



ANALYSIS OF VACANT LAND VALUE DETERMINANTS IN URBAN ZARIA, NIGERIA

Abbas, S.

Department of Geography and Environmental Management, Ahmadu Bello University, Zaria, Nigeria

Correspondence Author's Email address: abbasshehu55@gmail.com, Phone: +2348101573291

ABSTRACT

The study tried to analyse the determinants of vacant land values in urban Zaria Nigeria. This is in realization of the fact that though several studies have been carried out on land values in Nigeria, studies on vacant land values are hard to come by. Again, most of the previous studies used data obtained from occupants of developed properties, while this study utilised questionnaire survey, administered on estate agents/dealers, identified through snowball sampling. The analytical tool was multiple regression analysis, where vacant land value was the dependent variable while the several explanatory variables, identified from literature, estate agents and the authors' knowledge of the local area, were the independent variables. The results shows that the major determinants of vacant land values in the area include neighbourhood quality, road quality, development potential, and ethnic composition, with p values of 0.012, 0.024 and 0.035 respectively. In line with that the hypothesis put forward was tested, and it shows that there is a significant relationship between vacant land values and many of the explanatory variables. This implies that variables like neighbourhood quality, quality of road, development potential, ethnic composition, proximity to high institutions, distance from sub-centre, distance from CBD, and water supply, in that order, all help to account for vacant land value variations in urban Zaria. It was, therefore, recommended that these factors should be given due consideration in planning and policy formulation for future development of the area.

Keywords: Vacant Land value, Determinants, Urban, Neighbourhood quality, Road quality, CBD

INTRODUCTION

Vacant land, according to the American Planning Association, refers to a lot or parcel of land on which no improvements have been constructed (Davidson & Dolnick, in Kim *et al.*, 2018). On the other hand, price for land is either the amount sought (asking price) or the sum received (price paid); while the value of land is price estimates that reflect subjective expectations and perception of worth. In an efficient market, the value is likely to correspond to price. In this study, therefore, land value is seen as the price estimate that reflects subjective expectations and perceptions of worth of a vacant land (Adams, 1994). The value of vacant land has been rising for a long time in many developing countries cities. Little wonder that the UN Habitat Conference as far back as 1976 identified this as one of the most serious of many problems of urbanization in developing countries. This is largely because of the rapid increase in the demand for urban land for housing. However, due to the heterogeneity of socioeconomic activities in towns and cities, the values are not only rising but there are interesting variations in land values in different segments of cities (Jordan *et al.*, 2004).

According to Kironde (2000), land markets in urban Africa have not been well studied. This is perhaps because African

governments believe that they are the major source of urban land through planning schemes, or because governments do not generally recognize sale of bare land, and therefore believe that land market transactions do not exist. However, there is considerable evidence that most landowners in urban Africa obtain land by way of purchasing it from recognized owners. In urban Zaria, it has been observed that the land market has been vibrant for quite some time, with variations in land values recorded in different areas of the city. However, virtually no attempt has been made to systematically analyse the factors responsible for the variations. This study tries to unearth the explanatory variables, via a survey across the key actors in the land market in the area. It is worth noting that Zaria has attracted a number of people due to the ever increasing volume and variety of socio-economic activities located at spatially different parts or points. These activities range from the several institutions of higher learning, a number of commercial banks, telecommunication service providers, markets and retail outlets, all of which have attracted consumers and providers of ancillary services. *Ceteris paribus*, these would increase the demand, not only for residential properties, but also for commercial properties in the area and its attendant effects on vacant land values.

Some of the earliest theorists on land use and land value were Ricardo and von Thunen in the 19th century. Ricardo's theory was based on relative productivity of agricultural land while that of von Thunen was geographical and therefore considered the locational attributes of land in terms of its values and use. As far as Ricardo is concerned, land value is determined by relative and absolute productivity of land. A key drawback of the Ricardian approach is that it does not account for location. This was addressed by von Thunen, who considered both relative and absolute spatial locations of human activities on a landscape. A number of scholars (like Alonso, 1964; Muth, 1969 and Mills, 1981) have worked on land values, some of whom had proposed distance decay models; arguing that land values tend to decline with distance away from the city centre or CBD. One theory of interest here is the one by Hurd (1903). It maintains that since land value is dependent on economic rent, and rent on location, while location depends on convenience, and convenience on nearness, we can do away with the intervening steps and simply conclude that land value depends on nearness. According to Kabba & Li (2011), such nearness could be nearness to any of the following: city centre, social amenities, market areas, sea port or other such factors that buyers and sellers consider important in influencing land values.

Several studies have been carried out in Nigeria on land values, such as the one by Emoh *et al.*, (2013) on residential land value determinants in Onitsha; Riko & Dung-Gwom (2006) on peri-urban land values in Jos and Bello (2011) on urban crime and property values in Akure. So, while most of the previous studies (including Emoh *et al.*, 2013; Riko & Dung-Gwom, 2006 and; Bello, 2011) focused on developed properties (built-up areas), the present study revolves around undeveloped (vacant lands) within and around the city. Consequently, while these studies obtained information largely from occupiers of residential properties, the present study sourced information from actors in the day to day transactions on vacant lands, namely Estate Agents/Dealers in town. It is believed that these categories of respondents are in a better position to speak on land issues, since it is their main preoccupation. Thus, outcomes from this study are expected to be more reliable. This study is therefore, set out to analyse vacant land value determinants in the Zaria urban area of Kaduna State Nigeria. Hence, a hypothesis is hereby

formulated: "There is no significant relationship between vacant land values and explanatory variables".

Study Area

Zaria is located on the central plain of northern Nigeria, about 950km from the sea, approximately between Latitudes 11° 00' - 11° 10' North of the Equator and Longitudes 7° 36' -7° 45' East of the Greenwich Meridian (Figure 1). It is the second largest town in Kaduna State, after Kaduna, the state capital. Zaria town is made up of Zaria and Sabon Gari local government areas (LGAs). They form the study area, with the Kubanni river as the boundary that separates the two LGAs. The headquarters of Zaria LGA is located in Zaria city, near the Emir's palace, while that of Sabon Gari is located at Dogarawa.

Zaria, being in the heart of the Hausaland is predominantly occupied by the Hausa speaking people, traditionally known as Zage-zagi or Zazzagawa, who largely occupy the old walled city. Outside the city wall are other Hausa elements, who originally migrated into Zaria from the northern states. These are especially found in Tudun wada. The non-Hausa in-migrants to the area are predominantly found in areas like Sabon Gari, Palladan and Samaru. According to the 2006 population census, the two LGAs that make up the Zaria urban area have a combined population of 698,348 (with S/Gari having 291,358 and Zaria 406,990) (NPC, 2009). And according to Buttler (2015), Zaria is among the top ten most populous urban areas in Nigeria. Indeed it has been ranked 8th, and is the only non-state capital amongst the top ten.

The growth of urban Zaria, though influenced by historic circumstance and political authority it wielded prior to the 19th century, is also the result of deliberate establishment of educational institutions (Bello, 2000). Hence, it has been noted that twelve out of the seventeen tertiary institutions in Kaduna State are located in Zaria, while there are about fourteen manufacturing industries and major commercial establishments. As a result of this and many other developments in the area, Bello (*ibid*) has found that between 1962 and 1992, Zaria as an urban centre has been transformed from an educational centre to a rapidly growing manufacturing industrial city sprawling for more than 25km stretch along Kaduna-Sokoto high way.

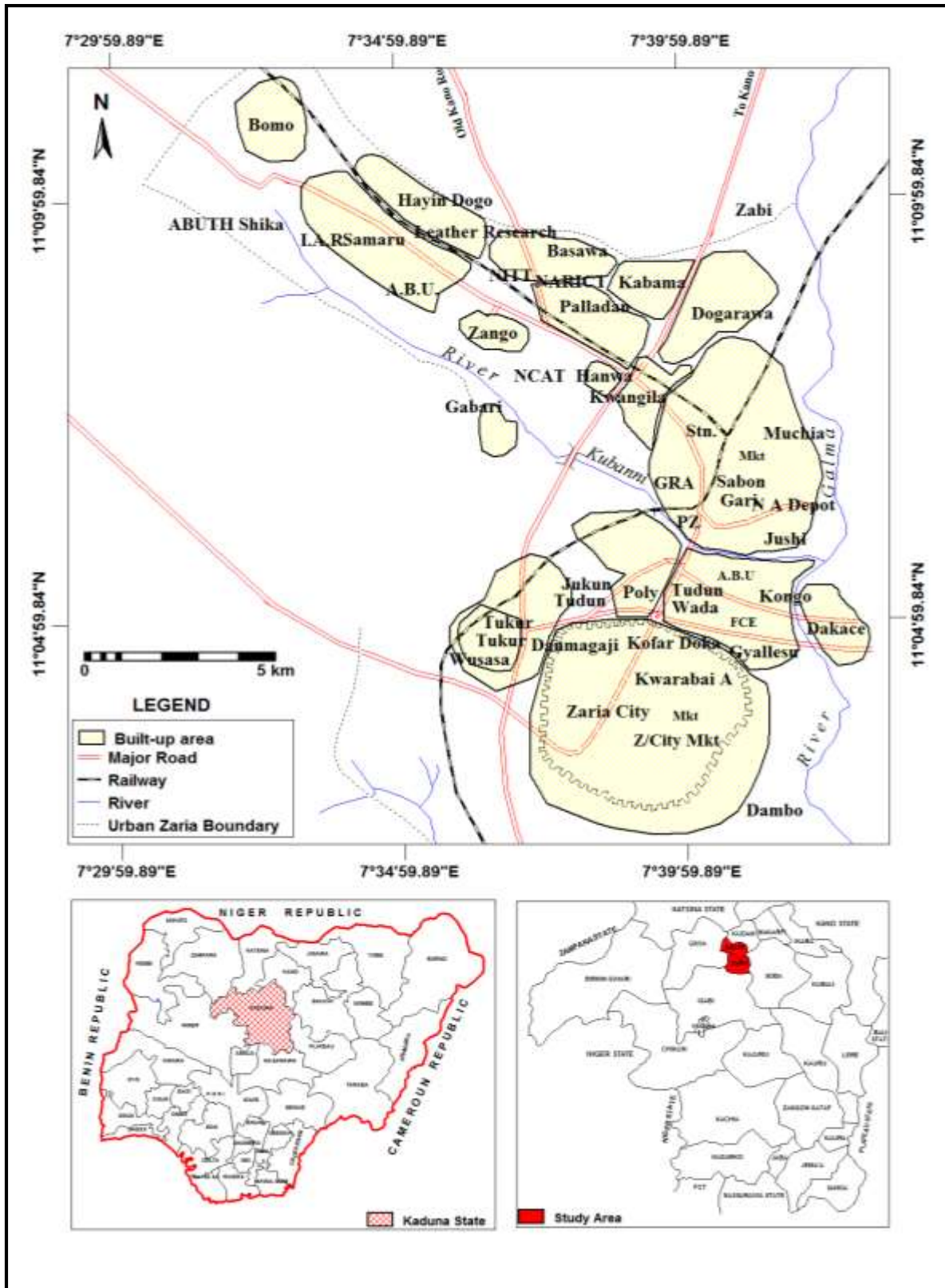


Fig.

Fig. 1: The Study Area – Urban Zaria

Source: Adapted and Modified From Topographic Map of Zaria Sheet 102 S.W

MATERIALS AND METHODS

The key information required was on the determinants of vacant land values. Data for this was collected through both primary and secondary sources. To select estate dealers/agents, the snowball sampling technique was utilized. The method is often used to obtain a sample when there is no adequate list which could be used as a sampling frame (Osuala, 2005). The method was adopted because of the difficulty in identifying this kind of respondents. Therefore, once one was identified and agreed to be interviewed, request was made for links with others until a total of 89 were found and interviewed. In addition, information on the value/price of vacant land was obtained from key informants like the local chiefs/traditional rulers and rent collection agencies.

For the independent (explanatory) variables, many factors that affect land value were determined and information on them was collected. Such factors were identified from the literature on the subject matter, discussions with estate dealers/agents/valuers,

rent collection agencies, building professionals as well as the researchers' local knowledge of the study area. Consequent upon that and based on the outcome of the reconnaissance survey conducted (including discussion with the Estate Agents/Dealers), it was realized that some of the factors earlier short-listed or identified from literature have little or no bearing in the area. The factors identified as having some meaning in the area include: i) distance from the CBD ii) distance from sub-centres, iii) neighbourhood quality iv) population density v) distance to the campuses of high institutions vi) availability of water supply vii) land use type viii) topography ix) road quality x) development potential xi) ethnic composition and xii) season of the year.

In order to determine the factors that influence vacant land value, Multiple Regression Analysis via the use of SPSS was adopted. This was used to test the hypothesis, which is "There is no significant relationship between vacant land values and explanatory variables". The multiple regression model used is thus:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_nx_n + e \dots \dots \dots (1)$$

Where,

Y (dependent variable) = Vacant Land Value

a = constant

$x_1, x_2, x_3, \dots, x_n$ are independent (explanatory) variables (distance from the CBD, distance from sub-centres, neighbourhood quality, population density, proximity to the campuses of high institutions, availability of infrastructural facilities, land use type, topography, road quality, development potential and ethnic composition)

$b_1, b_2, b_3, \dots, b_n$ are the regression coefficients which determines the contribution of the independent variables

e = residual or stochastic error (which reveals the strength of b_1x_1, \dots, b_nx_n . If e is low the amount of unexplained factors will be low and vice versa.

Using the factors mentioned above, the functions analysed using the above regression model are:

$$VLV = f (Dist_CBD, Dist_SC, Prox_HI, L_Use, Neb_Q, Pop_D, Topog, Infrs, Ethn_Co, Road_Qu, Devt_po) \dots \dots \dots (2)$$

Where:

LV = the value of land (vacant), charged per square metre

$DistCBD$ = the distance from CBD

$Dist SC$ = the distance from Sub-centres

$Prox HI$ = the proximity to higher institutions of learning

$L Use$ = the Land Use

$Neb Q$ = neighbourhood quality

$Pop D$ = population density

$Topog$ = topography

$Infrs$ = infrastructure

$Ethn Co$ = ethnic composition

$Road Q$ = road quality

$Devtpo$ = development potential of an area

Based on the above, our multiple regression equation now takes the following form:

$$Y(VLV) = a + b_1Dist\ CBD + b_2Dist\ SC + b_3Prox\ HI + b_4L\ Use + b_5Neb\ Q + b_6Pop\ D + b_7Topog + b_8Infrs + b_9Ethn\ Co + b_{10}Road\ Qu + b_{11}Devtpo \dots \dots \dots (3)$$

Where, a is the regression constant and b_1 to b_{11} are the value rating for the independent variables.

RESULTS AND DISCUSSION

In view of the ever-increasing population in the study area, the demand for vacant land for residential as well as commercial land use has been on the increase. And the land market has been bubbling with activities for quite some time. In order to achieve our aim and to test the null hypothesis, multiple regression analysis is employed. The variables were represented in a

model, thus: vacant land value = Y (VLv), distance from CBD= DistCBD, distance from sub-centre = DistSc, proximity to high institutions = Prox HI, land use = L Use, population density = Pop, neighbourhood quality = Ne Qual, water supply = Water s, quality of road = Road Q, ethnic composition =Ethn Com, topography= Topo, development potential = Devt Pot., Season = season. Results of the multiple regression model utilized in the analysis is presented in Table 1.

Table 1: Results of the Regression Analysis for Vacant Land Value

Model	Unstandardised		Standardised		
	coefficients		coefficients		
	B	Standard Error	Beta	t	P-Value
1 (Constant)	15025.972	11486.252		1.308	0.232
Dist CBD	1.491	1.160	0.526	1.286	0.240
Dist Sc	59.369	996.903	0.018	0.060	0.954
Prox HI	651.145	3026.431	0.080	0.215	0.836
Pop	-1628.983	4192.332	-0.201	-0.389	0.709
Ne Qual	5254.500	4088.214	0.591	1.285	0.024
Water S	1.042	0.888	0.444	1.174	0.279
Road Q	4227.593	2419.690	0.945	1.747	0.012
Ethn com	1035.554	1985.582	0.132	0.522	0.618
Topo	-2652.918	4142.342	-0.276	-0.640	0.542
Devt pot	2171.0233	2197.369	0.657	0.988	0.035
Season	-2063.986	3040.677	-0.486	-0.679	0.519

Source: Fieldwork, 2016

Table 1 shows the estimated coefficients of the independent variables from the multiple linear regression analysis. These coefficients are fitted into the regression model to describe the relationship between vacant land values and the explanatory variables. The model is presented in the following equation:

$$Y(VLv) = 15025.972 + 1.491\text{Dist CBD} + 59.369\text{Dist SC} + 651.145\text{Prox HI} - 1628.983\text{Pop D} + 5254.500\text{Neb Q} + 1.042\text{Water S} + 4227.593\text{Road Q} + 1035.554\text{Ethn Co} - 2652.918\text{Topo} + 2171.0233\text{Devt pot} - 2063.986\text{Season} \quad (4)$$

The above equation shows positive and statistically strong relationships between the value of vacant land and three explanatory variables or factors, namely, neighbourhood quality, road quality and development potential with a *p* value of 0.012, 0.024 and 0.035 respectively. It also shows a positive, though not very strong, relationship between the value of vacant land and the other variables except, population density, topography and season. Therefore, the null hypothesis is

rejected. Thus, there is a significant relationship between vacant land values and explanatory variables. The outcome implies that the higher the neighbourhood quality, the higher the value of vacant land. In other words, it shows that areas with high environmental quality, like the GRA and Hanwa New lay-outs that enjoy good design in terms of planning and occupied by the well-to-do in society were attractive, thus commanding high values. This outcome is in line with the finding of Kabba & Li

(2011), who found that the western part of Freetown, being occupied by key government officials and the rich, had far higher land value than the eastern side predominantly occupied by the low class members of the society. Also, vacant land values tended to increase as road quality improves. Accessibility, through road quality contributes in enhancing the value of vacant lands. For instance areas like PZ, Sokoto road and the Kwangila Fly-over enjoy high value due to that reason. This result is in tandem with that of Adebayo (2006), who noted that easy accessibility, through road network, was a major determinant of property values in Lagos, Nigeria. Then the more cosmopolitan an area, the higher the vacant land values. In other words, areas around like Sabon Gari and Samaru that are more cosmopolitan attract higher land values. Areas with high development potentials also attracted high vacant land values especially that land speculators in the land business are always on the watch-out for any such areas. It is pertinent to note that factors like proximity to high institutions in the town, the sub-centre areas, the CBD as well as water supply have not been really influential in determining the value of vacant lands. This is largely because of the near absence of vacant lands in the areas, that is, they have been fully developed.

On the other hand, those variables that show negative effect on residential land value included high population density, undulating topography and seasons. This implies that people in the area rarely considered seasons of the year in taking decisions to acquire a piece of land; once there was the means, the purchase was made. This could be largely as a result of the fact that the area is an urban setting, where agriculture is not the major means of income. Then, topography has not been of any influence because the study area is largely an even terrain, with only pockets of areas having undulating or hilly features. Land parcels close to areas having high population densities tended to attract lower value probably because such areas were hardly the choice of the well to do in the society; again such areas could be noisy, dirty, unplanned and with low quality of buildings. This tends to give such areas a lower rating by people in the upper echelon of the society, thus values over there tend to remain low. Furthermore, the analysis shows that the R^2 is 78.5%, while the adjusted R^2 , which is a more appropriate measure for a correlation estimate that accounts for the presence of multiple independent variables, was also determined. The adjusted R^2 obtained is 0.548, indicating that the regression model is highly significant, as it has explained about 54% of the land value variation in the study area. This is similar to the finding by Oni (2009), who obtained an R^2 value of 69.37% and an adjusted R^2 of 47.09% in the analysis of relationship between commercial property values and explanatory variables in Ikeja, Lagos.

Having said that, it is important to point out that the pressure of rapidly increasing population is gradually changing the traditional non-pecuniary value attached to land. This is demonstrated by the positive relationship, albeit a weak one,

between vacant land value and some predictors/independent variables such as neighbourhood quality, road quality and development potential. In other words, one could predict that with time, and *ceteris paribus*, this relationship would grow more statistically significant.

CONCLUSION

The study has established the factors that determine vacant land value in urban Zaria are neighbourhood quality, quality of road, development potential, ethnic composition, proximity to high institutions, distance from sub-centre, distance from CBD, and water supply, in that order. The major ones include neighbourhood quality, road quality, development potential, and ethnic composition. It is evident in this study that distance away from CBD, as established by earlier theorists, like Alonso, have not been very strong in determining land value. Thus, the null hypothesis put forward that there is no significant relationship between vacant land values and explanatory variables was rejected. It is therefore recommended that these factors should be given due consideration in planning and policy formulation for future urban development of the area. This would ensure maximum utilization of land resources in the area. Still in line with this, the state government could key in by making provision for essential amenities, like roads and drainages around areas for future residential or other related purposes, so that in the end it could generate revenues through taxes based on the land value of areas.

REFERENCES

- Adams, D.C. (1994). *Urban planning and the Development process*. London, UCL Press
- Adebayo, M.A. (2006). The State of Urban Infrastructure and its Effect on Property Values in Lagos, Nigeria. *Journal of Land Use and Development Studies*, 2(1). pp.23 - 33
- Ai, P. (2005). *Residential Land Value Modelling- Case Study Hankou, China*. Unpublished M.Sc.thesis submitted to the International Institute for Geo-Information Science, the Netherlands.
- Alonso, W. (1964). *Location and Land Use, Towards a General Theory of land Rent*. Harvard University Press, London
- Bello, A.L. (2000). Kaduna State. In *Nigeria: A People United, A Future Assured*. Vol.2, Gabumo Press, EsukUtan, Calabar, Nigeria.
- Bello, V. (2011). The Impact of Urban Crime on Property Values in Akure, Nigeria. International Federation of Surveyors, FIG Working Week 2011 – Bridging the Gap between cultures, Marrakech, Morocco, 18-22, may. pp. 1 – 13

- Buttler, R.A. (2015). Mongabay.com – City Population. Retrieved 16/10/15 from <http://www.mongabay.com>
- Emoh, F.I., Oni, A.O., & Egolum, C.C. (2013). Prioritizing Residential Land Value Determinants in Onitsha, Nigeria. *International Journal of Academic Research in Business and Social Sciences*; 3(3), pp. 201- 213.
- European Reintegration Support Organisation-ERSO (2008). Expert Meeting. Stockholm, 21-22, April
- Hurd, R.M. (1903). Principles of City Land Values in 1903 in: Alonso, W. (1964). *Location and Land Use, Towards a General Theory of land Rent*. Harvard University Press, London
- Jordan, A.C.; Drost, B.E. and Makgata, M.A. (2004). Land Value as a Function of Distance from the CBD: The Case of the Eastern Suburbs of Pretoria. *SAJEMS* NS 7(3), pp.532-541.
- Kabba, V.T.S. and Li, J. (2011). Determinants of Urban Land Price in Freetown, Sierra Leone. *Journal of American Science*, 7(2) pp. 213-223.
- Kim, G. Millen, P.A. & Nowak, D.J. (2018). Urban vacant land typology: A tool for managing urban vacant land. *Sustainable cities and society* 36, pp 144 – 156
- Kironde, J.M.L. (2000). Understanding Land Markets in African Urban Areas: The case of Dar es Salaam, Tanzania. *Habitat International*, Vol. 24 pp. 151-169
- Mills, E. (1981). Growth, Speculation and Sprawl in a Monocentric City. *Journal of Urban Economics*: 10, pp. 201– 226
- Muth, R.F. (1969). *Cities and Housing – the Spatial Pattern of Urban Residential Land Use*. The University of Chicago Press, Chicago and London
- NPC (2009) 2006 Population and Housing Census of the Federal Republic of Nigeria – Kaduna State. Priority Tables, Vol. 1
- Riko, L.S. and Dung-Gwom, J.Y. (2006). Peri-urban Land Values in Jos. *Nigerian Journal of Construction Technology and Management*. pp. 136 – 144.
- Oni, O.A. (2009). *Arterial Road Network and Commercial property Values in Ikeja, Nigeria*. Unpublished Ph.D. Thesis, Department of Estate Management, Covenant University, Ota, Ogun State, Nigeria.
- Osuala, E.C. (2005). *Introduction to Research Methodology*. Africana-First Publishers Ltd. 3rd edition
- UN Habitat Conference (1976). The Vancouver Declaration on Human Settlement. Canada, 31st May – 11th June.