Environmental Technology & Science Journal
Vol. 8 No. 2 December 2017

Analysis of Residential Property Rental Values Trends in Abaji City, F.C.T Nigeria

Sule, Abass Iyanda
Department of Estate Management & Valuation, Federal University of Technology, Minna
suleabbass76@futminna.edu.ng

Abstract
This paper examined the residential property rental values and demographic trends of Abaji City in order to uncover the housing market dynamics in Abaji area council. It is aimed to study rental performance so as to serve as a guide for potential investors in the study area. The rental values were obtained with the aid of questionnaire from ten 'Care takers' (Estate agents) for the period of 2003 – 2013, while population data was obtained from National Population Census and National Bureau of Statistics archives. The data collected were analyzed using trend analysis with simple linear regression models of Microsoft Excel, population projection and growth rate matrix. The study findings revealed an exponential increase in the residential rental values over the years, there is positive relationships between the rental values and time, given coefficients of determination R^2 as 0.9594, 0.8971 and 0.9115 for three, two and one bedroom houses respectively. Also, it revealed the potential investment opportunity in the residential sector of the study area. This study therefore, recommends among others that the local planning authority of the Abaji area council should be more proactive about development control so as to curb urban sprawl as the area is a potential destination for real estate investors and developers.

Keywords: Rental value, Residential properties, Demographic, Trends

Introduction
Growth in cities is accelerated by the readiness of the citizens and government to alienate land for development purposes. Land alienation is high in Abaji- the seat of Abaji Area Council of FCT-Nigeria leading to a fast pace of development especially in residential sector. As cities develop from the core to the countryside like the ocean waves on a beach, the land on the urban periphery be it farmland, grassland or forest is alienated for functional urban uses. The prices of land in periphery of cities in most Nigeria cities are very unstable, expensive and suspicious. The unpredictability of the land prices in Nigeria cities is a function of population aggregate and pressure occasioning high demand. Land appears to be significantly inelastic in price while demand remains high (Fasakin, *et.al*, 2006). Ajayi (1998) observes that, as economically efficient cities expand, pressure on land is reflected in high prices throughout the city. Again, the demand for land in cities especially in the periphery is a derived demand from that of product or services such as residential units which in turn is derived from demographic aggregate dynamics and profiles. The use of demographic information has been predominantly restricted to household population forecast considered essential when estimating future demand in a given area for which the demographic data is ideally suited (Runnels, 1989; Reed, 2001). However, when property valuers and analyst are looking towards the future in relation to housing and investment, demographic

statistics is increasingly acknowledged for their significant contribution towards an in-depth understanding (Hill & Peterson, 1994). In every part of the world where life exists, the number of residents within the area tends to change over time. The population changes affect the housing market dynamics of such an area which need to be understood by policy decision makers as well as stakeholders in the real estate investment sector. Therefore, this study aimed to establish the future performance of residential property in Abaji City by undertaken market feasibility study and forecast the future trends of rental values, and probable additional housing demand.

Objectives of the Study

The objectives are as follows:

(i) To find out the rental values of residential properties in the study area

(ii) To examine the rental value performance of residential properties in the study area

(iii) To find out housing demand in relation to population changes of the study area

Literature Review

Housing is viewed as consumption and an investment good in the literature. According to Reed (2001), housing represents the largest single source of wealth for individuals and has an important role in the macro economy. Housing as an investment requires a performance analysis of the housing market which the literature suggests that real estate market performance depends on location. Hence, real estate performance inclusive of rental trend analysis has to be location specific (Udoekanem *et al.*, 2014). Rental value trend of residential properties have been carried out by various authors and their studies are examined in the following paragraph.

The early study of Mankiw and Weil (1989) explored the relationship between demographics and the housing market in the United States. The study revealed that a large demographic change stimulate large changes in the demand for housing. Similarly, Reed (2001) investigates the changes in the established residential house prices in Brisbane and the study confirmed strong relationship between established residential house prices and demographic variables. Adrian (2012) assesses the City's housing needs of Upper Hutt City in New Zealand based on demographic change over a period of 25 years. The study showed that the Upper Hutt City will require substantial additional dwelling units due to population growth though with a declining average household size. In his exploratory study, Mulder (2006) regards the relationship between housing and population as a two-sided phenomenon. An exposition of the side one relate to the fact that people live in households and invariably households need housing, hence, increase in housing demand will have a push effect for supply of housing in the area. However, side two link housing to population which has to do with three variables- migration, household formation and birthrate. (For exposition see Mulder, 2006). Bello (2012) examines residential property performance in Akure, the study findings revealed a continuous rental growth in the two selected area. Similarly, Adebisi *et al.* (2015) find out that students population pressure contributes to high residential property rental values in the neighbourhoods in close proximity to the Federal University of Technology, Akure, Nigeria. Also, Ogunleye (2015) investigates the performance of residential properties rental value of government housing estates in two neighbourhoods of Akure, Nigeria. The study revealed a strong relationship between rental growth and time; however, he adduced population deprivation in the study area to lack of good housing and related infrastructure facilities. In another study conducted by Chukwu *et al*. (2015) in Enugu State of Nigeria, the study revealed that infrastructure development impacted positively on the rental values of residential properties in one of the two neighbourhoods examined. The study which discovered that rental value growth in New-Heaven area was higher compare

to Achara Layout area up to the year 2009, reported that massive infrastructure development thereafter by the government in the latter reduced the gap drastically. From the foregoing, apart from Mankiw and Weil (1989), Reed (2001), Adrian (2012) and Mulder (2006) who had examined the relationship between demographic and housing market. Other studies especially from Nigeria seem not inquiring in this area and therefore, this study fills the gap.

Methodology

Data for this study came from both primary and secondary data sources. The primary data mainly consist of rental value data of residential properties in the study area. These include a range of annual rental values paid for 3, 2 and 1bedroom flats for the period of 2003 – 2013, from which the average rental values for each category of residential property type was arrived at through Microsoft Excel function. The rental values were obtained from ten (10) 'Care takers' as popularly known in the study area with aid of questionnaire, 'Care takers' became the source of information due to nonexistence of registered estate firm in the study area. 'Care takers' are estate agents who practice estate agency but not registered with either the Nigerian Institution of Estate Surveyors and Valuers (NIESV) or Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON). Secondary data for the study is mainly population data sourced from National Population Census (NPC) and National Bureau of Statistics documents. The data collected were presented in tables and the analysis was done with simple linear regression models of Microsoft Excel. This was used to depict the trends in rental values and to compute the growth rate in the rental values of the residential properties in the study area. The second analysis conducted was on the population growth rate based on the population data of the study area obtained from NPC (2006) and NBS (2012) as well as population projection for short term period (2011 – 2016) and (2016 - 2021). The population growth rate was calculated with the formula:

$r = [(P2/P1)^{1/t} - 1] \times 100$ …… (1)

Where

r = growth annual rate (in %)

P1 = population at the beginning of the census period

P2 = population at the end of the census period

t = number of years of census period

For the population projection is

$Pt = Po * (1 + r/100)^{1/t}$ …… . (2)

Where

t = number of years of census period

Pt = population after t years

Po = population at the start

r = growth annual rate (in %)

Analysis and Findings

Assessment of rental values progression of the study area

From the average rental values of one, two and three bedrooms obtained in Senior and Junior Quarters of Abaji, the trends in the rental values between the year 2003 and 2013 is graphically illustrated as shown in Figure 1.

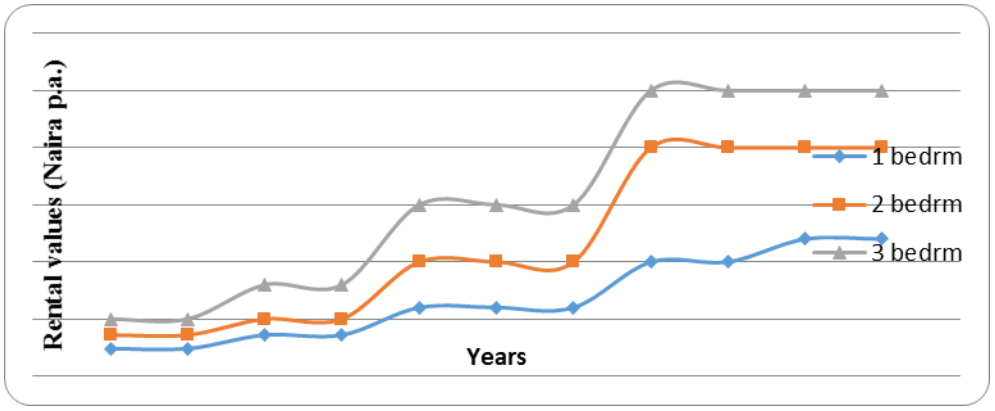

Figure 1: Rental values (₦) trends in Senior and Junior Quarters Area of Abaji

Figure 1 shows an upward trend positive relationship between rents and time. Also, it revealed the exponential growth of rents in the area especially for the two and three bedrooms houses. The rent passing on the 2 and 3 bedrooms residential property in the area increase exponentially in the year 2009 compared to 1 bedroom residential property. However, the rent passing on the 2 and 3 bedrooms residential property remain stable till 2013 while 1 bedroom residential property has gain a little increase in 2012.

The average rental values of one, two and three bedrooms as obtained in Sabon-Tasha Area of Abaji are as reported in Table 1. The trends in the property values of the area are graphically illustrated as shown in Figure 2.

Figure 2 shows the average rent passing on 1, 2 and 3 bedrooms residential property in Sabon-Tasha Area of Abaji. The rent passing on all the three types of residential properties in the area increase astronomically in the year 2009. The average growth rate of rent passing in the area as at 2009 stood at 1.67, 2.25 and 2.22 per cent for 3 bedrooms, 2 bedrooms and 1 bedroom respectively. However, the rent passing on the 2 and 3 bedrooms residential property remain stable till 2013 while 1 bedroom residential property has gain a little increase in the average growth rate of rent passing of 1.25 per cent as at 2012.

Table 1: Average rental values (₦) in Sabon-Tasha Area of Abaji

House types	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
One Bedroom	18,000	18,000	24,000	24,000	36,000	36,000	36,000	80,000	80,000	100,000	100,000
Two Bedroom	24,000	24,000	36,000	36,000	80,000	80,000	80,000	180,000	180,000	180,000	180,000
Three Bedroom	36,000	36,000	65,000	65,000	120,000	120,000	120,000	200,000	200,000	200,000	200,000

Source: Authors' Field Survey, 2013

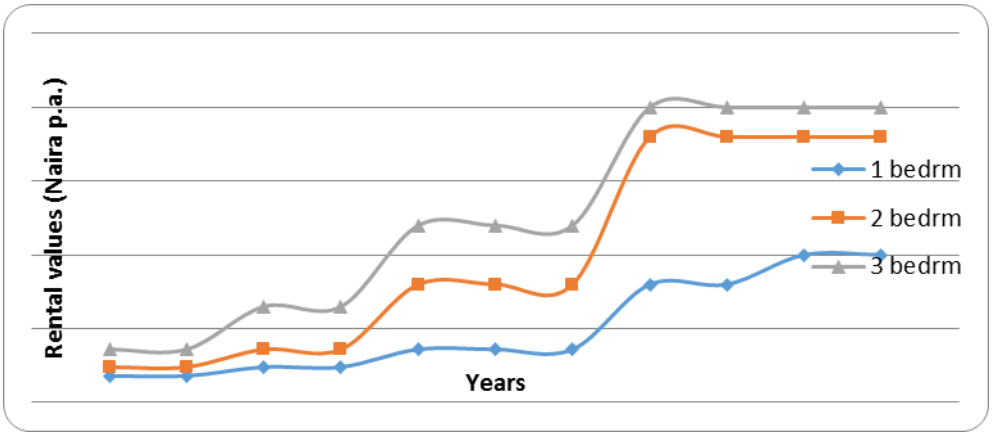

Figure 2: Rental values (₦) trends in Sabon-Tasha Area of Abaji

Table 2: Average rental values (₦) in Pipeline Area of Abaji

House types	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
One Bedroom	18,000	18,000	24,000	24,000	36,000	36,000	60,000	60,000	80,000	80,000	80,000
Two Bedroom	36,000	36,000	60,000	60,000	80,000	80,000	120,000	120,000	120,000	120,000	120,000
Three Bedroom	60,000	60,000	100,000	100,000	150,000	150,000	150,000	200,000	200,000	200,000	200,000

Source: Authors' Field Survey, 2013

Table 2 presents the average rental values of one, two and three bedrooms as obtained in Pipeline Area of Abaji during the field survey. Subsequently, the trend in the property values of the area is as shown in Figure 3.

The rent passing on all the residential properties in Pipeline area of Abaji shows a linear pattern since 2003 to 2013 (Figure 3). The average growth rate of rent passing in the area depicts a steady pattern of growth. The highest increase gain attracted by the properties in the area was in 2009 with 0.67 per cent and 0.5 per cent for one and two bedrooms respectively while the three bedrooms gained 0.5 per cent increase in the year 2007 and 2010.

Table 3 presents the average rental values of one, two and three bedrooms as obtained in Kekeshi Area of Abaji during the field survey. Next is the trend in the property rental values of the area as shown in figure 4 below.

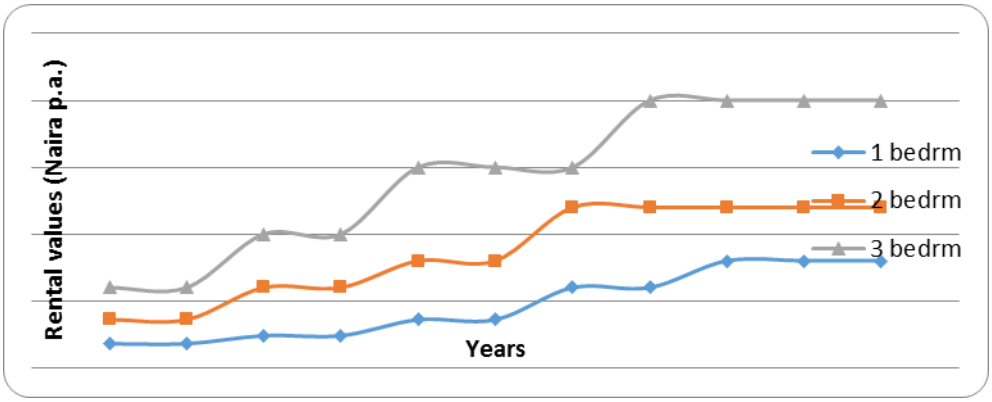

Figure 3: Rental values (₦) trends in Pipeline Area of Abaji

Table 3: Average rental values (₦) in Kekeshi Area of Abaji

House types	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
One Bedroom	12,000	12,000	18,000	18,000	30,000	30,000	42,000	42,000	50,000	50,000	50,000
Two Bedroom	30,000	30,000	45,000	45,000	60,000	60,000	100,000	100,000	100,000	100,000	100,000
Three Bedroom	50,000	50,000	80,000	80,000	120,000	120,000	120,000	150,000	150,000	150,000	150,000

Source: Authors' Field Survey, 2013

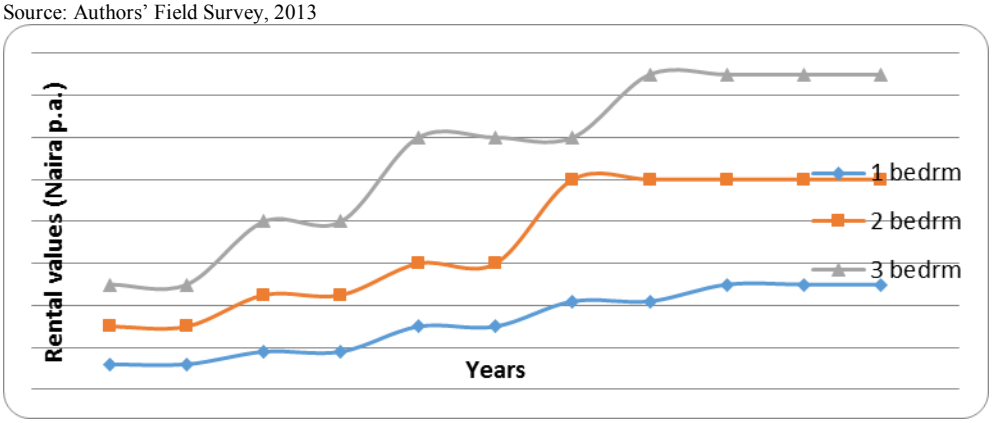

Figure 4: Rental values (₦) trends in Kekeshi Area of Abaji

Figure 4 shows the steady pattern of rental growth in Kekeshi Area of Abaji. The average rent passing on one and two bedrooms residential property in the area gained its highest increase of 0.67 per cent in 2007 and 2009 respectively. While three bedrooms residential property gained an increase of 0.5 per cent as at 2007. However, residential properties rental values in the area continue to show a positive relationship with time.

Again from Table 4, all the three residential property types shows and upward increase in rental value. The data in the table 5 is graphically illustrated below (Figure 5) to show clearly the trend in the rental flow.

Table 4: Average rental values (₦) in Tundun Wada Area of Abaji

House types	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013

One Bedroom	12,000	12,000	12,000	12,000	18,000	18,000	18,000	18,000	70,000	70,000	70,000
Two Bedroom	18,000	18,000	18,000	18,000	24,000	24,000	24,000	100,000	100,000	100,000	100,000
Three Bedroom	30,000	30,000	60,000	60,000	80,000	80,000	120,000	120,000	200,000	200,000	200,000

Source: Authors' Field Survey, 2013

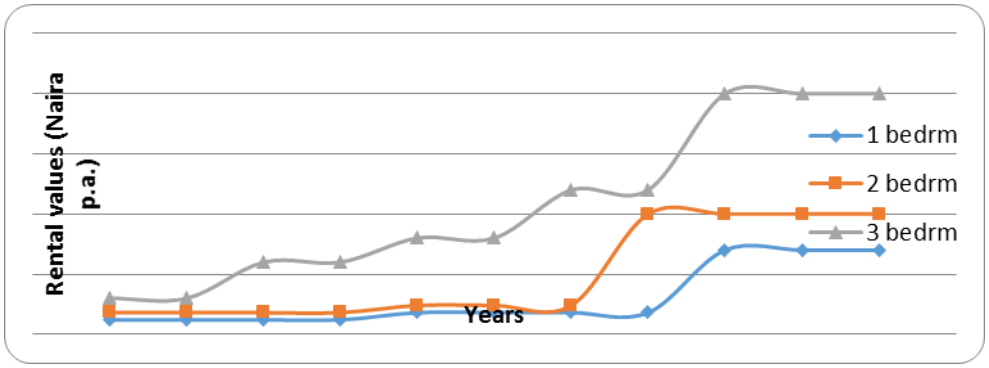

Figure 5: Rental values (₦) trends in Tundun Wada Area of Abaji

Figure 5 shows the rental values of one and two bedrooms in the Tundun Wada area of Abaji was almost at par between the year 2003 and 2009. The difference in the rental values of these residential properties at that period was insignificant as can be seen from the figure 5. However, in 2010 there was an unimaginable rise in the rental value of two bedrooms residential properties in the area which gained about 316 per cent increase in rent. Furthermore, the three bedrooms in the area in 2011 attracted an increase in rental value of up to 67 per cent.

In Table 5, all the three residential property types shows and steady increase in rental value. The data in the table 6 is graphically illustrated below (Figure 6) to show clearly the trend in the rental flow.

Similarly, the rental value trends in Abbattior area of Abaji show a similar pattern of rental growth in the year under review. In the Figure 6 above, the rental values of one and two bedrooms in the Abbattior area of Abaji was almost at par between the year 2003 and 2009. The difference in the rental values of these residential properties at that period was insignificant. On the other hand, in 2010 there was rental value growth of 316 per cent for two bedrooms residential properties in the area. Besides, the three bedrooms residential property rental values in the area rise by 67 per cent in 2011.

Table 5: Average rental values (₦) in Abbattior Area of Abaji

House types	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
One Bedroom	12,000	12,000	12,000	12,000	18,000	18,000	18,000	18,000	70,000	70,000	70,000
Two Bedroom	18,000	18,000	18,000	18,000	24,000	24,000	24,000	100,000	100,000	100,000	100,000
Three Bedroom	30,000	30,000	60,000	60,000	80,000	80,000	120,000	120,000	200,000	200,000	200,000

Source: Authors' Field Survey, 2013

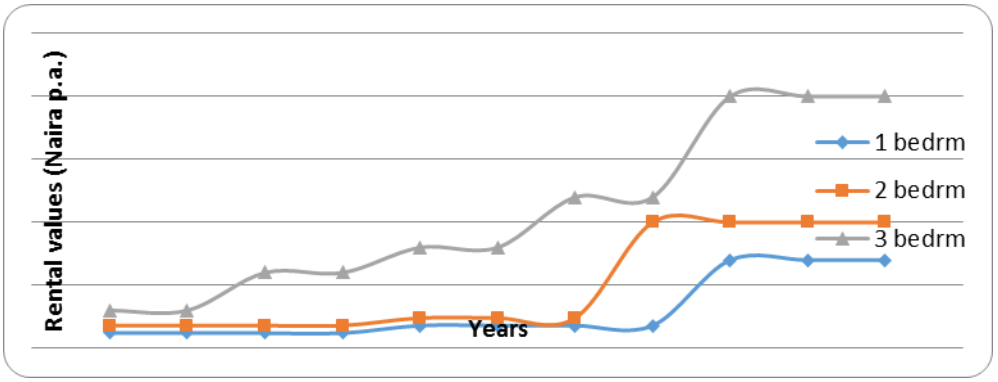

Figure 6: Rental values (₦) trends in Abbattior Area of Abaji

.

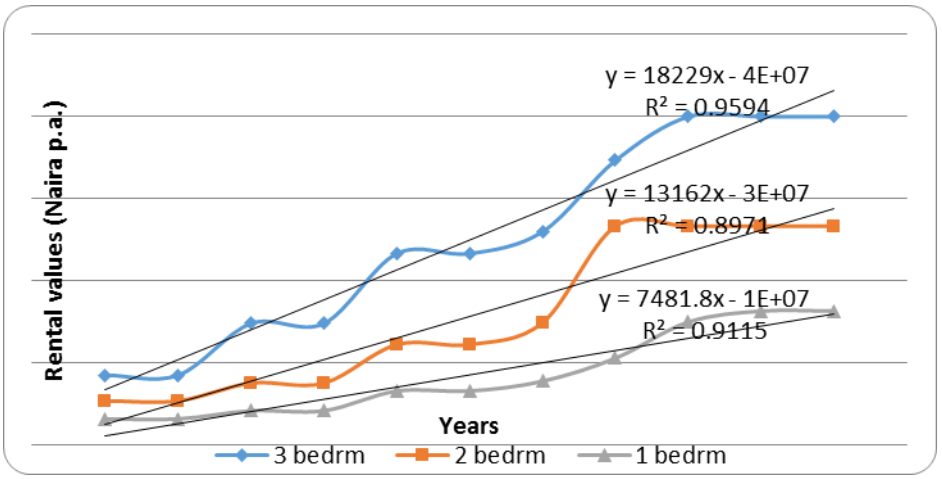

Figure 7: Statistical analysis of average annual rental values (₦) trends in Abaji City (Residential properties)

Figure 7 shows the overall annual average rental value trends of one, two and three bedrooms residential properties in Abaji City as a whole. It can be seen from the figure 7 that the annual average rental values of residential properties in the study area depict a progressive increase over the years. The positive relationships between the rental values and time have the coefficients of determination R^2 as 0.9594, 0.8971 and 0.9115 for three, two and one bedroom houses respectively. These results depict a high strength correlation between time and rents.

Figure 8 shows the projections in the rental values of the residential property in the study area based on linear equation as shown in the graph above. The projections to the year 2021 revealed the R^2 of the three residential housing types in the area as follows: 0.9918, 0.9794 and 0.9816 for three, two and one bedroom houses respectively. These results indicate that all the three types of residential houses in the area will be more profitable in future. The R^2 values of all these residential properties are high; however, it is clear that the three bedroom residential houses have the highest R^2 value (0.9918). This shows that about 99 per cent of the rental value variation of the three bedroom residential houses is explained by time variation in the model.

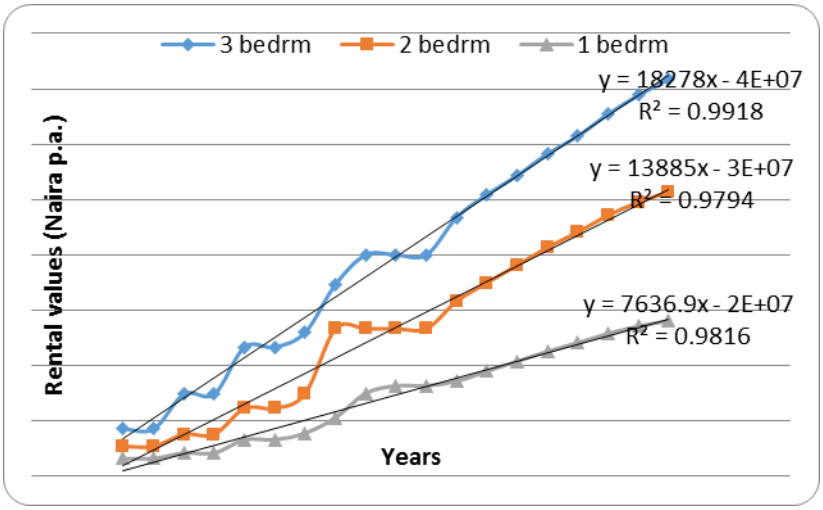

Figure 8: Statistical analysis of projected average annual rental values (₦) trends in Abaji City (Residential properties)

Analysis of population growth of the study area

According to the National Population Census (NPC) conducted in Nigeria during the year 1981, 1991 and 2006, the population of Abaji is as shown in Table 6. However, National Bureau of Statistics (2012) document revealed a projected population of Abaji from the year 2006 to 2011 as shown with asterisk in Table 6.

The projected population growth of 2016 (Table 6) is based on the established population census of 2006 and the projected population of 2011 by National Bureau of Statistics (2012). As such, the projections are a conservative estimate of the increase in population between 2006 and 2011 (see Table 6 & 7).

Over the last decade (2006 - 2016), Abaji has experienced population growth of 0.15 percent per annum. Focusing on the next 5 years, if the recent trends were to continue based on the annual average growth rate of projected population of 2011 to 2016 which stood at 0.09 percent per annum to 2021. Hence, the change in population indicates 88,047 people will need to be accommodated by the year 2021 (Table 7). Furthermore, the projected population figures are converted to an estimate of required dwelling units using the anticipated average number of residents per household in Abuja which is 4.5 (NBS, 2012 p110). Therefore, on the aforementioned scenario, the required housing units for the population of 88,047 on the average basis of 4.5 numbers of persons per household will result to 19,566 units of housing as other things are held constant.

Conclusion

This study has shown that, the rental value of residential properties in Abaji City has grown over the years, and the future projected rental value of the residential properties in the area revealed an exponential growth rate. Although all the three types of residential properties examined in this study have very high R^2 values which are practically and statistically significant, however, the 3-bedroom residential houses have the highest R^2 value of (0.9918). Besides, the projected housing need or requirement of the City based on medium term (2016 - 2021) according to assumptions as described in the analysis suggest that there will be sufficient demand. Evidently, an addition of about 3, 913 housing units are required annually to cater for the ever increasing population of the study area. Hence, Abaji City in Abaji Area Council is a destination for potential real estate

investors and developers for optimal investment returns. However, this study recommends that the local planning authority of the Abaji area council should be more proactive about development control so as to prevent sprawl formation in the area. Furthermore, this study recommends that demographic trend should be given attention as this influence cities growth.

Table 6: Trend in population growth of Abaji

Years	1981	1991	2006	2008	2009	2010	2011
Population	3,360	21,081	58,642	70,630*	77,513*	85,068*	93,359*

Sources: National Population Census (2006) & *Projected Population by NBS (2012)

Table 7: Projected population growth, at an average growth rate of 0.097 percent p.a.

Years	2006	2011	2016	2021	Change in population 2016 to 2021
Population	58,642	93,359	148,655	236,702	88,047

References

Adebisi, O. S., Ezeokoli, N. B., Oletubo, A. A. and Alade, T. J., 2015. Rental Analysis of Residential Properties in Close Proximity to the Federal University of Technology, Akure, Nigeria. *Journal of Economics and Sustainable Development,* Vol.6, No.10.

Adrian, S., 2012. Analysis of Demographic Trends and Housing Demand in Upper Hutt City. *Business and Economic Research Limited, BERL House, wellington, New Zealand*

Ajayi, C.A., 1998. *Property investment valuation and analysis*. Ibadan: De Ayo Publication, Bodija Ibadan.

Bello, V.A., 2012. Performance of Rental Values of Residential Properties in Selected areas in Akure, Nigeria between 2001 and 2011. *Mediterranean Journal of Social Sciences*, 3(3), 531 – 536.

Chukwu, A.C., Aniagolu, C.O., and Obodo, C.M., 2016. Trends in Rental Values of Residential Properties in Enugu, Nigeria; A Comparative Study between New Haven and Achara Layouts. *Journal of Multidisciplinary Engineering Science and Technology (JMEST)* Vol. 3 Issue 2.

Fasakin, J.O. and Ogunmakin, O.T., 2006. Some characteristic of Alienated Land for Residential Development in Akure, Nigeria (1999-2003) in *Social Sciences* 1(1):72-76.

Hill, J.K. and Petersen, D.M., 1994. 'Demographics and the Long-Term Outlook for Housing Investment' in *Economic Review*, First Quarter.

Mankiw, N.G., Weil, D.N., 1989. The baby boom, the baby bust, and the housing market. *Regional science and urban economics* 19(2): 235-58

Mulder, C.H., 2006. Population and housing: A two-sided relationship. *Demographic Research:* Vol. 15, Article 13. Published by the Max Planck Institute for Demographic Research Konrad-Zuse Str. 1, D-18057 Rostock GERMANY

NBS, 2012. *Quarterly Statistical Report*, Abuja: National Bureau of Statistics

National Population Census, 2006. National Population Commission http://www.nigerianstat.gov.ng/pdfuploads/annual_abstract_2012.pdf. (Accessed on 8th August 2016)

Ogunleye, B. M., 2015. Analysis of Investment Performance of Residential Property in Government Housing Estates in Akure, Nigeria.

Journal of Emerging Trends in Economics and Management Sciences (JETEMS) 6(3):193-201.

Reed, R., 2001. The significance of social influences and Established Housing Values, *The Appraisal Journal*, 69 (4), 56 – 61.

Runnels, J.A., 1989. Projecting Housing Demand from Demographics. *Real Estate Issues*, 14-20.

Udoekanem, N.B., Ighalo, J.I. and Nuhu, M. B., 2014. Determinants of Commercial Property Rental Growth in Minna, Nigeria. *EUL Journal of Social Sciences* (V: I) LAÜ Sosyal Bilimler Dergisi June 2014 Haziran

Attributes and Patterns of Mixed-Use Buildings in Ikeja Model City Planned Corridors Lagos, Nigeria

Shakirat Folashade Salami, Abubakar Danladi Isah, Stella Nonyelum Zubairu
Department of Architecture, Federal University of Technology Minna, Nigeria
arcmuzaifa@futminna.edu.ng

Abstract
Several developed countries are comprised of planned cities that support and sustain the needs of their inhabitants. In the 21st century it is almost impossible to find a thriving city without mixed-use developments or buildings. The concept of mixed-use has long been incorporated into our building developmental practices spontaneously. However, planning laws and developmental processes are now emerging to standardize the kinds of mixed-use that are permissible within the built environment. It therefore suggests that mixed-use buildings are indispensable in a metropolitan city due to increasing urbanity. Meanwhile debates abound on what constitute mixed-use as generalization is difficult because localities and socio-cultural dynamics affect the development of mixed-use structures. Mixed-use buildings are notable because they are characterized with combining several functions, and it is also part of the compact city and new urbanism developmental strategy. Mixed-use attributes promote strong relationships and opportunities between residents, and provides varied job while supporting integration. In aligning with other megacities across the world, and to deal with the haphazard development as well as conversion of uses in urban areas prompted the development of Model City Plans (MCPs) for different areas in Lagos State, Nigeria. The goal of this paper is to examine the attributes of mixed-use buildings in Ikeja Model City Plan through focused observation in order to determine the emerging pattern of mixed-use for the area and its implications. After eighteen mixed-use buildings were