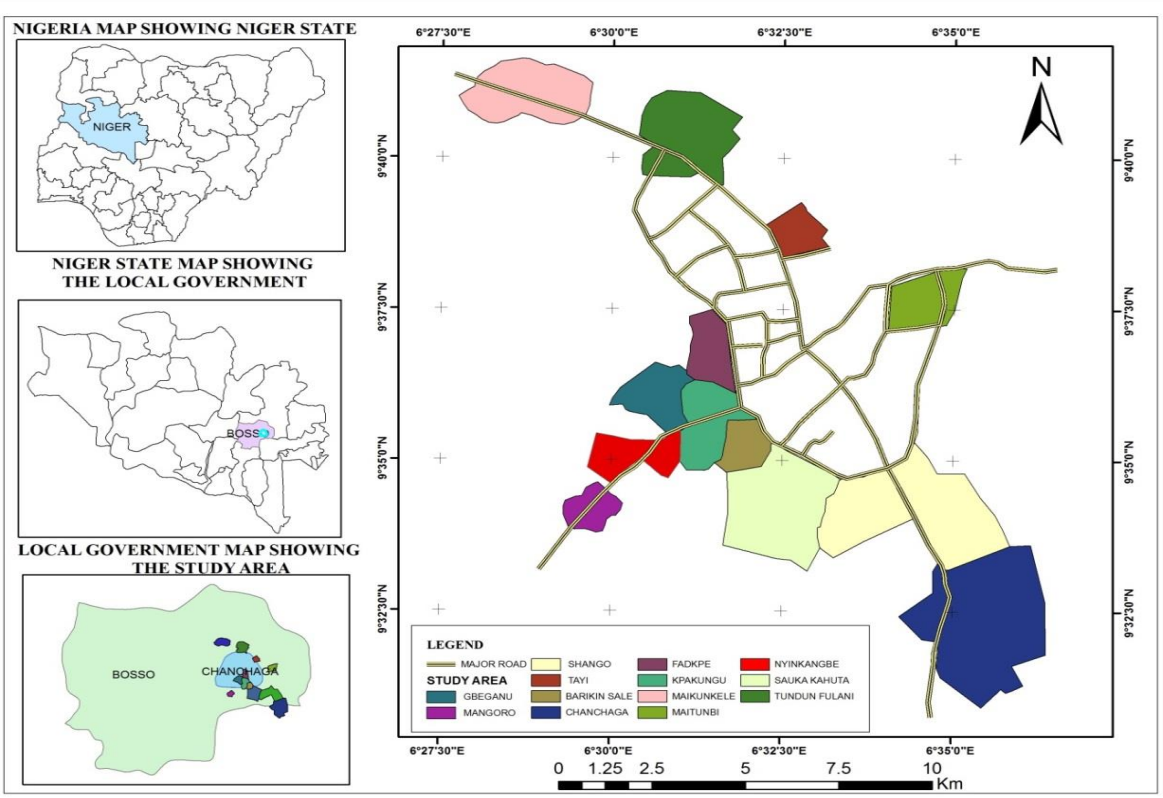

Figure 1: Map of the study area

Source: Department of Remote Sensing and GIS, Federal University of Technology, Akure (2016)

The population for the study constituted residential dwellings that fell into void at any time between January 2014 and December 2018 (5 years),and spread across thirteen (13) residential neighbourhoods in Minna, where rapid residential developments have been observed over the years. A total of 1,129 housing units were sampled following the Kothari (2004) formula for sample size selection and further adopting + 10% precision (margin of error), and 90% confidence level. Four major house types fell into this category. These were Tenements (473), single room apartments (349), two-bedroom bungalows (163) and three-bedroom bungalows (144). The sampled neighbourhoods are: Barkin-Saleh, Maikunkele, Chanchaga, Kpakungu, Maitumbi, Gbaganu, Nyikangbe, Shango, Sauka-kahuta, Tayi village, Tudun-fulani, Fadikpe, and Gidan-mangoro. Neighbourhood facilities identified in the study area which were used in the study were educational institutions/schools, shopping centres, health care centres, recreational facilities, access roads, sewage disposal sites / refuse dumps, security, electricity, and water supply. The choice of these neighbourhood facilities was based on evidence from the literature.

The data used were generated through two sets of questionnaires. The first set was administered on the household

heads of rented dwelling units that fell within the sample group, and focused on the availability and access to amenities, while the second set was administered on the managers of the sampled houses, which constituted estate surveyors, non-professional estate agents, and landlords (as the case may be) in the study area. The second set of questionnaire basically elicited data on vacancy / void related issues. A total of 1129 housing units were sampled, and Fifteen (15) Field Assistants who were trained, assisted in questionnaire administration and retrieval. Duly completed questionnaire were collated and subsequently used for analysis. To avoid the introduction of additional error by imputing missing data, only completed questionnaire without missing values were used. This is in line with Isreal (2003), which explained that imputing missing data could give rise to errors in data analysis. The well completed questionnaires represented an overall 77% response rate.

The research implemented the mixed methods research design. Data analysis involved the use of inferential statistics to address specific objectives of the study. Precisely, collated data were analysed using the optimally scaled categorical regression analysis (CATREG). This analytical tool was adopted due to the nature of the data which also entailed a dependent variable measured on ratio scale (vacancy / void period in months), an independent variable measured on ratio scale, and another eight independent variables measured on ordinal scales. Categorical regression mirrors the conventional multiple regression, except that categorical regression can also accommodate ordinal and nominal variables (Moss, 2016). Typically, the CATREG quantifies categorical variables so that the quantifications reflect characteristics of the original categories (Statistics Solutions, 2016).

The proximity of dwelling units to amenities / facilities was measured using ordinal variables on a three-point scale, viz: far, fairly close, and very close. This scale of measurement was derived in accordance with the duration or time taken (in minutes) by an average adult to walk from his/her dwelling unit to the nearest of each of the facilities / amenities under consideration. This was arrived at based on the consensus opinions of respondents in the course of the pilot study. Respondents described a walking distance of 1 – 15 minutes to any of the amenities as acceptable. They were however not willing to walk more than 30 minutes to access any of the facilities, thus, this research categorized a walking distance of 1 – 15 minutes as very close, 16 – 30 minutes denoted fairly close, while a walking distance of more than 30 minutes was categorised as far. This is similar to the recommendation of the Leeds unitary development plan (2006) which described the local accessibility standard to an amenity site as equivalent to 10 minutes- walk time (based on the consensus opinion of respondents). Neighbourhood security was measured using data obtained from police stations in the study area. The figures denote

the average number of reported crime cases per month in each of the sampled areas. Peculiar crime cases taken into consideration were burglary, robbery/theft, and hooliganism / street fighting, while the quality of electricity was measured in terms of the number of hours of supply per day from the public mains.

The impacts of these facilities/ amenities on the void periods of residential buildings in the study area was established by regressing proximities and availability of the sampled amenities (independent variables) against void periods (the dependent variable) using the optimally scaled categorical regression analysis (CATREG). In this research, void periods are related to the neighbourhood facilities/amenities in the study area. Thus, a functional equation designed to capture the relationship between void period and neighbourhood facilities/amenities takes the form:

$$VOP = f(x) \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where VOP = Void period
The independent variables are as follows:
X =>
X_1 = Shopping centres
X_2 = Educational institutions
X_3 = Health care centers
X_4 = Recreational facilities
X_5 = Major access roads
X_6 = Refuse disposal sites
X_7 = Security/ Crime rate
X_8 = Electricity supply
X_9 = Water supply

Substituting the *x* parameters into equation (1), the equation is simplified as:

$$\varphi_{r\,(VOP)} = \beta_1 \varphi_{j(SHOP)} + \beta_1 \varphi_{j(EDUC)} + \beta_1 \varphi_{j(HEALTH)} + \beta_1 \varphi_{j(RECRE)} + \beta_1 \varphi_{j(ROAD)} + \beta_1 \varphi_{j(REFUSE)} + \beta_1 \varphi_{j(SECURE)} + \beta_1 \varphi_{j(ELECT)} + \beta_1 \varphi_{j(WATER)} + e \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Prior to using collated data to justify the duration of void period of residential buildings, a number of tests and checks were carried out on the data set in order to ensure that the eventual results are meaningful and interpretable. Typically, regression analysis is very sensitive to outliers, thus the first step in the analysis involved the removal /exclusion of outliers from the data. There was also the need to establish whether multicollinearity existed in each of the data sets. This is because multicollinearity had been reported to undermine regression analysis and the subsequent conclusions from such analysis (Starkweather & Herrington, 2016). Multicollinearity was tested for by computing the Tolerance values and Variance Inflation Factors for each of the independent variables. Results showed that the tolerance value for each of the independent variables exceeded 0.10. It therefore implied that there was no multicollinearity in the data sets. Further evidence is given in the Variance Inflation Factors (VIFs) which were quite satisfactory since they are well below the cut off of 10. Having satisfied all the assumptions underlying the use of categorical regression (i.e., excluded outliers, ensured linearity and

homoscedacity, and also satisfied the 'no multicollinearity' rule), the regression analysis was conveniently carried out on the data and results of the analysis are best described as accurate and findings are meaningful.

For the purpose of this research, void period is the period between tenancies when buildings are unoccupied. Educational institutions refer to government owned to primary, secondary and tertiary institutions. Shopping centres refer to multi-tenanted commercial complexes (including blocks of six or more shops on a single floor or on more than one floor); water supply referred to public/government provided boreholes, while Health care centres referred to government owned general hospitals, and primary health care centres.

4. Findings and Discussion

4.1 The significant impacts of Neighbourhood facilities / Amenities on the vacancy periods of residential buildings.

The impacts of neighbourhood amenities/facilities on the vacancy periods of each of the four house types were analysed using the optimally scaled categorical regression analysis. These are presented in Table 1

The model summary in table 1 showed R^2 values of 0.317, 0.318, 0.34, and 0.51 for tenements, one-bedroom apartments, two-bedroom bungalows, and three-bedroom bungalows respectively. These indicated that the regression models explained about 32% of the total variation in the vacancy period of tenement buildings and one-bedroom apartments in the study area, and also 34% and 51% of the total variation in the vacancy periods of two and three-bedroom bungalows respectively. In other words, only 32%, variance in the vacancy period of tenement buildings and one bedroom apartments in the study area is predictable from the facilities under consideration, while 34% and 51% variance in the vacancy period of two and three-bedroom bungalows respectively is predictable from these facilities.

:

Table 1: Model Summary (Standardised data)

House Type	Multiple R	R Square	Adjusted R Square
Tenement	0.563	0.317	0.299
One bedroom apartments	0.564	0.318	0.285
Two bedroom bungalows	0.583	0.34	0.282
Three bedroom bungalows	0.714	0.51	0.49

Data Analysis, 2019

Other factors which were unaccounted for in the model can be said to be responsible for the remaining 68% , 68%, 66% and 49% for the four house types respectively. These factors relates to the accommodation and size of the dwelling unit, the condition of the physical building components of the house, age of the building, number of toilets, rental values, demand for particular house types, and individual preferences/choices of particular neighbourhoods. Generally, the $\mathbf{R^2}$ (coefficient of determination) indicates the proportion of variance in the dependent variable that can be explained by the independent variables.

The multiple correlation coefficients (Multiple *R = 0.563, 0.564, 0.583. and 0.714*) in Table 1 further indicated a fairly good predictability of vacancy periods from the identified facilities/ amenities (for tenements, one-bedroom apartments, and two-bedroom bungalows), and a very good predictability (for three-bedroom bungalows) of the vacancy periods from the identified facilities/amenities. The Multiple *R* is a measure of the strength of the association between the dependent variable and the independent variables. It measures how well the vacancy periods of the four sampled house types can be predicted based on the availability and proximity of the subject buildings to facilities. It indicates the strength of the association between the vacancy periods and these facilities. Typically, a multiple correlation coefficient measures how well a dependent variable can be predicted from independent variables. According to Pallant (2011), the closer R is to 1, the stronger the linear association is.

The *F* ratios in table 2 tested whether the overall regression models are good fits for the data. The table showed that neighbourhood facilities (ie, the independent variables) significantly predicted the vacancy periods for the four sampled house types in the study area (the dependent variable in this case). As shown in the table 2, F (12, 460) = 17.804 for tenement buildings, F (16, 332) = 9.683 for one-bedroom apartments, F (13, 149) = 5.904 for two-bedroom bungalows and (12, 131) = 11.360 for three-bedroom bungalows. The p-values in all the four cases were 0.000 which were less than the alpha level (i.e. $p < 0.05$), thus an indication that the regressions were good fits for the data.

Table 2: ANOVA test for the significance of neighbourhood facilities on the void period of residential buildings.

	Sum of Squares	df	Mean Square	F	Sig.
Tenement Buildings					
Regression	150.012	12	12.501	17.804	0.000
Residual	322.988	460	0.702		
Total	473	472			
One bedroom apartments					
Regression	111.043	16	6.94	9.683	0.000
Residual	237.957	332	0.717		
Total	349	348			
Two bedroom Bungalows					
Regression	55.417	13	4.263	5.904	0.000
Residual	107.583	149	0.722		
Total	163	162			
Three bedroom Bungalows					
Regression	73.433	12	6.119	11.36	0.000
Residual	70.567	131	0.539		
Total	144	143			

Data Analysis, 2019

The standardised beta coefficients which enabled comparison of the contribution of each independent variable to be made are presented in tables 3, 4, 5 and 6. The standardised beta coefficients compared the strength of the effect of each neighbourhood facility to the vacancy periods of each of the four house types. 'Standardised' means that the values for each of the different variables have been converted to the same scale so that they can be compared. The higher the absolute value of the beta coefficient, the stronger the effect. These analyses for each of the four sampled house types are presented as follows:

4.1.1 The impacts of Neighbourhood facilities on the vacancy period of Tenement buildings

This is further analysed in Table 3:

Table 3: Beta Coefficients of the independent variables

	Standardised Coefficients				
		Bootstrap (1000) Estimate of Std.			
	Beta	Error	Df	F	Sig.
Shopping complexes	.165	.038	2	18.401	.000
Educational Institutions	-.140	.041	2	11.504	.000
Health care Centers	.095	.047	1	4.133	.043
Recreation Centers	-.024	.055	1	.193	.661
Major Roads	-.229	.041	1	31.361	.000
Refuse Dumps	.063	.045	1	1.968	.161
Security of the Neighbourhood	-.152	.042	1	13.119	.000
Electricity supply	-.262	.042	1	38.884	.000
Sources of Water supply	-.202	.041	2	24.436	.000

Data Analysis, 2019

Figures in the last column of table 3 (known as the p-values) tell whether the respective independent variables make a significant contribution to the dependent variable. Variables whose p-values are less than 0.05 implied that the variables are making a significant unique contribution to the vacancy period of tenement buildings in the study area. Analysis in table 3 showed that the proximity of dwelling units to shopping centres, educational institutions, health care centres, and major roads make significant unique contributions to the vacancy period of tenement buildings in the study area. Others are: the level of security of the neighbourhoods, electricity, and sources of water supply to the housing units. These independent variables had p-values which were less than 0.05. Results also showed that the impacts of some of the independent variables (ie, proximity to recreational centers, and refuse dumps) on the vacancy period of tenement buildings in the study area were not statistically significant. These independent variables had p- values that exceeded 0.05.

The standardised beta coefficients in the second column of table 3 further indicated that electricity supply made the strongest unique contribution to explaining the vacancy period of tenement buildings in the study area. It had the highest beta coefficient (0.262). Other predictors which also contributed in explaining the vacancy period of tenement buildings in the study area are arranged in order of the strength of their contributions as follows: proximity to major roads (beta

coefficient = 0.229), sources of water supply (beta coefficient = 0.206), proximity to shopping centers (beta coefficient = 0.165), security (beta coefficient = 0.152), proximity to educational institutions (beta coefficient = 0.140), and health care centers (beta coefficient = 0.095).

Precisely, findings revealed that closer distances of tenement buildings to shopping centres and health care centres increased the vacancy periods for this house type. It therefore implied that these two facilities (ie. shopping centres and health care centres) constituted a disadvantage to tenement buildings (when they were within close proximity), thus tends to put off prospective tenants, and increase the vacancy period. On the other hand, closer distances to educational institutions, as well as improved security, water supply and electricity supply contributed significantly to reducing the vacancy periods of tenement buildings.

4.1.2 The impacts of Neighbourhood facilities on the vacancy periods of one-bedroom apartments

This is analysed in Table 4:

Table 4: Beta Coefficients of the independent variables (One-bedroom apartments)

	Standardised Coefficients				
		Bootstrap (1000) Estimate of Std.			
	Beta	Error	df	F	Sig.
Shopping complexes	-.199	.052	2	14.773	.000
Educational Institutions	-.233	.047	2	24.331	.000
Health care Centres	-.225	.046	2	23.513	.000
Recreation Centres	-.093	.067	1	1.938	.165
Major Roads	-.208	.053	2	15.540	.000
Refuse Dumps	.239	.047	2	26.482	.000
Security of the Neighbourhood	-.235	.051	2	21.544	.000
Electricity	-.043	.046	1	.849	.357
Water supply	-.111	.049	2	5.144	.006

Data Analysis, 2019

An examination of the standardised beta coefficients in the second column of table 4 revealed that refuse dumps made the strongest unique contribution to explaining the vacancy period of one-bedroom apartments in the study area. It had the highest beta

coefficient (-0.239). This is followed closely by security of the neighbourhood (-0.235), and proximity to educational institutions (-0.233). Water supply and shopping centres made the least contributions to the vacancy periods of one-bedroom apartments in the study area. The two variables had standardized beta coefficients of -0.111 and -0.199 respectively.

Also, the p-values in the last column of table 4 tell whether the contributions of the respective independent variables to the dependent variable are significant. Variables whose p-values were less than 0.05 implied that the variables are making a significant unique contribution to the dependent variable. A careful look at the table showed that seven out of the nine amenities considered made significant unique contributions to the vacancy periods of one-bedroom apartments in the study area. As shown in table 4, the contributions of recreation centres and electricity supply to the vacancy periods of one-bedroom apartments in the study area were not significant.

For one-bedroom apartments, closer distances to shopping centres, educational institutions, health care centres, and major roads brought about significant reduction vacancy periods. Other amenities which made significant contributions to reducing the vacancy period of one-bedroom apartments are: improved neighbourhood security, and improved water supply. On the contrary, closer distances to refuse dumps increased the vacancy period of one-bedroom apartments.

4.1.3 The impacts of Neighbourhood facilities on the vacancy periods of Two-bedroom bungalows

This is analysed in table 5:

Table 5: Beta Coefficients of the independent variables (Two-bedroom bungalows)

	Standardised Coefficients				
		Bootstrap (1000) Estimate of Std.			
	Beta	Error	Df	F	Sig.
Shopping complexes	.042	.095	1	.201	.655
Educational Institutions	-.200	.078	2	6.524	.002
Health care Centres	-.074	.093	2	.631	.534
Recreation Centres	-.086	.095	1	.819	.367
Major Roads	.115	.095	2	1.461	.235
Refuse Dumps	.476	.073	2	42.256	.000
Security of the Neighbourhood	.085	.103	1	.680	.411
Electricity supply	-.185	.098	1	3.532	.062
Water supply	-.156	.076	1	4.177	.043

Data Analysis, 2019

Neighbourhood facilities whose p-values were less than 0.05 indicated that these amenities were making a significant contribution to the vacancy periods of two-bedroom bungalows in the study area. Precisely, only educational institutions, refuse dumps, and water supply made significant contributions, while the contributions of shopping centres, health care centres, recreation centres, major roads, security, and electricity supply were not significant. Also, the standardised beta coefficient in table 5 compared the strength of the effect of each independent variable to the vacancy period of two bedroom bungalows. The standardised beta coefficients in the table revealed that proximity to refuse dumps made the strongest significant contribution to explaining the vacancy period of two bedroom bungalows in the study area. It had the highest beta coefficient (0.476). While closer distances to educational institutions and improved water supply contributed to reducing the vacancy period of this category of houses, closer distances to refuse dumps resulted in prolonged vacancy periods.

4.1.4 The impacts of Neighbourhood facilities on the vacancy period of Three-bedroom bungalows

This is analysed in Table 6:

Table 6: Beta Coefficients of the independent variables (Three bedroom bungalows)

	Standardised Coefficients				
		Bootstrap (1000) Estimate of Std.			
	Beta	Error	Df	F	Sig.
Shopping complexes	-.312	.078	2	16.215	.000
Educational Institutions	-.229	.179	1	1.624	.205
Health care Centres	-.086	.112	2	.583	.560
Recreation Centres	-.300	.099	1	9.062	.003
Major Roads	-.226	.105	1	4.644	.033
Refuse Dumps	-.195	.144	2	1.831	.164
Security of the Neighbourhood	-.150	.119	1	1.571	.212
Electricity supply	-.260	.092	1	8.053	.005
Water supply	-.037	.158	1	.056	.813

Data Analysis, 2019

Table 6 showed that the facilities/amenities which made significant contributions to the vacancy periods of three-bedroom houses in the study area are shopping centres, recreation centres, major roads, and electricity supply. These were identified by their p-values which were less than 0.05. Table 6 also showed the standardised beta coefficients which aided a comparison of the strength of the effect of each amenity to the vacancy period of three-bedroom houses. The standardised beta coefficients in the table revealed that shopping centres made the strongest significant contribution to explaining the vacancy period of three-bedroom bungalows in the study area. It recorded the highest beta coefficient (0.312). This was followed by recreation centres, which had a beta coefficient of 0.300, and electricity supply (beta coefficient = 0.260).

For three-bedroom houses, results in table 6 clearly indicated that shopping centres, recreation centres, major roads and electricity supply impacted negatively on their vacancy periods. In essence, improved electricity supply as well as closer distances to shopping centres, recreation centres, and major roads made significant contributions to reducing the vacancy period. Other amenities such as educational institutions, health care centres, refuse dumps, security and water supply were found not to have any significant impact on the vacancy periods of three-bedroom houses in the study area. Findings in this study

corroborate the work of Remoy (2010), Akalemeaku and Egbenta (2013), and McPeake (2015) and which identified low demand, resulting from a variety of neighbourhood factors as having profound impacts on the vacancy / void periods of residential buildings.

5.0 CONCLUSION

Residential property development is considered as a major form of investment in Nigeria, thus it is imperative that appropriate measures are taken to ensure that the invested capital is profitably recouped. This research is an attempt to examine the influence of the availability and proximity to neighbourhood facilities on the vacancy periods of residential properties in Minna. Landlords and real estate investors are sometimes faced with the challenge of replacing tenants within the shortest possible time, on residential properties developed in particular neighbourhoods without a detailed understanding of the unique factors that determine these delays. This research addressed the question about the extent to which the variations in duration of vacancy of residential properties in the study area can be explained by differences in the relative distances / proximities to amenities across neighbourhoods. The study provided empirical evidence on the extent to which the duration of vacancies for four (4) different house types is influenced positively and/or negatively by the identified amenities. Based on findings from this research, it is desirable that the government (being the major provider of ancillary facilities) and real estate investors go an extra mile in ensuring comfortable residential environments. This can be achieved by providing, maintaining and upgrading amenities within and around the neighbourhoods. These will attract people to the area, thus minimizing vacancy periods and ensuring that monies invested in residential real estate developments are timely and profitably recouped. It will aid investors to make more informed decisions on residential property investment with adequate knowledge of the influence of various amenities within the various neighbourhoods.

References

Adebayo, MA 2006, The State of Urban Infrastructure and Its Effects on Property Values in Lagos. *Journal of Land use and Development Studies*, 2(1), 50-59.

Akelemeaku, OJ and Egenta, IR 2013, An approach to better management of voids in commercial properties in Enugu. *Journal of Land Management and Appraisal*, 1 (2), 133-139

Antofine, AE, Adeleye, OA and Kediri, MA 2014, Housing Quality Assessment in selected Public Residential Estates in Amuwo-odofin LGA, Lagos, Nigeria. *International Journal of Research in Earth and Environmental Sciences*, 2(6), 7-16.

Ansah, AO 2012, Examination of the Determinants of Housing Values in Urban Ghana and Implications for Policy Makers. Paper presented at

the African Real Estate Society Conference in Accra, Ghana from 24th -27th October 2012.

Atser J and Akpan, PA 2009, Spatial Distribution and Accessibility of Health Facilities in Akwa Ibom State, Nigeria. *Ethiopian Journal of Environmental Studies and Management*, 2 (2), pp. 49-57.

Boucq, E and Stratec, SA 2011, Estimating the Impact on Housing Price brought by a Light Rail Infrastructure in France. Association for European Transport and Contributors., Available at www.abstracts.eatransport.org/paper/.../id/3604.

Central Statistics Office 2012, *Infrastructure Statistics Manual.* Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

Cellmer, R Senetra, A and Szczepanska, A 2012, The Effect of Environmental Factors on Real Estate Value. Paper presented at the FIG working week held in Rome, Italy, from 6th-10th May 2012.

Department of Remote Sensing and GIS, Federal University of Technology, Akure 2016, Map of the study area.

Duflo, E Galiani, S and Mobarak, M 2012, Improving access to Urban Services for the poor: Open issues and a framework for a future research agenda. J-PAL Urban Services Review Paper, Cambridge.

Duncombe, W and Yinger, J 2010, "What Recent Research reveals about Expected Financial Savings when small districts merge". The School Administrator, May 2010, 67 (5).

Isreal, GD 2003, Determining Sample Size. Fact Sheet PEOD-6, A series of the Program Evaluation and Organizational Development, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: November 1992. Available at https:/edis.ifas.ufl.edu/…/PD00600.pdf and assessed on 5th June 2015.

Jahangeer, AP Showkat, AG Zahoor, AN and Sultan, MB 2012, Spatial Analysis on the provision of Urban Amenities and their Deficiencies - A Case Study of Srinagar City, Jammu and Kashmir, India. *Research on Humanities and Social Sciences*. 2 (6), pp 192 – 219.

Kiel, KA and Boyle, MA 2001, A Survey of House Price Hedonic Studies of the Impact of Environmental Externalities. *Journal of Real Estate Literature* 9(2), 117-144.

Leeds Unitary Development Plan (2006). Available at www.leeds.gov.uk/docs/chapter5ppG1amenitypdf, and

assessed on 17th December 2016.

Lin, S 2001, Public Infrastructure Development in China. *Comparative Economic Studies*, 43(2), 83-109.

McPeake, J 2015. Effective Void Management in Ireland. Available at https://www.housingagency.ie and assessed on 17th May 2017.

Moss, S 2016. Categorical regression analysis. Available at www.sicotests.com/psyarticle.asp?id=160, and assessed on 19th October 2016.

Nam, J Han, J and Lee C 2016, Factors contributing to residential vacancy and some approaches to management in Gyeonggi province, Korea. *Sustainability,* 2016, 8, 367.

Niger State Government (2011). Gateway to Land and Housing in Niger State. Available at www.nigerstateonline.com and assessed on 7th April 2015.

National Population Commission 2006, 2006 Population and Housing Census of the Federal Republic of Nigeria.

Ogu, V. I. (2005). Urban Infrastructure Development and Sustainability in Nigeria. Human Settlement Development, Vol 3, downloaded at www.eolss.net/samples.../e1-18-05-05pdf on 1st April, 2015.

Ogunbajo, RA 2018, Impact of Externalities on Rental Values and Void Period in Minna, Nigeria. PhD Thesis. Department of Estate Management, Federal University of Technology, Akure.

Oladokun, TT 2011, Property Void and Ethnic Differentiation in Okota Rental Housing Market; *Ife Planning Journal*, 4(1), pp 85-94.

Olujimi, JAB and Bello, MO 2009, Effects of Infrastructural Facilities on the Rental Values of Residential Property. *Journal of Social Sciences,* 5 (4), 332-341.

Otegbulu, AC 2014, Urban Infrastructure Condition and Neighbourhood Sustainability: A Contingent Valuation Approach. *Ethiopian Journal of Environmental Studies and Management*, 7 (2), 160-170.

Otegbulu, A and Adewunmi, Y 2009, Evaluating the Sustainability of Urban Housing Development in Nigeria through Innovative Infrastructure Management. *International Journal of Housing Markets and Analysis*, 2(4), 334-346.

Pallant, J 2011, *SPSS Survival Manual*. A step by step guide to data analysis using SPSS. 4th edition, Allen and Unwin, Australia. Pp 150 – 162.

Remoy, H. (2010). Out of Office: A Study on the Cause of Office Vacancy and Transformation as a Means to Cope and Prevent. Amsterdam: IOS Press.

Saed, Y., Kamariah, D. Mohammad, M. A. and

Johani, M. Y. (2015). Challenges of Co-ordination in provision of Urban Infrastructure for new Residential Areas: The Iranian Experience. *Environmental Management and Sustainable Development*, 4(1), 48-72.

Statistics Solutions 2016, Statistical Analysis: A Manual on Dissertation and Thesis Statistics in SPSS. Available at www.statisticssolutions.com, and downloaded on 28th October 2016.

Starkweather, J. and Herrington, R. (2016). Research and Statistical Support, Module 9, University of North Texas. Available online at www.bayes.acs.unt.edu:8083/BayesContent/class/Jon/SPSS_SC/Module0/M9_CatReg/SPSS_M9_CatReg.htm and assessed on 22nd October 2016.

Ujoh, F and Kwaghsende, F (2014). Analysis of the Spatial Distribution of Health Facilities in Benue State, Nigeria, *Public Health Research*, 4 (5), 210-218. doi: 10.5923/j.phr.20140405.09.

Zietz, J Zietz, EN and Sirmans, GS 2008, Determinants of House Prices: A Quantile Regression Approach, *Journal of Real Estate Finance and Economics,* 37, pp. 317-333.