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## Correlates of Land Value Determinants in Lagos Metropolis, Nigeria

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**ABSTRACT** This paper examined the relationship that exists between various land value determinants in metropolitan Lagos, Nigeria. Using factor analysis and principal component techniques, it showed that a high level of co-variation existed between factors of land value such as accessibility, rent, transport improvement, quality of neighbourhood, infrastructural facilities and government regulations. The need for land use planners to consider these land value determinants in putting land into optimum use were highlighted.

### INTRODUCTION

Residential land use, among the various competing urban land uses, is the largest consumer of land in urban areas. Consequently, it is usually the focus of urban research. This has been confirmed through the works of many urban researchers like Park Burgess and McKenzie (1925) on American cities particularly in Chicago, Mabogunje (1968) on Lagos; Ayeni (1968) on Ikere-Ekiti and Jos respectively; Sada, (1975) on Lagos; Frishman (1977) on Kano; Olaore (1981) on Kaduna; Okpala (1981) on Enugu and Onitsha. Other studies on the importance of residential land use in urban areas include those carried out by Onakerhoraye, (1984) on Benin; Omirin (1998) on Lagos; Okewole (1998) on Bodija; Egunjobi (1999) on Nigerian cities generally and Olayiwola (2000) on sustainable city development in Osun State, Nigeria.

Most of these studies show that urban areas are of enormous political, social, economic and cultural importance to the various countries in which they are located. The importance of cities in societal development is due to their unique role as centres of innovation, adoption and diffusion and growth points. Cities therefore propel the growth of societies and are able to attract to themselves large numbers of people from the hinterlands.

The centripetal nature of the cities creates

intense pressure on the economic and spatial structure of urban systems such as on services and facilities like hospitals, educational institutions, housing, transport, telecommunication systems and energy supply. This is because the provisions of these facilities are expanding at rates slower than the rates of growth of the urban population thus creating a wide margin between demand and supply of urban infrastructural facilities and services.

The market forces of demand and supply, especially of land and housing, are basic factors influencing variation in land values in urban areas. Abiodun (1985), elucidates this point further and argued that the rapid increase of urban population in Nigeria had brought with it many problems associated with the difficulties of providing basic infrastructures. The study of Abiodun (1985) revealed that perhaps the most outstanding of all these problems is that of providing adequate facilities for the population. In support of this claim, Onibokun (1985) stressed the importance of the quality of residence. He stated that housing, as a unit of the environment, has a profound influence on the health, efficiency, social behaviour, satisfaction and general welfare of any community. Housing Onibokun stressed, reflects the cultural, social and economic values of a society, as it is the best and historical evidence in a country. It stimulates the growth of the national economy.

This assertion has been confirmed through the recent works of Egunjobi (1997) in which the studies demonstrate that the philosophical and practical attention developed in the area of urban

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studies as clear indications of the importance of housing in the way it affects our life. The way housing is structured in cities are capable of affecting and indeed do affect our lives both positively and negatively.

The growth of the economy generates physical development of which residential area is critical. This most often results in increase in values of land due to increase in demand, in a situation where there is scarcity of available land in the market. The aforementioned statements call for adequate research into residential land value in order to guide policy directions of government institutions and individuals.

### THEORETICAL ISSUES

It is widely recognized that many theories have been formulated in the study of urban systems. These theories are both descriptive and quantitative in nature. Among the models that have helped to explain city morphology are the Burgess (1925) Concentric Zones Model; Hoyt's (1939) Sector Model; and Harris and Ullman's (1945) Multiple Nuclei Model. These three models are described as ecological models. Other models include the Social Area Analysis and Factorial Ecology. Some of the models are not so general but they deal with specific urban features. Wingo's (1961) and Alonso's (1964), land use models are micro economic models of urban land value. While earlier works of Richardo and Von Thunen (1893), presented some notable theories on agricultural land use, Winch (1945), Zipf's (1949), and Chapin (1965) "Least Effort Principle" were formulated to explain urban mobility. Firey (1947) introduced the role of culturally rooted values and social behaviour in the determination of the city structure; while Kno's (1962) study on Topeka confirmed the spatial variation in land values in cities.

In the area of urban land values, the concept of accessibility has been adopted by scholars to structure the value of urban lands. These efforts had their origins in the early works of von Thunen and Richardo (Herbert, 1982). The principle of Bid Rent functions was established by Hurd (1903), and this has been confirmed by later works (Ratcliffe, 1949; Alonso, 1964); among others. The summary of their findings confirmed that the nature of the city land uses is a process that changes with the economy. This

has also been confirmed with recent literatures on urban land uses with particular reference to case studies of Nigerian urban centres as discussed below. Though many of the studies relating to urban residential areas carried out in many parts of the world were done under social cultural, economic and political situations different from the Nigerian situation. Therefore, their adoption to the Nigerian situation cannot provide a perfect explanation to Nigeria's urban problems. The outcome of such researches could only be used as guides to solving problems in developing countries generally and in Nigeria in particular. To solve problems of residential land use in Nigeria, there is the need for local researches to unravel the peculiarities of our own situation. In the Nigerian context, considerable amount of works have been done by scholars in various disciplines to explain the determinants, structures and effects of residential land use in Nigerian urban areas. For example, Mabogunje (1961, 1962); undertook the ecological analysis of Lagos and the growth of residential districts in Ibadan. In his discussions, he identified and classified the major residential districts in Lagos and Ibadan. He concluded that the growth of these cities were due to growth by fission and spatial expansion. Mabogunje's works also showed the relevance of the multiple Nuclei Model as applicable to Lagos and Ibadan.

Sada (1968) examined the effects of political factors on the geography of Lagos. He noted that the emergence of Lagos as a livable city was as a result of the political decision which made it a capital city in 1914. He added that with the difference in jurisdictional areas within the city and the associated varying levels of resources, the city has become a complex city. Sada concluded that the supply of different services is bound to make the city differentiated along many socially related lines. Also in 1972, Sada investigated the residential land uses in Lagos during which he explained the relevance of traditional models. He identified the major land use determinants and classified the residential land use in Lagos into high grade, government housing districts and commercial housing. Ayeni's studies (1968) and (1979) were on Ikere-Ekiti and Lagos respectively. He researched into the trend in the development of built-up areas of Ikere-Ekiti and Lagos. He also attempted the residential location model of Lagos metropolis during which he established the general framework that could be

used for the planning of Lagos metropolis.

Other studies on urban structures in Nigeria included that of Frishman (1977) on growth pattern of Kano, Okpala's (1981) study of Onitsha and Enugu focused on residential mobility. Onakerhoraye's (1984) research into the factors influencing the spatial structure of Benin. Recent studies are those of Olaore (1991); in which he researched into values of land and rentage of shelter in Kaduna. Okewole (1997) research highlighted some of the socio- culturally based characteristics of the core areas of Yoruba towns. He highlighted the environmental modification made by the inhabitants of Bodija Estate, a planned residential setting in Ibadan. The modifications he stressed were adapted by the inhabitants in their quest for personal environmental fit. Omirin (1998) researched on accessibility to residential land in Lagos. While Morenikeji (1998) and Adedibu et al. (1998) studies were on the growth pattern of residential land use and how they affect rental values in Ilorin and Minna, respectively.

It is therefore evident from the literatures reviewed above that there exist very few studies which address the relationship between land and land values in Nigerian urban areas. However, the few available literatures on land use and land values are in isolated forms. None of the available literatures have dealt comprehensively with the factors influencing residential land values in the study area. It is on this note that this study attempts an investigation into the characteristics, rentals, sales and factors influencing residential land values in metropolitan Lagos. The study also put forward some suggestions on how to improve public access to affordable residential apartments in the study area.

## RESEARCH METHODOLOGY

The data for this study were derived from primary and secondary sources. The primary data were obtained through questionnaire administration. The questionnaires were administered on 755 household heads selected from 47 residential neighbourhoods in metropolitan Lagos. The residential neighbourhoods used for the questionnaires administration were derived by classifying them into three categories. These were high, medium and low-density residential neighbourhoods. From this stratification 15%, 50% and 50% samples of the stratified residential

neighbourhoods were randomly selected. Table 1, shows the 47 selected residential neighbourhoods and the number of questionnaires administered in each identified category.

**Table 1: Analysis of residential neighbourhoods categories and number of questionnaires administered**

Type of residential neighbourhoods category	Number of neighbourhood in category	Number of neighbourhood selected	Number of questionnaire administer
High density residential neighbourhood	184	27	405
Medium density residential neighbourhood	20	10	200
Low density residential neighbourhood	20	10	150
Total	224	47	755

Source: The Authors 2003.

The respondents to the questionnaires administered were the household heads. The sampling frame was the houses in the selected residential neighbourhoods. In each of the selected neighbourhoods, 2.5%, 5% and 10% samples of the houses were systematically picked from each of the high, medium and low density residential neighbourhoods respectively. One household head per house was engaged in interview and questionnaire administration.

The questionnaire administered was designed to collect data on the socio-economic characteristics of respondents, physical and infrastructural facilities in the neighbourhoods and the determinants of residential land values (degree of accessibility, centrality, transport improvement, traffic flows, land rent, price and land demand and supply).

Two main statistical techniques were used in the study namely, the correlation analysis and the multiple regression analytical techniques.

## THE CASE STUDY AREA

Metropolitan Lagos is located in the South-Western (see Fig. 1) part of Nigeria. It is the largest metropolitan area in Nigeria (Ayeni, 1968, 1979). Framing the southern part of the study area in the West is the Lagos Harbour which stretches towards the east to form the Light House Creek. The Kuramo water and Lekki settlements



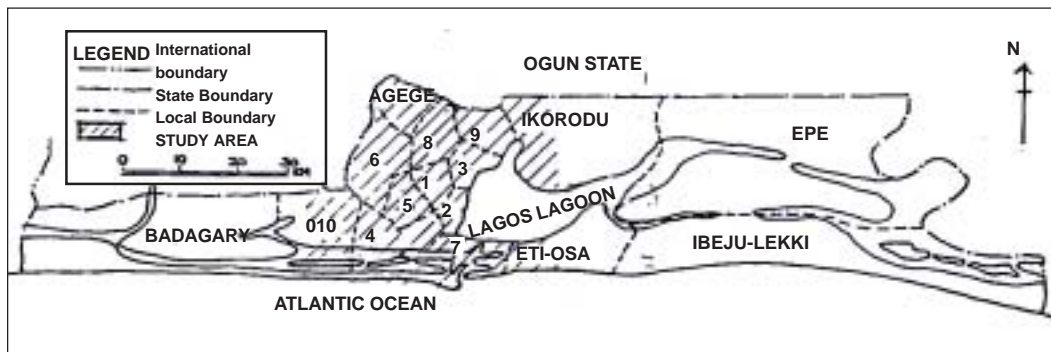
**Fig. 1. Location of Metropolitan Lagos**

Source: Adopted from Balogun, O.Y. Senior Secondary Atlas, Longnan Nigeria P L C, Lages, 1999

combine to form the eastern boundary, while the northern boundary are landmass of Ikorodu local government area and Alagbado towards Abeokuta in Ifako-Ijaiye and Alimosho Local Government Area which also has common boundary with Sango-Ota, a satellite town to Lagos from Ogun State. Badagry and Republic of Benin land mass defines the western boundary of the study area (see Fig. 2).

Lagos metropolis lies generally on low lands, with about 17500 hectares of built up area. The approximate population of this area is more than 9 million people. The projected population by the year 2000 is 10 million. The projected average population density of the built-up area of Lagos metropolis is about 20,000 people per square kilometer in an emerging African Megacity.

Today Lagos exerts influential and central role



Source: Lagos State In Maps (2000)

Legend

1. Mushin 2. Mainland 3. Somolw 4. Amuwo Odofin 5. Surulere 6. Almosuc 7. Lagos Island 8. Ikeja 9. Ieako-uaye

**Fig. 2. Map of Lagos State indicating Local Government areas and extent of Matropolition Lagos**



in Nigeria out of proportion to its land area. The significance of this role is due partly to its historical and cultural background and partly to its former role as the set of national government. It also owes its growth and development to European colonial influence.

In the colonial Lagos, there existed sharp contrast in the morphology and quality of housing between the Europeans, the educated African (Saras), the Brazilians and the indigenes. Each social and racial groups settled in different quarters. The contrast can be seen as they existed on Lagos Island. The Europeans lived along the Marinas, the educated Africans mainly west of the Europeans, as in the Olowogbowo area, the Brazilian settled behind the Europeans. The Brazilian quarter was known as Portuguese Town or Popo Aguda or Popo Saro (Akinsemoyin, 1968) while on the mainland were many indigenous settlements.

The population growth rate of Lagos has serious implications on the trend of urban land use development is a high demand for housing. However the rate of the housing supply has been slower than housing need. There is absence of practicable government policy that could solve the housing problems.

In metropolitan Lagos residential area densities vary widely from less than 100 person per hectare in Ikoyi to 2150 persons on North Lagos Island (metropolitan) Lagos Master Plan, 1985). In Mushin a figure of 1200 can be recorded and about 6067 in Agege. When converted to persons per square kilometer, the densities result in 9800 persons per square kilometer, 215,000 on Lagos Island, 120000 in Mushin and 60000 in Agege. On the overall average, the residential areas have more than 40000 persons per square kilometer. A circle of one kilometer radius would embrace 120,000 persons (metropolitan Lagos Master Plan, 1985). Most of the residential communities are well related to the transport system in that higher types of roadways border the communities in one or more sides.

In terms of spatial distribution of residential districts, seven communities can be identified in Lagos Island Area with the population ranging from 13000 to 113000. These include those of Ikoyi, Victoria Island, Lekki and Obalende Areas. In the Lagos Mainland, eleven communities can be identified, with population ranging from 11,000 to 74000. In Ikeja area, 10 communities

that embrace some large industrial and institutional area can be identified. The population of these communities varies from 5000 to 200000. In Somolu area ten communities can be identified with population ranging from 10000 to 15000. Mushin is comprised of 14 communities ranging in population from 1200 to 179000. Ikorodu and its three adjacent villages have a population estimated at 92000.

Industrial and storage uses presently occupy about 8.4 percent of the developed area representing a land area of 1444 hectares of land. 87.7 percent of the industrial and storage land is found in a total of eleven industrial estates. The distribution of commerce and industry throughout the built-up areas appears relatively even.

## RESULTS

Analysis of the Relationships Between Factors Influencing Residential Land Values in Metropolitan Lagos

The factor analysis and the principal component techniques were applied in the analysis of spatial variations and the relationships between factors influencing residential land values in metropolitan Lagos. The responses on the following determinants namely accessibility, rent, transport improvement, quality of neighbourhood, infrastructural facilities and government regulations with particular reference to zoning were used as variables in the analysis. The selected variables are listed in Table 2.

**Table 2: Variables used in factor analysis**

VAR 30	Accessibility as a Factor Influencing Residential Land Value
VAR 32	Price/Rent as a factor influencing Residential Land Value
VAR 31	Transport improvement as a factor influencing Residential Land Value
VAR 38	Quality of Neighbourhood as a factor influencing Residential Land Value
VAR 39	Services/ Facilities as a factor Influencing Residential Land Value
VAR 48	Government Regulation (Zoning) as a factor influencing Residential Land Value

Table 3, pages shows the correlation matrix of the linear association between the variables. Many interesting results were obtained in the matrix. The coefficient that is  $\pm 500$  or greater shows a high level of co-variation between the variables involved. Also, coefficient ranging

between  $\pm 300$  and  $\pm 400$  shows moderate level of correlation, while those between  $\pm 100$  and  $\pm 200$  indicates a weak level of correlation. Those lower than  $\pm .100$  show little or no linear correlation.

The result obtained in the matrix of correlation shown in Table 3 shows that all the variables have high degree of positive relationships with one another.

**Table 3: Matrix of correlations**

Variables	30	32	31	38	39	40
30	1.000					
32	.719	1.000	.732			
31	.874	.732	1.000			
38	.541	.572	.595	1.000		
39	.509	.594	.563	.695	1.000	
40	.541	.599	.557	.731	.697	1.000

Source: Computer Output, 2003.

This is a confirmation of the validity of the theoretical framework. The score on the relationship between accessibility and transport improvement shows the highest positive association with a figure of .874. This means that improvement in transportation facilities especially roads bring about improved accessibility in the study area. Also the relationship between the following, recorded very high degree of positive relationship: transport and rent (.732), quality of environment and zoning regulation (.731) and accessibility and rent (.719). The implication of the above is that improvement in transportation and accessibility will be expected to bring about higher rents, while improved quality of environment is as a result of effective implementation of planning regulations especially zoning regulations. Also the correlation matrix revealed that there is high positive relationship between quality of basic facilities and quality of environment in which the correlation matrix figure of .695 has been obtained while the relationship between facilities and zoning recorded .697. This means that the better the facilities provided the more improved is the quality of the environment, while application of zoning also enhances the effective provisions of basic facilities.

Generally the lowest correlation inter-relationship figure recorded is .509 and this is for the relationship between facilities and accessibility. This is still within the range of high coefficient level of co-variation. This means that all the factors identified as basic to influencing residential land values have high level of co variation.

## SUMMARY AND CONCLUSION

This paper has attempted to explain the relationship that exists between various land value determinants in metropolitan Lagos, Nigeria. The analysis which was based on the use of factor analysis and principal component techniques showed that factors such accessibility, rent, transport improvement, quality of neighbourhood, infrastructural facilities, and government regulations all have high level of co-variation.

The practical utility of these findings for policy formulation is that in planning for the use of land, special consideration must be given to the factors of land values that were identified above. These factors will guide land use planners in making sure that land are put into their optimum use.

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