CHAPTER ONE

INTRODUCTION

1. 1 Background to the study

There is a significant relationship between land, housing and rent in the physical growth and expansion of cities. Land is a natural or physical platform upon which a house is built for owner occupation, for sale or for rent at agreed prices or costs. The price of a house is a function of land cost, building costs (material and labour) and cost of finance (determined by nominal interest rate). Confirming this relationship, Grimes and Aitken (2007) maintain that both land and building costs are relevant to the developer in deciding a specific housing development. On the other hand, past studies (Burgess 1924; Alonso 1964; Yeastes 1965) have shown that the consumer's decision to pay for a house or rent one is mainly a function of location factors, thereby ignoring non- location factors. However, the continued expansion of our cities has been attributed to certain factors including the decisions of both the developer and consumer, which often resulted in the exponential increases in land, housing and rental values.

In Nigeria, past studies on urban land and housing values (Mabogunje 1968; Adeniyi 1972; Sada 1972; Onibokun 1975; Onorkerhoraye 1977; Frishman 1977; Ayeni 1979; Okpala 1981; Megbolugbe 1983; Onorkerhoraye 1984; Agbola 1985, 1987; Megbolugbe and Frank 1987; Adedibu and Afolayan 1989; Arimah 1990; Olaore 1991; Aluko 1996; Omirin 1998; Okewole 1998; Egunjobi 1999; Olayiwola 2000 and Okoror 2001) focused mostly on distance from CBD as the dominant factor. Furthermore, most urban studies in developed countries have also focused on distance from the CBD as the dominant factor of land and housing values, ignoring non – location factors and the actions of the actors in land and housing production. This is confirmed in studies by social scientists like Burgess (1924), Hoyt (1929), Donnision (1961), Yeastes (1965), Simon (1968), Brown and Moore (1970), Brodsky (1970), Ball (1973), Smith (1976), Macleanan (1977), which showed that location is the major determinant of land and housing values. Therefore, this study re – examines this

explanation to show that non – location factors are also important determinants of land housing and rental values in Nigerian cities.

Housing has been defined in various forms by social scientists in urban studies. Turner (1976) defined housing as the ways and means by which goods and services are provided by human actions through housing construction or investments. In a wider sense, Eke (2004) argued that housing includes the physical building (whether residential, commercial, industrial, etc) as well as the totality of the environment and the neighbourhood amenities within which the building situates. Also, Agbola (2005) views housing as the shell or structure of dwellings including its design and basic built – in equipments such as the amount and allocation of space, the heating, lighting, sanitary and similar facilities. However, the most comprehensive and relevant definition is provided by Harvey (1972) and Knox (1995, 2000).

According to Harvey (1972), housing is fixed in geographic space, it changes hands infrequently, it is a commodity which we cannot do without and it is a form of stored wealth which is subject to speculative activities in the market. In addition, a house has various forms of value for the user and above all, it is the point from which the user relates to every other aspect of the urban scene (Harvey, 1972). Housing is a spatially uneven resource of variable cost and quality often expressed in terms of land, housing or rental values. Furthermore, Knox (1995, 2000) defined housing as a commodity whose resultant market values in terms of rental, housing or land values etc are determined not only by the location of the physical building itself but also by a variety of actors(private developers, land owners, builders etc) operating within different political and institutional contexts. Also, Knox(2000) revealed that these values are determined by the actions of various housing suppliers operating within different conditions such as land tenure system, financial system, land and building regulation, infrastructure provision and government policies.

The development of this political and institutional approach in relation to the growth and structure of cities can be traced to the work of Pahl (1969), who argued that the proper focus of urban research should be the interplay of spatial and social constraints that determine opportunities of access to land and housing resources, rather than the location or distance variables. He suggested that the key to understanding the social

constraints could be found in the activities, policies and ideologies of the managers or controllers or gatekeepers of the urban system. For instance, the main influence of land tenure system on these values is that land owners can impose their wishes as to the type of development that can take place, and for speculative reasons, will only release land as soon as the chance of substantial profit is presented. This consequently will determine the housing or rental values of such development. However, it has been noted that the variation in these values stem partly from the process of housing production, which in itself reflects the changing fortunes of the dwelling construction industry, and partly from the differences in the extent of maintenance, repair and rehabilitation effected by either private individuals or corporate owners (Ball, 1978).

Land value, as explained by Lewis (1979), is the price offered by a purchaser who is aware of prices being paid for and asked for other plots or pieces of land in the vicinity at a time when the availability of land is known widely. While housing value is the estimated cost of a building in order to determine its selling price, rental value is the price money paid monthly/annually per room or floor space of a house. This study, therefore, seeks to determine whether or not land, housing and rental values are a function of location or non - location variables and examine if such functional relationship could be used to explain the planning and development of our cities, using Onitsha as a case study.

1.2 Statement of Research Problem

Although Alonso (1964), Yeastes (1965) and Broadsky (1970) have shown that land and housing values are a function of cost and distance from the CBD, these studies are limited in approach given the fact that non – location variables were not given recognition. In these studies, CBD is accorded more importance than it really deserves, neglecting the effects of non – location variables. This study, therefore, introduced non- location variables in the determination of land, housing and rental values of residential housing.

Also, previous studies have extensively treated urban residential housing markets as if they were made up of a single tenure (either rental or owner- occupied). So far, it is only studies by Kain and Quigley (1970), Butler (1982) , Follain and Jimenez (1984) , Blackley et al (1986) and Arimah (1990) that have treated housing markets as

comprising both rental and owner- occupied housing, excluding public housing. Therefore, the research problem is to examine the extent to which land, housing and rental values are determined by non- location variables and to see whether these variables have implications for the planning and development of Nigerian cities.

With the rapid urbanization and population growth, there is at the same time an increasing number of households for whom house- price inflation has put home-ownership clearly out of reach. Indeed, there is strong evidence in Britain that social polarization has been taking place between housing tenure categories, whereby the rate of increase in house- ownership among the lower status groups was less compared with growth rates among higher status groups (Knox 2000). This clearly has important implications for urban residential segregation and the structure of cities. In addition to the implications for residential segregation, the polarization of socio- economic groups by housing tenure or structure raises some critical issues in relation to patterns of income and wealth, class structure and social conflict.

Furthermore, the actions or activities of the actors (landlords and developers) in the allocation of housing units do not promote equal access to decent and affordable housing, most especially where incomes are unequally distributed (Johnston et al, 1994). Housing of varying costs and qualities is said to be unevenly distributed over space. This uneven distribution of residential housing has added a spatial dimension to urban poverty in the form of slums and informal settlements, which are variously called ghettos, favellas and shanty towns among others. These settlements are often characterized by overcrowding, bad sanitation, pollution of various kinds, environmental and health hazards which adversely affect the living conditions of many dwellers. Low quality housing is therefore produced by absentee landlords, owner occupants or squatters in slum and informal settlement for the poor, while decent housing with necessary facilities are located in neighbourhoods occupied by the rich.

The disproportionate distribution of quality housing between the rich and the poor mainly by the private developers can be seen ‘ as further example of the myriad of social inequalities the working class endures’ (Cable and Cable, 1995). This is the case in Third world cities where issues of social and spatial marginalization are at the forefront in planning and management of urban development (Corubolo, 1998). In

most developing countries, especially in Africa, Biau (2003) commented that the major housing problems are the inadequate approach to urban land management or land tenure system and housing finance mechanism. In Southern Nigeria, Mabogunje (2003) pointed out that the land tenure system encouraged the practice of multiple sales of the same land to different buyers by the land- owning families in the absence of titling and appropriate registration mechanisms for transactions in land. This practice often led to land speculation and sharp rise in the prices of land for urban and infrastructure development, especially housing, resulting in high rental and housing values.

The fact that conventional housing finance usually works in favour of middle and high income groups is reflected in the highly segmented structure of residential housing of our cities. The poor, low and middle income groups cannot afford a loan even for the least expensive commercially built housing units. In addition, the continuous rise in building and construction materials makes the provision of housing so exorbitant that its prices and rents are not within the reach of the poor. Also, lengthy and complex planning procedures delay the provision of serviced land and housing production, leading to increase in land and housing prices. Therefore, the thrust of this research is not to suggest that location or distance from the CBD is still not relevant in the determination of land, housing and rental values but other factors are also to be recognized. Also, with the effects of globalization and splintering urbanism in contemporary cities of the world, the recognition of distance to the CBD as a determinant of housing or land values should be relaxed. In line with these thoughts, the questions to be addressed in this research are as follows:

(i) How and at what cost is land acquired?
(ii) What types of houses are built and at what cost?
(iii) Are there variations in the cost of land, house and rent paid?
(iv) Are these costs a function of distance to the CBD or other non- location variables?
(v) To what extent do non- location factors account for the variations in land, housing and rental values of residential housing?
(vi) Under what political and institutional frameworks does the housing market operate?

(vii) Is there a relationship between land, housing and rental values and urban residential structure or form?

1.3 Justification of the study

The focus of this study is on residential land use. This is because among the various competing urban land uses, it is the largest consumer of land in urban areas and consequently it is usually the focus of urban research. This has been confirmed through the works of many urban researchers like Burgess (1924) in Chicago city of America, Mabogunje (1968) in Lagos; Sada (1975) in Lagos; Frishman (1977) in Kano; Ayeni (1979) in Jos; Olaore (1981) in Kaduna; Asabere(1981) in Accra, Ghana; Okpala (1981) in Enugu and Onitsha. Other studies on the importance of residential land use in urban areas include those carried out by Onakerhoraye (1984) in Benin; Arimah (1990) in Ibadan; Omirin (1998) in Lagos; Okewole (1998) in Bodija,Ibadan; Egunjobi (1999) in Nigerian cities generally; Olayiwola (2000) in Osun state and Okoror (2001) in Benin.

Most of these studies, however, show that the CBD and distance from it are the most important determinants of land, housing and rental values, and of the structure of the cities. Therefore, the rationale for this study is the re – examination of this explanation to show that non – location factors are also important determinants of land, housing and rental values in residential land use development, and to explain their implications for the planning and development of Nigerian cities.

1.4 Aim and Objectives

The main aim of this study is to establish the relative importance of location and non-location factors in the determination of land, housing and rental values in Onitsha, Nigeria.

The specific objectives to be pursued are to:

1. Examine the nature of urban land and housing supply with a view to determining the major actors and under what political, social and institutional contexts they operate.
2. Identify and account for the variations in land, housing and rental values.

3. Examine whether or not land, housing and rental values are determined by location and non- location factors.
4. Examine whether there is a significant relationship between land values and residential housing density.
5. Identify the theoretical and practical implications of the findings.

1.5 Hypotheses tested

The following hypotheses were verified in this study. That:

(i) distance from the CBD and nearness to major roads are not major determinants of land, housing and rental values,

(ii) land, housing and rental values are a function of non- location factors such as plot size, room size, number of rooms, time of land purchase/sale, date of development, age of layout, place of origin, income, housing quality and condition , neighbourhood infrastructures and government zoning policy, and

(iii) there is no relationship between housing density and land value

1.6 **Research Methodology**

The data for this study were collected from primary and secondary sources. For the primary data, multi – stage cluster sampling procedure was used to administer questionnaire in the 11 residential layouts in Onitsha. The respondents were the landlords or their representatives and housing units were the sample frame. Focus Group Discussion (FGD) was used to complement the data collected through the use of the questionnaire.

1.6.**1 Primary Data**

Primary data were obtained via a questionnaire survey conducted between December 2007 and August 2008 with the aid of trained field assistants. The questionnaire was designed to elicit information on the determinants of land, housing and rental values. The first section of the questionnaire deals with the socio – economic characteristics of the land and home owners. The socio – economic characteristics of respondents sought include place of origin, sex, age, educational qualification, occupation and income per month.

The second section is on land and housing data pertained to how land was acquired, land size and cost, time of land purchase, housing type, size and number of rooms, date of development, housing construction materials, housing facilities such as water supply, solid waste disposal system, types of bathrooms, toilets, kitchens. Information was also sought on the condition of the houses such as the state of walls, floors and roofs, in order to determine their quality. Data were collected on housing cost and rent for bungalow, block of flats and duplexes.

Data were collected on age of the neighbourhood or layout, condition of road, community facilities (for example number of primary schools, number of health facilities, number of security organizations) as well as types of pollution and crime, and reasons for locating in the neighbourhood, and the distances of houses from the CBD and major roads. These distances were determined using the street or layout map of Onitsha, obtained from the local planning authority. With this, direct measurement of linear distances of houses in each selected street and ward, to the CBD and the identified major roads, were obtained.

To compliment the direct observation and administration of questionnaire, Focus Group Discussions (FGD) was held. FGDs were variously defined as organized discussion (Kitzinger, 1994), collective activity (Powell et al, 1996), social events (Goss and Leinbah, 1996) and interaction activity (Kitzinger, 1995).

FGD was conducted for selected residents, especially the landlords, tenants and housing agents, who have lived in the layouts for at least 5 years and above. One layout each was selected from the low, medium and high densities areas. The issues covered in the discussion include whether land, housing and rental values were determined by location factors such as distance to the CBD and major roads or non-location factors like plot size, time of land purchase, age of layout, date of development, room size, income, housing quality and neighbourhood infrastructures. Also, reasons for the variations in land, housing and rental values were discussed. The format for each group discussion is shown in Appendix 2.

Furthermore, in-depth key informant interviews were conducted. Specifically, interviews were conducted with the Chief Town Planning Officer in Onitsha in respect

of the authority's role on land subdivision or allocation, development control, type and level of basic infrastructure provided and zoning regulation. Questions were also asked on the trends in land, housing and rental values.

1.6.1.1 Sample Frame and Sample Size

The sample frame or population was the residential housing units in Onitsha. From Onitsha Master Plan (1978) and NPC (1991) estimates (because the 2006 census estimates were not published at the time of the survey), the total number of residential housing in Onitsha was 42,500. Based on this number, a certain proportion was used for the sample survey based on some principle. This is because, according to Neuman (1991), the basic principle governing sample sizes is that the smaller the population, the bigger the sampling ratio has to be and vice versa. Also, Bartlett et al (2001) reported that Cochran (1977) developed a formula for sample size determination in the case of continuous and categorical or discrete data. For categorical/discrete data, he used the acceptable margin of error of 0.05, t- value of 1.65 in regression analysis and recommended that the researcher must estimate the variance in the structure of the population. The formula is denoted by

$$n_o = (t)^2 \times s^2/(d)^2$$

where n_o = sample size

t = t – value for the acceptable margin of error

s^2 = estimate of variance

d = acceptable margin of error to take

In this study, the estimated variance for the total population of 42,500 housing units is 1.44, t - value for margin of error in the regression is 1.65 and the acceptable margin of error to take is 0.05. Applying the formula, sample size = $1.65^2 \times 1.44/0.05^2$ = 1,568. This figure represents 3.68% of the population. But due to financial, time, personnel and other resource limitations, 2% sample ratio was used. Therefore, from the total number of 42,500 residential units, the sample size used for the research was 850 (i.e. 2% x 42,500). This figure was then distributed in proportion to the number of residential housing units in each layout as shown in Table1.1.

Table 1.1. Total numbers of residential houses and sample size for the study area

S/N	Layouts	No. of residential houses	Sample size
1	Fegge	10,750	215
2	Woliwo	2,000	40
3	Odoakpu	8,000	160
4	Inland Town	5,400	108
5	Otu	2,550	51
6	Omogba	2,500	50
7	American Quarters	2,050	41
8	G.R.A	1,500	30
9	Trans Nkisi	1,000	20
10	Awada	1,500	30
11	Okpoko	5,250	105
TOTAL		42,500	850

Sources: Author's Field Work, 2008, NPC (1991) and Onitsha Master Plan, 1978.

With reference to the FGD, the number of participants in a particular session of the FGDs was restricted to 10 in each of the selected layouts in the low, medium and high density residential areas. Only one interview was conducted with the Chief Town Planning Officer of Onitsha.

1.6.1.2 Sampling Procedure and Methods of Data Collection

Having chosen the number of houses to be sampled in each of the layouts, the multi – stage cluster sampling was used to select the houses for the administration of the questionnaire. According to Bryman and Cramer (1997 p. 102), "a multi-stage cluster sample is a probability sampling procedure that allows geographically dispersed or heterogeneous population to be adequately covered, while simultaneously saving interviewer time and travel cost."

In the first stage, the layouts were identified and classified based on the 1978 Onitsha Master Plan classification of housing densities. Based on the housing density classification of the study area, Fegge, Odoakpu, Okpoko and Woliwo layouts were selected to represent the high density housing area. Inland Town, Otu, Omogba and Awada layouts were selected to represent the medium density area, while GRA, American Quarters and Trans-Nkisi layouts represented the low density area. It should be pointed out however, that this housing density classification is mainly for ease of data collection and analysis, though there may be other classifications.

In the second stage, major wards in each of these layouts were selected. The major wards considered are those that have more residents and housing developments. According to INEC (2008) record in Onitsha, there were a total of 36 wards in the city and 18 wards were selected for this study. For the high density residential areas, 4 wards were selected in Fegge, 3 wards in Odoakpu and one ward each in Okpoko and Woliwo. In the medium density residential areas, 3 wards were selected in Inland Town, one ward each in Awada, Omogba and Otu while one ward each was selected in the G.R.A., American Quarters and Trans-Nkisi layouts in the low density residential area. The number of questionnaire assigned to each layout was then divided by the number of selected wards to obtain the number of questionnaire for each ward.

In the third stage, all the streets in the selected wards were identified and numbered using the street map of Onitsha as a guide. The streets were selected based on their grade. The grades of streets considered were primary/major streets and secondary streets. In Fegge, 21 streets were selected, 15 streets in Odoakpu and 3 streets each in Okpoko and Woliwo. In Inland Town, 12 streets were selected, 2 streets in Awada and 4 streets each in Omogba and Otu, while 3 streets each were selected in G.R.A, American Quarters and Trans-Nkisi layouts. Out of these streets, the major ones selected were 4 each in Fegge and Inland Town, 3 in Odoakpu, 2 each in Woliwo, Otu, Omogba, American Quarters, G.R.A, Okpoko and 1 each in Awada and Trans Nkisi. The rest were secondary streets. The number of questionnaire for each ward was divided by the number of the selected streets to obtain the number of questionnaire for each street as presented in Table 2.

Finally, in the last stage every third housing unit was selected in each street for the administration of the estimated number of questionnaire. That is, when the first house was selected, the next unit selected was the fourth house and so on. An equal number of houses on each side of a street were selected until the required number of houses along the street was sampled. For instance, to determine the number of houses sampled in each street in Fegge layout, the sample size of 215 is divided by 21 to obtain an average of 10 questionnaires per street. The 10 questionnaires were systematically administered on 10 houses in each street.

In addition, the average distances of the houses to the CBD and major roads were estimated by direct measurement on the map, using the street map of Onitsha as a guide.

1.6.2 **Secondary Data**

Secondary data sources for this study include published materials such as books, journals and publications of government and quasi-government agencies. Unpublished land and housing related materials such as theses, dissertations, technical reports, conference papers and seminar and workshop papers were also used. Reports and data from national agencies such as National Population Commission, Federal Office of Statistics, as well as international agencies (WHO, UNDP, UNCHS), universities and other relevant institutions were consulted.

Table 1.2.Sampling procedure and sample size distribution

Density class	Layouts	Selected Wards	Selected Streets	Total Questionnaire	Retrieved Questionnaire
High density	Fegge	4	21	215	208
	Odoakpu	3	15	160	154
	Woliwo	1	3	40	21
	Okpoko	1	3	105	32
Medium Density	Omogba	1	4	50	50
	Awada	1	2	30	29
	Inland Town	3	12	108	69
	Otu	1	4	51	50
Low density	American Quarters	1	3	41	35
	G.R.A	1	3	30	30
	Trans Nkisi	1	3	20	20
TOTAL		18	72	850	758

Source: Author's Field Work, 2008

The types of data obtained from these sources include information on land management, housing production, trend and allocation, institutional framework for housing provision, housing policies, analysis of land, housing and rental values, and housing resources – finance and material. In addition, satellite imaginary and the Master Plan of Onitsha were used to delineate the study area according to various land uses.

1.6.3 Methods of Data Analysis

The data collected for this study were analyzed using descriptive and inferential statistical techniques. Some of the descriptive techniques are means, standard deviations, percentages, frequencies etc. The inferential statistics used to analyse the data collected and the stated hypotheses are the stepwise and non stepwise regression analyses, with significance tests conducted to accept or reject the stated hypotheses.

The hypotheses and the inferential techniques used were as follows:

Hypothesis One:

This states that the distance from CBD and nearness to major roads are not major determinants of land, housing and rental values. Past studies have shown that land values diminish with distance from the CBD and major roads in a negative exponential fashion. In this study, the inverse relationship between land values, housing and rental values is investigated, using 3 multiple linear regression models as follows:

$Y_i = a - b_1x_1 - b_2 x_2 + e$

Where Yi represents land value, housing value and rental value

a = the intercept coefficient on Y_i

x_1 = distances from the CBD.

x_2 = distances from the major / class A roads

b_1, b_2 = regression coefficients

e = error term.

Hypothesis Two:

The hypothesis states that land, housing and rental values of residential housing are a function of non – location factors such as plot and room sizes, time of land purchase, date of development, age of layout, place of origin, income, housing quality and condition (measured by house type, number of rooms, toilet type, bathing room type, kitchen type, housing wall and roof conditions), neighbourhood quality (measured by road condition, number of primary schools, number of health facilities, number of security organizations) and zoning policy such as location in low, medium and high density zones. This hypothesis was tested using 3 multiple regression models with each of the 3 dependent variables run on 21 independent variables. The model is given as follows:

$$Y_i = a + b_1 x_1 + b_2 x_2 + b_3 x_3 \ldots\ldots + b_{21} x_{21} + e$$

Where Y_i represents land value, housing value and rental value.

a = the intercept coefficient on Y_i

b = regression coefficients

x_1 = plot size

x_2 = room size

x_3 = time of land purchase

x_4 = date of development

x_5 = age of layout

x_6 = place of origin

x_7 = income per month

x_8 = low density zone

x_9 = medium density zone

x_{10}= high density zone

x_{11} = house type

x_{12} = number of rooms

x_{13} = toilet type

x_{14} = bathing room type

x_{15} = kitchen type

x_{16} = housing wall condition

x_{17} = housing roof condition

x_{18} = road condition

x_{19} = number of primary schools

x_{20} = number of health facilities

x_{21} = number of security groups

e = error term.

Later, distance from the CBD was included in the above model using stepwise regression to determine its relative importance among the non-location factors in assessing land, housing and rental values. However, the individual significance of these independent variables was determined by using the t- test while the collective or joint significance of these variables was obtained using F-test.

Hypothesis Three:

This hypothesis states that there is no relationship between housing density and land value. That is, housing density is not a function of land value. This is to test whether the physical compactness or cramming of structures observed in the study area could be explained by land value. In literature, housing density has been expressed as the number of dwelling units per unit area. This hypothesis was tested using a simple linear regression model. The model is as follows

$$Y = a + b_1 x_1 + e$$

Where Y = Housing density

a = Y intercept

b = regression coefficient

x_1 = Land value measured as cost per plot.

e = error term

1.6.4 Operational Definition of Variables

The types of variables and how they were measured need some explanation. The major dependent variables are the land value, housing value and rental value of residential buildings in Onitsha. Land value is expressed as cost per plot size of 15m x 30m, 25m x 40m, and 30m x 60m; housing value is the estimated cost of a building such as bungalow, blocks of flats, and duplex while rental value is measured as the price money paid monthly per room in bungalows or per flat for blocks of flats and per duplex.

In order to ascertain land, housing and rental values of residential houses, this study is designed to examine location and non-location factors so as to determine their effects and relative importance. These factors are referred to as independent variables. The variables designated as location factors include the distance from CBD measured in kilometer and distance from major roads measured in metres, using layout map of Onitsha, while the non-location factors are plot size(measured in square meter), room size(in square meter) ; time of land purchase/sale ,date of development and age of layout(in number of years); place of origin (coded 1 if the respondent is native or 0 otherwise) and income(amount of money earned per month). Others include house type (coded 1 if blocks of flats or 0 otherwise; 1 if bungalow or 0 otherwise; 1 if duplex or 0 otherwise), number of rooms in a building, toilet type(coded 1 if water closet or 0 otherwise), bath room type(coded 1 if bath tub/shower or 0 otherwise,), kitchen type(coded 1 if separate or 0 otherwise), house wall(coded 1 if cracked or 0 otherwise), house roof condition(coded 1 if leaking or 0 otherwise); roads condition (coded 1 if is tarred or 0 otherwise), number of primary schools, number of health facilities, number of security groups; density type(coded 1 if location in low density or 0 otherwise). In addition, housing density is measured as number of dwelling units per hectare.

1.7 Structure of the Thesis

This study is divided into eight chapters. Chapter one is the introduction and the second chapter presents the literature review and theoretical framework while chapter three discusses the study area. Chapter four identifies and accounts for the variations in land, housing and rental values. In chapter five, the locational determinants of land, housing and rental values are examined. Chapter six examines the non – location factors while their effects are discussed in chapter seven. Chapter eight presents a summary of the major findings and their theoretical and practical implications.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Literature Review

The focus of this literature review is on the determinants of land, housing and rental values and their implications. Some works on urban economic studies describe a number of determinants of land, housing and rental values which help to explain, for example, why these values vary spatially and over time and why densities vary in different parts of cities. Others explained why particular uses develop in particular parts of cities and why particular income groups may choose to live close to or distant from the CBD or their places of work. Therefore, reviews of empirical studies in both developed and developing countries as well as the gaps in previous works are examined in this chapter.

2.1.1 **Studies in Developed Countries**

In the area of urban land and housing values, many studies have assumed that these values are determined by their location or distances in relation to the central business district (CBD), thus making land, housing and rental values a function of distance to the CBD. The studies are confirmed by the early works of Von Thunen(1826), Burgess (1924), Hurd (1903), Hoyt (1933), Ratcliffe (1949) and later works of Alonso (1964), Yeasts (1965) , Ridke and Henning (1967), Brodsky (1970), Kain and Quigley (1970), Lapham (1971), Ball (1973), Richardson et al (1974), Wilkinson (1974), Wilkinson and Archer (1974), Berry and Bednarz (1975), Smith (1976), Ball and Kirwan (1977), Maclennan (1977), Li and Brown (1980), Butler (1982).

The early theoretical literature (Segal, 1977) describes the forces and processes which may lead to not just a rent gradient from the CBD, but also a density gradient and the reasons for the two being inter- related. The intellectual basis of the standard urban

rent model with its concentric circles, which forms the basis of much theoretical works in urban economics stems from the agricultural location theory of the early 19th century writer, Von Thunen, whose work provided a hypothesis which explain inter alia why the most intensive crops were produced closest to the market. Modern urban land use theory, which forms the core of urban economics, is essentially a revival of Von Thunen's theory of agricultural land use (Fujita, 1989).

Subsequent writers on land and housing values in most developed countries adapted Von Thunen's (1826) theory to an urban setting, emphasizing the role of competitive bidding for land in determining urban land uses and the influence of accessibility on land values. In a single centre, space will be used most intensively in the core and the density of use will tend to decline with increasing distance from it. These gradients may also be observed in population densities, housing and rental values and employment per acre of land. Burgess (1924), influenced by ecology, suggested that human beings compete for scarce resources such as land and raw materials, with the aim of satisfying their different economic and social needs. As in ecology, the competition for such resources is constantly changing (Balchin et al, 2000). Alonso's (1964) development of the bid rent function with his work in Michigan in the U.S formalizes the trade – off between accessibility and land costs. Each activity or land use has a family of bid rent curves which shows what a given activity is prepared to pay at each site. The activities with steeper bid rent curves capture the central locations because they are prepared to pay more for central sites. Households also have a bid rent function – a trade – off between housing costs and journey to work costs, which generally assume that a household has a fixed budget that it can allocate to some combination of these two items. Alonso's bid rent concept implies that with an increase in urban population and / or increase in total urban income, the demand for land would increase, raising bid rents throughout the urban area, which in turn would result in each land use invading the next outer zone (Balchin et al, 2000).

However, these studies and models are somehow biased in according the CBD and distance from it more importance than they really deserve, while the effects of non-location variables are neglected. There is some empirical evidence that increasingly strong demand for city centre living is leading to a doughnut effect (The Scottish Government Research, 2002) in some British cities – most notably in Birmingham and

London. For instance, areas such as Selly Oak, Northfield and Erdington have been left behind in the rush to improve inner city areas because of the failing infrastructures at the suburbs. These empirical findings imply that urban growth will normally be associated with both upward and outward expansion. Near the city centre, low structures will tend to be replaced by higher ones and there will be attempts to encroach on open spaces and build on any spare plots. Central densities (with the probable exception of residential density) will rise, and the central land will be used more intensively. At the same time, however, the settled urban area will expand outwards. According to Richardson (1971), the reason is that large amount of land is required for efficient production of goods and housing.

Empirical work in U.S led to a critique of the concentric zone model, which was found to offer a poor description of the structure of many cities. Hoyt's radial- sector theory, describe how in many cities one or more high rent sectors shaped like pie slice wedges tend to develop along radial lines from the centre to the periphery. High rent sectors tend to develop in areas of high quality environment. Despite the contributions of these theoretical models to the explanation of urban form and/ or land values, they are challenged by the complexity of real cities, where so many factors, not solely economic, impact on land use decisions and development process (Pieda, 1986). This is why cities in the world today are increasingly polycentric, with many other centers of employment.

In the U.K, the impact of the planning system is of course a powerful determinant of both land values, uses and densities, which does not always take into account the natural tendencies of market forces which underpin the theoretical models. For instance, deliberate shortage in land supply or accessibility brings about increase in land values. In his report to the Scottish Government, Evans (2002) argues that planning regulations can push up the price of land if they constrain its supply, thus impacting on the elasticity of the housing supply. In these circumstances, increase in demand results not only in an increase of housing but an increase in house prices. This is because of regulation in land supply which prevents house builders from responding to demand. This often results in a shift in supply towards houses which consume less land because of the high land values.

However, Grington (1986), supporting the demand side factors, argued that the planning system cannot push up prices of land or housing other than in certain market conditions. In any case, some empirical studies by Cheshire and Sheppard (2000) and Savills (1998), still maintain that planning system or regulations often result in price differentials in land and housing development. In conclusion, Pieda (1986) showed that both demand and supply factors are significant. This is because the statistical analysis of variation in land prices provided some evidence that constraints on land supply resulted in increased house prices, while demand factors, represented by the level of earnings, unemployment and owner occupation, were also important. In each of the equations tested, the level of earnings proved to be the most significant variable, followed by the measure of land supply, such as the amount of land with detailed planning permission per capita.

One significant aspect of this literature review is the implications of land, housing and rental values for urban structure or form. The factors which combine to produce high land values tend to influence urban structure. Both theoretical work and empirical studies suggest that densities increase as land values rise. Higher land prices encourage infilling of vacant plots and increased densities. According to Wheaton (1977), people accept higher house prices because they are willing to trade – off accessibility for space, recognizing that they can only have the space they prefer at the cost of longer commuting times. Pieda (1986) argued that apart from increase in land values, greater demand for land also lead to higher or increased densities. For instance, in a situation where there is competition for site and strong housing demand, developers may try to maximize the number of units on a site, so that they can maximize the residual value, and thus the bid price of land. Pieda (1986) further argued that the role of land values in determining patterns of residential housing is in some respect counter- intuitive. Whereas low land values are expected to stimulate residential development, the builders are reluctant because of their perceptions of weak demand for housing in the area concerned.

The increase in urban densities which may be associated with high land values is viewed differently from different perspectives. Those who support compact urban forms see increased densities leading to a range of positive results in terms of improved energy conservation, transport and service provision (The Scottish

Government Research,2002), which are key aspects of sustainability concept. This argument is supported by Hall (1999), suggesting that higher densities result in better public transport, support of a wider range of services, decline in journey distance and more localized contacts and activities which reduce the need for travel. However, this view is not universally held. Those who attack what they term 'Town cramming' argue that higher density residential patterns effectively act against consumer preference to force people to live in housing which they do not want to live in. Evans (2002) points out that consumers are steered towards smaller properties and higher density living. In summary, the British tend to aspire to live near the countryside, put up with the suburbs as alternatives and are averse, in general, to urban living (Hall, 1999). Of most interest in terms of densities and land values are the speculations of Hall (1999) on the optimum density for residential neighbourhoods in cities. He argues for a minimum density of 37 units per hectare but acknowledges that areas of high demand such as Islington and Chelsea in London or Pacific Heights and Russian Hill in San Francisco have much higher densities. He points out that anything up to 120 units per hectare can be sustained without sacrificing quality of life. Confirming this argument, Hall (1999) states that Lord Rogers has pointed out that Barcelona has an average density of about 400 dwellings per hectare, and areas such as Bath, Edinburgh's New Town and Bloomsbury and Islington in London have an overall density of 100 – 200 dwellings per hectare.

From the review of research evidence in developed countries, it is obvious that some works in urban economics adopt more complex models of location choice, which reflect the fact that the decisions of households in particular are not a simple trade – off between space and accessibility. The trade – off is in fact a three way trade – off with three basic factors being considered: accessibility, space and environmental amenities. Accessibility includes both pecuniary and time costs associated with getting to work, visiting relatives and friends, shopping and other activities. The space factor consists of the need for some land as well as the size and quality of the house itself. Finally, environmental amenities include natural features such as hills and scenic views as well as neighbourhood characteristics ranging from the quality schools and safety to racial composition (Fujita, 1989). Using these factors, Cheshire and Sheppard (2000) create models which attempt to deal with the considerable complexity of the determinants of urban land prices. They used Hedonic price models to explain intra – urban variation

in the price of land. One of the factors which impact on land prices is the planning system, of which their work attempts to quantify that effect (Cheshire and Sheppard, 2000).

Cheshire and Sheppard's work recognizes the many factors which impact on the price of an individual plot of land. They stated that it has long been recognized that housing is a composite good. The price that is paid for a house reflects various characteristics of the house – its floor area, for example, or the facilities it enjoys, its age and design. A house, however, is not only composed of characteristics relating to its structure but also of the characteristics determined by its location. The latter include the classic element of urban economic models, accessibility to employment centre. There is another set of location determined characteristics, however, including the quality of local public goods and of microenvironment, the characteristics of the immediate neighbourhood, or the amenities (and disamenities) which the location provides access to.

So far, studies in developed countries have focused on the accessibility factor and the structural characteristics of an area in the explanation of variations in land, housing and rental values. However, recent studies have shown that fundamentals such as lending interest rates and psychological factors like behavioral expectations are useful in the explanations of variations in these values.

Mayer and Sinai (2007), examined the relative roles of fundamentals and psychology in explaining variations in house prices in U S. Using metropolitan area data, they estimated how the house price-rent ratio responds to fundamentals such as real interest rates and taxes and availability of capital and behavioral conjectures such as backwards-looking expectations of house price growth and inflation illusion. They found that interest rate and lagged-five year house price appreciation rate are the most important determinants of variations in housing or rental values and lending market efficiency also is capitalized into house prices, with higher prices associated with lower origination costs and greater use of subprime mortgage. Thus, the causes of a house price boom appear to vary over time, with interest rate fundamentals mattering more than backwards-looking price expectations in the house price run-up.

Furthermore, literature on equilibrium models of house price determination showed that there is great dispersion in house price appreciation rates and volatility across different housing markets in developed countries. According to Mayer and Sinai (2007), one difficulty in decomposing this wide variation in local price movement across metropolitan areas into so-called rational and behavioral factors is the lack of widely-accepted rational dynamic model of house prices that combines local fundamentals such as changes in economic conditions, risk and supply constraints; and aggregate fundamentals such as time-series variation in interest rates and inflation. They stated that without such a model as a baseline, it is hard to determine the relative contributions of fundamentals and psychology in generating movement in house prices.

Relating fundamentals to house or rental price dynamics, Brunnermeier and Julliard (2007), developed a dynamic rational expectations model of house prices but do not incorporate local factors. Also, Glaeser and Gyourko (2006), calibrate a dynamic model of housing in spatial equilibrium, explaining the impact of local shocks on house prices. However, they are not able to incorporate shocks to interest rates (or income), which the authors concede may explain some of the serial correlation in their data.

Theoretical papers have argued that liquidity constraints might also explain the seeming excess sensitivity of house prices to income shocks (Stein, 1995 and Ortalo-Magne and Rady, 1999). Lamont and Stein (1999), Engelhardt (1994, 1996), and Genesove and Mayer (1997), present empirical evidences in favor of the liquidity constraints hypothesis, in the explanation of variations in house or rental prices.

Some authors have argued that psychological factors rather than fundamentals play a key role in house price dynamics. On the role of psychology, Case and Shiller (1989) focused on unexplained serial correlation in real estate prices. Meese and Wallace (1993) obtained detailed rental data from advertisements and estimated an asset pricing model on houses in the San Francisco area. They concluded that run-up in prices was not fully justified by fundamentals but that pricing inefficiencies are due to high transaction costs that limit arbitrage opportunities for rational investors (Smith and Smith, 2006).

Case and Shiller (1989) showed that the expectation of future price appreciation by the households is psychological. They observed that recent buyers in Los Angels expected much higher long term price appreciation than households in Milwaukee, where house prices were flat in the 1980s. In a subsequent survey, Case and Shiller (2004) that recent buyers in Milwaukee expected appreciation in-line with national housing boom. Also, Shiller (2007) showed that by 2006, recent home buyers in both Milwaukee and Los Angels had lowered their expected appreciation for the next year, although they did not adjust down their 10-year expected appreciation rate as much. This is because of the psychological view of housing as an important investment opportunity.

A second psychological view explained by Brunnermeier and Julliard (2007) argues that households cannot fully disentangle real and nominal changes in interest rates and rents. As a result, when expected inflation falls, home owners take into account low nominal interest rates when making housing purchase decisions without recognizing that future appreciation rates of prices and rents will fall commensurately. They argued that falling inflation leads to otherwise unjustified price spikes and housing frenzies and can help explain the run-up in U S and global prices in the 2000s. As evidence, they also show that inflation is correlated with the expectations model of house prices.

Probably the most direct evidence on the importance of psychology in real estate market focuses specifically on loss aversion in downturns (Genesove and Mayer, 2001, Engelhardt, 2003). They argue that since loss averse sellers set higher asking prices when house prices are falling, this particular psychological factor actually leads to downturns in real estate market.

Finally, another set of literature focus on rational dispersion in long-run price appreciation rather than short-run dynamics. Van Nieuwerburg and Weil (2007) calibrate a model that uses productivity differences to explain long-run dispersion across cities. Also, Gyourko, Mayer and Sinai (2006) present evidence suggesting that increasing numbers of households and the growth of income in the right tail of income distribution, combined with supply constraints in some highly desirable cities has led to 50-year trend of faster house price growth in certain superstar cities like San Francisco, Boston and New York than in other cities in the U.S.

2.1.2 Studies in Developing Countries

Only few studies on urban economics of land and housing values in developing countries such as Latin America, Asia and Africa, have been undertaken (Asabere 1981, Quigley 1982, Jimenez 1982, Follain et al 1982, Mayo and Malpezzi 1984, Lim et al 1984, Follain and Jimenez 1984, 1985). Previous studies in China have focused on macro - economic determinants of housing systems such as housing provision (Tolley,1991), housing problems ((Zhang, 1998) and housing policies (Lee, 1988); but Youquin (2000) examined housing choices, prices and changing residential patterns as well as their social spatial impact on the urban landscape, especially with the continuing institutional factors in the housing systems. He examined factors affecting housing choices and prices. Based on the analysis, he argued that in contrast to the economic and socio – demographic perspectives on housing choices in the Western literature, a framework incorporating social relationships between the state, work units and employees is needed to understand households' housing choices and patterns in traditional urban China.

Asabere (1981) examined the determinants of land values in an African city and concluded that a clear understanding of the determinants of land values in Accra, Ghana, must precede the formulation and implementation of all land related policies. The model or hypothesis of his study states that the value of any given lot is determined by the following variables : location in terms of distance to the CBD, distance to the sea, and the presence of major or class – A roads, governmental zoning, culturally rooted determinants like land tenure (who owns or sells land), ethnic clustering (homogeneity), and the type of interest attached to land (freehold or leasehold), time of sale, the size of the lot and whether the lot has site services or not.

Asabere's (1981) findings reveal that land values decrease away from the CBD but increase away from the sea because of erosion, corrosion, noise pollution and other reasons. Also, the distance to road variable shows that land values are higher close to class A roads, while governmental zoning regulations restrict the form of development to be undertaken by any zone by imposing constraints upon its use, height and minimum environmental standards and these have potential impacts on land values. The effect of high class residential zoning on land values is positive. This may be attributed to the positive externalities that flow from well protected high class

neighbourhoods. However, the effect of low class residential zoning on land values is negative. This may be attributed to the negative externalities that exist in the low class residential neighbourhoods. The study established that the month of sale and the type of land holder or seller proved to have a significant effect on land sale prices. The former is confirmed by the two different time specifications used (1974 – 1975 and 1976 – 1978), while the latter shows that all stool/ethnic lands are sold at a discount. Furthermore, the study established that lots with site services attract higher values than those without, while the lot size variable established that value increases with area at a decreasing rate (i.e diminishing marginal effects).

By establishing these variables, Asabere (1981) has demonstrated that land market exists despite all its imperfections. Most importantly, his study in Accra, Ghana has demonstrated the need for more research in the property markets of the cities of the developing countries of the world. In the Nigerian context considerable amounts of work have been done by scholars in various disciples to explain the determinants, structures and effects of residential land use in Nigerian urban areas. For example, Mabogunje (1962, 1968), 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 expansion. Also, Sada(1972) 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 work (1979) was on Jos where he used social area indices to study the spatial structure of residential areas in the city. He concluded that western theories are not applicable in cities in developing countries due to cross – cultural differences as well as differences in social value system. Other studies of urban structure in Nigeria include that of Frishman (1977) on growth pattern of Kano ; Okpala's (1981) study of Onitsha and Enugu focused on residential mobility. Megbolugbe's (1983, 1991) study of urban housing market in Jos focused on structural and neighbourhood attributes as major determinants of housing values, ignoring location attribute .Onorkerhoraye (1977,1984) sought to explain the factors influencing residential districting observed in

Benin. He found out that social hierarchy in the city was an important process determining residential differentiation in Benin.

The market forces of demand and supply, especially of land and housing, are basic factors influencing variation in the values in urban areas. Abiodun (1976) elucidates this point further and argued that rapid increase in urban population in Nigeria had brought with it many problems associated with difficulties of providing basic infrastructures and calls for adequate provision. In support of this claim, Onibokun (1973) stressed the importance of the quality of residence. He stated that housing is a unit of health, efficiency, social behaviour, satisfaction and general welfare of any community. He further stressed that housing reflects the culture, social and economic values of a society. This assertion has been confirmed in the works of Egunjobi (1999) which demonstrated that the philosophical and practical attention in the area of urban studies is a clear indication of the importance of housing. The growth of the economy generates physical development of which the residential area is critical. This most often results in increase in values of land due to increase in demand and scarcity of available land in the market.

Adedibu and Afolayan (1989) viewed social relationships as a major determinant of structure of cities in Nigeria and thus studied the growth patterns of residential land use and how they affect rental values in Ilorin. They used the social area analysis in the study of Ilorin. Arimah (1990) and Aluko (2002) observed that Megbolugbe's (1983) study neglected location attributes in his estimate of housing values and concluded that the implicit price of housing attributes are determined by the structural, neighbourhood and location attributes in their analyses of urban housing market in Ibadan and Lagos respectively. Arimah (1990) used the hedonic regression model to estimate the implicit price of housing attributes and their relative effects on the rental values in two residential sections of Ibadan, namely the indigenous and modern sections. He used the valuation list of 1982 containing 67,951 residential units as sampling frame while the annual housing rent rating for the same year was used as dependent variable. He had about 24 independent variables based on the housing data collected. He found that the variables, number of rooms occupied (structural attributes), road or presence of school (neighbourhood attributes) and distance to CBD (location attributes) are the important determinants of rental values in both parts of the city. This is confirmed by the

coefficient of multiple determinations of 93.6% and 95.9% in the traditional and modern segments of the city, respectively.

Olaore (1991) studied 'the values of land and rentage of shelter in Nigerian's urban areas', with a case study of Kaduna. He attempted to determine the factors responsible for the growing disaffection and public outcry against soaring urban land values and the rental values of housing. The data base originated from questionnaires administered to 570 households from various districts in Kaduna. Using two basic multiple regression models, he found that with regard to residential land value, the important factors were age of a neighbourhood district, infrastructural index, residential accessibility index and distance from the CBD. On the rental value of shelter, the infrastructural index, distance from the CBD, and residential accessibility were factors considered important. Although population density was found to be of great influence, he said that it had a depressing effect on rental level. However, he suggested that variables like income and public sector influence ought to be included to uncover more underlying factors.

Other studies on the correlates of residential land use in urban areas include those by Okewole (1997), Omirin (1998) and Olayiwola (2000). Okewole (1997) highlighted some of the socio – cultural characteristics of the core area of Ibadan and better environmental quality of Bodija occupied mainly by the non – natives. Omirin (1998) researched the accessibility to residential land in Lagos while Olayiwola (2000) worked on sustainable city development in Osun state, Nigeria.

Okoror (2001) used only land values in a correlation study of urban morphology in Benin City. The objectives were to explain the variation in urban expansion based on the inter- relationships between population, land value and radius of the city; to explore the extent site rental value provides adequate proxy for identifying and differentiating urban neighbourhood; and to explore the change that would occur to the classification scheme based on multi- dimensional variables including land value. Using multiple regression analysis, he found that the built- up area, the overall radius of the city and population change contribute more to urban expansion than land value. This implies that land values alone cannot be used to adequately categorize the city

into homogenous residential neighbourhoods, and hence the need to include housing and rental values in this study.

Olayiwola et al (2006) used the principal component technique to analyse spatial variation in residential land value determinants in Lagos. They identified accessibility, rent, transport improvement, quality of neighbourhood, infrastructural facilities and government regulation with particular reference to zoning as determinants of residential land value. All the variables have a high degree of positive relationship with one another. However, improvement in transportation and accessibility are the most important determinants of residential land value. This is followed by quality of environment, basic facilities and application of zoning regulations, in that order. In any case, Olayiwola et al (2006) are of the opinion that where there is improvement in infrastructural facilities, there is expected to be improvement in economic variables, usually in form of increase in rent and price of land.

2.1.3 Synthesis of Findings and Gaps in the Literature

The literature on urban land and housing values in developed countries highlights the importance of the CBD and distance from it as a major determinant of these values in urban areas. This is confirmed by the early works of Burgess (1924), Hoyt (1933) and later works of Alonso (1964), Yeast (1965), Richardson et al (1974) etc. They all ignored non- location factors. These studies emphasized the role of competitive bidding for land in determining urban land uses and the influence of accessibility on land values. They maintained that in a single – centered city, space will be used most intensively in the core and the density of use as well as its value will tend to decline with increasing distance from it. These studies did not, however, consider the structural characteristics of space in terms of size or amount as well as its environmental attributes such as facilities and services.

It, therefore, follows that these studies are somehow biased in according the CBD and distance from it more importance than they really deserved, while the effects of non-location variables were neglected. For instance, some empirical evidence have shown that the increasing strong demand for city centre living is leading to a doughnut effect in some British cities, most notably Birmingham and London. The planning implication is that the suburbs have been left behind in the rush to improve inner city

areas. These empirical findings imply that urban growth will normally be associated with both upward and outward expansions.

Empirical work in the U.S de-emphasized the relevance of a single centre and distance from it, which led to a critique of the concentric zone and sector models. The studies maintained that the fact that cities are increasingly polycentric, with many subsidiary centers of employment, makes the models hard to apply to the real world. This implies that location factors (CBD and distance from it) alone, could not be considered as the main factors for the explanation of the structure of cities; hence the need to also consider the non-location factors. In the U.K, Evans (2002) pointed out that the impact of planning system is of course a powerful determinant of land values, uses and densities. He argued that planning regulations can push up the price of land if they constrain the supply of land, and thus impact the elasticity of housing supply.

Research evidence in the developed countries also highlighted the implications of non-location factors such as the demand factor, which brings about high land values and influences urban structure. Pieda (1986) argued that because land values are effectively a residual, greater demand for land often results in higher densities in general. However, the increase in urban densities which may be associated with high land values is viewed differentl. Arguing in favour of compact urban form, Hall (1999) saw increased densities leading to a range of positive results in terms of improved energy conservation, transport and service provisions. This view is not universally held. Evans (2002) argues that higher density residential pattern effectively act against consumer preference to force people to live in housing which they do not want to live in. How far are these views true in developing countries?

From the research evidence in developed countries, it is obvious that some works in urban economics adopt more complex models of non- location choice, which reflect the fact that the decisions of households in particular, are not a simple trade-off between space and accessibility. In fact, there is a three way trade-off with three basic factors being considered- accessibility, space and environment. Thus, this study is to show that non – location factors are also important determinants of land, housing and rental values, not only distance from the CBD and major roads as claimed by most past studies.

Although only a few analyses of urban land and housing values in developing countries have been undertaken, the dominant focus has also been on the relevance of the CBD and distance from it as the major determinant, ignoring non-location factors too. This is confirmed by the majority of works reviewed especially Asabere (1981), Quigley (1982), Mayo and Malpezzi (1984), Follian and Jimenez (1984,). In Nigeria, such works include Mabogunje (1968), Sada (1972), Onorkerhoraye (1977), Ayeni (1979), Arimah (1990), Olaore (1991). Megbolugbe's (1983) study of urban private housing market in Jos however explains that land, housing and rental values are determined by non-location factors (structural and neighbourhood attributes).

In summary, most of these studies focused on the location factor. They concluded that land, housing and rental values increase as one moves nearer to the CBD. With the emergence of subsidiary centers in our contemporary cities, this statement remains contextual. It is on this note that this study attempts to explain that the land, housing and rental values of urban residential housing are determined also by the non-locational variables and not mainly by the CBD and distance from it.

2.2 Theoretical and Conceptual Framework

The relevant theories/concepts used in this study are:

1. Bid – Rent Theory
2. Hedonic Price Indices Theory
3. The Demand – Supply Concept
4. Urban Managerialism

2.2.1 Bid- Rent Theory

The competition for space among various land uses (commercial, industrial, residential) in a way that maximizes their utility is the basis for the trade – off model or bid- rent theory developed by William Alonso (1964) and used for urban spatial analysis. Also in the analysis of housing demand, Wheat (1977) used the idea of bid rent approach to explain that housing units are sold to those consumers offering the highest for them, a process which in equilibrium is tantamount to maximizing individual utilities

Bid- rent theory is a geographic economic theory that refers to how the price and demand on real estate or land changes as the distance from the CBD increases. The amount one pays for the use of land is called rent and the graph that describes how rent declines with distance from the CBD is called the bid rent function which illustrates how the value of land reflects its accessibility to the CBD. The basic shape of the bid rent function is illustrated in Fig. 2.1

The bid rent theory begins with some basic assumptions.

(i) That all parcels of land are uniform apart from their relative distances from one another.

(ii) Transport is a direct function of the linear distances between places.

(iii) That CBD is the only single center for all the employment opportunities.

(iv) That people are rational in their market transactions.

Based on these assumptions, the argument proceeds as follows. For all types of land use, the most central sites will be the most attractive. As a result, competition for central sites will be intense, and the prices offered for them will be higher than those for less central sites. Different types of land users will place different financial evaluations on the utility of centrality, depending on their particular schedule of expected income and expenditure (i.e budget). It is logical, for example, to expect some offices, banks, hostels and other commercial establishments to be able and willing to outbid households for central sites because the extra income accruing to a central location through increased trade is likely to outweigh the savings in commuting costs obtained at the same site by a household.

Thus each type of land user can be thought of having a distinctive bid rent curve that reflects the prices that each type is prepared to pay for sites at different distances from the CBD. Juxtaposing the bid rent curves of different user shows that the user with steeper curves captures the more central sites, while those with shallower curves are left with the peripheral sites. For example, Fig. 2.2 shows the allocation of land between uses such as retail, manufacture and residential.

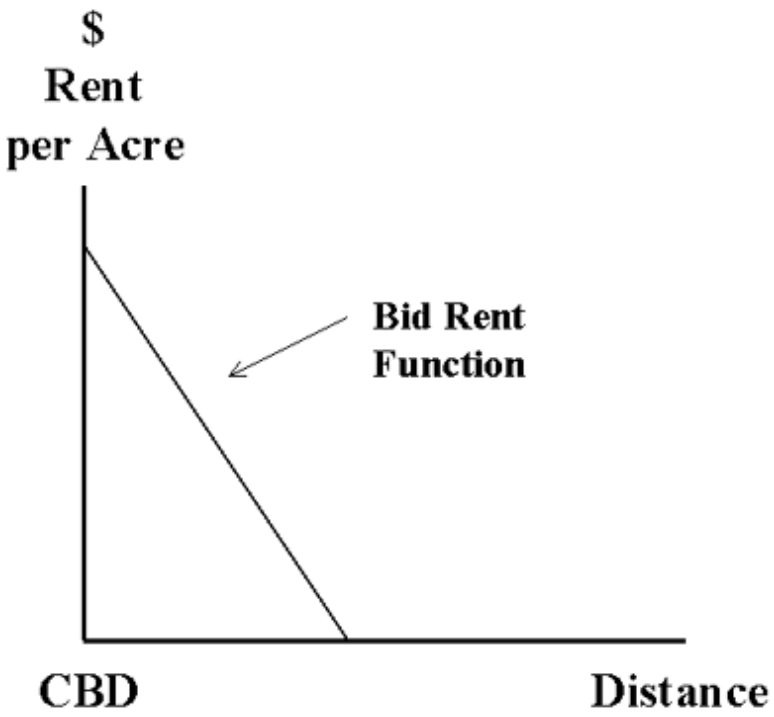

Fig. 2.1. The bid rent function

Source:Alonso (1964)

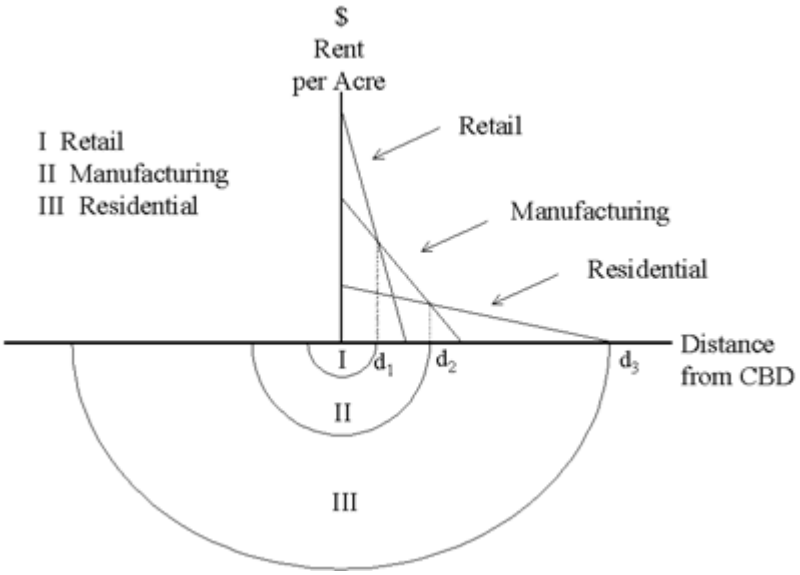

Fig. 2.2. Allocation of land between three uses

Source:Alonso (1964)

Given two distinct households – high and low income, when their bid rent curves are plotted, an important relationship is exposed. Those with higher incomes will have steeper bid rent curves and so end up nearer the city centre, while the lowest income groups will end up on the periphery. However, this outcome is contradictory given what we have seen about the suburbanization of both the high and middle income groups due to increase in residential plot size, floor space, number and size of rooms and other space related housing attributes with distance from CBD, which is facilitated by improved transportation technology.

The high income households are best able to afford the recurring costs of commuting and tend to trade off those costs for extra living space. Although this fits the commonly observed pattern of high income households consuming relatively large amount of land on the urban fringes, the low income are left to occupy the more expensive inner sites by living at higher densities. Therefore, the monocentric assumption and pre-eminence of accessibility to the CBD in explaining variations in land, housing and rental values of urban housing market should be relaxed. This could be done by allowing for secondary centers of employment and shopping in a multimodal metropolitan setting and introducing the influence of transit nodes so as to obtain a realistic projection of contemporary urban structure.

Based on this observation, Alonso (1964) stressed the need to make additional assumptions about household behavior, namely, that different households bid for different sized lots in different locations according to their relative preferences for living space versus the utility of accessibility. With this additional assumption, Alonso's bid rent function is defined as a function of lot sizes and quantity, neighbourhood and environmental conditions as well as accessibility to public services. From this later assumption, the household's utility function at a given income and transport cost is expressed as

$$Y - t(k) = X + R \qquad \text{(2.1)}$$

Where,

Y = household income

$t(k)$ = transport cost to the CBD by the household

X = non- housing good, determined by utility or satisfaction level

R = rental payment for a given dwelling unit

To obtain the bid rent function, Galster (1977) and Follian et al (1982) solve the utility function in terms of X, i.e X = (U,Z). Substituting this in equation (2.1), we have the bid rent function:

$$R = Y - t(k) - X(U^*, Z) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2.2)$$

Where R = rental payment for a given dwelling unit

Y = household income

t(k) =transport cost to the CBD

X (U*,Z) = utility function of household

U* = maximum or optimum amount of living space

Z = quality of dwelling unit

This equation is the maximum amount a household (given a particular utility, U) would be willing to pay for a given quality of dwelling unit characterized by the vector, Z.

The empirical implementation of this model shows housing rent or value as a function of household income and the housing attributes such as living space, bathroom type, kitchen type, toilet type, water and electricity supply. Thus, the bid rent function is seen as a trade - off between living space or other housing attributes and commuting cost and therefore, Alonso's model is sometimes referred to as 'the trade - off model'. However, a simpler method of operationalzing this trade – off model as well as overcoming some of its weakness is provided by the Hedonic Price Indices Theory.

2.2.1 Hedonic Price Indices Theory

This model sees price as a measure of values attached to land, housing and rent in the urban housing market. The hedonic technique was first suggested by Court (1939), but was developed by Griliches et al (1971) initially for the purpose of estimating the value of quality change in consumer goods. The thrust of the model is to subdivide each commodity into as many separate components as are deemed necessary, in order to reflect adequately the existing quality differentials and treat each sub – division as a separate product. Rosen (1974) used the concept to analyse the supply and demand of the characteristics which differentiate products in competitive markets. When the model is applied to housing as a multi-dimensional good, housing is differentiated into a bundle of attributes that vary in both quantity and quality.

Accordingly, the hedonic housing price model becomes an operational tool that functionally links housing expenditures/investments to measure of attributes of houses. The classical hedonic price model shows that there is a relationship between housing prices and traits (attributes). The housing attributes can be classified into three categories; structural attributes (such as number of rooms, building age, roof cover and plumbing fixtures, etc.) denoted by S , neighbourhood attributes (such as school quality, road quality and availability of electricity, water and other vital public services) denoted by N, and location attributes covering access to economic, social and political facilities(such as distance to CBD, shopping centres, parks and other recreational facilities) denoted by L. This relationship is expressed as

$$P = f(S, N, L) \quad \text{..... (2.3)}$$

Where, P is the hedonic or implicit price function of any of the attributes. The implicit price of a particular attribute can be found by differentiating the implicit price function with respect to that attribute, when all other attributes are held constant.

2.2.3 **The Demand- Supply Concept**

The philosophy underlying the demand- supply concept is that the price at which an item is sold is the outcome of a complex set of factors which determine the behaviour of consumers and producers and consequently the value of that item. For instance, demand factors are those which determine the number of people who want to buy, the quality each wants to purchase and the maximum price each is willing to pay. Supply factors on the other hand, determine the number of producers, how much each will offer for sale and the minimum price required to induce producers to offer one more item for sale. Stutz and Kartman (1982), Nellis and Longbottom(1981) and Barlev and May (1996), posit that the major demand factors in housing markets are real income per person/household, demographic factors, rental rates and in case of owner occupiers, the future expectations of a change in prices. The key supply factors are availability of the factors of production including labour, land, capital and entrepreneurship. With the exception of a few cases, neither set of factors solely determines the price at which a product is sold. Therefore, it follows that variations in both housing values, rental values and land values within a city are likely to be explained by the differences in demand and supply factors between these areas.

If a housing market could be explained by land, housing and rental values as pointed out by Arimah (1990), a hypothetical housing demand equation for an urban residential housing market can be stated as follows:

$DH(t) = a_1 + a_2 P(t) + a_3 Y(t) + a_4 Pop(t) + a_5 HH(t) + a_6 Exp(t)$…….(2.4)

Where DH(t) = quality of housing demand in time, t

P(t) = relative housing price at time, t

Y(t) = measure of income at time, t

Pop(t) = population at time, t

HH(t) = household size at time , t

Exp(t) = expectations of future price increase at time , t

Also, the housing supply equation for urban housing market is put as follows (Arimah, 1990):

$SH(t) = b_1 + b_2 P(t) + b_3 HS(t)$ ……. (2.5)

Where SH(t) = quality of housing supplied in time , t

P(t) = relative housing price at time , t

HS(t) = existing number of housing stock at time , t

The price of any commodity is determined by the interaction of the demand and supply curves in order to determine the price of housing. Using equations (4) and (5), the equilibrium model of demand function stated by Arimah (1990) is defined as

DH(t) = SH(t) and solving for P(t), this yields

$P(t) = C_1 + C_2 Y(t) + C_3 Pop(t) + C_4 HH(t) + C_5 Exp(t) + C_6 HS(t)$……...(2.6)

Where,

P(t) = Housing price at time, t

Y(t) = Income at time, t

Pop(t) = Population at time, t

HH(t) = Household size at time, t

Exp(t) = Expectation of future price increase at time, t

HS(t) = Housing stock at time, t

2.2.4 Urban Managerialism

This concept is adopted as a descriptive tool to explain how land, housing and rental values of urban residential housing are determined by urban managers. It examines the way and manner by which scarce housing resources are allocated to different social

classes in different areas within a given town or city. The relevance of this concept is that it explains how different institutions charged with housing production help in determining land, housing and rental values as well as social segregation in cities. In doing this, the emphasis is on access to housing and the role of urban managers, who control and manage access to scarce housing resources (Pahl, 1975).

These urban managers, especially the housing finance intermediaries such as banks, insurance companies and local housing authorities, whose task it is to provide finance, are governed by the creditworthiness of the consumers. Consequently the poor, especially manual workers are notably disadvantaged through this procedure. Those who qualify for the benefit of owner occupation are those whose standard of living conforms to such housing tenure.

A key theme in managerialism as observed by Cater and Jones(1989) is constraint, especially how scarce resources are rationed, access denied and social groups effectively directed to particular housing in specific areas. These practices according to a number of studies have identified estate agents, property developers and surveyors as active agents that exacerbate rather than reduce housing inequalities between citizens. Moreover, in developed countries where public housing is accorded great priority, local authorities, though with financial backing of the state, have continued to serve as builders and landlords of dwelling units. These houses are usually allocated on the principles of need and affordable rent.

Another key theme in this concept is the struggle between various interest groups which often results in class conflict. According to Cater and Jones (1989), class conflict implies an unequal struggle between the strong and weak, in which the former use their superior power to enhance their own resources at the expense of the later – there are winners and losers. Winners are usually those who can afford the prices of the land or houses given by the managers.

At this juncture, it becomes imperative to mention that managerial decision is seen as the main causal factor of variations in land, housing and rental values. This is evident in the persistent scarcity of acceptable dwellings, the acute injustice which stems from the need for rationing and the yawning gap which exist between political promise and

practical fulfillment (Cater and Jones, 1989). Consequently, Pahl (1975) reiterated that managers are the independent variables in urban allocation system. To buttress this finding, Pahl (1975) stated that social groups are the dependent variables while the managers are the independent variables in the allocation process.

However, the major limitation of this concept is that it fails to indicate that urban managers (gatekeepers) operate within wider social constraints. Furthermore, the managers are only distributors of resources and managerialism does not allow for the analysis of the production of such scarcities (Pahl, 1975). In a nutshell, managerialism completely ignores the production of scarce housing resources.

CHAPTER THREE
THE STUDY AREA

3.1 Location and Physical Characteristics

Onitsha in Anambra State is located in the south eastern part of Nigeria, bounded on the east, west, north and south by Enugu, Delta, Enugu and Imo States respectively (Figure 3.1). The development of a good road transport network to all important cities and town (including Onitsha) in Nigeria enhanced the town's geographic location. Therefore, Onitsha is located in a strategic position in the national context at a potentially important road – waterway interchange at the bank of the Niger River. The town houses the biggest market in West Africa. All these characteristics qualify the town as a suitable location for the study of land, housing and rental values.

In the state, Onitsha is bounded in the east, north and south by Idemili, Oyi and Ogbaru Local Government Areas respectively and by the River Niger in the west (Figure3.2). The town of Onitsha or Onitsha metropolis comprises mainly the Onitsha North and South Local Government Areas, with the Inland Town and Fegge as the Headquarters respectively. Onitsha metropolis covers the town itself and a long narrow area of low-lying land generally situated between the Niger River and the Owerri road extending southwards. This southern area contains a number of small settlements and villages in Ogbaru and Idemili Local Government Areas.

Onitsha metropolis consists of 11 layouts, namely Fegge, Odoakpu, Okpoko, Woliwo, Otu, Inland town, Awada, Omoba, American Quarter, G.R.A. and newly established Nkisi Layouts (Figure 3.3).The town is located in the most densely populated part of the state accounting for more than one third of the state's population.

Onitsha experiences 2 broad seasons namely, a long wet season and a dry season with harmattan period (Onitsha Master Plan 1978).

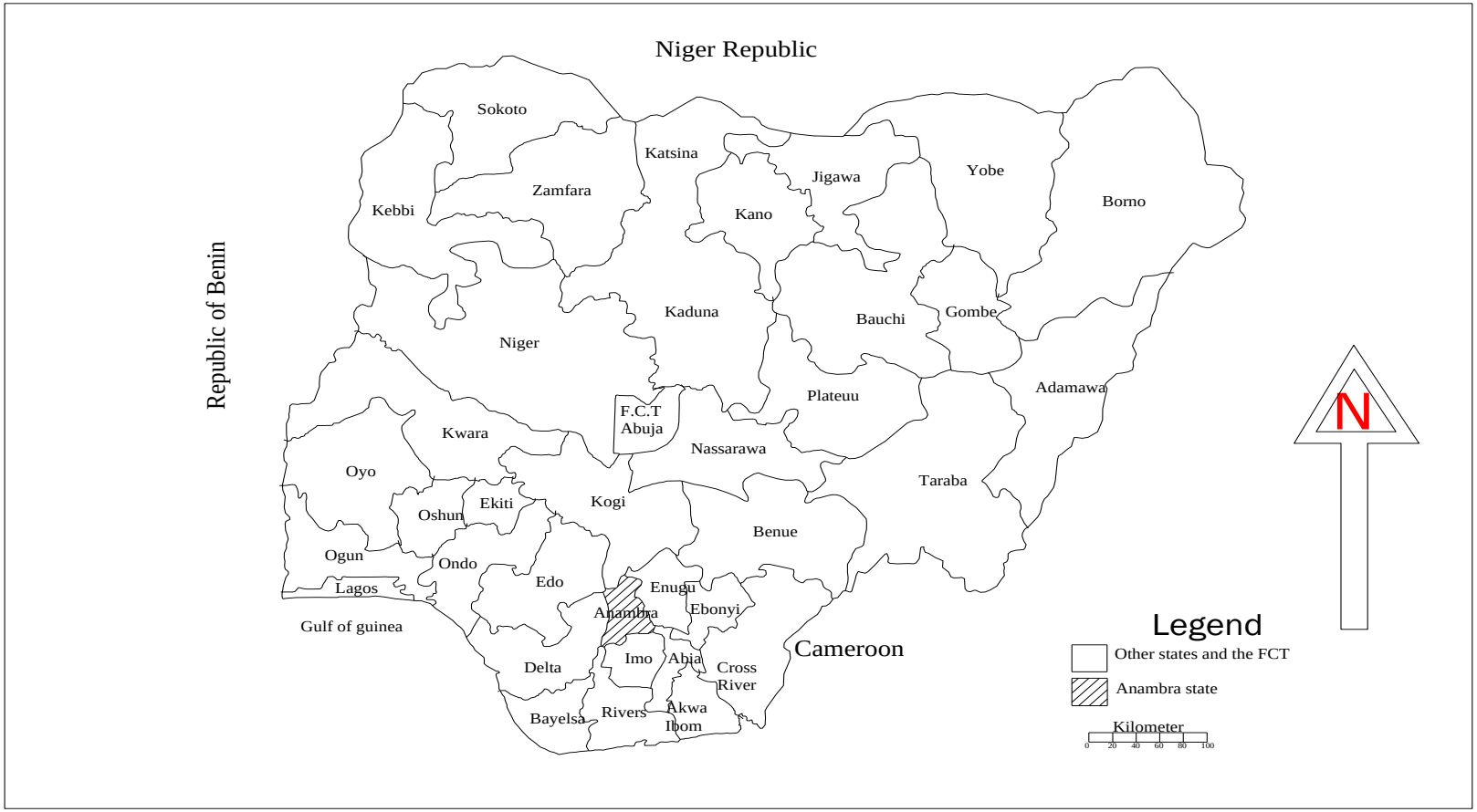

Fig 3.1.Nigeria Showing Anambra State

Source: Federal Survey, 2011

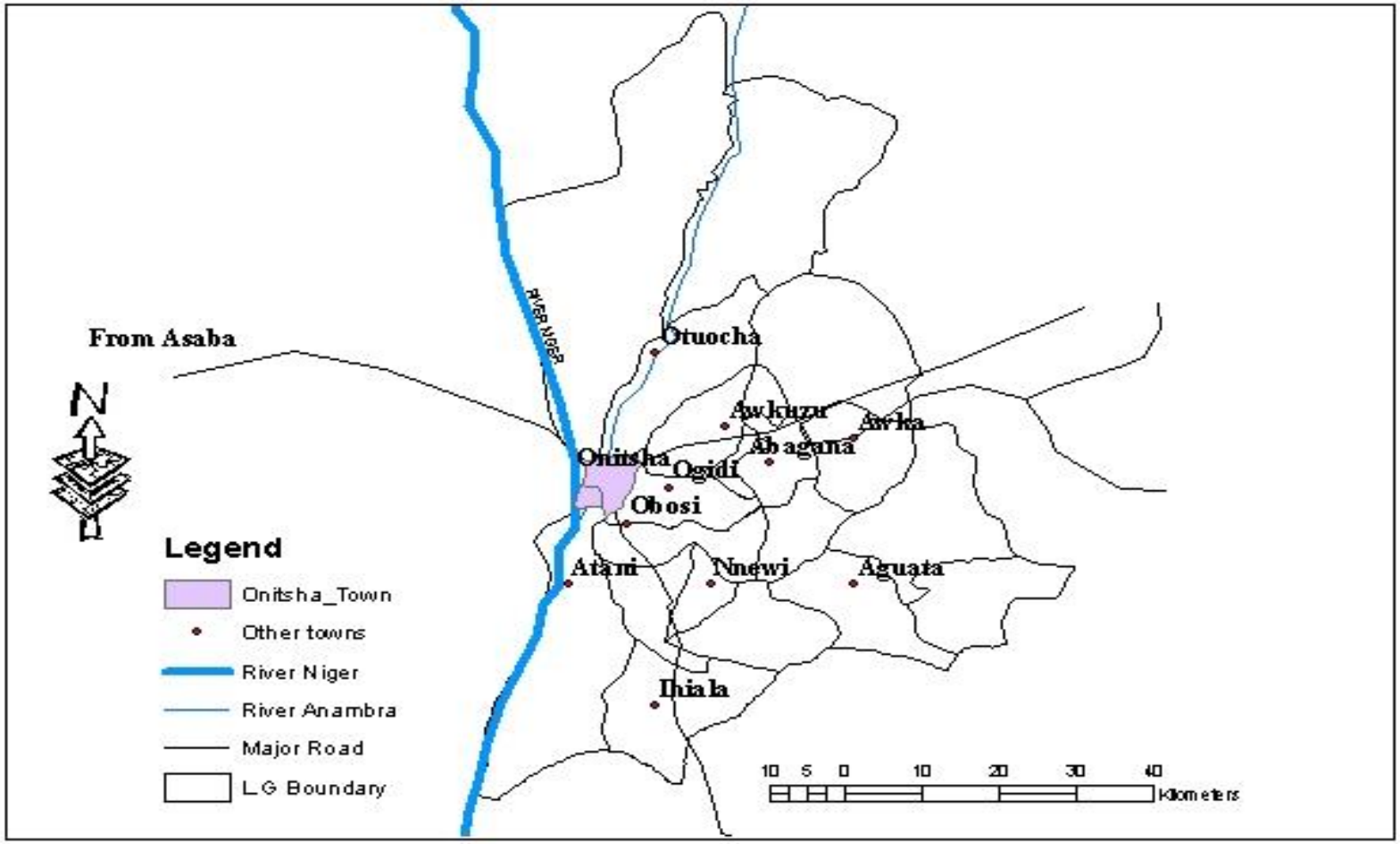

Fig.3.2.Anambra State showing Onitsha and some major towns Source: Federal Survey, 2011

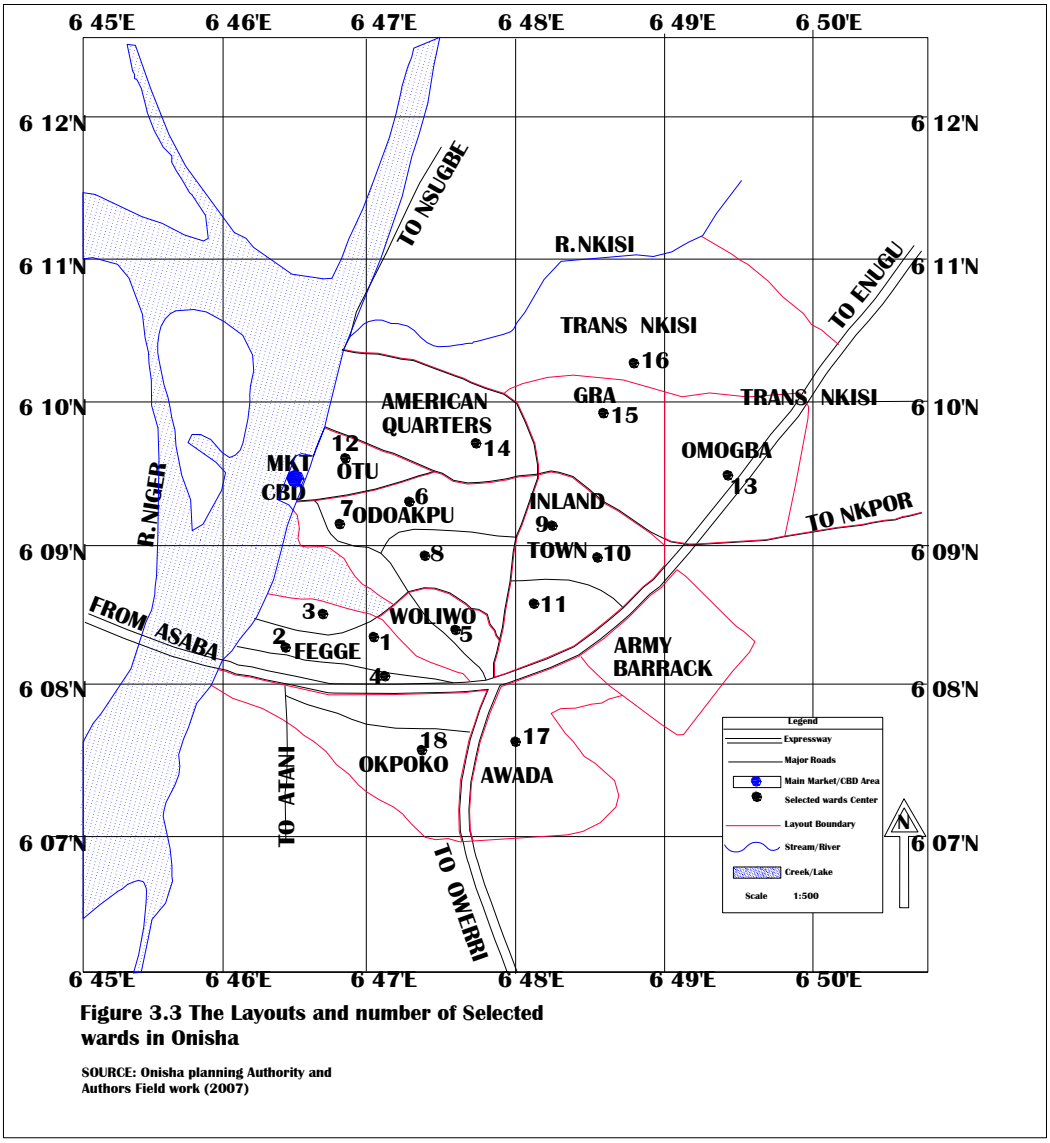

Figure 3.3 The Layouts and number of Selected wards in Onisha

SOURCE: Onisha planning Authority and Authors Field work (2007)

Physically Onitsha is situated on the left bank of the Niger River about 1km south of the confluence with the Anambra River (Onitsha Master Plan, 1978). It is located in a narrow basin between the Nkisi River to the North and the Idemili River to the south and on land which slopes gently down to the Niger flood plain. The old traditional native town or Inland town as its name implies is situated further inland on higher ground while the recently developed areas of Awada and Omoba extend farther away.

The developed areas of Odoakpu, Otu and Woliwo are on lower ground while Fegge and the then unauthorized area of Okpoko are actually situated within the flood plains The low density areas, G.R.A. and American quarter are located on high ground to the north, on the watershed with the Nkisi River, where Nkisi layout is also situated.The surrounding land is varied. To the North, across the Nkisi River valley, the terrain is steep and difficult comprising the southern extremity of the Udi Plateau which is heavily dissected by tributaries of the Nkisi and Anambra Rivers. To the east, the terrain is relatively flat, rising gradually to between 150m and 160m, providing good building land and a natural expansion area for Onitsha (Onitsha Master Plan, 1978).

Much of this good building land impinges onto the densely populated areas of the Idemili Local Government Area. To the south the land is flat and swampy comprising the wide flood plain of the Niger and Idemili Rivers. Geologically, Onitsha is situated within the vast sedimentary basin of the Niger – Benin trough (Onitsha Master Plan, 1978). It is located on the sedimentary rocks of the upper middle Eocene known as the Bende Ameke Group (Ibid). To the north and south are large areas of alluvia deposit from the quaternary period.

3.2 Historical Development of Onitsha

Onitsha was a seventeenth-century village created by a group of migrants led away from a part of the disintegrating Bini Empire by Eze Chima (Harding, 1963). However, this small peasant community which occupied the river bank area, was ousted in early 1800s by the more powerful immigrant group, the Onitsha people, that occupied the upland area, known as inland town (Enu-Onicha) today (Onyemelukwe, 1974).

Henderson (1972) and Crowther (1857) recorded that almost all the area of Onitsha around the banks of the river was uninhabited and the centre of the old town (i.e. Inland town) was at least two or three miles distant from the waterside. The

population according to Crowther's (1857) estimate was 13,000. Crowther (1857) described the town "as being one mile in length, if not more, with one broad road that runs length-wise which divides it into two sections. Both sides of the road are either covered by bushes or plantations and the people of Onitsha manufactured their own clothes, generally plain or fanciful white.

When the missionaries arrived, the people of Onitsha under Obi Akazua, were at war with their neighbours (notably Ogidi and Obosi people) and as a consequence of this war, many good houses were deserted at the east end of the town, where a constant look-out was kept for the approach of the enemies (Dike, 1962). In this state of affairs, Onitsha people welcomed European traders and the missionaries in order to strengthen their own position (Crowther 1857). The missionaries were allocated land (the present Otu area) along the waterside for the purpose of accessibility and consequently the establishment of a port or market centre for the European traders. This marked the beginning of civilization and the economic development of Onitsha in late 1800s or before 1900s.

Onyemelukwe (1974) reported that increasing land hunger and poor agricultural returns in Onitsha area have reduced agriculture to a mere way-of-life activity rather than as the main source of income for many people. This consequently acted as inducement to the workforce to move into alternative economic pursuits, such as retail services, petty trade and other low-prestige tertiary activities. This was a summary picture of the economic landscape out of which Onitsha developed as a large centre of over 160,000 people before the Nigerian Civil War (Onyemelukwe, 1974).

With the increasing population and commercial activities, residential developments and basic facilities and infrastructures like schools, hospitals, churches, roads, water supply etc., were established before the Nigerian civil war. Specifically, Inland town and Otu layouts were developed before 1900. This was followed by the developments of Odoakpu layout between 1900 and 1920; Fegge layout between 1940 and 1949. American Quarters and G.R.A. between 1950 and 1969 as well as the Army Barrack in early 1960s (Figure 3.4). At the end of the civil war, there was great influx of people into Onitsha, which made the town to expand into nearby towns and villages. This expansion led to the development of Woliwo layout immediately after the war in 1970,

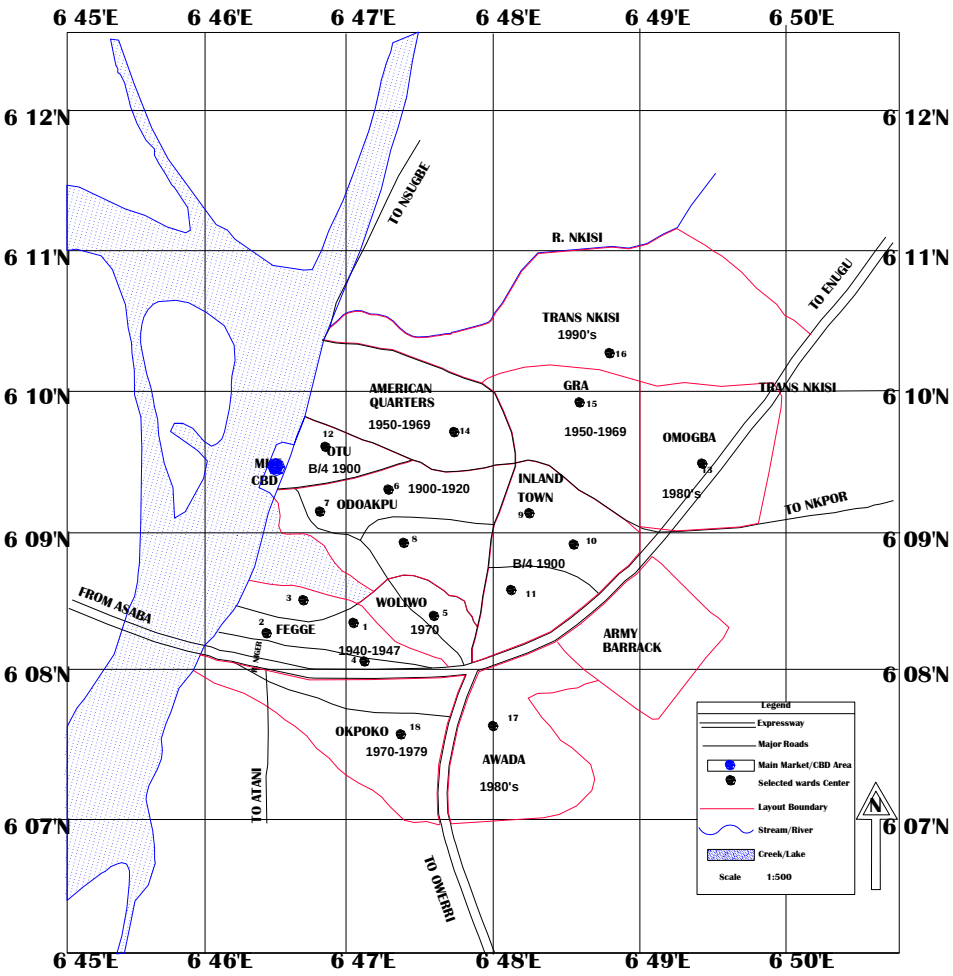

Figure 3.4 Historical Development of Layouts in Onisha

SOURCE: Onisha planning Authority and Authors Field work (2007)

followed by the development of Okpoko layout between 1970 and 1979. As the pressure on housing accommodation mounted, Onitsha continues to expand with the development of Omagba and Awada layouts in early 1980s. The latest development is Trans Nkisi layout in early 1990s.

Nzegwu (1978) and Wamer (1895) described Onitsha as a particularly pretty town with beautiful trees far larger than the ones seen in England and often covered with luxuriant creepers, bamboos, plantains, bananas and palms of various kinds. The whole town was very clean, the open sandy spaces were kept well, swept and the red mud floors of the houses were frequently polished. Since the end of the Biafran war in 1970, phenomenal transformations have occurred in Onitsha especially at the level of infrastructure (roads, industries, schools and hospital buildings). The rapid pace of growth has brought about the lowering of people's moral scheme in terms of orderliness and cleanliness.

Today, the development of Onitsha is marked by a catalogue of ills: garbage-strewn streets, unsanitary clogged and overflowing drains, squalid high rises, filthy premises, violent crimes, armed robberies and killings, inhospitable living conditions, lack of city planning, lack of solid waste management, impassable roads, and most important of all, total breakdown of law and order (Nzegwu, 1978).

3.3 Population Size and Structure

Despite the conflicting and often contradicting estimates of the population of Onitsha, the population size has increased from 13,000 people in 1857 to 160,000 before the civil war and 256,447 people in 1991. The resulting estimates for 1976 provided a contradiction with the smaller Onitsha urban area having a greater estimated population (307,420) than the larger Onitsha Local Government Area (270,469). In addition, the Onitsha Master Plan Survey indicates a total 1978 population of 251,747. This figure is clearly lower than the 1976 estimate but appears to relate well with the figure of 256,447 obtained in 1991 census. The 2006 census figure of…… was not published at the onset of the field work, hence the reliance on the 1978 and 1991 figures for this study. Based on the 1991 census, the population size of the various areas or layouts in the town are shown in the Table 3.1.

Table 3. 1. Population size distribution in Onitsha metropolis

S/N	Layouts	Population size	Density
1	Fegge	64, 119	194.8
2	Woliwo	7,561	99.5
3	Odoakpu	57, 714	336.1
4	Inland Town	30,056	65.4
5	Otu	12,822	186.5
6	Omogba	15,250	82.6
7	American Quarters	8,411	50.5
8	G.R.A	6,203	16.1
9	Trans Nkisi	2,343	29.8
10	Awada	16,504	85.7
11	Okpoko	35,467	178.5
	TOTAL	256,447	124

Source: NPC Final Census, 1991

The total population of 256,447 indicates that Onitsha has a very high overall population density in excess of 124 persons per hectare based on the estimate of 2,068 hectares of land for the town (Onitsha Master Plan, 1978). This reveals that Odoakpu has the highest density (336.1), followed by Fegge (194.8), Otu (186.5) and the lowest, G.R.A. with 16.1 persons per hectare.

Before the civil war, the age structure of the population of Onitsha was fairly typical of a rapidly developing country (Onitsha Master Plan 1978). It included a large young dependent population with very few old people. Nevertheless, although the average age was only 21.1 years, there was a significant drop in the 15-19 age groups indicating that many young people left Onitsha to seek education and work opportunities elsewhere in Nigeria.

After the civil war, and precisely from 1978, the age structure changed due to apparently large migratory movements into Onitsha of single male migrants between 15 and 30 years of age. Even if they were married, these young men were not accompanied by their wives or children so that there has not been an accompanying growth of females in the equivalent age groups, nor has the proportion of young children increased. Such a pattern of migration has inevitably led to a slightly unbalanced sex structure in which males in 1978 accounted for 56.3% of the population compared with 51.2% in 1963. Such a situation, which is characteristic of an economy in the early stages of change and growth, is expected to be only a temporary phenomenon as married migrants are eventually joined by their wives and a trend of migration by single females develops. This is confirmed by the 1991 census, in which males and females accounted for 51% and 49% of the total population respectively. In addition, there has been a significant growth of the 15-19 age groups for both sexes since 1978. This too, is probably the result of the migratory movements of those who are seeking education and employment opportunities in Onitsha. Although the average size of family given by Onitsha Master Plan is 5.1 persons, this average should not conceal the wide range of family sizes (between 6 and10 persons) recorded by the 1991 census in Onitsha. The migration factor has therefore had a major impact on the structure of Onitsha's population .The population size and structure of Onitsha need to be taken into consideration in assessing land, housing and rental values.

3.4 Land Use Structure

The existing land use pattern in Onitsha is well defined by the 1978 Master Plan of Onitsha (Figure 3.5). The commercial heart (or the CBD) is located in Otu around the main market in the triangle between the Niger River, Old Market-road and New Market road. This busy commercial hub (CBD) and mixed use area is surrounded by the high density residential areas of Odoakpu and Fegge and low/medium density residential area of American Quarters. The low densities residential areas of G.R.A. and Trans Nkisi are found in the north while in the east are the medium density residential areas of Omogba, Woliwo and Inland Town. Most large scale and new industrial development is concentrated around the Niger Bridge Head and the more accessible new roads (Expressway) between Niger Bridge, Iweka Roundabout and Owerri Road. Secondary commercial centers are located along Iweka Road (Ochanja market), at Iweka Roundabout (New Relief Market), and at the specialized Bridge Head Market dealing mainly in building materials and pharmaceutical drugs. Other areas in Onitsha metropolis are the medium density residential area of Awada located in Obosi to the east and the high density residential area of Okpoko in Ogbaru Local Government Area, to the south of Onitsha.

This pattern is unusual in that the commercial heart (CBD) of the town is not located near its physical centre, or even near the original traditional settlement in Enu-Onicha (Inland Town). The commercial centre was developed along the Niger River bank at the crossing point to Asaba, by the early Christian Missionaries and European traders. As a result, the commercial centre is now between the river bank and the surrounding high density areas and has little or no room for expansion. Furthermore, as the town expands to the north, east and south, the location of the commercial heart (CBD) becomes even more peripheral, with possible important implications for land, housing and rental values, as well as the traffic system.

Recent trends show that land use developments have been at various density levels. Inland-Town, for instance, is the indigenous home of the Onitsha people and is the best planned area due to its function as the seat of the colonial administration of old Onitsha province. In terms of density, the area is built up as a medium density residential area, comprising mainly bungalows. With regard to infrastructure, Inland Town has good motorable roads with asphalt surface.

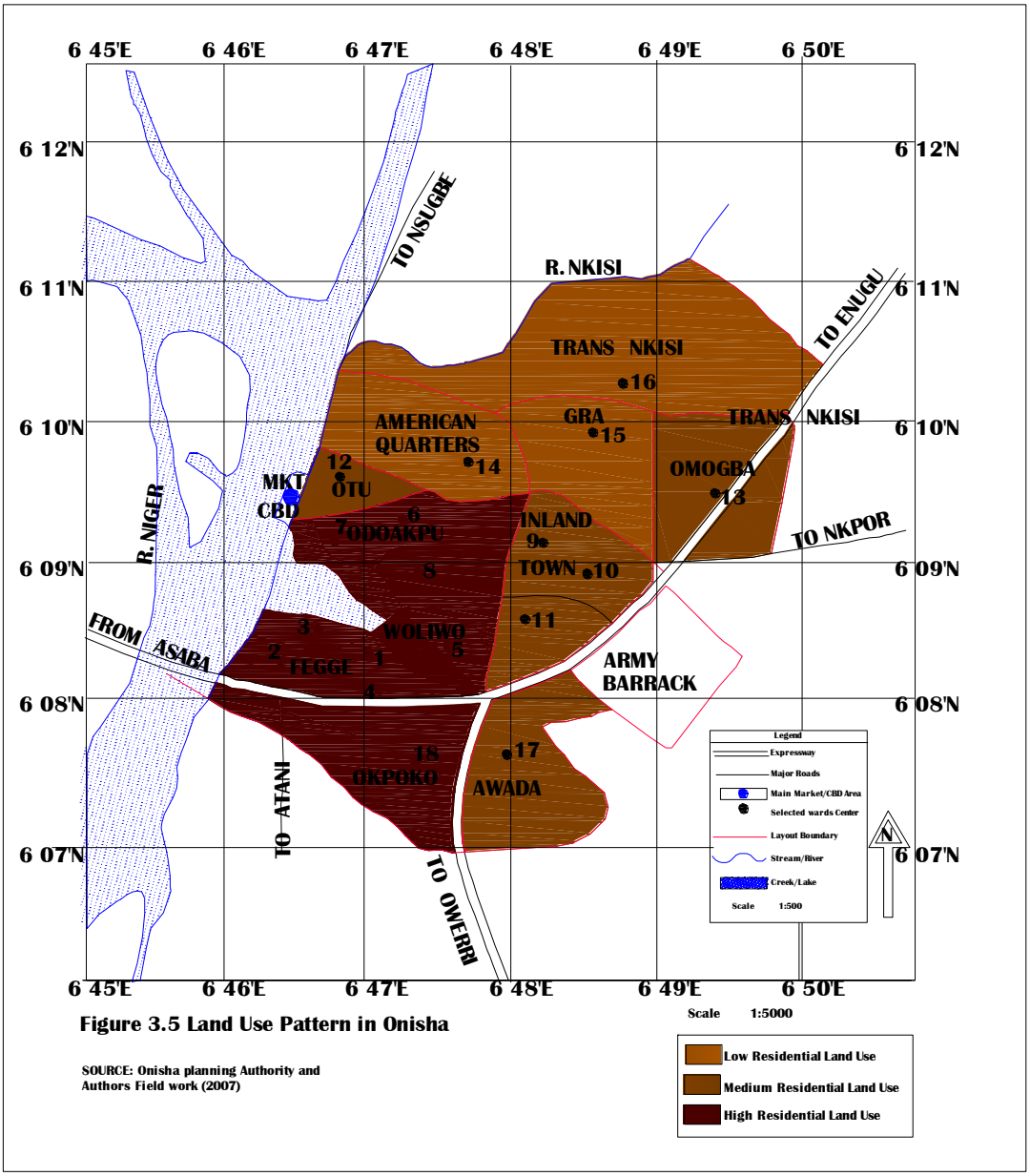

Figure 3.5 Land Use Pattern in Onisha

SOURCE: Onisha planning Authority and Authors Field work (2007)

There is pipe borne water, recreational grounds, educational and health institutions. American Quarters and the G.R.A. are developed as low density areas with buildings consisting of duplexes, semi-detached houses and bungalows. Also, the area is well serviced with good roads and facilities such as courts, police station as well as adequate water supply. Trans Nkisi is a new low density area with infrastructural development at a primary stage.

Odoakpu and Fegge are high density areas, initially made up of bungalows but due to increasing population and demand for housing, most of these bungalows were demolished and converted to high-rise buildings. Few of the roads are still in good condition but majority lack maintenance. The areas have basic facilities like primary schools, secondary schools, health clinics, etc, but lack maintenance. Almost all the inhabitants in these areas are migrants. Woliwo area, being closely located to these areas has the same high density development and has few good roads, schools and health facilities. Okpoko area is also a high density residential area with poor road network. The area has a very bad profile and could be described as an urban slum, inhabited by squatters. Most buildings in the area are neither high rise nor good owner-occupied. Other social amenities such as pipe borne water and electricity are available but not functioning adequately and almost all the inhabitants are migrants.

Awada and Omogba areas have medium density plots in most parts, with a small area developed as high density plots. They are fairly well planned but not as planned as Inland Town, with most if not all the inhabitants being migrants to the city. Even though most buildings in these areas are high-rise, they do not have social amenities due to little or no government presence. In Awada, for instance, the road network is in a deplorable condition; where there is pipe borne water, it hardly flows and electricity supply is in some cases unstable. Land to the south of the expressway from bridge head is largely committed by industrial development near the river, along the expressway and on both sides of Owerri road. To the east is the military barrack and the Catholic Seminary in the direction of Nkpor town.

It is important to note that most new developments on the periphery of Onitsha Metropolis have been carried out in a fairly haphazard manner and some large areas of land are likely to be misused. New areas are developed with simple access roads

connecting them to the existing main road network with little thought for the needs of further growth areas. In short, despite the obvious efforts of the Onitsha Local Government Town Planning Department, much of the new development on the periphery of Onitsha is uncoordinated. If this continues for much longer, the town will inevitably sprawl in an uncontrolled fashion and the existing traffic and congestion problems will be exacerbated, which will definitely have effects on land, housing and rental values.

3.5 Housing Development

According to the Onitsha Master Plan (1978), the existing housing stock comprises a total of about 24,500 dwellings within the town plus a further 6,500 or so in the unauthorized development at Okpoko. However, with development of Omoagba, Awada and Trans Nkisi Layouts, the NPC (1991) estimate of the dwelling units is a further 11,500. Therefore, the present total housing stock in Onitsha Metropolis is 42,500. Table 3. 2 show the distribution of this stock among the layouts in Onitsha metropolis. There are some characteristics of these dwelling units that have implications for land, housing and rental values in the town. For instance, there is a high incidence of sharing between more than one family, and occupancy rates are generally high. Overcrowding and lack of proper services and amenities represent the most acute problems with the general physical condition of the buildings giving a little cause for concern.

With nearly half the buildings apparently constructed during the past forty years, and with about 50% needing some repairs, the existing housing stock in Onitsha can be regarded as being fairly physically sound. Therefore, from the point of view of building condition there is little need for urban renewal. This is particularly true of the demolition and conversion of most bungalows in Odoakpu, Fegge, Otu and Woliwo, to high-rise buildings of about three, four and five floors. Building plots appear to be of adequate size for normal use but these conversions appear to increase density of use.

Table 3. 2. Residential housing stock per layout

S/N	Layouts	Housing units
1	Fegge	10,750
2	Woliwo	2,000
3	Odoakpu	8,000
4	Inland Town	5,400
5	Otu	2,550
6	Omogba	2,500
7	American Quarters	2,050
8	G.R.A	1,500
9	Trans Nkisi	1,000
10	Awada	1,500
11	Okpoko	5,250
TOTAL		42,500

Source: NPC (1991) and Onitsha Master Plan (1978).

There are serious deficiencies in the supply of services, particularly piped water and sewage disposal, resulting from the limited infrastructure in the town. These deficiencies seriously reduce the quality of life of a large number of people in the town and they are aggravated by the high densities and overcrowding that exists. Onitsha Master Plan (1978) reported that only about one third of the population have piped water supplied direct to their homes, and nearly one third have no piped water at all, relying on wells or other sources. This reliance on wells is particularly dangerous in high density situations where sewage disposal is unsatisfactory since the risk of pollution of the water courses is enormous. Areas such as Otu, Odoakpu, Fegge, Woliwo and Okpoko are worse affected by the deficiency. Nearly every house in Onitsha is connected to electricity supply but this supply is often irregular, prompting people to use generators as an alternative with its attendant effects such as noise and air pollution.

Also, Onitsha Master (1978) reported that there is average of more than one family in a dwelling and the degree of privacy enjoyed by large numbers of the inhabitants is therefore minimal. This, however, could merely reflect the social preference of a gregarious people, but when it is seen together with the occupancy rates, it appears to be a symptom of acute housing shortage. This shortage will invariably have some effect on housing and rental values. In particular, it is not uncommon to find cases of nine persons living in a single room.

In Otu, the commercial and employment centre of the town, the pressure on space is greater than in any other area and the proportion of 2 and 3 storey buildings is therefore larger. The area is one of mixed use and most buildings are sub-divided into many small units providing both residential and business accommodation. There is a high percentage of small one room dwellings and a high concentration of one person families comprising, mainly young immigrants.

Odoakpu also includes a significant proportion of business activities but on a much reduced scale and presents a more homogenous residential character than Otu. Density is very high and overcrowding is serious despite some 2, 3 and 4 storey buildings. Fegge is also densely populated and overcrowded. It was originally a planned development with plots laid out in a classic grid pattern providing an intensive

residential area with its own neighbourhood commerce. More recently, it has been subjected to considerable pressure from an increasing population, including a high proportion of immigrants, and it houses more people than any other district. The buildings are mainly two storey mixed with a few bungalows, three and four storey buildings and are packed tightly together with little or no open space between them

Inland Town or Enu-Onicha, is the original native area and is still the heartland of indigenous Onitsha people. Presently, it is a medium density residential area and is fairly free of overcrowding. Buildings are generally bungalows and single storey, and there is generally ample space between them. G.R.A., the Government Residential Area, is a low density development where overcrowding is virtually unknown. Plot sizes are spacious and most buildings are modern, mainly duplexes with basic amenities. Presently, American Quarters is a fairly low density development with buildings not as modern as in G.R.A. The newly developed Trans Nkisi layout is also a low density area with the newest buildings in terms of age but with infrastructures in early stage of development.

Woliwo is a high density area where 3 and 4 storey blocks of modern flats have been constructed. This area has clearly been planned although it suffers some overcrowding. The main problem in this area is the absence of surface water drainage, and during the rainy season the streets suffer from flooding and damage to the road surface. Also the area has been developed with buildings located close together with little vacant land remaining on each plot.

Awada and Omogba are new medium density areas at the periphery of the town. The buildings are mostly 3, 4, and 5 storey blocks of flats and are new and modern. However, the buildings are located closely to one another with little or no space for lighting or ventilation. Most of the streets have no drainage channels and water supply is mainly provided through private efforts such as construction of boreholes.

The worst conditions in the town are found in Okpoko area with a very high proportion of immigrants. These people have been forced to settle in this area by the general shortage of housing in the town and their housing conditions are appalling. These

houses are mainly bungalows with multiple rooms. It is a high density area with acute overcrowding, and no piped water supply.

The next chapter of this study examined socio-economic characteristics of actors involved in urban land and housing development as well as the sources of finance and government policy and agency. Also, the chapter identified and accounted for the spatial variations in land, housing and rental values.

CHAPTER FOUR
VARIATIONS IN LAND, HOUSING AND RENTAL VALUES

4.1 Introduction

This chapter first examines the socio – economic characteristics of the actors involved in urban land and housing development as well as the sources of finance and government policy and urban and housing development agency. The socio – economic characteristics considered are the place of origin, age, educational qualification, occupation and income per month. Also, data on land, housing and rental values are presented to show how they vary in the study area. Using maps, the spatial distribution of land, housing and rental values among the layouts in the study area is depicted. This is to identify and account for the variations in land, housing and rental values of residential housing. To examine whether there is a relationship between any of these values and urban residential structure, the chapter verifies the hypothesis which states that there is no relationship between housing density and land values.

4.2 Socio – economic characteristics of land and home owners

The most critical socio – economic factors considered are place of origin, age, educational qualification, occupation and income per month. Table 4.1 shows that 78.8% of the respondents are non – natives and 21.2% are natives. Among the non – natives, 26.4%, 17.8%, 4.0% and 2.8% of the respondents live in the high density areas of Fegge, Odoakpu, Okpoko and Woliwo layouts, respectively, while 6.7%, 4.1%. 3.7% and 3.6% reside in the medium density areas of Omogba, Inland Town, Awada and Otu layouts respectively.

In the low density areas of Trans Nkisi, American Quarters and G.R.A layouts, the non – natives represent 4.0%, 3.4% and 2.5% of the respondents, respectively. The natives mostly live in Inland Town and Otu layouts, representing 12.1% and 3.0% of the respondents, respectively. Only 2.8%, 1.2%, 1.1%, 0.8% and 0.3% of the natives are in

Table 4.1. Place of origin of respondents

S/N	Layouts	Wards	Natives		Non Natives		Total	
			No.	%	No.	%	No.	%
1	Fegge	1	5	0.7	55	7.3	60	7.9
		2	4	0.5	55	7.3	59	7.8
		3	0	0.0	59	7.8	59	7.8
		4	0	0.0	30	4.0	30	4.0
2	Woliwo	5	0	0.0	21	2.8	21	2.8
3	Odoakpu	6	13	1.7	39	5.1	52	6.9
		7	0	0.0	50	6.6	50	6.6
		8	8	1.1	46	6.1	54	7.1
4	Inland Town	9	26	3.4	15	2.0	41	5.4
		10	40	5.3	4	0.5	44	5.8
		11	26	3.4	12	1.6	38	5.0
5	Otu	12	23	3.0	27	3.6	50	6.6
6	Omogba	13	0	0.0	51	6.7	51	6.7
7	American Quarters	14	6	0.8	26	3.4	32	4.2
8	G.R.A	15	8	1.1	19	2.5	27	3.6
9	Trans Nkisi	16	0	0.0	30	4.0	30	4.0
10	Awada	17	0	0.0	28	3.7	28	3.7
11	Okpoko	18	2	0.3	30	4.0	32	4.2
	Total		161	21.2	597	78.8	758	100

Source: Author's Field Work, 2008.

in Odoakpu, Fegge, G.R.A, American Quarters and Okpoko layouts, respectively while no native lives in Woliwo, Omogba, Awada and Trans Nkisi layouts.

Under normal circumstances, the older a person, the more the intention to acquire land for housing development as observed in the study area. The age of the land and home owners was found to vary in the layouts. Table 4.2 shows that 58.0%, 22.0% and 6.2% of the respondents are between 50 and 60 years, between 40 and 50 years and above 60 years of age, respectively. The younger respondents are, between 20 and 30 years and between 30 and 40years of age, representing 6.5% and 7.3% of the responses respectively. Table 4.2 further reveals that the younger respondents live mostly in the medium density areas of Omogba and Awada layouts and the low density areas of G.R.A, American Quarters and Trans Nkisi layouts. The older respondents are found in high density areas of Fegge, Odoakpu and Okpoko layouts as well as Inland Town and Otu layouts. However, the average age of the land and home owners is 50 years.

Table 4.3 shows that 71.6% and 24.0% of the respondents have primary and secondary education respectively. Only 0.1% of the respondents have university education while 4.2% of the respondents do not have any formal education. The land and home owners with primary education are mostly in Fegge, Odoakpu and Omogba layouts, accounting for 21.2%, 18.0% and 6.7% of the respondents respectively. Secondary school certificate holders are predominant only in Inland Town, American Quarters and G.R.A layouts and account for 10.4%, 2.1% and 1.5% of the respondents respectively.

Furthermore, Table 4.4 reveals the occupation of the respondents, indicating that 60.8% and 24.9% are traders and civil servants respectively. Others are the artisans (e.g the carpenters, mechanics, builders or drivers), pensioners and unskilled workers (e.g road transport workers, labourers), representing 7.0%, 6.7% and 0.5% of the respondents respectively. The distribution of traders shows that 18.1%, 12.7%, 6.7%, 3.8% and 3.8% of them live in Fegge, Odoakpu, Omogba, Otu and Inland Town layouts respectively. Others who respectively live in Awada, Okpoko, Trans Nkisi, G.R.A,American Quarters and Woliwo layouts represent 3.7%, 3.0%, 2.6%, 2.2%, 2.1% and 2.0% of the respondents.

Table 4.2.Age of respondents (years)

S/N	Layouts	Wards	20 – 30		30 – 40		40 – 50		50 – 60		Above 60		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	8	1.1	3	0.4	10	1.3	27	3.6	12	1.6	60	7.9
		2	0	0.0	0	0.0	11	1.5	48	6.3	0	0.0	59	7.8
		3	0	0.0	0	0.0	12	1.6	44	5.8	3	0.4	59	7.8
		4	0	0.0	0	0.0	6	0.8	19	2.5	5	0.7	30	4.0
2	Woliwo	5	1	0.1	0	0.0	3	0.4	17	2.2	0	0.0	21	2.8
3	Odoakpu	6	0	0.0	0	0.0	13	1.7	37	4.9	2	0.3	52	6.9
		7	0	0.0	0	0.0	13	1.7	34	4.5	3	0.4	50	6.6
		8	0	0.0	0	0.0	9	1.2	43	5.7	2	0.3	54	7.1
4	Inland													
	Town	9	0	0.0	0	0.0	5	0.7	35	4.6	1	0.1	41	5.4
		10	0	0.0	0	0.0	8	1.1	25	3.3	11	1.5	44	5.8
		11	0	0.0	0	0.0	9	1.2	28	3.7	1	0.1	38	5.0
5	Otu	12	0	0.0	0	0.0	19	2.5	28	3.7	3	0.4	50	6.6
6	Omogba	13	18	2.4	22	2.9	10	1.3	1	0.1	0	0.0	51	6.7
7	American													
	Quarters	14	3	0.4	5	0.7	12	1.6	12	1.6	0	0.0	32	4.2
8	G.R.A	15	0	0.0	7	0.9	8	1.1	12	1.6	0	0.0	27	3.6
9	Trans Nkisi	16	7	0.9	6	0.8	12	1.6	5	0.7	0	0.0	30	4.0
10	Awada	17	10	1.3	11	1.5	6	0.8	1	0.1	0	0.0	28	3.7
11	Okpoko	18	2	0.3	1	0.1	1	0.1	24	3.2	4	0.5	32	4.2
	Total		49	6.5	55	7.3	167	22.0	440	58.0	47	6.2	758	100

Source: Author's Field Work, 2008

Table 4.3.Education qualification of respondents

S/N	Layouts	Wards	None		Primary		Secondary		University		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	0	0.0	47	6.2	12	1.6	1	0.0	60	7.9
		2	10	1.3	44	5.8	5	0.7	0	0.0	59	7.8
		3	0	0.0	44	5.8	5	0.7	0	0.0	59	7.8
		4	0	0.0	26	3.4	4	0.5	0	0.0	30	4.0
2	Woliwo	5	0	0.0	21	2.8	0	0.0	0	0.0	21	2.8
3	Odoakpu	6	0	0.0	32	4.2	20	2.6	0	0.0	52	6.9
		7	1	0.1	40	5.3	9	1.2	0	0.0	50	6.6
		8	4	0.5	43	5.7	7	0.9	0	0.0	54	7.1
4	Inland Town	9	1	0.1	16	2.1	24	3.2	0	0.0	41	5.4
		10	0	0.0	9	1.2	35	4.6	0	0.0	44	5.8
		11	1	0.1	17	2.2	20	2.6	0	0.0	38	5.8
5	Otu	12	0	0.0	48	6.3	2	0.3	0	0.0	50	6.6
6	Omogba	13	0	0.0	51	6.7	0	0.0	0	0.0	51	6.7
7	American Quarters	14	0	0.0	16	2.1	16	2.1	0	0.0	32	4.2
8	G.R.A	15	0	0.0	16	2.1	11	1.5	0	0.0	27	3.6
9	Trans Nkisi	16	0	0.0	21	2.8	9	1.2	0	0.0	30	4.0
10	Awada	17	0	0.0	28	3.7	0	0.0	0	0.0	28	3.7
11	Okpoko	18	5	0.7	24	3.2	3	0.4	0	0.0	32	4.2
	Total		32	4.2	543	71.6	182	24.0	1	0.1	758	100

Source: Author's Field Work, 2008

Table 4.4.Occupation of respondents

S/N	Layouts	Wards	Civil servants		Trader		Professional		Unskilled		Retired		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	19	2.5	26	3.4	6	0.8	0	0.0	9	1.2	60	7.9
		2	10	1.3	47	6.2	1	0.1	0	0.0	1	0.1	59	7.8
		3	10	1.3	48	6.3	0	0.0	0	0.0	1	0.1	59	7.8
		4	1	0.1	17	2.2	11	1.5	0	0.0	1	0.1	30	4.0
2	Woliwo	5	5	0.7	15	2.0	0	0.0	1	0.1	5	0.7	21	2.8
3	Odoakpu	6	15	2.0	28	3.7	4	0.5	0	0.0	7	0.9	52	6.9
		7	4	0.5	28	3.7	11	1.5	0	0.0	2	0.3	50	6.6
		8	9	1.2	40	5.3	1	0.1	2	0.3	0	0.0	54	7.1
4	Inland													
	Town	9	24	3.2	12	1.6	4	0.5	1	0.1	13	1.7	41	5.4
		10	13	1.7	5	0.7	13	1.7	0	0.0	3	0.4	44	5.8
		11	22	2.9	11	1.5	2	0.3	0	0.0	5	0.7	38	5.0
5	Otu	12	16	2.1	29	3.8	0	0.0	0	0.0	0	0.0	50	6.6
6	Omogba	13	0	0.0	51	6.7	0	0.0	0	0.0	0	0.0	51	6.7
7	American													
	Quarters	14	16	2.1	16	2.1	0	0.0	0	0.0	0	0.0	32	4.2
8	G.R.A	15	10	1.3	17	2.2	0	0.0	0	0.0	0	0.0	27	3.6
9	Trans Nkisi	16	10	1.3	20	2.6	0	0.0	0	0.0	0	0.0	30	4.0
10	Awada	17	0	0.0	28	3.7	0	0.0	0	0.0	0	0.0	28	3.7
11	Okpoko	18	5	0.7	23	3.0	0	0.0	0	0.0	4	0.5	32	4.2
	Total		189	24.9	461	60.8	53	7.0	4	0.5	51	6.7	758	100

Source: Author's Field Work, 2008

Finally, Table 4.5 shows the income level of the land and home owners. The table indicates that 40.5%, 32.8% and 21.8% earn between 90,000 and 110,000, 70,000 and 90,000 and above 110,000 naira per month respectively. Others earn between 50,000 and 70,000 and below 50,000 naira per month, representing 4.0% and 0.9% of the respondents respectively. The higher income earners of above 110,000 naira per month reside in Omogba, G.R.A, American Quarters, Awada, Fegge and Trans Nkisi layouts and represent 5.1%, 2.9%, 2.8%, 2.5%, 2.4% and 2.1% of the respondents respectively. In any case, the average income per month of the respondents is above 90,000 naira.

4.3 **Sources of Finance for Land and Housing Development**

The possible sources for financing land and housing development are mainly private savings, government and the public agencies like the mortgage institutions. Land and housing are among the greatly cherished material possessions of the Igbo people and yet evidences abound in Onitsha that only a small minority of the families can afford to own and pay for these possessions out of their incomes.

Table 4.6 shows that the source of finance is mainly private savings, which represents 96% of the responses. In addition, the analysis of occupation and income in Table 4.7 indicates that 60.8% of the respondents are traders who earn between 70,000 and 110,000 naira per month. During the Focus Group Discussion (FGD), the participants who are mostly traders said that they spend 75% of their earnings on personal and daily needs while 25% are saved for capital projects like housing development. The 2.7% of respondents who obtain finance from government are probably the civil servants and pensioners, who make monthly contributions to the housing loan scheme from their salaries. Those that satisfy the conditions for mortgage loan represent only 1.3% of the respondents. This implies that the only viable source of finance for land and housing development in the study area is private savings.

Table 4.5.Income per month of respondents (in Naira)

S/N	Layouts	Wards	Below 50000		50000 - 70000		70000 - 90000		90000 - 110000		Above 110000		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	4	0.5	10	1.3	17	2.2	11	1.5	18	2.4	60	7.9
		2	0	0.0	1	0.1	13	1.7	40	5.3	5	0.7	59	7.8
		3	0	0.0	0	0.0	18	2.4	37	4.9	4	0.5	59	7.8
		4	0	0.0	2	0.3	20	2.6	8	1.1	0	0.0	30	4.0
2	Woliwo	5	0	0.0	0	0.0	11	1.5	4	0.5	6	0.8	21	2.8
3	Odoakpu	6	0	0.0	3	0.4	15	2.0	28	3.7	6	0.8	52	6.9
		7	0	0.0	1	0.1	17	2.2	30	4.0	0	0.0	50	6.6
		8	0	0.0	2	0.3	15	2.0	35	4.6	2	0.3	54	7.1
4	Inland													
	Town	9	0	0.0	2	0.3	32	4.2	7	0.9	0	0.0	41	5.4
		10	0	0.0	5	0.7	28	3.7	11	1.5	0	0.0	44	5.8
		11	0	0.0	0	0.0	27	3.6	11	1.5	0	0.0	38	5.0
5	Otu	12	0	0.0	0	0.0	24	3.2	25	3.3	1	0.1	50	6.6
6	Omogba	13	0	0.0	0	0.0	0	0.0	12	1.6	39	5.1	51	6.7
7	American													
	Quarters	14	2	0.3	0	0.0	1	0.1	10	1.3	21	2.8	32	4.2
8	G.R.A	15	0	0.0	0	0.0	0	0.0	5	0.7	22	2.9	27	3.6
9	Trans Nkisi	16	0	0.0	0	0.0	1	0.1	13	1.7	16	2.1	30	4.0
10	Awada	17	0	0.0	0	0.0	0	0.0	9	1.2	19	2.5	28	3.7
11	Okpoko	18	1	0.1	4	0.5	10	1.3	11	1.5	6	0.8	32	4.2
	Total		7	0.9	30	4.0	249	32.8	307	40.5	165	21.8	758	100

Source: Author's Field Work, 2008

Table 4.6.Sources of finance

S/N	Layouts	Wards	Private savings		Government credit		Mortgage Institution		Total	
			No.	%	No.	%	No.	%	No.	%
1.	Fegge	1	59	7.8	0	0.0	1	0.1	60	7.9
		2	59	7.8	0	0.0	0	0.0	59	7.8
		3	59	7.8	0	0.0	0	0.0	59	7.8
		4	30	4.0	0	0.0	0	0.0	30	4.0
2.	Woliwo	5	21	2.8	0	0.0	0	0.0	21	2.8
3.	Odoakpu	6	52	6.9	0	0.0	0	0.0	52	6.9
		7	50	6.6	0	0.0	0	0.0	50	6.6
		8	54	7.1	0	0.0	0	0.0	54	7.1
4.	Inland Town	9	26	3.4	10	1.3	5	0.7	41	5.4
		10	41	5.4	2	0.3	1	0.1	44	5.8
		11	38	5.0	0	0.0	0	0.0	38	5.0
5.	Otu	12	39	5.1	8	1.1	3	0.4	50	6.6
6.	Omogba	13	51	6.7	0	0.0	0	0.0	51	6.7
7.	American Qtrs	14	32	4.2	0	0.0	0	0.0	32	4.2
8.	G.R.A	15	27	3.6	0	0.0	0	0.0	27	3.6
9.	Trans Nkisi	16	30	4.0	0	0.0	0	0.0	30	4.0
10.	Awada	17	28	3.7	0	0.0	0	0.0	28	3.7
11.	Okpoko	18	32	4.2	0	0.0	0	0.0	32	4.2
	Total		728	96.0	20	2.7	10	1.3	758	100

Source: Author's Field Work, 2008.

Table 4.7.Occupation and income per month (in naira) of respondents

S/N	Occupation	Below 50000		50000 - 70000		70000 - 90000		90000 - 110000		Above 110000		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1.	Civil servant	4	0.5	7	0.9	90	11.9	71	9.4	17	2.2	189	24.9
2.	Trader	0	0.0	3	0.4	95	12.5	218	28.8	145	19.1	461	60.8
3.	Professional	1	0.1	3	0.4	31	4.1	15	2.0	3	0.4	53	7.0
4.	Unskilled worker	2	0.3	2	0.3	0	0.0	0	0.0	0	0.0	4	0.5
5.	Retired/Pensioner	2	0.3	17	2.2	31	4.1	1	0.1	0	0.0	51	6.7
	Total	9	1.2	32	4.2	247	32.6	305	40.2	165	21.8	758	100

Source: Author's Field Work, 2008

4.4 **Government Policy and Agency for Urban Land and Housing Development.**

Government policy for urban land and housing development in terms of zoning is well defined in the study area as indicated in the 1978 Onitsha Master Plan obtained from the State Ministry of Lands and Housing. This was corroborated by the Chief Town Planning Officer, Onitsha Local Planning Authority. According to the Chief Town Planning Officer, the residential zoning policy is aimed at developing a variety of densities to carter for the varying needs of different income groups. Generally, the policy states that lower income housing will be provided at higher densities and higher income housing will be at lower densities. The intent of the policy is that the higher the average density the lower the cost of land and services and conversely, the lower the density, the higher the cost of land and services.

To confirm the implementation of this policy, a question is asked on what type of density zone is the property situated. Table 4.8 shows that 51.1%, 37.2% and 11.7% of the properties are situated in high, medium and low density zones, respectively. In the high density zone, 27.5%, 20.6%, 4.2% and 2.8% of the properties are in Fegge, Odoakpu, Okpoko and Woliwo layouts, respectively. In the case of the medium density zone, 16.2%, 6.7%, 6.6% and 3.7% of the properties are in Inland Town, Omogba, Otu andAwada layouts, respectively. While in the low density zone, 4.2%, 4.0% and 3.6% of the properties are in American Quarters, Trans Nkisi and G.R.A layouts, respectively.

4.5 Variations in Land Values

Land value is expressed in this study as the cost per plot of land. Table 4.9 shows the plot sizes and land values. For plot size of 15m x 30m, 27.2% are below 1 million naira, 24.4% are between 1 and 1.5 million naira while 14.0% are between 1.5 and 2 million naira. The rests of the plot size that cost between 2 and 2.5 million, 2.5 and 3 million naira and above 3 million naira are respectively less than 5% each. For the plot size of 25m x 40m, 8.4% are below 1 million naira, 2.9% each are between 1 and 1.5 million naira and between 2 and 2.5 million naira while 5.6% are between 1.5 and 2 million naira. Only less than 1% of the plot size of 25m x 40m is between 2.5 and 3

Table 4.8.Residential density zones in the study area

S/N	Layouts	Wards	Low		Medium		High		Total	
			No.	%	No.	%	No.	%	No.	%
1.	Fegge	1	0	0.0	0	0.0	60	7.9	60	7.9
		2	0	0.0	0	0.0	59	7.8	59	7.8
		3	0	0.0	0	0.0	59	7.8	59	7.8
		4	0	0.0	30	4.0	0	0.0	30	4.0
2.	Woliwo	5	0	0.0	0	0.0	21	2.8	21	2.8
3.	Odoakpu	6	0	0.0	0	0.0	52	6.9	52	6.9
		7	0	0.0	0	0.0	50	6.6	50	6.6
		8	0	0.0	0	0.0	54	7.1	54	7.1
4.	Inland Town	9	0	0.0	41	5.4	0	0.0	41	5.4
		10	0	0.0	44	5.8	0	0.0	44	5.8
		11	0	0.0	38	5.0	0	0.0	38	5.0
5.	Otu	12	0	0.0	50	6.6	0	0.0	50	6.6
6.	Omogba	13	0	0.0	51	6.7	0	0.0	51	6.7
7.	American Qtrs	14	32	4.2	0	0.0	0	0.0	32	4.2
8.	G.R.A	15	27	3.6	0	0.0	0	0.0	27	3.6
9.	Trans Nkisi	16	30	4.0	0	0.0	0	0.0	30	4.0
10.	Awada	17	0	0.0	28	3.7	0	0.0	28	3.7
11.	Okpoko	18	0	0.0	0	0.0	32	4.2	32	4.2
	Total		89	11.7	282	37.2	387	51.1	758	100

Source: Author's Field Work, 2008

Table 4.9.Plot sizes and land values (in million Naira)

S/N	Plot sizes	Below 1.0		1.0-1.5		1.5-2.0		2.0-2.5		2.5-3.0		Above 3.0		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1.	15m x 30m	199	27.2	178	24.4	102	14.0	36	4.9	19	2.6	31	4.2	565	77.3
2.	25m x 40m	61	8.4	21	2.9	41	5.6	21	2.9	3	0.4	5	0.7	152	20.9
3.	30m x 60m	10	1.3	2	0.3	1	0.1	0	0.0	0	0.0	0	0.0	13	1.8
	Total	274	37.0	201	27.6	144	19.7	57	7.8	22	3.0	36	4.9	730	100

Source: Author's Field Work, 2008

million naira and above 3 million naira respectively. Only 1.4% of 30m x 60m plot size is below 1 million naira, 0.3% between 1 and 1.5 million naira, 0.1% between 1.5 and 2 million naira, and none is above 2 and 3 million naira. The average land values for 15m x 30m, 25m x 40m and 30m x 60m plot sizes are 1.43, 1.59 and 1.82 million naira respectively.

Table 4.10 shows the distribution of these land values among the layouts. The distribution shows that 37.0% of the plots are below 1 million naira and 12.2%, 10.9%, 9.1%, 4.1% and 0.8% of them are found in Fegge, Inland Town, Odoakpu, Otu and Okpoko layouts respectively. The table indicates that 27.6% of the plots cost between 1 and 1.5 million naira. Out of this, 9.1%, 8.8%, 2.4% and 1.5% of the plots are respectively in Fegge, Odoakpu, Inland Town and Otu while 1.0% each is in Woliwo and Trans Nkisi layouts and 0.3% is in American Quarters.

Further variations in land values show that 19.7% and 7.8% of the plots are between 1.5 and 2 million naira and between 2 and 2.5 million naira respectively. For the land values between 1.5 and 2 million naira, 3.0% each of the plots are in Omogba and Trans Nkisi layouts, 3.0% in Fegge, 2.2% in American Quarters ,2.7% is in G.R.A and 2.0% in Odoakpu layouts while 1.8%, 1.1% and 0.9% are in Woliwo, Awada and Inland Town respectively. Land values between 2 and 2.5 million naira are mostly in Omogba and Awada layouts as indicated respectively by 2.7% and 1.6% of the plots. Also 1.8% and 1.0% of the plots cost between 2 and 2.5 million naira in American Quarters and G.RA layouts respectively while only 0.1% each of the plots also cost between 2 and 2.5 million naira in Fegge and Trans Nkisi layouts. The survey also reveals that 3.0% of the plots cost between 2.5 and 3 million naira. Out of this, 1.9% , 0.6% and 0.4% are in Fegge, Omogba and Awada respectively while only 0.1% is in American Quarters. Finally, 4.9% of the plots that cost above 3 million naira are in Fegge, Odoakpu, Omogba, Awada, Woliwo and Inland Town. The distribution shows that 2.2% and 1.1% of them are in Fegge and Odoakpu respectively while 0.7% each is in Omogba and Awada and 0.1% each is in Woliwo and Inland Town.

Table 4.11 indicates the estimated average land value per plot in each layout while Figure 4.1 shows the variations from the CBD. With reference to the distances from

Table 4.10.Land values in the layouts (in million Naira)

S/N	Layouts	Wards	Below 1.0		1.0-1.5		1.5-2.0		2.0-2.5		2.5-3.0		Above 3.0		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	28	3.8	21	2.9	7	1.0	0	0.0	2	0.3	2	0.3	60	7.9
		2	15	2.1	24	3.3	7	1.0	1	0.1	3	0.4	9	1.2	59	7.8
		3	21	2.9	16	2.2	7	1.0	0	0.0	9	1.2	6	0.8	59	7.8
		4	25	3.4	5	0.7	0	0.0	0	0.0	0	0.0	0	0.0	30	4.0
2	Woliwo	5	0	0.0	7	1.0	13	1.8	0	0.0	0	0.0	1	0.1	21	2.8
3	Odoakpu	6	19	2.6	27	3.7	6	0.8	0	0.0	0	0.0	0	0.0	52	6.9
		7	24	3.3	23	3.2	3	0.4	0	0.0	0	0.0	0	0.0	50	6.6
		8	23	3.2	14	1.9	6	0.8	0	0.0	0	0.0	8	1.1	54	7.1
4	Inland															
	Town	9	16	2.2	3	0.4	6	0.8	3	0.4	0	0.0	0	0.0	26	3.6
		10	37	5.1	3	0.4	1	0.1	0	0.0	0	0.0	0	0.0	41	5.6
		11	26	3.6	12	1.6	0	0.0	0	0.0	0	0.0	0	0.0	38	5.0
5	Otu	12	30	4.1	11	1.5	0	0.0	0	0.0	0	0.0	0	0.0	41	5.6
6	Omogba	13	0	0.0	0	0.0	22	3.0	20	2.7	4	0.6	5	0.7	51	6.7
7	American															
	Quarters	14	0	0.0	2	0.3	16	2.2	13	1.8	1	0.1	0	0.0	32	4.2
8	G.R.A	15	0	0.0	0	0.0	20	2.7	7	1.0	0	0.0	0	0.0	27	3.6
9	Trans Nkisi	16	0	0.0	7	1.0	22	3.0	1	0.1	0	0.0	0	0.0	30	4.0
10	Awada	17	0	0.0	0	0.0	8	1.1	12	1.6	3	0.4	5	0.7	28	3.7
11	Okpoko	18	6	0.8	26	3.6	0	0.0	0	0.0	0	0.0	0	0.0	32	4.2
	Total		270	37.0	201	27.6	144	19.7	57	7.8	22	3.0	37	4.9	730	100

Source: Author's Field Work, 2008

Table 4.11.Layouts, plot sizes and average land values (in Million Naira)

S/N	Layouts	Plot sizes	Land values
1.	Fegge	15m x 30m	1.44
2.	Woliwo	15m x 30m	1.64
3.	Odoakpu	15m x 30m	1.29
4.	Inland Town	25m x 40m	0.95
5.	Otu	25m x 40m	0.86
6.	Omogba	25m x 30m	2.15
7.	American Quarters	30m x 60m	1.95
8.	G.R.A	30m x 60m	1.88
9.	Trans Nkisi	30m x 60m	1.65
10.	Awada	25m x 40m	2,29
11.	Okpoko	15m x 30m	1.19

Source: Author's Field Work, 2008.

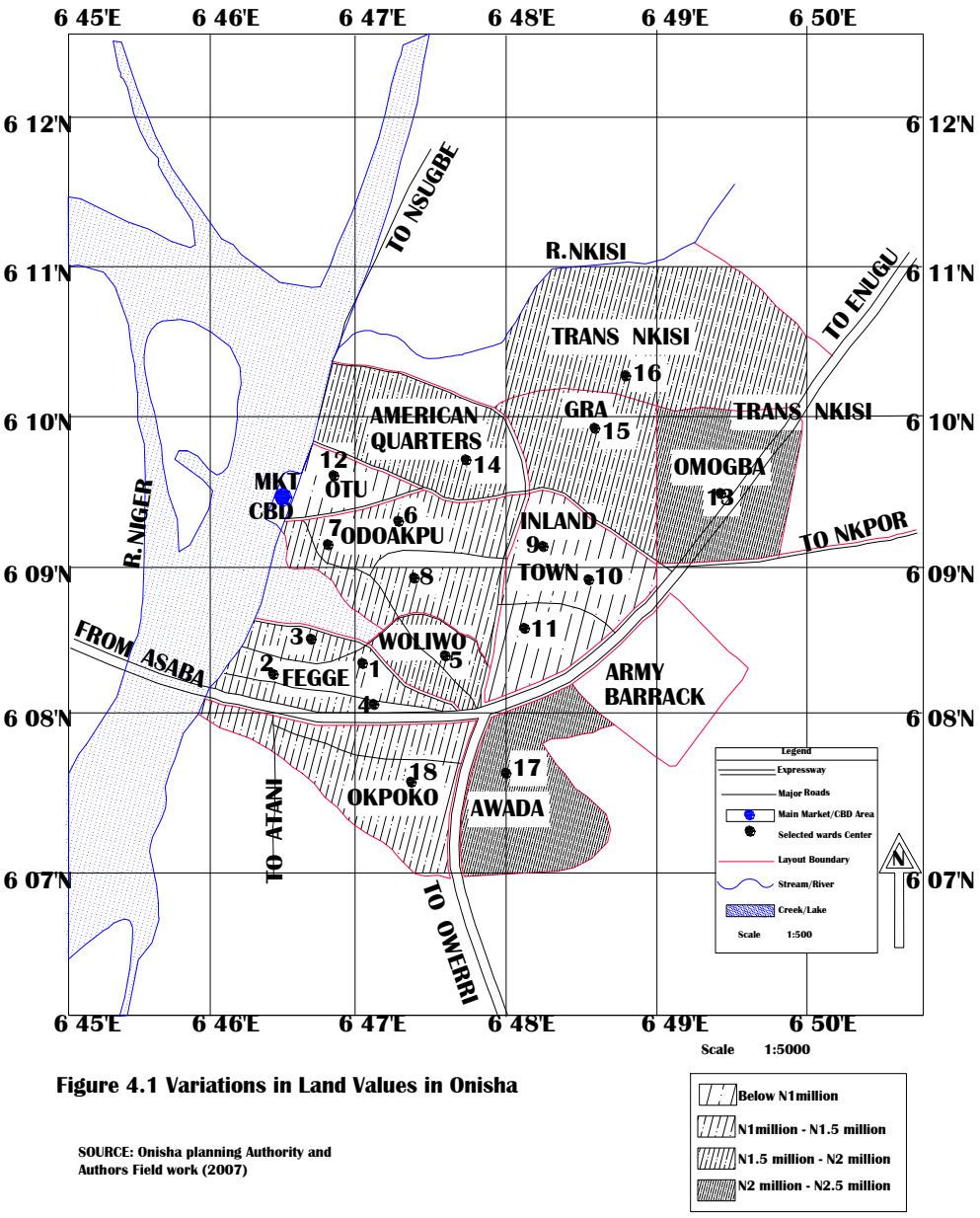

Figure 4.1 Variations in Land Values in Onisha

SOURCE: Onisha planning Authority and
Authors Field work (2007)

the Main Market, which is the CBD, land values in Otu, Odoakpu and Fegge at distances between 100m and 500m are 0.86, 1.29 and 1.44 million naira. Land values in Omogba, Awada and Trans Nkisi at distances above 1 km from the CBD are 2.15, 2.29 and 1.65 million naira respectively. Figure 4.1 further reveals that land values in American Quarters and G.R.A which are not more than 500m from the CBD are 1.95 and 1.88 million naira respectively. In addition, land values in Woliwo, Inland Town and Okpoko, which are not more than 1 km from the CBD are 1.64, 0.95 and 1.19 million naira respectively.

4.6 Variations in Housing Values

Housing value is defined as the cost of a building and housing value varies by building type. The types of building considered in this study are bungalows, blocks of flats and duplexes. Table 4.12 shows types of housing while Table 4.13 indicates the housing types and housing values. From Table 4.12, 43.1%, 43.9% and 12.9% of the buildings are respectively bungalows, blocks of flats and duplexes. Table 4.13 shows that 32.8% of the bungalows cost between 5 and 10 million naira, 9.5% are below 5 million naira while only 0.4% each cost between 10 and 15 million naira and above 15 million respectively. Unlike the bungalows, 15.4% and 10.4% of blocks of flats cost between 10 and 15 million naira and above 15 million naira respectively. However, 17.7% of the blocks of flats cost between 5 and 10 million naira while only 0.4% of them cost below 5 million naira.

Also, 5.3% and 1.7% of the duplexes cost between 10 and 15 million naira and above 15 million naira respectively. The data further show that 5.6% and 0.4% of the duplexes cost between 5 and 10 million naira and below 5 million naira respectively. The estimated average housing values for bungalows, blocks of flats and duplexes are 5 million, 8 million and 10 million naira respectively.

Table 4.14 presents the variations in housing values in the study area. The table shows that 10.3% of the buildings, (either bungalows, blocks of flats or duplexes) cost less than 5 million naira. Out of this, 5.7%, 3.0%, 0.9% and 0.7% are located in Fegge, Odoakpu, Okpoko and Woliwo layouts respectively. No buildings that are less than 5 million naira are found in other layouts in the study area. The percentage of buildings

Table 4.12.House types

S/N	Layouts	Wards	Bungalows		Blocks of Flats		Duplexes		Total	
			No.	%	No.	%	No.	%	No.	%
1.	Fegge	1	25	3.3	27	3.6	8	1.1	60	7.9
		2	33	4.4	26	3.4	0	0.0	58	7.8
		3	23	3.0	36	4.7	0	0.0	58	7.8
		4	14	1.8	12	1.6	4	0.5	30	4.0
2.	Woliwo	5	10	1.3	11	1.5	0	0.0	21	2.8
3.	Odoakpu	6	22	2.9	24	3.2	6	0.8	52	6.9
		7	21	2.8	27	3.7	2	0.3	50	6.6
		8	30	4.0	24	3.2	0	0.0	54	7.1
4.	Inland Town	9	29	3.8	7	0.9	5	0.7	41	5.4
		10	8	1.1	21	2.8	15	2.0	44	5.8
		11	27	3.6	5	0.7	6	0.8	38	5.0
5.	Otu	12	34	4.5	16	2.1	0	0.0	50	6.6
6.	Omogba	13	0	0.0	44	5.8	7	0.9	51	6.7
7.	American Qtrs	14	7	0.9	16	2.1	9	1.2	32	4.2
8.	G.R.A	15	12	1.6	0	0.0	15	2.0	27	3.6
9.	Trans Nkisi	16	15	2.0	0	0.0	15	2.0	30	4.0
10.	Awada	17	0	0.0	24	3.2	4	0.5	28	3.7
11.	Okpoko	18	17	2.2	13	1.7	2	0.3	32	4.2
	Total		327	43.1	333	43.9	98	12.9	758	100

Source: Author's Field Work, 2008

Table 4.13.House types and housing values (in million Naira)

S/N	Plot sizes	Below 5.0		5.0 - 10.0		10.0 - 15.0		Above 15.0		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1.	Bungalows	72	9.5	249	32.8	3	0.4	3	0.4	327	43.1
2.	Blocks of flats	3	0.4	134	17.7	117	15.4	79	10.4	333	43.9
3.	Duplexes	3	0.4	42	5.6	40	5.3	13	1.7	98	13.0
	Total	78	10.3	425	56.1	160	21.1	95	12.5	758	100

Source: Author's Field Work ,2008

Table 4.14.Housing values in the layouts (in million Naira)

S/N	Layouts	Wards	Below 5.0		5.0 - 10.0		10.0 - 15.0		Above 15.0		Totals	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	20	2.6	15	2.0	11	1.5	14	1.8	60	7.9
		2	13	1.7	36	4.7	4	0.5	6	0.8	59	7.8
		3	9	1.2	33	4.4	11	1.5	6	0.8	59	7.8
		4	1	0.1	27	3.6	1	0.1	1	0.1	30	4.0
2	Woliwo	5	5	0.7	13	1.7	2	0.3	1	0.1	21	2.8
3	Odoakpu	6	8	1.1	25	3.3	13	1.7	6	0.8	52	6.9
		7	4	0.5	38	5.0	8	1.1	0	0.0	50	6.6
		8	11	1.5	31	4.1	11	1.5	1	0.1	54	7.1
4	Inland											
	Town	9	0	0.0	38	5.0	3	0.4	0	0.0	41	5.4
		10	0	0.0	32	4.2	11	1.5	1	0.1	44	5.8
		11	0	0.0	37	4.9	1	0.1	0	0.0	38	5.0
5	Otu	12	0	0.0	45	5.9	5	0.7	0	0.0	50	6.6
6	Omogba	13	0	0.0	0	0.0	20	2.6	31	4.1	51	6.7
7	American											
	Quarters	14	0	0.0	6	0.8	23	3.0	3	0.4	32	4.2
8	G.R.A	15	0	0.0	12	1.6	14	1.8	1	0.1	27	3.6
9	Trans Nkisi	16	0	0.0	16	2.1	14	1.8	0	0.0	30	4.0
10	Awada	17	0	0.0	0	0.0	5	0.7	23	3.0	28	3.7
11	Okpoko	18	7	0.9	21	2.8	3	0.4	1	0.1	32	4.2
	Total		78	10.3	425	56.1	160	21.1	95	12.5	758	100

Source: Author's Field Work ,2008

that cost between 5 and 10 million naira in Fegge, Inland Town, Odoakpu and Otu are 14.6% 14.1%, 12.4% and 5.9% respectively. Also, 2.8%, 2.1%, 1.6% and 0.8% of these buildings are respectively in Okpoko, Trans Nkisi, Woliwo, G.R.A and American Quarters. None is observed in Omogba and Awada layouts. In the survey, 21.1% of the buildings cost between 10 and 15 million naira. Amongst the buildings, 4.2%, 3.6%, 3.0% and 2.6% are in Odoakpu, Fegge, American Quarters and Omogba layouts respectively. Only 2.0% of the houses are in Inland Town and 1.8% each is in G.R.A and Trans Nkisi layouts, 0.7% each in Odoakpu and Awada layouts, 0.4% in Okpoko layout and 0.3% in Woliwo layout. The survey further reveals that 4.1%, 3.6% and 3.0% of houses above 15 million naira are in Omogba, Fegge and Awada layouts respectively. Only 0.9% of the houses are in Odoakpu, 0.4% in American Quarters while 0.1% is in each of Woliwo, Inland Town, G.R.A and Okpoko layouts. None is in Otu and Trans Nkisi layouts.

The estimated average housing values in each layout are presented in Table 4.15 and the variations from the CBD are shown in Figure 4.2. The figure shows that housing values in Otu, Odoakpu and Fegge at distances between 100m and 500m from the CBD are 8.0, 8.5 and 8.6 million naira respectively. Housing values in Omogba, Awada and Trans Nkisi at distances above 1km from the CBD are 14, 14.5 and 9.8 million naira, respectively. The average housing values in American Quarters and G.R.A at distances not more than 500m from the CBD are respectively 11.8 and 10.4 million naira. Furthermore, the figure shows that housing values in Woliwo, Inland Town and Okpoko which are not more than 1km from the CBD are 7.7, 8.1 and 7.6 million naira respectively.

Table 4.15.Layouts and average housing values (in Million Naira)

S/N	Layouts	Housing values
1.	Fegge	8.61
2.	Woliwo	7.74
3.	Odoakpu	8.50
4.	Inland Town	8.17
5.	Otu	8.00
6.	Omogba	14.00
7.	American Quarters	11.80
8.	G.R.A	10.40
9.	Trans Nkisi	9.83
10.	Awada	14.55
11.	Okpoko	7.66

Source: Author's Field Work, 2008.

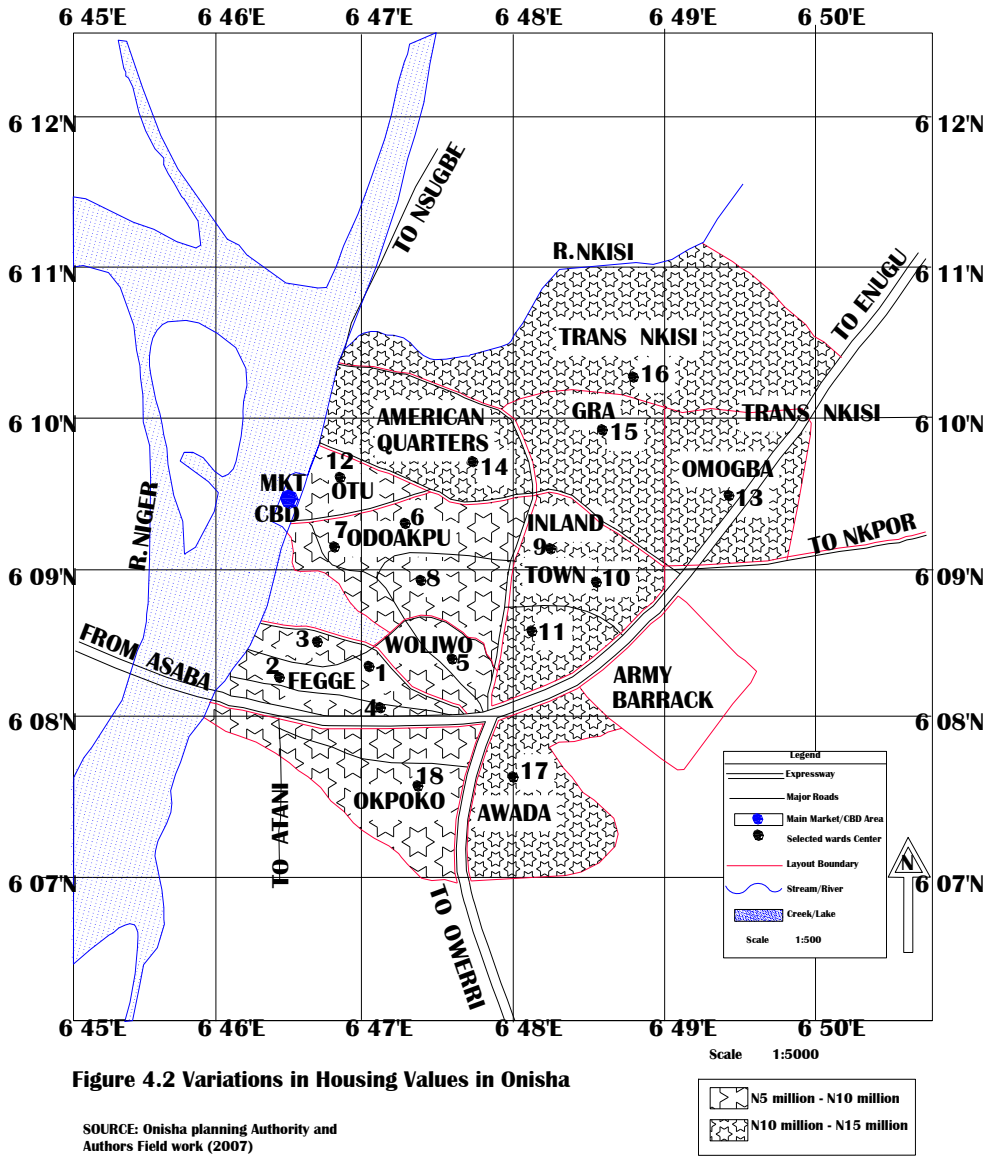

Figure 4.2 Variations in Housing Values in Onisha

SOURCE: Onisha planning Authority and
Authors Field work (2007)

4.7 Variations in Rental Values

Rental value has been defined as the price money paid monthly per room in bungalow, per flat for blocks of flats and per duplex. It is on this basis that the rental values in the study were obtained. The rental values for the bungalows, block of flats and duplexes were obtained as follows.

4.7.1 Rental Values for Bungalows

Number of rooms and rental values for bungalows are presented in Table 4.16. The table shows that the rent for 64.7% of the buildings is between 1,500 and 2,000 naira per month while 25.4% of the buildings are rented between 2,000 and 2,500 naira per room per month. Only 5.6% and 4.3% of the buildings are respectively rented at the cost of between 2,500 and 3,000 naira and between 3,000 and 3.500 naira, per month. The average number of rooms per building is six (6).

The average rental value per room for the bungalows is 2,000 naira per month.

The distribution of the rental values for the bungalows in different layouts is presented in Table 4.17. For rooms that are rented between 1,500 and 2,000 naira per month, 21.6% of the buildings are in Fegge layout, 16.3% are in Odoakpu, 11.1% are in Inland Town, 8.5% are in Otu and 4.2% are in Okpoko . No room in American Quarters, G.R.A and Trans Nkisi layouts is rented between 1,500 and 2,000 naira per month.

In Inland Town, Odoakpu and Fegge, 9.5%, 7.5% and 6.9% of the rooms are rented between 2,000 and 2,500 naira per month respectively. Only 1.3% of such rooms are in American Quarters, 0.7% are in Woliwo and none in other layouts. No room is rented between 2,500 and 3,000 naira per month except in Trans Nkisi and American Quarters layouts, which respectively accounts for 4.6% and 1.0% of the building. Also, no room is rented between 3,000 and 3,500 naira per month except in G.R.A and Trans Nkisi layouts, representing 3.9% and 0.3% of the buildings respectively.

From Table 4.17, average rental values in each layout were estimated. Table 4.18 shows that average rental value is lowest in Okpoko layout and highest in G.R.A. Figure 4.3 presents the spatial distribution of the average rental values. The values in Fegge, Odoakpu, Inland Town, Otu, Woliwo and Okpoko which are at distances between 100m and 500m from the CBD are between 1,500 and 2,000 naira per month.

Table 4.16.Number of rooms and rental values for bungalows (in Naira per month)

S/N	No. of rooms	1500-2000		2000 - 2500		2500 - 3000		3000 - 3500		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%
1.	Below 4	1	0.3	0	0.0	0	0.0	0	0.0	1	0.3
2.	5	8	2.6	3	1.0	0	0.0	0	0.0	11	3.6
3.	6	119	39.3	32	10.6	17	5.6	13	4.3	181	59.7
4.	7	42	13.9	34	11.2	0	0.0	0	0.0	76	25.1
5.	8	26	8.6	8	2.6	0	0.0	0	0.0	34	11.2
	Total	196	64.7	77	25.4	17	5.6	13	4.3	303	100

Source: Author's Field Work, 2008

Table 4.17.Rental values per room for bungalows in the layouts (in Naira per month)

S/N	Layouts	Wards	1500-2000		2000 - 2500		2500 - 3000		3000 - 3500		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	24	7.8	2	0.7	0	0.0	0	0.0	26	8.5
		2	21	6.9	7	2.3	0	0.0	0	0.0	28	9.2
		3	21	6.9	2	0.7	0	0.0	0	0.0	23	7.5
		4	0	0.0	10	3.3	0	0.0	0	0.0	10	3.3
2	Woliwo	5	8	2.6	2	0.7	0	0.0	0	0.0	10	3.3
3	Odoakpu	6	18	5.9	4	1.3	0	0.0	0	0.0	22	7.2
		7	14	4.6	7	2.3	0	0.0	0	0.0	21	6.9
		8	18	5.9	12	3.9	0	0.0	0	0.0	30	9.8
4	Inland											
	Town	9	3	1.0	26	8.5	0	0.0	0	0.0	29	9.5
		10	4	1.3	3	1.0	0	0.0	0	0.0	7	2.3
		11	27	8.8	0	0.0	0	0.0	0	0.0	27	8.8
5	Otu	12	26	8.6	0	0.0	0	0.0	0	0.0	26	8.5
6	American											
	Quarters	14	0	0.0	4	1.3	3	1.0	0	0.0	7	2.3
7	G.R.A	15	0	0.0	0	0.0	0	0.0	12	3.9	12	3.9
8	Trans Nkisi	16	0	0.0	0	0.0	14	4.6	1	0.3	15	4.9
9	Okpoko	18	13	4.2	0	0.0	0	0.0	0	0.0	13	4.2
	Total		197	64.4	79	25.8	17	5.6	13	4.2	306	100

Source: Author's Field Work, 2008

Table 4.18.Layouts and average rent per month for rooms in bungalows (in Naira)

S/N	Layouts	Rents per room
1.	Fegge	1,871
2.	Woliwo	1,850
3.	Odoakpu	1,908
4.	Inland Town	1,980
5.	Otu	1,750
6.	American Quarters	2,464
7.	G.R.A	3,250
8.	Trans Nkisi	2,783
9.	Okpoko	1,750

Source: Author's Field Work, 2008.

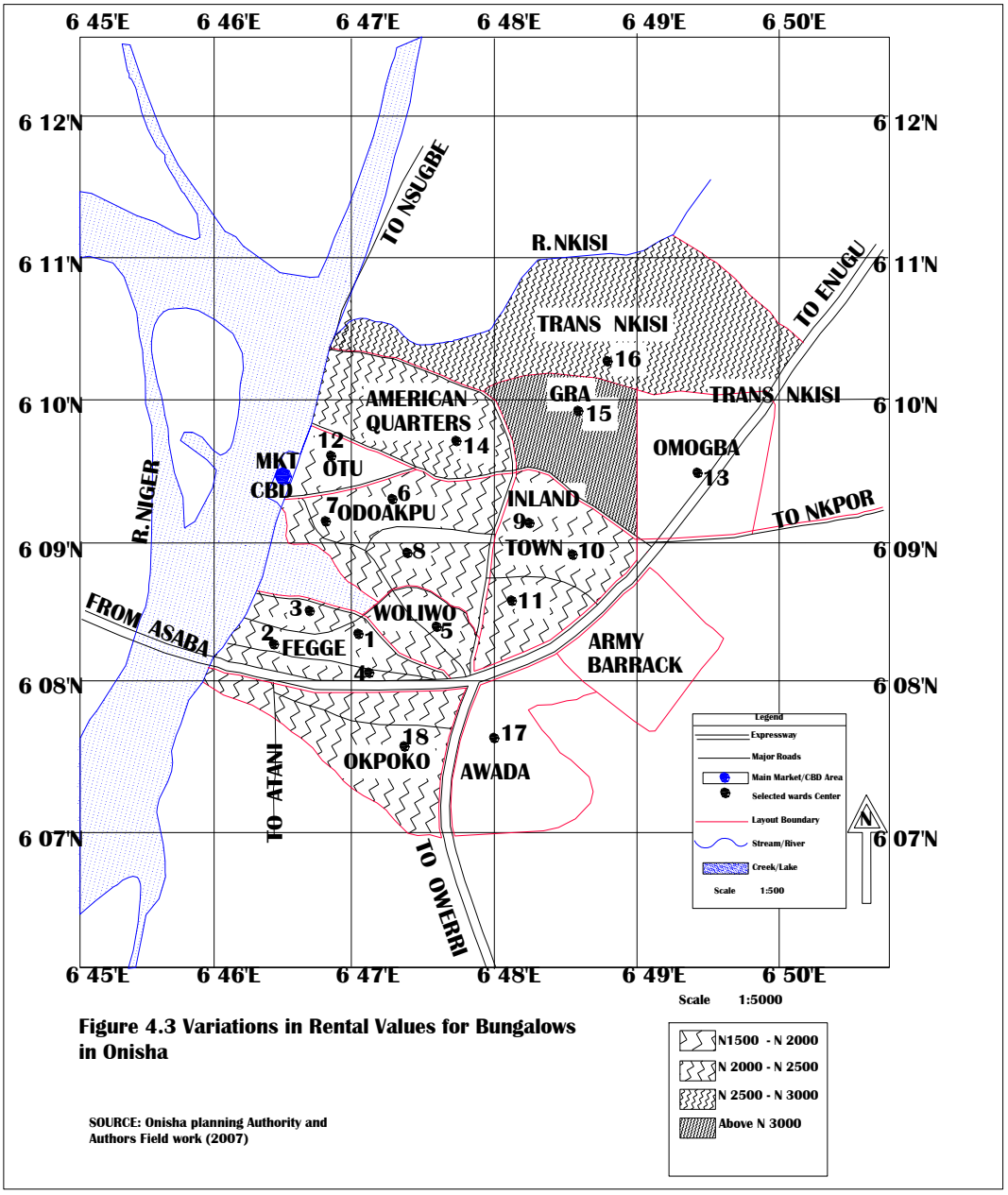

Figure 4.3 Variations in Rental Values for Bungalows in Onisha

SOURCE: Onisha planning Authority and Authors Field work (2007)

In the low density areas of American Quarters, Trans Nkisi and G.R.A which are at distances between 500m and 1km from the CBD, rents per month for a room are between 2,000 and above 3,000 naira per month. As observed, rent per room is generally lower near the CBD which is contrary to the postulation of the theory. This is because at location near the CBD where land value is high, there are so many households living at higher densities and thus the aggregate rent paid is high.

4.7.2 Rental Values for Blocks of Flats

The number of rooms and rent per month for block of flats are presented in Table 4.19. Most of the flats are rented between 4,500 and 5,000 naira and between 5,500 and 6,000 naira, per month, accounting for 29.0% and 25.1% of the buildings respectively. This is followed by 18.7% of the flats rented between 6,000 and 6,500 naira per month, and 12.1% rented above 7,000 naira per month. Also, 7.6% of the flats are rented between 6,500 and 7,000 naira per month while 4.8% are rented between 3,500 and 4,000 naira per month. Only 1.8% and 0.9% of the flats are respectively rented between 5,000 and 5,500 and between 4,000 and 4,500 naira per month. The average number of rooms per flat is three (3).

The distribution of these rents is shown in Table 4.20. The table shows that 3.6% of the flats that are rented between 3,500 and 4,000 naira per month are in Okpoko, 1.2% is in Fegge and none in other layouts. Also, between 4,000 and 4,500 naira per month, 0.6% and 0.3% of the flats are only in Fegge and Okpoko layouts respectively. In Odoakpu, 15.6% of the flats are rented between 4,500 and 5,000 naira per month, while 6.6% in Inland Town, 3.3% in Fegge, 3.0% in Woliwo and 0.6% in Otu, are also rented between 4,500 and 5,000 naira per month. None is in Omogba , Awada, American Quarters and Okpoko layouts. Data on rental values between 5,000 and 5,500 naira per month indicate that 0.9% each is in Fegge and Odoakpu layouts, 0.3% is in Inland Town and none in other layouts. Between 5,500 and 6,000 naira per month, 12.3% of the flats are in Fegge, 6.3% are in Odoakpu and 4.2% are in Otu. Only 1.8% and 0.3% of the flats in Inland Town and Woliwo layouts respectively are rented between 5,500 and 6,000 naira per month.

Table 4.19.Number of rooms and rental values for blocks of flats (in Naira per month)

S/N	No. of rooms	3500-4000		4000-4500		4500-5000		5000-5500		5500-6000		6000-6500		6500-7000		>7000		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1.	2	0	0.0	0	0.0	2	0.6	0	0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.6
2.	3	16	4.8	3	0.9	91	27.5	6	1.8	82	24.8	62	18.7	24	7.3	39	11.8	323	97.6
3.	4	0	0.0	0	0.0	3	0.9	0	0.0	1	0.3	0	0.0	1	0.3	1	0.3	6	1.8
	Total	16	4.8	3	0.9	96	29.0	6	1.8	83	25.1	62	18.7	25	7.6	40	12.1	331	100

Source: Author's Field Work, 2008

Table 4.20.Rental values per flat in the layouts (in Naira per month)

Layouts	Wards	3500-4000		4000-4500		4500-5000		5000-5500		5500-6000		6000-6500		6500-7000		>7000		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Fegge	1	4	1.2	2	0.6	3	0.9	1	0.3	2	0.6	5	1.5	1	0.3	8	2.4	26	7.8
	2	0	0.0	0	0.0	1	0.3	1	0.3	18	5.4	4	1.2	1	0.3	1	0.3	26	7.8
	3	0	0.0	0	0.0	0	0.0	0	0.0	17	5.1	18	5.4	0	0.0	0	0.0	35	10.5
	4	0	0.0	0	0.0	7	2.1	1	0.3	4	1.2	0	0.0	0	0.0	0	0.0	12	3.6
Woliwo	5	0	0.0	0	0.0	10	3.0	0	0.0	1	0.3	0	0.0	0	0.0	0	0.0	11	3.3
Odoakpu	6	0	0.0	0	0.0	15	4.5	2	0.6	8	2.4	1	0.3	0	0.0	0	0.0	26	7.8
	7	0	0.0	0	0.0	25	7.5	0	0.0	2	0.6	0	0.0	0	0.0	0	0.0	27	8.1
	8	0	0.0	0	0.0	12	3.6	1	0.3	11	3.3	0	0.0	0	0.0	0	0.0	24	7.2
Inland																			
Town	9	0	0.0	0	0.0	0	0.0	0	0.0	4	1.2	3	0.9	0	0.0	0	0.0	7	2.1
	10	0	0.0	0	0.0	17	5.1	1	0.3	2	0.6	0	0.0	1	0.3	0	0.0	21	6.3
	11	0	0.0	0	0.0	5	1.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5	1.5
Otu	12	0	0.0	0	0.0	2	0.6	0	0.0	14	4.2	0	0.0	0	0.0	0	0.0	16	4.8
Omogba	13	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	19	5.7	16	4.8	9	2.7	44	13.2
American																			
Quarters	14	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.6	1	0.3	13	3.9	16	4.8
Awada	17	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	10	3.0	5	1.5	9	2.7	24	7.2
Okpoko	18	12	3.6	1	0.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	13	3.9
Total		16	4.8	3	0.9	97	29.1	7	2.1	83	24.9	62	18.6	25	7.5	40	12.0	333	100

Source: Author's Field Work, 2008

Rental values between 6,000 and 6,500 naira are in Fegge and Omogba layouts, which have 8.1% and 5.7% of the flats respectively. In Awada, Inland Town, American Quarters and Odoakpu, 3.0%, 0.9%, 0.6% and 0.3% of the flats are rented between 6,000 and 6,500 naira per month respectively. The data further show that 4.8% of flats in Omogba, 1.5% in Awada, 0.6% in Fegge and 0.3% each in Inland Town and American Quarters are between 6,500 and 7,000 naira per month. Finally, only 3.9% of the flats in American Quarters and 2.7% each in Fegge, Omogba and Awada layouts are above 7,000 naira per month. Flats in G.R.A and Trans Nkisi layouts which are mostly owner- occupied have rental values of above 7,000 naira per month. The average rental values in each layout are shown in Table 4.21. Generally, the table shows that average higher rental value of above 6,000 naira per month for flats are paid in medium and high income areas of Omogba, Awada, American Quarters and G.R.A.

Figure 4.4 shows the spatial distribution of these values. Rental values below 5,000 naira per month are paid in Okpoko but between 5,000 and 6,500 naira per month are paid in Fegge, Odoakpu, Inland Town and Otu which are at distances between 100m and 500m from the CBD. The rental values above 6,500 naira per month are paid in Omogba , Awada and American Quarters at distances between 500m and 1km from the CBD.

The distribution shows that rent per flat is lower near the CBD but higher in location far from the CBD. Theoretically, many low income households occupy sites near the CBD where land vale is high by living at higher densities. The resultant effect is that the aggregate rent paid is low as observed in Fegge, Woliwo, Odoakpu, Otu. Also, according to the theory, land value is cheaper far from the CBD but because the high and middle income groups have always been suburbanized, the rental values are high as in the case of Omogba and Awada. This is due to increase in residential plot size, floor space, number and size of rooms and other space related housing attributes with distance from CBD. Also, the high rental values per flat in the upper income areas is because the high income households are best able to afford the costs of commuting to the CBD and hence can trade off those costs for extra living space.

Table 4.21.Layouts and average rent per month for blocks of flats (in Naira)

S/N	Layouts	Rents per flat
1.	Fegge	5,308
2.	Woliwo	4,841
3.	Odoakpu	5,061
4.	Inland Town	5,144
5.	Otu	5,625
6.	Omogba	6,585
7.	American Quarters	6,890
8.	Awada	6,635
9.	Okpoko	3,788

Source: Author's Field Work, 2008.

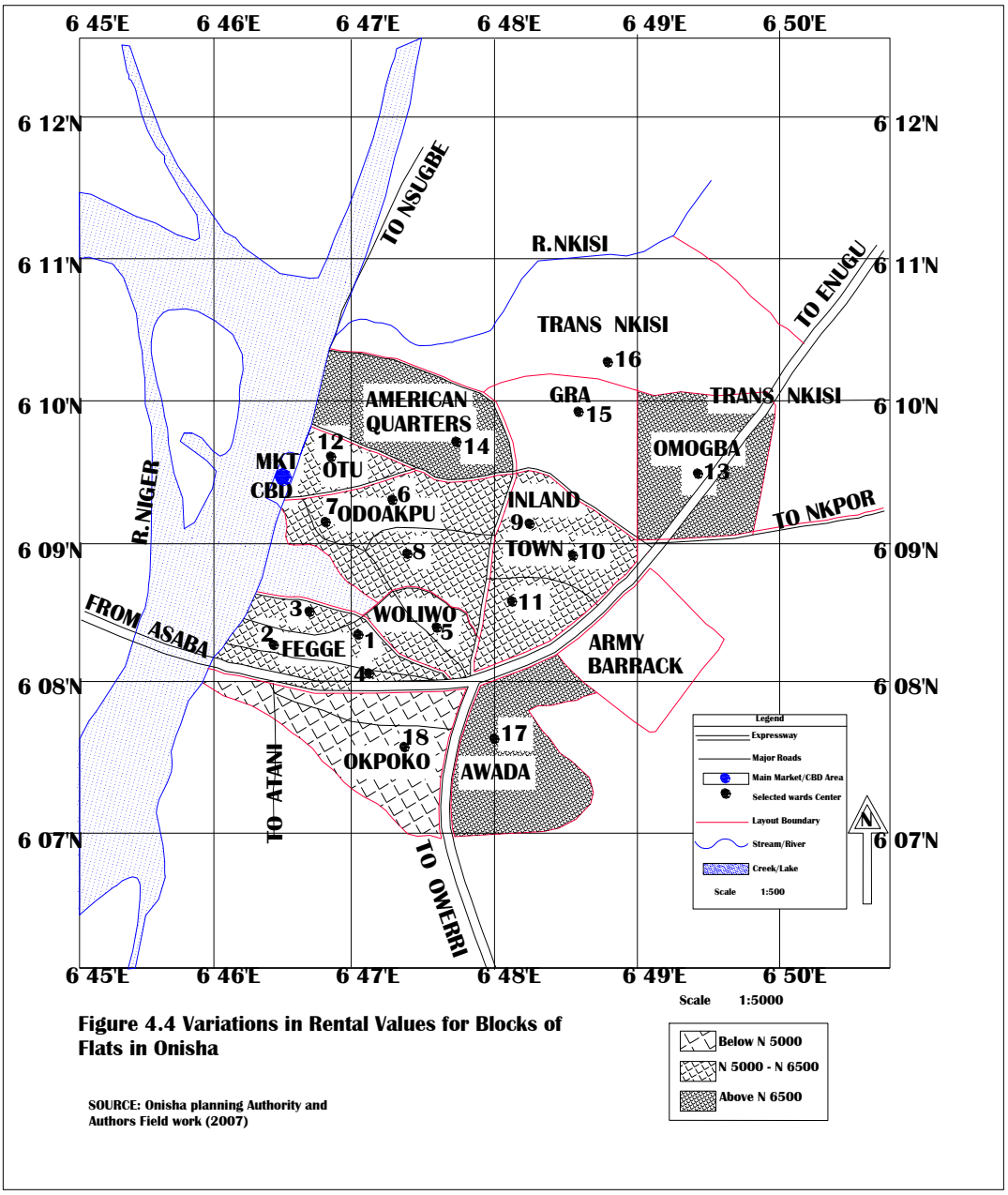

Figure 4.4 Variations in Rental Values for Blocks of Flats in Onisha

SOURCE: Onisha planning Authority and Authors Field work (2007)

4.7.3 Rental Values for Duplexes

Table 4.22 shows the number of rooms and rents per month in duplex buildings. The table indicates that 42.1% of the buildings are rented between 9,000 and 10,500 naira per month while 37.9% are rented between 4,500 and 6,000 naira per month. Also, 10.5% of the buildings are rented between 10,500 and 12,000 naira, 8.4% are between 6,000 and 7,500 naira and only 1.1% is above 12,000 naira per month. The average number of rooms per duplex is six (6).

Table 4.23 shows that rents between 4,500 and 6,000 naira per month are paid in 19.8% of the buildings in Inland Town, 12.3% in Fegge , 4.2% in Odoakpu and none in the rest of the layouts. Also, 6.3% of the buildings in Inland Town and 1.0% each in Fegge and Odoakpu layouts are rented between 6,000 and 7,500 naira per month. But, 15.6% of buildings in Trans Nkisi, 8.3% in American Quarters, 7.3% in Omogba and 4.2% in Awada layout, are only rented between 9,000 and 10,500 naira per month. In G.R.A and American Quarters, 9.4% and 1.0% of the duplexes are rented at 10,500 and 12,000 naira per month respectively. However, only 1.0% of duplexes in Odoakpu are rented above 12,000 naira per month.

The average rental values for the duplexes in Table 4.24 show that the highest paid rent is above 9,000 naira and the least is less than 6,000 naira per month Figure 4.5 indicates that in Fegge, Odoakpu, Inland Town and Okpoko which are at distances below 500m from the CBD, the rent paid is between 5,000 and 7,000 naira per month. But in G.R.A, American Quarters, Trans Nkisi, Omogba and Awada that are at distances between 500m and 2km from the CBD, the rent per month for duplexes is between 9,000 and 10,500 naira. The figure shows that rent per duplex is lower near the CBD as evident in Fegge, Odoakpu and Inland Town, but higher in G.R.A,Trans Nkisi and Awada which are far from the CBD.

Table 4.22.Number of rooms and rental values for duplexes (in Naira per month)

S/N	No. of rooms	4500-6000		6000 - 7500		9000 - 10500		10500 – 12000		Above 12000		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1.	Below 4	1	1.1	1	1.1	0	0.0	0	0.0	0	0.0	2	2.2
2.	4	3	3.2	0	0.0	0	0.0	0	0.0	0	0.0	3	3.2
3.	5	5	5.3	4	4.2	0	0.0	0	0.0	0	0.0	9	9.5
4.	6	26	27.4	3	3.2	40	42.1	10	10.5	1	1.1	80	84.3
5.	Above 6	1	1.1	0	0.0	0	0.0	0	0.0	0	0.0	1	1.1
	Total	36	37.9	8	8.3	40	42.1	10	10.5	1	1.1	95	100

Source: Author's Field Work, 2008

Table 4.23.Rental values for duplexes in the layouts (in Naira per month)

S/N	Layouts	Wards	4500-600		6000 – 7500		9000 – 10500		10500 – 12000		Above 12000		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%1
1	Fegge	1	8	8.3	1	1.0	0	0.0	0	0.0	0	0.0	9	9.4
		2	4	4.2	0	0.0	0	0.0	0	0.0	0	0.0	4	4.2
2	Odoakpu	6	3	3.1	0	0.0	0	0.0	0	0.0	1	1.0	4	4.2
		7	1	1.1	1	1.0	0	0.0	0	0.0	0	0.0	2	2.1
3	Inland													
	Town	9	5	5.2	0	0.0	0	0.0	0	0.0	0	0.0	5	5.2
		10	14	14.6	0	0.0	0	0.0	0	0.0	0	0.0	14	14.6
		11	0	0.0	6	0.0	0	0.0	0	0.0	0	0.0	6	6.3
4	Omogba	13	0	0.0	0	0.0	7	7.3	0	0.0	0	0.0	7	7.3
5	American													
	Quarters	14	0	0.0	0	0.0	8	8.3	1	1.0	0	0.0	9	9.4
6	G.R.A	15	0	0.0	0	0.0	6	6.3	9	9.4	0	0.0	15	15.6
7	Trans Nkisi	16	0	0.0	0	0.0	15	15.6	0	0.0	0	0.0	15	15.6
8	Awada	17	0	0.0	0	0.0	4	4.2	0	0.0	0	0.0	4	4.2
9	Okpoko	18	2	2.1	0	0.0	0	0.0	0	0.0	0	0.0	2	2.1
	Total		37	38.5	8	8.3	40	41.7	10	10.4	1	1.0	96	100

Source: Author's Field Work, 2008

Table 4.24.Layouts and average rent per month for duplexes (in Naira)

S/N	Layouts	Rents per duplex
1.	Fegge	5,365
2.	Odoakpu	6,625
3.	Inland Town	5,610
4.	Omogba	9,750
5.	American Quarters	9,916
6.	G.R.A	10,550
7.	Trans Nkisi	9,750
8.	Awada	9,750
9.	Okpoko	5,250

Source: Author's Field Work, 2008.

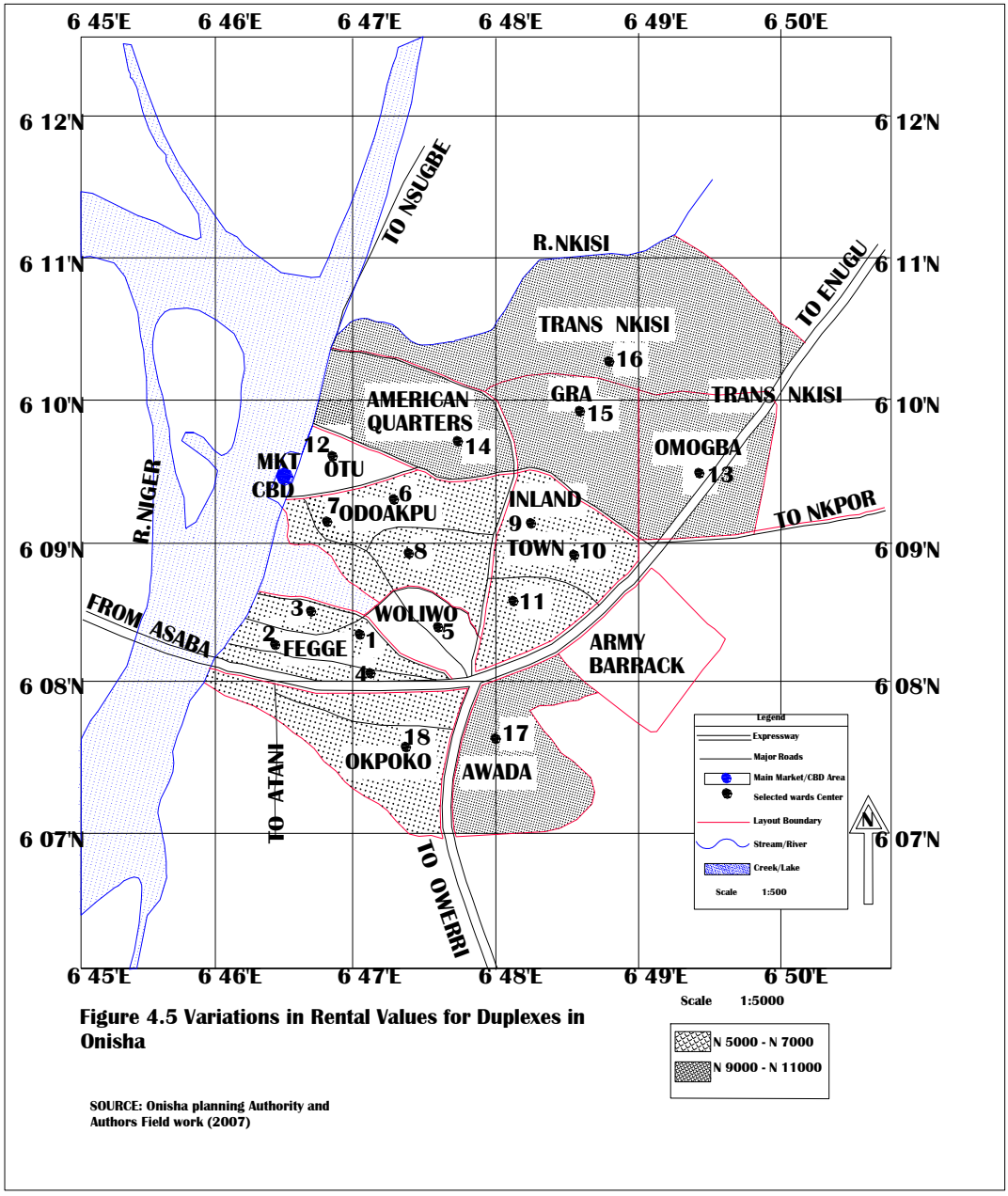

Figure 4.5 Variations in Rental Values for Duplexes in Onisha

SOURCE: Onisha planning Authority and
Authors Field work (2007)

4.8 Assessing the Relationship between Housing Density and Land Values

Because land is the platform upon which housing development takes place, housing density is considered as a function of the land values. In this study, housing density is defined as the number of dwelling units per hectare. That is, it is a measure of spatial concentration of dwelling units. The area and number of residential units in each of the layouts were obtained and used to estimate the housing density presented in Table 4.25.

The number of residential buildings per hectare in Odoakpu, Otu, Fegge and Woliwo layouts are 52, 54, 55 and 57 respectively. The housing density in Inland Town is 31 buildings per hectare and in American quarters, it is 34 buildings per hectare. The lowest numbers of buildings per hectare are found in G.R.A and Trans Nkisi layouts, which are 15 and 13 respectively. Awada and Omogba layouts have the highest density of 60 and 71 residential buildings per hectare respectively. This distribution shows that less than 60 buildings per hectare are found in Fegge, Woliwo, Odoakpu, Otu, Inland Town and Okpoko which are at distances less than 500m from the CBD. Also, between 60 and 75 buildings per hectare are found in Omogba and Awada at distances between 1km and 2km from the CBD. However, in American Quarters, G.R.A and Trans Nkisi which are at distances more than 500m from the CBD, numbers of buildings per hectare are less than 40.

Table 4.26 presents data on housing density and land values in the study area. For instance, the average numbers of buildings per hectare in Odoakpu, Fegge and Woliwo are 52, 55 and 57, and the corresponding land values are 1.29, 1.64 and 1.44 million naira per plot respectively. Also, in Awada and Omogba where 60 and 71 buildings per hectare are found, the average land values are 2.29 and 2.15 million naira per plot respectively. This means that housing density increases with the land values. However, this cannot be generalized because in American Quarters, G.R.A and Trans Nkisi which are at distances between 500m and 1km from the CBD, the number of buildings per hectare is less than 40 but the average land values are 1.95, 1.88 and 1.65 million naira per plot respectively.

Table 4.25.Estimates of housing density

S/N	Layouts	Area (Ha)	No. of residential units	Estimated housing density
1.	Fegge	195	10,750	55
2.	Woliwo	35	2,000	57
3.	Odoakpu	154	8,000	52
4.	Inland Town	174	5,400	31
5.	Otu	47	2,550	54
6.	Omogba	35	2,500	71
7.	American Quarters	63	2,050	33
8.	G.R.A	97	1,500	15
9.	Trans Nkisi	80	1,000	13
10.	Awada	25	1,500	60
11.	Okpoko	120	5,250	44
	Total	1,025	42,500	

Source: Author's Field Work, 2008

Table 4.26.Housing density and land values

S/N	Layouts	Housing density (buildings per Ha)	Land values (in million Naira)
1.	Fegge	55	1.44
2.	Woliwo	57	1.64
3.	Odoakpu	52	1.29
4.	Inland Town	31	0.95
5.	Otu	54	0.86
6.	Omogba	71	2.15
7.	American Quarters	33	1.95
8.	G.R.A	15	1.88
9.	Trans Nkisi	13	1.65
10.	Awada	60	2.29
11.	Okpoko	44	1.19

Source: Author's Field Work, 2008.

The relationship between housing density and land values is investigated by using simple linear regression model. This model is expressed as follows:

$HD = a + bLV + e$

where, HD = Housing density measured by number of dwelling units per hectare.

a = Y - intercept or constant

b = regression coefficient

LV = Land values measured by cost per plot of land

e = error term

The result of the linear regression analysis of the housing density and land values is shown in Table 4.27. The overall performance of the analysis as indicated by R^2 statistic is 0 .115 and F – value is 99.626. This shows that 11.5% of the variation in housing density is explained by the land values. From the results, the regression coefficient indicates that a unit increase in the land values would result in a 0.341 increase in housing density. However land values are high in G.R.A and Trans Nkisi layouts despite low housing density. Hence it cannot be generalized in the study area that an increase in housing density is a function of the increase in land values. Thus, cramming of structures may not be due to the land values alone. However, we accept the hypothesis which is significant at 95% confidence level, that there is a relationship between housing density and land values (see Appendix 3.11 to 3.12). The next chapter examined the local determinants of land, housing and rental values in the study area.

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Table 4.27.Linear regression results: Housing density

Variables	Regression coefficient, B	Standard error of B	t- value	Significance level
Land value	0.341	0.019	9.981	0.001
Constant	1.621	0.068	23.869	0.001

R^2 = 0.115, SEE = 0.756, F – value = 99.626 probability of F <, = 0.05

CHAPTER FIVE
LOCATIONAL DETERMINANTS OF LAND, HOUSING AND RENTAL VALUES

5.1 Introduction

This chapter examines the determinants of land, housing and rental values in the study area in order to find out whether or not the land, housing and rental values are determined by location/access factors. The location factors considered are the distances to the CBD and to the major roads. The multiple regression technique was used to verify the hypothesis which states that the distances to the CBD and the major roads are not the major determinants of land, housing and rental values.

5.2 Location/Access Factors

The location factors considered in this study are distance to the CBD and distance to the major roads. The distances were obtained by linear measurement using the layout map of the study area as a guide. The Central Business District (CBD) in this study is the Onitsha Main Market area, devoted to commercial and service activities while the major roads are the primary roads in the town that are paved and well maintained.

5.2.1 Distance to the CBD

This study employs a simple model, where access is measured by linear distance to the CBD. With the CBD defined as the area with the greatest concentration of economic activities, it is expected to be very accessible to the urban population. Urban economics point to accessibility as the key to understanding the pattern of land uses. It is hypothesized that land, housing and rental values would decline away from the CBD in a negative exponential fashion.

In this study, distances were obtained by map measurement using the layout plan of Onitsha. The distances of houses to the CBD are presented in Table 5.1

Table 5.1.Distances of houses from the CBD

S/N	Layouts	Wards	Less 1km		1km - 2km		2km - 3km		3km - 4km		4km - 5km		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	10	1.3	30	4.0	20	2.6	0	0.0	0	0.0	60	7.9
		2	5	0.7	34	4.5	15	2.0	5	0.7	0	0.0	59	7.8
		3	6	0.8	33	4.4	11	1.5	9	1.2	0	0.0	59	7.8
		4	3	0.4	4	0.5	14	1.8	9	1.2	0	0.0	30	4.0
2	Woliwo	5	1	0.1	7	0.9	10	1.3	3	0.4	0	0.0	21	2.8
3	Odoakpu	6	6	0.8	29	3.8	13	1.7	4	0.5	0	0.0	52	6.9
		7	25	3.3	16	2.1	6	0.8	3	0.4	0	0.0	50	6.6
		8	10	1.3	33	4.4	9	1.2	2	0.3	0	0.0	54	7.1
4	Inland													
	Town	9	1	0.1	16	2.1	17	2.2	6	0.8	1	0.1	41	5.4
		10	0	0.0	6	0.8	20	2.6	15	2.0	3	0.4	44	5.8
		11	0	0.0	7	0.9	15	2.0	12	1.6	4	0.5	38	5.0
5	Otu	12	31	4.1	10	1.3	9	1.2	0	0.0	0	0.0	50	6.6
6	Omogba	13	0	0.0	0	0.0	0	0.0	21	2.8	30	4.0	51	6.7
7	American													
	Quarters	14	0	0.0	15	2.0	10	1.3	7	0.9	0	0.0	32	4.2
8	G.R.A	15	0	0.0	0	0.0	11	1.5	9	1.2	7	0.9	27	3.6
9	Trans Nkisi	16	0	0.0	0	0.0	0	0.0	10	1.3	20	2.6	30	4.0
10	Awada	17	0	0.0	0	0.0	0	0.0	7	0.9	21	2.8	28	3.7
11	Okpoko	18	0	0.0	8	1.1	10	1.3	14	1.8	0	0.0	32	4.2
	Total		98	12.9	248	32.7	190	25.1	136	17.9	86	11.3	758	100

Source: Author's Field Work, 2008

Table 5.1 shows that 12.9% of the houses are less than 1km from the CBD, out of which 5.4%, 4.1% and 3.2% of them are in Odoakpu , Otu and Fegge layouts respectively while 0.1% each is in Woliwo and Inland Town. Also, 32.7% of the houses are located between 1km and 2km from the CBD. Out of these houses, 13.4% are in Fegge, 10.3% are in Odoakpu, 3.8% are in Inland Town, 2.0% are in American Quarters, 1.3% is in Otu and 1.1% is in Okpoko. The Table further reveals that 25.1% of the houses are located between 2km and 3km from the CBD out of which 7.9%, 4.8% and 3.7% of them are in Fegge, Inland Town and Odoakpu layouts respectively, while 1.5% is in G.R.A, 1.3% each is in Woliwo, American Quarters and Okpoko layouts and 1.2% in Otu. The data also indicate that 17.9% of the houses are located between 3km and 4km from the CBD, and 4.4%, 3.1%, 2.8% and 1.8% of them are in Inland Town, Fegge, Omogba and Okpoko layouts respectively. Also, 1.3% of such location is in Trans Nkisi layout, 1.2% each is in G.R.A and Odoakpu, 0.9% is in Awada and 0.4% is in Woliwo. No where else were houses located between 4km and 5km from the CBD except in Omogba, Awada, Trans Nkisi, Inland Town and G.R.A layouts, which represents 4.0%, 2.8%, 2.6% and 1.0% of the houses respectively. The average distance of houses from the CBD is 2.4km.

The distances of houses from the CBD and their average land, housing and rental values are shown in Table 5.2. This is to determine the relationship between distance from the CBD and land, housing and rental values. The analysis shows that land, housing and rental values increase with distance from the CBD. For instance, at distances less than 1km and between 4km and 5km from the CBD, land values increase from 1.05 to 1.89 million naira per plot. That is, land values increase with distance from the CBD. The same trend is observed in housing and rental values as shown in the table. However, this statement will be subjected to regression analysis for confirmation.

5.2.2 Distance to the Major Roads

A number of studies have employed the distance to road variable as determinant of land, housing and rental values. For example, Brigham (1964) used distance to freeway in Los Angeles, Yeates (1965) used distance to the loop in Chicago, Knos (1968) used distance to Kansas Avenue in Topeka, and Asabere (1982) used distance to the major or class A roads in Accra.

Table 5.2.Distances of houses from CBD and average land, housing and rental values

S/N	Distances	Land values (million naira)	Housing values (million naira)	Rental values(naira per month) (Bungalows)	Rental values (Blocks of flats)	Rental values (Duplexes)
1.	Less than 1km	1.05	8.43	1,800	5,215	5,250
2.	1km – 2km	1.35	8.52	1,900	5,525	6,500
3.	2km – 3km	1.38	8.60	2,500	5,700	7,568
4.	3km – 4km	1.54	10.20	2,600	6,000	8,000
5.	4km- 5km	1.89	12.50	2,700	6,500	9,634

Source: Author's Field Work, 2008

In this study, distance to the major roads was used. At least two major roads were selected in each ward in the study area. The major roads selected in Fegge were Zik's avenue, Port Harcourt road, Creek road and Bridge head expressway. The selected major roads in Woliwo were Iweka road and Port Harcourt road, and those in Odoakpu were New Market road, Oguta road and Modebe road. Awka road, Works road, Mba road and Oguta road were selected in Inland Town while Old Market and New Market roads were selected in Otu layout. In Omogba layout, Awka road and Enugu expressway were selected while Court road and New Market road were both selected in American Quarters and G.R.A. Nsugbe road was the only major road selected in Trans Nkisi and only Onitsha – Owerri expressway was selected in Awada layout. In Okpoko layout the major roads selected were Obodoukwu road and Bridge head expressway. Based on the selected major roads, the distances of the houses in the selected wards from the roads are presented in Table 5.3.

Table 5.3 shows that 23.7% of the houses are less than 50m from the major roads and 9.0% of them are in Fegge, 4.0% in Odoakpu, 3.8% in Inland Town, 1.7% in Omogba, 1.1% each in Otu and Trans Nkisi, 0.8% each in G.R.A and Okpoko, 0.7% each in Woliwo and American Quarters, and 0.4% in Awada. Also, the table reveals that 23.0% of the houses are between 50m and 100m from the major roads, out of which 6.0% are in Fegge, 4.4% each are in Odoakpu and Inland Town, 2.1% are in Otu, 1.8% in Omogba, 1.6% in Okpoko, 0.7% each in American Quarters and Awada, 0.5% in G.R.A and 0.4% each in Woliwo and American Quarters. Furthermore, 28.0% of the houses are between 100m and 150m from the major roads and 7.4%, 5.4% 4.5% and 2.1% of them are in Fegge, Odoakpu, Inland Town andOmogba layouts respectively while 1.8% is in Otu, 1.6% in American Quarters, 1.3% each in Trans Nkisi and Okpoko and 0.8% each in G.R.A and Awada. Finally, 25.3% of the houses are located above 150m from the major roads. Out this percentage, 6.8% of the houses are in Odoakpu, 5.1% are in Fegge, 3.8% are in Inland Town and 1.8% in Awada. Others represent 1.6% of houses in Otu, 1.5% in G.R.A, 1.3% in American Quarters, 1.2% in Trans Nkisi, 0.8% in Woliwo and 0.5% in Okpoko. The average distance of houses from the major roads is 102m.

Table 5.3.Distances of houses from major roads

S/N	Layouts	Wards	Less 50m		50m - 100m		100m - 150m		Above 150m		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	24	3.2	14	1.8	12	1.6	10	1.3	60	7.9
		2	20	2.6	11	1.5	16	2.1	12	1.6	59	7.8
		3	16	2.1	18	2.4	12	1.6	13	1.7	59	7.8
		4	8	1.1	2	0.3	16	2.1	4	0.5	30	4.0
2	Woliwo	5	5	0.7	3	0.4	7	0.9	6	0.8	21	2.8
3	Odoakpu	6	6	0.8	10	1.3	12	1.6	24	3.2	52	6.9
		7	9	1.2	10	1.3	16	2.1	15	2.0	50	6.6
		8	15	2.0	18	1.8	13	1.7	12	1.6	54	7.1
4	Inland											
	Town	9	8	1.1	10	1.3	11	1.5	12	1.6	41	5.4
		10	12	1.6	11	1.5	13	1.7	8	1.1	44	5.8
		11	8	1.1	12	1.6	10	1.3	8	1.1	38	5.0
5	Otu	12	8	1.1	16	2.1	14	1.8	12	1.6	50	6.6
6	Omogba	13	13	1.7	14	1.8	16	2.1	8	1.1	51	6.7
7	American											
	Quarters	14	5	0.7	5	0.7	12	1.6	10	1.3	32	4.2
8	G.R.A	15	6	0.8	4	0.5	6	0.8	11	1.5	27	3.6
9	Trans Nkisi	16	8	1.1	3	0.4	10	1.3	9	1.2	30	4.0
10	Awada	17	3	0.4	5	0.7	6	0.8	14	1.8	28	3.7
11	Okpoko	18	6	0.8	12	1.6	10	1.3	4	0.5	32	4.2
	Total		180	23.7	174	23.0	212	28.0	192	25.3	758	100

Source: Author's Field Work, 2008

The distances of the houses to major roads and average land, housing and rental values are presented in Table 5.4. This is to determine the relationship between distance to the major roads and the land, housing and rental values. Table 5.4 confirms the expectation that land, housing and rental values would be higher close to the major roads. At distances less than 50m, land value is high but lower at distances above 150m to the major roads. The housing value is also high at distances less than 50m and lower at distances above 150m to the major roads. The same is applicable to rental values for rooms in bungalows, flats and duplexes as indicated in the table. Therefore, land, housing and rental values are high near the major roads but low far from the major roads. Again this statement would be accepted or rejected after the regression analysis has been conducted.

5.3 The Effect of Distance on Land, Housing and Rental Values

To find out if land, housing and rental values decrease with the distances from the CBD and to the major roads, data in Tables 4.10, 4.14, 4.17, 4.20, 4.23, 5.1 and 5.3 were used in the multiple linear regression analyses, consisting of 3 models with each of the 3 dependent variables run on 2 independent variables. The summary statistics and definition of the variables is presented in Table 5.5. The distances to the CBD and the major roads are the independent variables while land, housing and rental values are the dependent variables.

5.3.1 The impact of the Distance variables on Land values

The multiple regression model is as follows:

$$LV = a + b_1 dCBD + b_2 dMR + e$$

Where, LV = land values measured by cost per plot of land.

a = Y intercept or constant.

b_1, b_2 = regression coefficients

dCBD = distance of houses to the CBD, obtained by map measurement

dMR = distance of houses to the major roads, also obtained by map measurement

e = error term

The results of the multiple regression analysis of land values are shown in Table 5.6.

Table 5.4.Distances of houses from major roads and average land, housing and rental values

S/N	Distances	Land values (million naira)	Housing values (million naira)	Rental values(naira per month) (Bungalows)	Rental values (Blocks of flats)	Rental values (Duplexes)
1.	Less than 50m	1.51	11.51	2,500	6,250	9,314
2.	50m – 100m	1.47	9.81	2,000	6,000	8,636
3.	100m – 150m	1.41	8.92	1,970	5,760	8,027
4.	Above 150m	1.27	8.41	1,850	5,580	7,313

Source: Author's Field Work, 2008

Table 5.5.Summary statistics and definition of the variables

Variables	Definition	Mean	Standard deviation
Land value, LV	Cost per plot of land (in million naira)	1.42	0.902
Housing value, HV	Cost per building type (in million naira)	9.24	5.532
Rental Value : RVB	Rent per room per month for Bungalow(naira)	1,998.36	1709.683
RVF	Rent per Flat per month (naira)	5,206.46	4876.681
RVD	Rent per Duplex per month(naira)	7997.40	5311.244
Distance from CBD, dCBD	Distances of houses from CBD (in Kilometer)	2.4	1.622
Distance from Major Roads, dMR	Distances of houses from major roads(meter)	102	63.726

Source: Author's Field Work, 2008

Table 5.6.Multiple regression results: Land values

Variables	Regression coefficient, B	Standard error of B	t- value	Significance level
dCBD	0.351	0.046	9.005	0.001
dMR	- 0.082	0.050	- 2.099	0.036
Constant	2.294	0.141	16.338	0.001

R^2 = 0.101, SEE = 1.340, F – value = 43.403 probability of F <, = 0.05

The performance of the overall equation is low as indicated by the R^2 statistics of 0.101, with F – value of 43.403. The magnitude of the multiple determination coefficient, R^2, shows that only 10.1% of the variations in land values is explained by distances of houses from the CBD and to the major roads.

The magnitude and level of significance of the regression coefficients show that the distance of houses to the CBD (dCBD) has a coefficient of 0.351 and distance of houses to the major roads (dMR) has a coefficient of -0 .082. Both variables are significant at 95% confidence level. The coefficient for the distance to the CBD indicates that a unit increase in the distance of a house from CBD would result in a 0.351 increase in land value. That is, land value increase with distance from the CBD. Also, the coefficient for the distance to the major roads means that a unit increase in the distance of a house to the major would result in a 0.082 decrease in land value. In other words, land value is higher close to the major roads.

In examining the signs of the coefficients of the distance variables, the dCBD has a positive relationship with the land values while dMR has a negative relationship. This means that the cost of land increases with distance from the CBD but decreases with distance from the major roads. This statement is supported by the survey shown in Table 5.2 where land value is 1.05 million naira at distance less than 1km and 1.89 million naira at distance between 4km and 5km from the CBD. This is further corroborated by the focused group discussion (FGD) on the distances of the houses from the CBD. A participant from the low density group reported:

> I live in G.R.A which is more than 4 km from the Main Market (CBD). My land was bought recently at higher price (2 million naira) because the area is quiet, peaceful and provided with good facilities. This is also the reasons for high housing and rental values here.

Also commenting, another participant in the high density group said:

> Otu layout is where I live and it is less than 1 km from the Main Market. My land was bought 30 years ago but its market price is low today (below 1 million naira) when compared with houses in Omogba or Awada layouts which are above 2 million naira at distance between 4 and 5 km to the CBD. People complain about congestion and noise generation from the CBD. This is why people are willing to buy land at higher prices away from the CBD.

Also, land values are high near the major roads. Table 5.4 shows that land value is 1.51 million naira at distance less than 50m from the major roads and 1.27 million naira at distance above 150m. The focused group discussion on distances of houses from the major roads shows that although quick and easy means of movement especially telecommunication services (GSM) and the motor cycles (okada) have made every land accessible, the costs are still high near the major roads. A participant in the high density group reported:

> My land in Fegge layout is more than 120m from Zik's avenue and the cost was below 1 million naira while the cost of my friend's land located less than 60m from the avenue was above 2 million naira. The reason he gave is easy access to place of work and community services. The same is applicable to cost of house and rent paid

These results or findings are contrary to the past studies (Alonso 1964; Yeastes 1965) where land values decrease with distance from the CBD but confirm the expectation that land values are higher close to major roads. In addition, the rate of increase in the land values is relatively small as indicated by the magnitude of the distance variables coefficients which implies that the distance variables are not major determinants of land values.

5.3.2 The impact of Distance Variables on Housing Values.

The multiple regression model adopted to determine the effect of the distance variables on housing values is given by,

$$HV = a + b_1dCBD + b_2dMR + e$$

Where HV = Housing values measured by cost per building

a = Y intercept or constant.

b_1, b_2 = regression coefficients

dCBD = distance of houses to the CBD, obtained by map measurement

dMR = distance of houses to the major roads, also obtained by map measurement

e = error term

The results of the multiple regression analysis of housing values are presented in Table 5.7. Despite the F – value of 53.467, the overall performance of the analysis is still low as indicated by R^2 statistics of 0.122. The magnitude of the multiple determination coefficient, R^2, shows that only 12.2% of the variations in housing values is explained by the distances from the CBD and from major roads.

The regression coefficients for the distance variables are all significant at 95% confidence level. The coefficient for distance to the CBD is 0.393. This means that the cost of buildings would increase by 0.393 for a unit increase in the distance of houses from the CBD. For distance to major roads, the coefficient is -0.124, which indicates that a unit increase in the distance of houses to the major roads would lead to 0.124 decreases in the cost of buildings.

The coefficient of distance to the CBD has a positive relationship with housing values and distance to the major roads has a negative relationship. This shows that the cost of buildings increases with the distance from the CBD and decreases with distance from the major roads. This statement is supported by Tables 5.2 and 5.4, and corroborated by the focused group discussion (FGD). The discussion showed that the distance variables affect housing values. For example, a participant from the high density group said:

> My house which is less than 1 km from the CBD is not more than 6 million naira today compared with houses in Omogba or Awada layouts which are above 15 million at distance between 4 and 5 km to the CBD. I think the high cost is because the houses are new, spacious and with adequate facilities.

Table 5.7.Multiple regression results: Housing values

Variables	Regression coefficient, B	Standard error of B	t- value	Significance level
dCBD	0.393	0.027	10.190	0.001
dMR	- 0.124	0.029	- 3.212	0.001
Constant	1.831	0.082	22.452	0.001

R^2 = 0.122, SEE = 0.777, F – value = 53.467 probability of F <, = 0.05

Also, discussion on distance from the major roads showed that housing values are high near the roads. Another participant in the high density group reported:

> My house is less than 50m from P.H road and the cost is above 10million naira because it can be accessed easily from any part of the town.

Again, this is against the findings in past studies (Alonso 1964; Yeastes 1965) that housing values decrease with distance from the CBD but confirms that housing values are high near the major roads. Thus, the distance of houses from the CBD is not a major determinant of housing values as shown by the low magnitude of R^2 statistics and the coefficients.

5.3.3 The impact of the Distance Variables on Rental Values

The rental values considered in this analysis are the rents per flat, duplex and rooms in bungalows. For rooms in bungalows, the multiple regression model employed to estimate the effect of the distance variables on the rent per month is as follows,

$$RVB = a + b_1dCBD + b_2dMR + e$$

Where RVB = Rent per room in bungalows.

a = Y intercept or constant.

b_1, b_2 = regression coefficients

dCBD = distance of houses to the CBD, obtained by map measurement

dMR = distance of houses to the major roads, also obtained by map measurement

e = error term

The results of the multiple regression analysis for the rental values of room in bungalows are presented in Table 5.8 The overall performance of the analysis shows R^2 statistics of 0.165 with an F – value of 31.098. The R^2 shows that 16.5% of the variations in rental values for room in bungalows is explained by the distance variables, dCBD and dMR. This implies that the two distance variables are not major determinants of the rental values for room in bungalows.

Table 5.8.Multiple regression results: Rental values for bungalows

Variables	Regression coefficient, B	Standard error of B	t- value	Significance level
dCBD	0.485	0.046	7.885	0.001
dMR	- 0.248	0.043	- 4.027	0.001
Constant	0.979	0.122	8.053	0.001

R^2 = 0.165, SEE = 0.718, F – value =31.098 probability of F <, = 0.05

The results further reveal that the distance of houses to the CBD (dCBD) has a coefficient of 0.485 while the distance of houses to the major roads (dMR) has a coefficient of -0.248 and both are significant at 95% confidence level. The coefficient of dCBD indicates that the rent paid per month for room in bungalows increases by 0.485 for a unit increase in the distance of houses from the CBD. This is contrary to past studies (Burgess 1924, Alonso 1964) which showed that rent decreases with distance from the CBD. Also as expected, the coefficient of dMR means that the rent paid per month decreases by 0.248 for a unit increase in the distance of houses from the major roads.

Furthermore, the results show that the dCBD has a positive relationship and dMR a negative relationship with rental values for rooms in bungalows. That is, the rent paid per month for room in bungalows increases with the distances from the CBD and near the major roads. This is supported by the data in Tables 5.2 and 5.4, and confirmed by the focused group discussions (FGD). A participant from the medium density group said:

> The distance of my house from the CBD (Main Market) is about 4 km and the rent is 2,500 per room per month. The tenants said that the house is spacious with basic facilities and these are their interests and not closeness to the CBD where there is noise pollution.

This shows that distance to the CBD is not important in the explanation of variations in the rental values for room in bungalows.

The multiple regression model used to explain the effect of the distance variables on rental values for blocks of flats is given as

$$RVF = a + b_1CBD + b_2dMR + e$$

Where RVF = rent paid per month for flats.

a = Y intercept or constant.

b_1, b_2 = regression coefficients

dCBD = distance of houses to the CBD, obtained by map measurement

dMR = distance of houses to the major roads, also obtained by map measurement

e = error term

The results of the regression analysis for the rental values of blocks of flats are shown in Table 5.9. The overall performance is still low as shown by the R^2 statistic of 0.149 and F – value of 30.104. The multiple determination coefficient, R^2, shows that 14.9% of the variations in the rental values for the blocks of flats is explained by the distance variables. This implies that the distance variables are not important determinants of the rental values for blocks of flats.

The regression coefficient of distance to the CBD is significant at 95% confidence level but that of distance to the major roads is not significant. The dCBD has a coefficient of 0.428 and this means that the rent paid per month would increase by 0.428 for a unit increase in the distance of houses from the CBD. Also, the coefficient of dMR is -0.148, which indicates that the rent paid per month would decrease by 0.148 for a unit increase in the distance of houses from the major roads.

Also, the signs of the coefficients show that dCBD is positive and dMR is negative, which means that rental values for flats increase with distance from the CBD but decrease with distance from the major roads. This statement is supported by the data in Tables 5.2 and 5.4 as well as the focused group discussions (FGD). The discussions also showed that rents increase with distance from the CBD. A participant from the medium density group reported:

> My tenants pay 7,000 naira per flat per month in my house which is about 5 km from the CBD (Main Market). The tenants are not concerned with the distance but the security and basic facilities in the house. We have Maiguides security and the facilities are privately provided.

This implies that distance from the CBD is not an important determinant of the variations in rental values for blocks of flats.

Table 5.9.Multiple regression results: Rental values for blocks of flats

Variables	Regression coefficient, B	Standard error of B	t- value	Significance level
dCBD	0.428	0.082	7.745	0.001
dMR	- 0.148	0.096	- 2.670	0.008
Constant	3.719	0.273	13.624	0.001

R^2 = 0.149, SEE = 1.750, F – value =30.104 probability of F <, = 0.05

Finally, the performance of the regression model for the rental values for duplexes shows that the rent paid per month mainly increase with distance of houses from the CBD. The multiple regression model for this analysis is denoted by

$$RVD = a + b_1dCBD + b_2dMR + e$$

Where RVD = rent paid per month for duplexes.

a = Y intercept or constant.

b_1, b_2 = regression coefficients

dCBD = distance of houses to the CBD, obtained by map measurement

dMR = distance of houses to the major roads, also obtained by map measurement

e = error term

The results of the regression analysis are shown in Table 5.10. The F – value is 14.585 and the R^2 statistics is 0.222. The coefficient of the multiple determination, R^2, indicates that 22.2% of the variations in rental values for duplexes is explained by the distance variables. The result also indicates that the two distance variables are not major determinants of rental values for duplexes.

In examining the regression coefficients, only distance to the CBD is significant at 95% confidence level, with a coefficient of 0.515. This coefficient means that a unit increase in the distance from the CBD would result in 0.515 increase in the rent paid per month for duplexes. Distance from the major roads (dMR) is not a major determinant of rent per month for the duplexes. The coefficient of distance to major roads is -0.048. In this case, the rent per month would decrease by 0.048 for a unit increase in the distance from the major roads. This finding cannot be generalized because the coefficient is not significant. However, the results confirm the data in Tables 5.2 and 5.4, and the Focused group discussions (FGD) held.

Table 5.10.Multiple regression results: Rental values for duplexes

Variables	Regression coefficient, B	Standard error of B	t- value	Significance level
dCBD	0.515	0.149	4.667	0.001
dMR	- 0.048	0.154	- 0.438	0.663
Constant	0.538	0.471	1.143	0.256

R^2 = 0.222, SEE = 1.405, F – value =14.585 probability of F <, = 0.05

Participant from low density group said:

> I live in G.R.A which is more than 4 km from the Main Market (CBD). Rent per month for duplex is 10,000 naira because the area is quiet, peaceful and provided with good facilities and not because of the distance from the CBD.

The regression and FGD results have shown that distances from the CBD and from major roads are not really the major determinants of land, housing and rental values, and therefore validated the hypothesis that distance from the CBD and nearness to major roads are not major determinants of land, housing and rental values. (see Appendix 3.1 to 3.5). The expectations were that the land, housing and rental values would decrease with the distances from the CBD and major roads. In this study, land, housing and rental values increase with distances from the CBD and major roads. In other words, there are non distance variables that affect land, housing and rental values. The next chapter examined the non distance variables or non locational factors in land, housing and rental values in the study area.

CHAPTER SIX
NON – LOCATIONAL FACTORS IN LAND, HOUSING AND RENTAL VALUES

6.1 Introduction

This chapter identifies and explains the non – location factors as determinants of land, housing and rental values. The non - location factors considered are space attributes, time attributes, socio – economic attributes, policy attributes, housing attributes and neighbourhood attributes. The space attributes are plot sizes and size of rooms. Time attributes include time of land purchase, date of development and age of layouts. The socio – economic attributes are place of origin and income per month while the policy attribute is the density zoning types. The housing attributes considered include house type, number of rooms, toilet type, bathing room type, kitchen type, housing wall condition and housing roof condition. Road condition, number of primary schools, number of health facilities and number of security organisations are the neighbourhood attributes. These non - distance variables were obtained from the responses in the questionnaire.

6.2. Space Attributes

The space attributes used in this study are plot size and size of room. The plot size variable was measured in square meters. The sizes of the plots utilized are 15m x 30m ($45m^2$), 25m x 40m ($1000m^2$) and 30m x 60m ($1800m^2$). The choice of the sizes is informed by the planning regulations for residential land subdivision in the area. The plot sizes in the layouts are shown in Table 6.1. For plot size of 15m x 30m, 26.9% of them are in fegge, 14.3% are in Odoakpu, 7.6% are in Inland Town, 6.6% are in Otu and 5.8% are in Omogba. In Okpoko, Awada, Woliwo, American Quarters and Trans Nkisi layouts, 4.2%, 3.7%, 2.8%, 2.6% and 1.8% of the plots respectively are of size 15m x 30m. No plot of this size is in G.R.A. This plot size is predominant in the layouts and represents 76.4% of all plots. Next is the plot size of 25m x 40m and 7.4%

Table 6.1.Plot sizes (in m^2)

S/N	Layouts	Wards	15mx30m		25mx40m		30mx60m		Total	
			No.	%	No.	%	No.	%	No.	%
1.	Fegge	1	56	7.4	0	0.0	4	0.5	60	7.9
		2	58	7.7	0	0.0	0	0.0	58	7.8
		3	59	7.8	0	0.0	0	0.0	58	7.8
		4	30	4.0	0	0.0	0	0.0	30	4.0
2.	Woliwo	5	21	2.8	0	0.0	0	0.0	21	2.8
3.	Odoakpu	6	43	5.7	9	1.2	0	0.0	52	6.9
		7	27	3.7	22	2.9	1	0.1	50	6.6
		8	38	5.0	16	2.1	0	0.0	54	7.1
4.	Inland Town	9	28	3.7	13	1.7	0	0.0	41	5.4
		10	10	1.3	25	3.3	9	1.2	44	5.8
		11	20	2.6	18	2.4	0	0.0	38	5.0
5.	Otu	12	50	6.6	0	0.0	0	0.0	50	6.6
6.	Omogba	13	44	5.8	7	0.9	0	0.0	51	6.7
7.	American Qtrs	14	20	2.6	12	1.6	0	0.0	32	4.2
8.	G.R.A	15	0	0.0	27	3.6	0	0.0	27	3.6
9.	Trans Nkisi	16	14	1.8	16	2.1	0	0.0	30	4.0
10.	Awada	17	28	3.7	0	0.0	0	0.0	28	3.7
11.	Okpoko	18	32	4.2	0	0.0	0	0.0	32	4.2
	Total		578	76.4	165	21.8	14	1.8	758	100

Source: Author's Field Work, 2008

% of them are in Inland Town, 6.2% are in Odoakpu, 3.6% are in G.R.A, 2.1% are in Trans Nkisi, while only 1.6% is in American Quarters and 0.9% in Omogba. No plot of this size is in Fegge, Woliwo, Otu, Awada and Okpoko layouts. The plot size of 30m x 60m is not common, with only 1.2% of them in Inland Town, 0.5% in Fegge, 0.1% in Odoakpu and none in the other layouts.

All the variables of the space attributes and other attributes of the non locational factors are examined in relation to land, housing and rental values in Table 6.2. The table shows that land, housing and rental values are high for bigger plots. This is expected because under normal circumstances land, housing and rental values would increase with plot size.

The second space attribute is the size of room. The size of room in this study refers to floor area of a room or the length multiplied by the width of a room. The two common sizes of rooms are 10ft x 12ft (or 3m x 3.6m) and 12ft x 14ft (or 3.6m x 4.3m). Table 6.3 shows the room sizes in the layouts. The table indicates that 53.6% of the buildings have room size of 12ft x 14ft. Out of these buildings, 13.4%, 10.2%, 6.7% and 4.8% are in Fegge, Odoakpu, Omogba and Inland Town layouts respectively. Also, 3.7% of the buildings are each in Awada and Trans Nkisi layouts, 3.6% in G.R.A, 3.3% in American Quarters while there are 1.7%, 1.5% and 1.1% of such buildings in Okpoko, Woliwo and Otu layouts respectively. For the rooms size of 10ft x 12ft, 14.0%, 11.6% and 10.4% of them are in Fegge, Inland Town and Odoakpu layouts respectively. While 5.5%, 2.5%, 1.3%, 0.9% and 0.3% are respectively in Otu, Okpoko, Woliwo, American Quarters and Trans Nkisi layouts and none in G.R.A, Omogba and Awada layouts.

As presented in Table 6.2, room sizes do not affect land values. However, the effect is positive on housing and rental values and this means that the values increase with the size of rooms. From these discussions, plot sizes affect land, housing and rental values while room sizes affect housing and rental values. The results, however, were not supported by any of the stepwise regression analyses conducted.

Table 6.2.Summary of the non locational variables and average land, housing and rental values

S/N	Attributes	Variables		Land values (million naira)	Housing values (million naira)	Rental values(bungalows) (naira per month)	Rental values(flats) (naira per month)	Rental values(duplexes) (naira per month)
1.	Space	Plot size 15mx30m		1.43	9.09	1,915	5,765	7,116
		25mx40m		1.49	9.75	2,367	5,264	8,820
		30mx60m		1.52	10.34	2,250	5,594	5,250
		Room size 3mx3.6m		1.41	7.26	1,904	5,380	5,586
		3.6mx4.3m		1.07	10.95	2,702	5,677	8,966
2.	Time	Time of land purchase	< 15yrs	2.04	10.94	2,032	5,782	9,833
			15-30	1.43	9.34	2,023	5,680	7,671
			30-45	0.99	7.47	1,920	5,404	5,850
			>45yrs	1.00	8.08	1,964	5,050	5,450
		Date of development	<15yrs	2.05	10.02	2,070	5,805	9,833
			15-30	1.41	9.08	2,016	5,642	8,526
			30-45	1.00	7.38	1,910	5,449	5,850
			>45yrs	0.55	7.68	1,971	4,750	5,250
		Age of layout	<20yrs	1.65	9.83	2,750	0000	9,750
			20-30	1.60	9.00	0000	6,600	9,750
			30-60	1.51	8.79	2,320	5,350	7,650
			60-120	1.27	8.45	1,900	5,200	5,875
			>120	0.86	8.00	1,750	5,000	0000
3.	Socio-economic characteristics	Place of origin	Native	0.90	8.17	2,028	5,043	6,234
			Non native	1.55	9.53	2,500	5,729	8,800

		Income						
		per month	<50000	1.07	6.79	1,750	5,750	5,250
			50000-70000	1.04	7.50	1,929	4,977	5,250
			70000-90000	1.08	6.93	1,902	5,281	5,540
			90000-110000	1.49	9.21	2,000	5,972	8,089
			>110000	1.52	10.34	2,500	6,050	9,250
4.	Policy	Density zone type	low	1.83	10.70	2,757	6,891	10,135
			Medium	1.60	9.80	2,500	6,000	6,713
			High	1.41	8.49	1,854	5,000	5,824
5	Housing	House type	Bungalows	1.43	7.06	2,000	0000	0000
			Blocks of flats	1.51	11.01	0000	5,500	0000
			Duplexes	1.48	10.46	0000	0000	8,500
		Wall condition	Cracked	1.14	6.54	1,920	4,875	5,750
			Not cracked	1.43	9.42	1,994	5,656	8,000
		Roof condition	Leaking	1.08	6.77	1,800	5,000	5,550
			Not leaking	1.43	9.32	1,994	6,000	8,500
		Toilet type	Water closet	1.38	9.26	2,000	5,500	8,500
			Pit latrine	1.35	6.50	1,750	0000	0000
		Bathroom type	Tub with shower	1.54	10.97	2,780	5,744	8,400
			Shower alone	1.50	10.25	1,950	5,464	7,250
			Walled bath	1.48	7.72	1,924	4,336	5,500
			Open fence	1.30	6.41	1,830	0000	0000
		Kitchen type	Separated	1.65	10.78	2,728	6,000	8,000
			Shared	1.55	6.97	1,892	0000	0000

		Number of rooms	6 rooms	1.30	7.06	2,000	0000	0000
			8 rooms	1.46	10.43	0000	0000	7,970
			>8 rooms	1.35	11.00	0000	5,700	0000
6	Neighbourhood	Road condition	Tarred	1.46	9.71	2,054	5,921	8,425
			Untarred	1.33	8.27	1,854	5,188	5,350
		Number of primary						
		schools	1 School	1.65	9.50	2,150	5,500	9,500
			2 Schools	1.68	9.80	2,250	5,800	9,800
			4 Schools	1.70	10.10	2,300	6,000	10,000
		Number of health						
		facilities	1 Facility	1.30	8.95	1,970	5,500	7,300
			2 Facilities	1.70	10.02	2,190	6,000	10,000
			>2 Facilities	1.85	10.20	2,250	7,400	10,200
		Number of security						
		groups	2 Groups	1.30	9.30	2,000	5,600	8,300
			3 Groups	1.40	9.50	2,150	5,750	8,500
			4 Groups	1.60	10.40	2,400	7,425	9,200

Source: Author's Field Work, 2008

Table 6.3.Sizes of rooms (in m^2)

S/N	Layouts	Wards	3mx3.6m		3.6mx4.3m		Total	
			No.	%	No.	%	No.	%
1.	Fegge	1	31	4.1	29	3.8	60	7.9
		2	34	4.5	25	3.3	58	7.8
		3	27	3.6	32	4.2	58	7.8
		4	14	1.8	16	2.1	30	4.0
2.	Woliwo	5	10	1.3	11	1.5	21	2.8
3.	Odoakpu	6	26	3.4	26	3.4	52	6.9
		7	23	3.0	27	3.6	50	6.6
		8	30	4.0	24	3.2	54	7.1
4.	Inland Town	9	33	4.4	8	1.1	41	5.4
		10	27	3.6	17	2.2	44	5.8
		11	27	3.6	11	1.5	38	5.0
5.	Otu	12	42	5.5	8	1.1	50	6.6
6.	Omogba	13	0	0.0	51	6.7	51	6.7
7.	American Qtrs	14	7	0.9	25	3.3	32	4.2
8.	G.R.A	15	0	0.0	27	3.6	27	3.6
9.	Trans Nkisi	16	2	0.3	28	3.7	30	4.0
10.	Awada	17	0	0.0	28	3.7	28	3.7
11.	Okpoko	18	19	2.5	13	1.7	32	4.2
	Total		352	46.4	406	53.6	758	100

Source: Author's Field Work, 2008

6.3 Time Attributes

The time variable refers to the time of land purchase, date of house development and age of layout. The purpose of the time variable is to investigate whether land, housing and rental values vary with the time of land purchase, date of housing development and age of the layout. The period considered for the time of land purchase is between 1950 and 2008 because most of the respondents bought their land after 1950. The period is divided into the following, namely, less than 15 years, between 15 and 30 years, 30 and 45 years and more than 45years.

The times of land purchase in the layouts are shown in Table 6.4. The table shows that 23.9%, 47.4%, 19.7% and 9.1% of the plots were purchased less than 15 years, between 15 and 30years, 30 and 45 years and more than 45 years ago, respectively. For the period less than 15 years, 8.9%, 2.9%, 2.8%, 2.4% and 2.2% of lands purchased are in Fegge, Trans Nkisi, Omogba, Odoakpu and Okpoko layouts respectively. Also, 1.7% of the plots are in Awada, 0.9% each is in Woliwo and G.R.A, 0.5% each in American Quarters and Inland Town and 0.1% in Otu.

For the period between 15 and 30 years, 14.1%, 11.0%, 4.3%, 4.0% and 3.7% of plots purchased are in Fegge, Odoakpu, Inland Towns, Omogba and American Quarters layouts, respectively. In G.R.A, Awada, Woliwo, Okpoko, Otu and Trans Nkisi layouts, 2.6%, 2.0%, 1.8%, 1.6% 1.3% and 1.1% of the plots were respectively purchased between 15 and 30 years ago. Also, the table shows that 7.3%, 4.8%, 4.2%, 3.2% and 0.3% of plots purchased between 30 and 45 years ago are respectively in Odoakpu, Inland Town, Fegge, Otu and Okpoko layouts while none is in other layouts. For the period over 45 years, 6.7%, 2.0%, 0.3% and 0.1% of plots purchased are in Inland Town, Otu, Fegge and Okpoko layouts, respectively and none in other layouts.

The time of land purchase is also examined in relation to land, housing and rental values as presented in Table 6.2. The table shows that time of land purchase has no meaningful effect on housing and rental values. Only land value has negative relationship with period of land purchase. This statement will be confirmed by regression analysis.

Table 6.4.Time of land purchase (in years)

S/N	Layouts	Wards	< 15		15 – 30		30 – 45		> 45		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	11	1.5	30	4.0	17	2.2	2	0.3	60	7.9
		2	32	4.2	26	3.4	1	0.1	0	0.0	59	7.8
		3	22	2.9	25	3.3	12	1.6	0	0.0	59	7.8
		4	2	0.3	26	3.4	2	0.3	0	0.0	30	4.0
2	Woliwo	5	7	0.9	14	1.8	0	0.0	0	0.0	21	2.8
3	Odoakpu	6	3	0.4	33	4.4	16	2.1	0	0.0	52	6.9
		7	3	0.4	26	3.4	21	2.8	0	0.0	50	6.6
		8	12	1.6	24	3.2	18	2.4	0	0.0	54	7.1
4	Inland											
	Town	9	3	0.4	8	1.1	11	1.5	19	2.5	41	5.4
		10	1	0.1	12	1.6	5	0.7	26	3.4	44	5.8
		11	0	0.0	12	1.6	20	2.6	6	0.8	38	5.0
5	Otu	12	1	0.1	10	1.3	24	3.2	15	2.0	50	6.6
6	Omogba	13	21	2.8	30	4.0	0	0.0	0	0.0	51	6.7
7	American											
	Quarters	14	4	0.5	28	3.7	0	0.0	0	0.0	32	4.2
8	G.R.A	15	7	0.9	20	2.6	0	0.0	0	0.0	27	3.6
9	Trans Nkisi	16	22	2.9	8	1.1	0	0.0	0	0.0	30	4.0
10	Awada	17	13	1.7	15	2.0	0	0.0	0	0.0	28	3.7
11	Okpoko	18	17	2.2	12	1.6	2	0.3	1	0.1	32	4.2
	Total		181	23.9	359	47.4	149	19.7	69	9.1	758	100

Source: Author's Field Work ,2008

The next time variable utilized in this study is the date of housing development. The same period between 1950 and 2008 is adopted. This period is also classified into the following, namely, less than 15 years, between 15 and 30 years, 30 and 45 years and more than 45 years. Table 6.5 shows the date of housing development in the layouts. The table reveals that 23.2%, 50.2%, 19.3% and 7.3% of the houses were built less than 15 years, between 15 and 30 years, 30 and 45 years and more than 45 years ago, respectively. For the houses built less than 15 years ago, 8.9%, 2.9% and 2.6% of them are in Fegge, Trans Nkisi and Omogba layouts, respectively, while 2.1% each are in Odoakpu and Okpoko, 1.6% in Awada, 1.1% each in G.R.A and Woliwo, 0.5% in American Quarters, 0.4% in Inland Town and none in Otu layout. Between 15 and 30 years ago, 14.4%, 11.9%, 5.9%, 4.1% and 3.7% of the houses are in Fegge, Odoakpu, Inland Town, Omogba and American Quarters layouts, respectively. Also within the same period, 2.5% of the houses are in G.R.A, 2.1% in Awada, 1.7% each in Woliwo and Okpoko, while only 1.1% of the houses are in Trans Nkisi layout. In Odoakpu, Inland Town, Fegge, Otu and Okpoko layouts, 6.8%, 5.1%, 4.1%, 3.2% and 0.3% of the houses were built between 30 and 45 years ago but none in other layouts. For houses built more than 45 years ago, only 4.9%, 2.0%, 0.3% and 0.1% of them are respectively in Inland Town, Otu, Fegge and Okpoko layouts.

The date of housing development is examined in relation to land, housing and rental values as presented in Table 6.2. The table shows that date of development has no meaningful effect on land values but on housing and rental values. Housing and rental values have a negative association with period of development. This is because housing and rental values are higher for houses built less than 15 years ago than those built more than 45 years ago.

Finally, age of the layouts is considered as a time variable. Based on the historical development of the layouts, the sample period is between 1878 and 2008. The sample period is classified into the following, namely, less than 20 years, between 20 and 30 years, 30 and 60 years, 60 and 120 years and more than 120 years. This classification is based on different periods when the layouts were developed. The responses in Table 6.6 show that 64.1% of the layouts were mostly developed between 60 and 120 years. This is followed by 14.9% of the layouts developed between 30 and 60 years and

10.4% developed between 20 and 30 years. No layout was developed less than 20 years and more than 120 years except in Trans Nkisi and Otu layouts, respectively.

The effect of the age of layout is also examined in relation to land, housing and rental values as shown in Table 6.2. The table shows that land, housing and rental values have a negative relationship with age of layout. That is, land, housing and rental values are higher in layouts developed less than 20 years ago than those developed more than 120 years ago. Thus, the discussions so far have shown that time attributes affect land, housing and rental values.

6.4 Socio – economic attributes

The urban area is a complex social, economic and political system. Therefore, a full range of the determinants of land, housing and rental values of urban residential housing cannot be produced without the understanding of how the urban system works. Thus, the study examines the influence of socio – economic attributes in order to uncover more underlying factors that determine variations in land, housing and rental values. The most important socio – economic attributes considered are the place of origin and income per month.

The place of origin variable seeks to understand whether the land and home owners are natives or non natives. Specifically, the study expects that land and housing would be sold at lower prices to the natives. The responses to the place of origin were discussed in Chapter Four and presented in Table 4.1. The table shows that 78.8% of the respondents in the layouts are non natives while 21.2% are the natives, who reside mostly in Inland Town and Otu layouts. Table 6.2 shows that higher land, housing and rental values are paid by non natives than the natives. This is will be confirmed by regression analysis.

Another important socio – economic attribute is the income per month of the respondents. This is because the level of income determines the ability to save for the purchase of land or house. The income per month of the land and home owners was discussed in Chapter Four and shown in Table 4.5. The land and home owners mostly earn between 90,000 and 110,000 naira per month. Table 6.2 shows that land, housing

Table 6.5.Date of development (in years)

S/N	Layouts	Wards	< 15		15 – 30		30 – 45		> 45		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	8	1.1	33	3.4	16	2.1	2	0.3	60	7.9
		2	33	4.4	25	3.5	1	0.1	0	0.0	59	7.8
		3	25	3.3	22	2.9	12	1.6	0	0.0	59	7.8
		4	1	0.1	27	3.6	2	0.3	0	0.0	30	4.0
2	Woliwo	5	8	1.1	13	1.7	0	0.0	0	0.0	21	2.8
3	Odoakpu	6	2	0.3	35	4.6	15	2.0	0	0.0	52	6.9
		7	3	0.4	29	3.8	18	2.4	0	0.0	50	6.6
		8	11	1.5	25	3.5	18	2.4	0	0.0	54	7.1
4	Inland											
	Town	9	2	0.3	8	1.1	12	1.6	19	2.5	41	5.4
		10	1	0.1	20	2.6	5	0.7	18	2.4	44	5.8
		11	0	0.0	17	2.2	21	2.8	0	0.0	38	5.0
5	Otu	12	0	0.0	11	1.5	24	3.2	15	2.0	50	6.6
6	Omogba	13	20	2.6	31	4.1	0	0.0	0	0.0	51	6.7
7	American											
	Quarters	14	4	0.5	28	3.7	0	0.0	0	0.0	32	4.2
8	G.R.A	15	8	1.1	19	2.5	0	0.0	0	0.0	27	3.6
9	Trans Nkisi	16	22	2.9	8	1.1	0	0.0	0	0.0	30	4.0
10	Awada	17	12	1.6	16	2.1	0	0.0	0	0.0	28	3.7
11	Okpoko	18	16	2.1	13	1.7	2	0.3	1	0.1	32	4.2
	Total		176	23.2	380	50.2	146	19.3	55	7.3	758	100

Source: Author's Field Work, 2008

Table 6.6.Age of layouts (in years)

S/N	Layouts	Wards	<20		20 – 30		30 – 60		60 – 120		>120		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	0	0.0	0	0.0	1	0.1	59	7.8	0	0.0	60	7.9
		2	0	0.0	0	0.0	0	0.0	59	7.8	0	0.0	59	7.8
		3	0	0.0	0	0.0	0	0.0	30	4.0	0	0.0	59	7.8
		4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	30	4.0
2	Woliwo	5	0	0.0	0	0.0	21	2.8	52	6.9	0	0.0	21	2.8
3	Odoakpu	6	0	0.0	0	0.0	0	0.0	50	6.6	0	0.0	52	6.9
		7	0	0.0	0	0.0	0	0.0	54	7.1	0	0.0	50	6.6
		8	0	0.0	0	0.0	0	0.0	41	5.4	0	0.0	54	7.1
4	Inland													
	Town	9	0	0.0	0	0.0	0	0.0	44	5.8	0	0.0	41	5.4
		10	0	0.0	0	0.0	0	0.0	38	5.0	0	0.0	44	5.8
		11	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	38	5.0
5	Otu	12	0	0.0	0	0.0	0	0.0	0	0.0	50	6.6	50	6.6
6	Omogba	13	0	0.0	51	6.7	0	0.0	0	0.0	0	0.0	51	6.7
7	American													
	Quarters	14	0	0.0	0	0.0	32	4.2	0	0.0	0	0.0	32	4.2
8	G.R.A	15	0	0.0	0	0.0	27	3.6	0	0.0	0	0.0	27	3.6
9	Trans Nkisi	16	30	4.0	0	0.0	0	0.0	0	0.0	0	0.0	30	4.0
10	Awada	17	0	0.0	28	3.7	0	0.0	0	0.0	0	0.0	28	3.7
11	Okpoko	18	0	0.0	0	0.0	32	4.2	0	0.0	0	0.0	32	4.2
	Total		30	4.0	79	10.4	113	14.9	486	64.1	50	6.6	758	100

Source: Author's Field Work, 2008

and rental values have a positive association with income per month. This statement will also be confirmed by regression analysis.

6.5 Zoning Policy Attributes

The zoning policy attributes are the physical planning regulations aimed at segregating parcels of land for different uses. One such regulation requires that land is zoned into low, medium and high density uses with facilities provided. The purpose of the zoning is to carter for the varying needs of different income groups. Hence, it is expected that, at higher density, the costs of land and services would be low, and conversely, the lower the density, the higher the costs of land and services. The responses to the types of density zones were discussed in Chapter Four and presented in Table 4.8. The types of density zones examined are low, medium and high. The table shows that 51.1%, 37.2% and 11.7% of the residential areas are zoned for high, medium and low density uses respectively. The density zones are examined along with land, housing and rental values as shown in Table 6.2. As expected, land, housing and rental values are high in low and medium density zones but low in high density zones. Therefore zoning policy is considered as a determinant in the variations in land, housing and rental values.

6.6 Housing Attributes

No doubt, the structural attributes of houses are important determinants of housing and rental values. The housing attributes utilized in this study are the house type, number of rooms, available facilities and the physical condition of the house. Room size is a measure of indoor space.

The common house types considered in the study area are bungalows, blocks of flats and duplex buildings. The blocks of flats are multi-storey buildings ranging from one floor to three or four floors. The duplexes have one floor. The survey presented in Table 4.12 in Chapter Four shows that 43.1%, 43.9% and 12.9% of the buildings are bungalows, blocks of flats and duplexes, respectively. Bungalows and blocks of flats are dominant in the study area. For the bungalows, 12.5%, 9.7%, 8.5% and 4.5% of them are in Fegge, Odoakpu, Inland Town and Otu layouts respectively. Only 2.2%, 2.0%, 1.6%, 1.3% and 0.9% of bungalows are in Okpoko, Trans Nkisi, G.R.A, Woliwo

and American Quarters respectively but none in Omogba and Awada layouts. In Fegge, Odoakpu, Omogba, Inland Town and Awada layouts, 13.3%, 10.1%, 5.8%, 4.4% and 3.2% of the buildings are blocks of flats respectively, while 2.1% each of the blocks of flats are in Otu and American Quarters layouts, 1.7% in Okpoko and 1.6% in Woliwo but none in G.R.A and Trans Nkisi layouts. The duplexes are not prominent. Only 3.5% of them are in Inland Town, 2.0% each in G.R.A and Trans Nkisi, 1.6% in Fegge, 1.2% in American Quarters, 1.1% in Odoakpu, 0.9% in Omogba, 0.5% in Awada and 0.3% in Okpoko. The house types and land, housing and rental values are presented in Table 6.2. House types do not affect land values. However, housing and rental values are high for duplexes and blocks of flats but low for bungalows. This statement will be subjected to regression analysis.

The number of rooms in a building is considered because it is expected to affect the cost of building and rental values. The survey conducted shows that the average number of rooms in a bungalow is 6, in duplexes 6 and in blocks of flats predominantly 3 rooms per flat. The average number of floors is 3 and each contains 2 flats. Therefore there are 18 rooms in a block of flats of three floors. As shown in Table 6.2, only housing and rental values that increase with the number of rooms in a building.

The housing facilities such as types of kitchens, bathrooms and toilets were also considered. All the buildings in the layouts have water closet toilets. Although, there are varieties of bathrooms in the buildings, the dominant types shown in Table 6.7 are tub with shower bathrooms and bathrooms without either tub or shower. For tub with shower bathrooms, 11.1% of the buildings are in Fegge, 8.3% in Odoakpu, 8.1% in Inland Town, 5.1% in Omogba and 3.6% each in American Quarters and G.R.A. Others are 3.2% in Awada, 2.1% in Trans Nkisi, 1.2% in Woliwo, 0.7% in Otu and none in Okpoko. In Fegge, Odoakpu, Inland Town and Otu, 13.8%, 12.0%, 8.1% and 5.9% respectively of the buildings have bathrooms with neither tub nor shower. Only 2.9%, 1.8%, 1.6%, 1.5%, 0.7% and 0.5% of such buildings are in Okpoko, Trans Nkisi, Omogba, Woliwo, American Quarters and Awada layouts, respectively but none in G.R.A. For bathrooms with only shower, 0.9%, 0.2% and 0.1% of them are in Fegge, Odoakpu and Woliwo layouts respectively but none in other layouts. Open spaces used as bathrooms are only in Fegge and Okpoko layouts, representing 1.7%

and 1.3% of the buildings respectively. The bathrooms types are examined along with land, housing and rental values as shown in Table 6.2. It shows that bathroom type has no meaningful effect on land values but on housing and rental values. The table shows that housing and rental values have a positive relationship with type of bathroom. That is, housing and rental values are high for buildings that have tub with shower bathrooms and low for buildings that have neither tub nor shower.

In addition, kitchens are either shared or separate. Table 6.8 shows that 59.5% of the buildings have separate or private kitchens and 40.5% of them have shared kitchen facilities. For the buildings with private or separate kitchens, 14.2%, 10.8%, 7.6% and 6.7% are in Fegge, Odoakpu, Inland Town and Omogba layouts respectively, while

Table 6.7.Types of bathrooms

S/N	Layouts	Wards	Tub with shower		Shower alone		Walled bath		Open fence bath		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	19	2.5	3	0.4	28	3.7	10	1.3	60	7.9
		2	22	2.9	1	0.1	34	4.5	2	0.3	59	7.8
		3	28	3.7	3	0.4	27	3.6	1	0.1	59	7.8
		4	15	2.0	0	0.0	15	2.0	0	0.0	30	4.0
2	Woliwo	5	9	1.2	1	0.1	11	1.5	0	0.0	21	2.8
3	Odoakpu	6	25	3.3	0	0.0	27	3.6	0	0.0	52	6.9
		7	17	2.2	1	0.1	32	4.2	0	0.0	50	6.6
		8	21	2.8	1	0.1	32	4.2	0	0.0	54	7.1
4	Inland											
	Town	9	14	1.8	0	0.0	27	3.6	0	0.0	41	5.4
		10	36	4.7	0	0.0	8	1.1	0	0.0	44	5.8
		11	12	1.6	0	0.0	26	3.4	0	0.0	38	5.0
5	Otu	12	5	0.7	0	0.0	45	5.9	0	0.0	50	6.6
6	Omogba	13	39	5.1	0	0.0	12	1.6	0	0.0	51	6.7
7	American											
	Quarters	14	27	3.6	0	0.0	5	0.7	0	0.0	32	4.2
8	G.R.A	15	27	3.6	0	0.0	0	0.0	0	0.0	27	3.6
9	Trans Nkisi	16	16	2.1	0	0.0	14	1.8	0	0.0	30	4.0
10	Awada	17	24	3.2	0	0.0	4	0.5	0	0.0	28	3.7
11	Okpoko	18	0	0.0	0	0.0	22	2.9	10	1.3	32	4.2
	Total		356	47.0	10	1.3	369	48.7	23	3.0	758	100

Source: Author's Field Work, 2008

Table 6.8.Types of kitchen

S/N	Layouts	Wards	Separated kitchen		Shared kitchen		Total	
			No.	%	No.	%	No.	%
1.	Fegge	1	30	4.0	30	4.0	60	7.9
		2	26	3.4	33	4.4	59	7.8
		3	36	4.7	23	3.0	59	7.8
		4	16	2.1	14	1.8	30	4.0
2.	Woliwo	5	11	1.5	10	1.3	21	2.8
3.	Odoakpu	6	30	4.0	22	2.9	52	6.9
		7	29	3.8	21	2.7	50	6.6
		8	23	3.0	31	4.1	54	7.1
4.	Inland Town	9	12	1.6	29	3.8	41	5.4
		10	36	4.7	8	1.1	44	5.8
		11	10	1.3	28	3.7	38	5.0
5.	Otu	12	14	1.8	36	4.7	50	6.6
6.	Omogba	13	51	6.7	0	0.0	51	6.7
7.	American Qtrs	14	28	3.7	4	0.5	32	4.2
8.	G.R.A	15	27	3.7	0	0.0	27	3.6
9.	Trans Nkisi	16	30	4.0	0	0.0	30	4.0
10.	Awada	17	28	3.7	0	0.0	28	3.7
11.	Okpoko	18	14	1.8	18	2.4	32	4.2
	Total		451	59.5	307	40.5	758	100

Source: Author's Field Work, 2008

4.0% are in Trans Nkisi, 3.7% each in Awada and American Quarters, 3.6% in G.R.A, 1.8% each in Okpoko and Otu and 1.5% in Woliwo.

For buildings that share kitchen facilities, 13.2%, 9.7%, 8.6% and 4.7% are in Fegge, Odoakpu, Inland Town and Otu layouts respectively, while 2.4%, 1.3% and 0.5% are in Okpoko, Woliwo and American Quarters respectively. None is in the other layouts. In Table 6.2, types of kitchen are examined along with land, housing and rental values. The result shows that kitchen type has no meaningful effect on land values but on housing and rental values. The table indicates that housing and rental values have a positive association with kitchen type. This means that housing and rental values are high for buildings that have separate kitchens and low for those that share kitchens. Discussions so far show that housing facilities affect housing and rental values only. However, this statement will be subjected to regression analysis.

Finally, the physical condition of houses is an important determinant of housing and rental values. Table 6.9 shows the physical conditions of walls and roofs of houses in the study area. The survey shows that 93.8% of the building walls in the layouts are not cracked. Only 6.2% of the building walls are cracked. In Fegge, Odoakpu, Inland Town, Omogba and Otu, 24.5%, 18.3%, 16.2%, 6.7% and 6.6% respectively of the building walls are not cracked. Also, 4.2%, 4.0%, 3.7%, 3.4% and 2.6% of the building walls in American Quarters, Trans Nkisi, Awada, G.R.A, Okpoko and Woliwo respectively are not cracked. Only 2.8%, 2.1%, 0.8% and 0.1% of building walls in Fegge, Odoakpu, Okpoko and Woliwo respectively are cracked. In addition, the survey shows that 96.8% of the building roofs in the layouts are not leaking but only 3.2% are leaking. The physical condition of houses along with land, housing and rental values are presented in Table 6.2. There is no meaningful effect of building physical conditions on land values. However, the results show that housing and rental values have a positive relationship with the physical condition of houses. This means that these values are high for houses that have no cracked walls or leaking roofs and low in those that have cracked walls and leaking roofs.

Table 6.9.Physical conditions of houses

S/N	Layouts	Wards	Cracked wall		Not cracked		Leaking roof		Not leaking		Totals of each group	
			No.	%	No.	%	No.	%	No.	%	No.	%
1	Fegge	1	11	1.5	49	6.5	11	1.5	49	6.5	60	7.9
		2	4	0.5	55	7.3	1	0.1	58	7.6	59	7.8
		3	1	0.1	58	7.7	0	0.0	59	7.8	59	7.8
		4	7	0.9	23	3.0	1	0.1	29	3.8	30	4.0
2	Woliwo	5	1	0.1	20	2.6	0	0.0	21	2.8	21	2.8
3	Odoakpu	6	0	0.0	52	6.9	1	0.1	51	6.7	52	6.9
		7	13	1.7	36	4.7	3	0.4	47	6.2	50	6.6
		8	3	0.4	51	6.7	0	0.0	54	7.1	54	7.1
4	Inland											
	Town	9	0	0.0	41	5.4	0	0.0	41	5.4	41	5.4
		10	0	0.0	44	5.8	0	0.0	44	5.8	44	5.8
		11	0	0.0	38	5.0	0	0.0	38	5.0	38	5.0
5	Otu	12	0	0.0	50	6.6	0	0.0	50	6.6	50	6.6
6	Omogba	13	0	0.0	51	6.7	0	0.0	51	6.7	51	6.7
7	American											
	Quarters	14	0	0.0	32	4.2	0	0.0	32	4.2	32	4.2
8	G.R.A	15	0	0.0	27	3.6	0	0.0	27	3.6	27	3.6
9	Trans Nkisi	16	0	0.0	30	4.0	0	0.0	30	4.0	30	4.0
10	Awada	17	0	0.0	28	3.7	0	0.0	28	3.7	28	3.7
11	Okpoko	18	7	0.9	32	4.2	7	0.9	25	3.3	32	4.2
	Totals of each group		47	6.2	711	93.4	24	3.2	734	96.8	758	100

Source: Author's Field Work, 2008

6.7 Neighbourhood Attributes

The neighbourhood attributes used in this study includes roads, primary schools, hospitals/clinics and security services. Table 6.10 shows that 67.3% of roads in the layouts are in tarred conditions while 32.3% are not tarred. The tarred roads show that 15.6%, 11.9%, 8.5% 6.7% and 6.6% of them are in Fegge, Inland Town, Odoakpu, Omogba and Otu layouts respectively and 4.2%, 4.0%, 3.7%, 3.6%, 1.6% and 0.9% are in American Quarters, Trans Nkisi, Awada, G.R.A, Okpoko and Woliwo respectively. Only 12.0%, 11.9%, 4.4%, 2.6% and 1.8% of the roads in Odoakpu, Fegge, Inland Town, Okpoko and Woliwo respectively are not tarred in the study area. The road condition affects land, housing and rental values as shown in Table 6.2

Data on the number of primary schools are presented in Table 6.11. The table shows that there are 10 primary schools in Fegge, 8 in Odoakpu, 6 in Inland Town and 4 each in Omogba, Awada and Okpoko. Also, there are 2 primary schools each in Woliwo, Otu, American Quarters, G.R.A and 1 primary school in Trans Nkisi. The number of primary schools in the layouts is examined along with land, housing and rental values as presented in Table 6.2. The table shows that land, housing and rental values increase with number of primary schools in the layouts.

The next neighbourhood attribute considered is number of health facilities such as hospitals/clinics in the layouts. This is presented in Table 6.12. There are 14 hospitals and 11 clinics in the layouts. Out of these, there are 5 hospitals in Fegge, 2 each in Odoakpu and Inland Town, 1 each in Woliwo, Omogba, American Quarters, G.R.A and Awada, while 3 clinics are in Fegge, 2 in Okpoko and 1 each in Inland Town, Otu, American Quarters, G.R.A, Trans Nkisi and Awada. Also, the number of health facilities is presented along with land, housing and rental values in Table 6.2. It shows that land, housing and rental values increase with number of health facilities in the layouts.

The types and number of security organizations are presented in Table 6.13. There are three types of security groups namely Anambra Vigilant Service (AVS), Onitsha Market Traders Association (OMATA) and the MaiGuides. These groups operate in

different layouts as shown in the table. There are 6 groups of AVS, 2 in Inland Town and 1 each in Fegge, American Quarters, G.R.A and Trans Nkisi. The OMATA has 20 groups, 7 in Odoakpu, 6 in Fegge, 3 in Otu and 2 each in Woliwo and Okpoko. The MaiGuides has 11 groups with 3 each in Fegge, Omogba and Awada layouts and 2 in Inland Town. Also, the number of security groups is examined along with land, housing and rental values as presented in Table 6.2. The table shows that land, housing and rental values increase with number of security organizations.

In the next chapter, the effects of these non locational factors on land, housing and rental values are subjected to regression analysis.

Table 6.10.Roads conditions

S/N	Layouts	Wards	Tarred road		Untarred road		Total	
			No.	%	No.	%	No.	%
1.	Fegge	1	41	5.4	19	2.5	60	7.9
		2	12	1.6	47	6.2	59	7.8
		3	35	4.6	24	3.2	59	7.8
		4	30	4.0	0	0.0	30	4.0
2.	Woliwo	5	7	0.9	14	1.8	21	2.8
3.	Odoakpu	6	20	2.6	32	4.2	52	6.9
		7	19	2.5	31	4.1	50	6.6
		8	26	3.4	28	3.7	54	7.1
4.	Inland Town	9	41	5.4	0	0.0	41	5.4
		10	11	1.5	33	4.4	44	5.8
		11	38	5.0	0	0.0	38	5.0
5.	Otu	12	50	6.6	0	0.0	50	6.6
6.	Omogba	13	51	6.7	0	0.0	51	6.7
7.	American Qtrs	14	32	4.2	0	0.0	32	4.2
8.	G.R.A	15	27	3.6	0	0.0	27	3.6
9.	Trans Nkisi	16	30	4.0	0	0.0	30	4.0
10.	Awada	17	28	3.7	0	0.0	28	3.7
11.	Okpoko	18	12	1.6	0	0.0	32	4.2
	Total		510	67.3	248	32.7	758	100

Source: Author's Field Work, 2008

Table 6.11.Number of primary schools per layout

S/N	Layouts	Wards	No. of primary schools
1.	Fegge	1	4
		2	2
		3	2
		4	2
2.	Woliwo	5	2
3.	Odoakpu	6	4
		7	2
		8	2
4.	Inland Town	9	2
		10	2
		11	2
5.	Otu	12	2
6.	Omogba	13	4
7.	American Quarters	14	2
8.	G.R.A	15	2
9.	Trans Nkisi	16	1
10.	Awada	17	4
11.	Okpoko	18	4
	Total		45

Source: Author's Field Work, 2008

Table 6.12.Number of health facilities per layout

S/N	Layouts	Wards	Hospitals	Clinics
			No.	No.
1.	Fegge	1	3	1
		2	1	1
		3	1	0
		4	0	1
2.	Woliwo	5	1	0
3.	Odoakpu	6	1	0
		7	1	0
		8	0	0
4.	Inland Town	9	1	0
		10	0	1
		11	1	0
5.	Otu	12	0	1
6.	Omogba	13	1	0
7.	American Quarters	14	1	1
8.	G.R.A	15	1	1
9.	Trans Nkisi	16	0	1
10.	Awada	17	1	1
11.	Okpoko	18	0	2
	Total		14	11

Source: Author's Field Work, 2008

Table 6.13.Number of security groups types per layout

S/N	Layouts	Wards	AVS	OMATA	MaiGuides	Total
			No.	No.	No.	No.
1.	Fegge	1	0	4	0	4
		2	0	0	3	3
		3	0	2	0	2
		4	1	0	0	1
2.	Woliwo	5	0	2	0	2
3.	Odoakpu	6	0	3	0	3
		7	0	2	0	2
		8	0	2	0	2
4.	Inland Town	9	1	0	0	1
		10	1	0	0	1
		11	0	0	2	2
5.	Otu	12	0	3	0	3
6.	Omogba	13	0	0	3	3
7.	American Quarters	14	1	0	0	1
8.	G.R.A	15	1	0	0	1
9.	Trans Nkisi	16	1	0	0	1
10.	Awada	17	0	0	3	3
11.	Okpoko	18	0	2	0	2
	Total		6	20	11	37

Source: Author's Field Work, 2008

CHAPTER SEVEN

ESTIMATING THE EFFECTS OF NON LOCATIONAL FACTORS

7.1 **Introduction**

To determine the effects of the non – location factors, the data discussed in Chapter Six are subjected to regression analysis. To execute this analysis, the variables are first defined and the summary of statistics used presented in Table 7.1. The variables consist of quantitative and qualitative or dummy data. The quantitative data are land, housing and rental values. Others are plot size, room size, number of rooms, time of land purchase, date of development, age of layout, income per month, number of primary schools, number of health facilities and number of security organizations. The qualitative or dummy variables include place of origin, density type, house type, kitchen type, bathroom type, toilet type, housing wall and roof conditions and road condition.

The effects of the non- location factors on land, housing and rental values were determined using multiple regression analysis. A total of 3 dependent variables and 21 independent variables were used. The dependent variables are the land, housing and rental values while the independent variables are the non – location factors defined in Table 7.1. The regression was done to test the hypothesis which states that the land, housing and rental values are a function of the non location factors, such as plot size, room size, number of rooms, time of land purchase, date of development, age of layout, place of origin, income, housing quality and condition (measured by house type, kitchen type, toilet type, bathroom type, housing wall and roof conditions),neighbourhood infrastructures (measured by road condition, number of primary schools, health facilities and security organizations) and government zoning policy (measured by density type). Later, a stepwise regression analysis was done to determine the relevant factors in the explanation of the variations in land, housing and rental values.

Table 7.1.Definitions and summary statistics of non Locational variables in the analysis

Variables	Definition	Mean	Standard deviation
Plot size, PLS	Area of plot of land (in m^2)	594.84	496.191
Room size, RMS	Area of a room in building (in m^2)	13.32	6.962
Number of rooms, NRM	Number of rooms in building	7.56	3.980
Time of land purchase, TLP	Period of time land purchased (years)	25.71	15.922
Date of development, DOD	Period of housing development (years)	25.38	15.523
Age of layout, AOL	Age of layout (years)	75.73	46.685
Income per month, INC	Amount of money earned per month (in Naira)	711134.56	59966.653
Place of origin, POO	= 1 if respondent is non native*	0.79	0.406
Density zone type	= 1 if location in low density zone, LDZ*	0.12	0.322
	= 1 if location in medium density zone, MDZ*	0.37	0.484
	= 1 if location in high density zone, HDZ*	0.51	0.500
House type, HOT	= 1 if blocks of flats*	0.44	0.496
Kitchen type, KIT	= 1 if kitchen use is private or separate*	0.59	0.492
Bathroom type, BAT	= 1 if bathroom has tub with shower*	0.47	0.499
Toilet type, TOT	= 1 if toilet has water closet*	0.99	0.081
Housing wall condition, HWC	= 1 if wall is not cracked*	0.94	0.239
Housing roof condition, HRC	= 1 if roof is not leaking*	0.97	0.172
Road condition	= 1 if road is tarred*	0.67	0.469
Number of primary school, NPS	in a layout	2.55	1.580
Number of health facilities, NHF	in a layout	1.39	0.630
Number of security groups, NSG	in a layout	2.21	1.430

*0 otherwise

Furthermore, a comparative analysis of the location and non – location factors was undertaken in order to determine their relative importance in explaining variations in land, housing and rental values.

7.2 The Effects of Non locational Variables on Land Values

The data in Tables 6.1, 6.3 and 6.4 to 6.13 in Chapter Six were used for the regression analysis. The contribution of the non location variables to the explanation of the variations in land values are first determined by non stepwise multiple regression analysis and later by stepwise regression analysis. The results of the multiple regression analysis are presented in Table 7.2. In the analysis, the high density zone (HDZ) variable is excluded as a predictor because of its correlation with the medium density zone (MDZ) variable.

The overall performance of the multiple regression analysis is good as indicated by R^2 statistics of 0.609 and F – value of 59.620. The R^2 value means that 60.9% of the overall explanation to the variations in land values in the study area are provided by the non location variables entered in Table 7.2. However, the coefficients of the variables and their t – values show that some variables are not significant.

In order to determine the order of importance and obtain the contributions of the various non location variables to the overall explanation, the stepwise regression model was utilized. The stepwise model proceeds by selecting variable with the highest correlation with the dependent variable. This procedure continues until all meaningful independent variables with successively smaller partial correlations have been entered. That is, the most important variables are first entered into the model followed by the less important variables.

The stepwise regression model of the variables is as follows:

$$LV = a+b_1TLP+b_2BAT+b_3AOL+b_4HOT+b_5ROC+b_6INC+_{b7}KIT+b_8DOD+b_9NSG +b_{10}LDZ+e \quad \text{…….7.1}$$

Table 7.3 presents the results of the stepwise regression analysis for land values. The relative importance of each variable is determined by the t – value and its R^2 change (i.e contribution to the overall explained variance).

Table 7.2.Multiple regression analysis: Land values

Variables	Regression coefficient	Standard error	t- value	Significance level
PLS	0.027	0.081	0.992	0.321
RMS	0.075	0.144	1.468	0.143
TLP	- 0.351	0.107	- 5.219	0.001
DOD	- 0.184	0.111	- 2.766	0.006
AOL	- 0.154	0.054	- 4.498	0.001
INC	0.070	0.050	2.266	0.024
POO	0.010	0.112	0.326	0.745
LDZ	0.159	0.212	3.260	0.001
MDZ	0.024	0.097	0.735	0.462
HOT	0.167	0.210	2,245	0.025
NRM	0.142	0.154	1.390	0.165
KIT	0.204	0.180	3.249	0.001
BAT	0.212	0.101	5.919	0.001
TOT	0.024	0.431	0.959	0.338
HWC	0.029	0.156	1.117	0.264
HRC	0.012	0.218	0.460	0.645
ROC	0.085	0.084	3.046	0.002
NPS	0.027	0.099	0.726	0.468
NHF	0.041	0.075	1.215	0.227
NSG	0.104	0.059	2.694	0.007
Constant	4.849	0.607	7.989	0.001

$R^2 = 0.609$, SEE = 0.881, F – value = 59.620 probability of F <, = 0.05

Table 7.3.Stepwise regression analysis: Land values

Step	Variables	Multiple R	R^2	R^2 change	Regression coefficient	t – value	Sign. level
1	TLP	0.692	0.478	0.478	- 0.355	- 5.525	0.001
2	BAT	0.736	0.541	0.063	0.213	6.256	0.001
3	AOL	0.754	0.566	0.025	- 0.163	- 5.322	0.001
4	HOT	0.764	0.581	0.015	0.228	5.839	0.001
5	ROC	0.770	0.590	0.009	0.099	4.083	0.001
6	INC	0.774	0.596	0.006	0.082	2.787	0.005
7	KIT	0.778	0.602	0.006	0.170	3.636	0.001
8	DOD	0.780	0.604	0.002	- 0.155	- 2.380	0.018
9	NSG	0.782	0.606	0.002	0.085	3.078	0.002
10	LDZ	0.784	0.609	0.003	0.086	2.484	0.003
	F – value = 118.427						

The most important variable explaining the variations in land values in the study area is time of land purchase (TLP). The TLP is significant and accounts for 47.8% of variations in land values. The TLP coefficient indicates that land value has a negative relationship with the period when land is purchased. The time value of money shows that land purchased more than 45 years ago is valued at one million naira and one bought less than 15 years ago is above two million naira as confirmed in Table 6.2

The second most important variable is the bathroom type (BAT), which accounts for 6.3% of the variations in land values. The BAT coefficient means that land value has a positive association with bathroom type. This is because Table 6.2 shows that land values are high in houses with tub and shower type of bathrooms.

The next variable in order of importance is age of layout (AOL). This variable accounts for 2.5% of the variations in land values. The AOL coefficient shows that a unit increase in the age of layout would result in a .163 decrease in the land values. This result agrees with Table 6.2 because land values are lower in layouts that are above120 years than those less than 20 years old. This means that land values increase with age of the layout.

The fourth most important variable accounting for the variations in land values is the house type (HOT). This variable accounts for 1.5% of the variations. The HOT coefficient shows that land value has a positive relationship with house type. As shown in Table 6.2, this means that land values are high on land where blocks of flats are developed. Moreover, housing includes not only the shelter but the space of land surrounding the shelter. In this case, land value is seen as a function of the cost of the shelter and the space around it.

After the fourth step, the five other variables are not significant and important in explaining variations in land values in the study area. This is because each of the variables accounts for less than 1% of the variations in land values. The variables include road condition (ROC), income per month (INC), kitchen type (KIT), date of development (DOD), number of security groups (NSG) and low density zone (LDZ). The ROC coefficient means that a unit increase in number of paved roads would lead to a 0.099 increase in land values. The survey indicates that lands along tarred roads

are a little higher in value than those along untarred roads. Also, the INC coefficient shows that increase in the amount of money earned per month would result in a 0.082 increase in land values. As indicated in the survey, high income earners can afford to pay for land that costs more. The KIT coefficient means that land value has a positive association with kitchen type, especially if the houses have separate or private kitchen facilities as confirmed in Table 6.2. Also, Land value has a negative relationship with the period when the house is developed as shown by the coefficient. Furthermore, NSG coefficient means that a unit increase in number of security groups would result in a 0.085 increase in land values. Finally, the LDZ coefficient indicates that land value has a positive association with density type where land is located. As shown in Table 6.2, this means that land values are high for lands located in low density zone.

The stepwise regression analysis has shown that the significant determinants of variations in land values are time of land purchase (TLP), bathroom type (BAT), age of layout (AOL) and house type (HOT). This is further corroborated by the focused group discussions (FGD) held. Reporting, a participant in the high density group said:

> I bought my land before the Nigerian civil war, that is more than 45 years ago, at the cost of 20 pounds (5,000 naira) but today the same land is worth over one million naira.

The discussions reveal that the prices of plots are higher for buildings with better and improved facilities. For example, a participant from the high density group reported:

> In low density area, plots of land where houses with tub/ shower bathrooms, separate kitchens and water closet toilets are developed, they are offered between 1.8 and 2.3 million naira.

Very much related to time of land purchase is the age of the layout in which the land situates. A participant from Nkisi layout in the low density group reported:

> Land is expensive here because it is the newest layout (less than 15 years old) and the rush to purchase land pushes the price up.

Finally, the discussions showed that the type of house in terms of space requirement affects land values. This is well captured by a participant in the medium density group. The participant said:

> Plot of land here is bigger (25m x 40m) to accommodate blocks of flats buildings which are predominant. Majority of the tenants have cars and hence need parking space. Also, the rooms are bigger with better facilities. These are some considerations for land purchase in Awada at average cost of above 2 million naira per plot.

7.3 The Effects of Non Location Variables on Housing Values

As in the land value analysis, the effects of the non location variables on the housing values are examined using both non stepwise and stepwise regression models. The results of the multiple regression analysis (non stepwise) are shown in Table 7.4.

The overall performance of the multiple regression analysis is fairly good as shown by R^2 value of 0.549 and F- value of 46.889. The magnitude of R^2 indicates that 54.9% of the variations in housing values are provided by the non location variables defined in Table 7.1. But, not all the variables are significant as shown by their coefficients and t-values. In order to determine the contributions of the variables to overall explanation, a stepwise regression analysis was utilized. The stepwise regression model is given as:

$$HV = a+b_1NRM+b_2AOL+b_3INC+b_4MDZ+b_5NPS+b_6BAT+b_7ROC+b_8NSG +b_9TLP+e \quad \ldots\ldots 7.2$$

The results of the stepwise regression analysis for housing values are presented in Table 7.5. The most important variable explaining the variations in housing values in the study area is the number of rooms (NRM). The NRM accounts for 32.5% of the variations in housing values. The NRM coefficient shows that a unit increase in number of rooms in a house would result in a 0.343 increase in housing values. This is expected because the survey shows that houses with more rooms are costlier, especially as observed in blocks of flats.

The next most important variable is the age of layout (AOL), which accounts for 10.6% of the variations in housing values. The AOL coefficient shows that a unit increase in the age of a layout would result in a 0.136 decrease in housing values. This result is plausible because Table 6.2 also indicates that housing values are lower in the

layouts that are more than 120 years than in those less than 20 years old. This implies that housing values are high if the layouts are new.

The third most important variable is income per month (INC). This variable accounts for 3.4% of the variations in housing values. The INC coefficient indicates that a unit increase in the amount of money earned per month would bring about a 0.168 increase in housing values. This is so because the survey reveals that high cost buildings are provided or afforded by the higher income earners.

Location in medium density zone (MDZ) is the fourth most important variable that explains the variations in housing values. The MDZ variable accounts for 3.7% of the variations in housing values. The coefficient of MDZ shows that housing value has positive a association with density type. As shown in Table 6.2, this means that housing values are high if the houses are located in medium density zone. This is evident in the medium density areas of Omogba and Awada layouts where costs of buildings are higher. The high cost could be attributed to policy which ensures that there are less negative externalities such as inadequate infrastructures and services as observed in the medium density areas.

The fifth important variable is number of primary schools (NPS), which accounts for 1.6% of variations in housing values. The NPS coefficient shows that housing value has a positive association with number of primary schools as shown in Table 6.2. This means that housing values are high in neighbourhoods with more primary schools.

Bathroom type (BAT) is the sixth important variable that accounts for 1.2% of variations in housing values. The coefficient of BAT indicates that housing value has a positive relationship with bathroom type as presented in Table 6.2. This means that housing values are high in houses with tub and shower bathroom facilities.

Table 7.4.Multiple regression analysis: Housing values

Variables	Regression coefficient	Standard error	t- value	Significance level
PLS	0.043	0.051	1.439	0.151
RMS	0.023	0.091	0.420	0.675
TLP	- 0.097	0.068	- 1.337	0.182
DOD	- 0.001	0.070	-0.018	0.985
AOL	- 0.156	0.034	- 4.169	0.001
INC	0.158	0.032	4.782	0.001
POO	0.009	0.070	0.250	0.802
LDZ	0.160	0.134	3.056	0.002
MDZ	0.280	0.061	5.844	0.001
HOT	0.061	0.133	0.771	0.411
NRM	0.480	0,097	4.387	0.001
KIT	0.101	0.113	1.502	0.133
BAT	0.139	0.064	3.605	0.001
TOT	0.017	0.272	0.652	0.515
HWC	0.020	0.098	0.706	0.480
HRC	0.028	0.138	1.014	0.311
ROC	0.090	0.053	3.016	0.003
NPS	0.159	0.062	4.048	0.001
NHF	0.036	0.047	0.996	0.320
NSG	0.133	0.037	3.186	0.001
Constant	0.230	0.383	0.601	0.548

R^2 = 0.549, SEE = 0.555, F – value = 46.889 probability of F <, = 0.05

Table 7.5.Stepwise regression analysis: Housing values

Step	Variables	Multiple R	R^2	R^2 change	Regression coefficient	t – value level	Sign.
1	NRM	0.571	0.325	0.325	0.348	10.435	0.001
2	AOL	0.658	0.431	0.106	- 0.136	- 4.198	0.001
3	INC	0.684	0.465	0.034	0.168	5.491	0.001
4	MDZ	0.710	0.502	0.037	0.156	5.008	0.001
5	NPS	0.722	0.518	0.016	0.142	4.146	0.001
6	BAT	0.731	0.530	0.012	0.131	3.864	0.001
7	ROC	0.737	0.540	0.010	0.074	2.580	0.010
8	NSG	0.740	0.543	0.003	0.113	3.039	0.035
9	TLP	0.745	0.550	0.007	- 0.026	- 2.335	0.020

F – value = 103.338

The seventh important variable is road condition (ROC), which account for 1.0% of variations in housing values. The ROC coefficient shows that housing value has a positive relationship with condition of roads. Table 6.2 confirms that housing values are high for houses located along tarred roads. This is because the survey showed that costs of houses along tarred roads are higher than those along the untarred roads.

The other two variables, namely NSG and TLP are not important because each accounts for less than 1% of variations in housing values. However, their coefficients show that housing value has a positive association with number of security groups but negative relationship with time of land purchase.

Therefore, the stepwise regression results reveal that the determinants of the variations in housing values are number of rooms (housing attribute), age of layout (time attribute), income per month (socio – economic attribute) location in medium density zone (policy attribute), number of primary schools (neighbourhood attribute), bathroom type (housing attribute) and road condition (neighbourhood attribute). These results were supported by the focused group discussions (FGD) held. Discussions on the housing values showed that housing condition and facilities like bathroom, toilet, kitchen, number and size of rooms are very important factors. The number of rooms is reported as the reasons for the variations in housing values. Commenting, a participant from the medium density zone stated:

> Even within the same layout, 3 – bedroom blocks of flats attracts higher value than a 2 – bedroom blocks of flats because of the difference in the number of rooms in the buildings.

Apart from the number of rooms, a participant from low density group commented:

> Houses that have tub with shower bathrooms, separate kitchens and water closet toilets are sold between 8 and 10 million naira in low density areas.

Like in the land values, discussions also showed that housing values are high in new layouts because of better infrastructures and services like access roads and security. However, the participants agreed that income is a vital factor because it determines the

bargaining power in the market. Hence the higher the income, the higher the bargaining power. A participant from the high density zone stated:

> Ordinarily, the price of land or house is fair but the influence of higher biddings by the high income earners is responsible for the variations in the prices.

Also commenting, a participant from the low density group said:

> I am willing to buy any land or house provided that it satisfies my needs and is within my income.

Other important factors supported by the FGD are the location in medium density and neighbourhood infrastructures as reasons for high cost of houses. Corroborating these, a participant from medium density group said:

> The medium density area is quiet, peaceful and has adequate facilities such as primary schools and good roads. These are reasons for high prices of houses in Omogba and Awada layouts.

7.4 The Effects of Non Location Variables on Rental Values.

The rental values are examined in this study based on type of building namely, the bungalows, blocks of flats and duplexes. The effects of non location variables on the rental values for these buildings are examined using the regression model.

7.4.1 The Effects on Rental Values for Bungalows

In the multiple regression analysis of rental values for bungalows, the variables defined in Table 7.1 were used and the results are presented in Table 7.6. The R^2 statistics of the overall performance is highly significant as indicated by 0.779 and F – value of 54.399. The R^2 value shows that 77.9% of the variations in rental values for bungalows are accounted for by the non location variables entered. As shown in Table 7.6, the individual coefficients and t – values of some of the variables used are not too important in the explanation of the variations in the rents per month for rooms in bungalows.

To determine the importance of individual variables, a stepwise regression analysis was adopted and the model is denoted by;

$RVB = a+b_1LDZ+b_2NSG+b_3BAT+b_4KIT+b_5NRM+b_6NHF+b_7AOL$

$+b_8RMS+e$……..7.3

The results of the stepwise regression analysis of rental values for bungalows are shown in Table 7.7. The most important variable entered is location in the low density zone (LDZ), which accounts for 63.3% of the variations in rental values for bungalows.

The LDZ coefficient shows that rent per room in bungalows has a positive association with density type as shown in Table 6.2. This means that rents for rooms are high if the bungalows are located in low density zones. This has been confirmed by the survey where rents per month for rooms in low density areas of G.R.A and American quarters are higher than in other areas. This could be attributed to better infrastructures and services in the low density zones.

The next important variable is the number of security groups (NSG), which accounts for 5.8% of the variations in rental values for rooms in bungalows. The coefficient of NSG indicates that a unit increase in the number of security groups would result in a 0.484 increase in the rent paid per month for rooms in bungalows. This is evident in the survey where rent per month is higher in bungalows that are protected by more security groups.

The third most important variable is bathroom type (BAT). This variable accounts for 3.6% of variations in the rents per month for rooms in bungalows. The BAT coefficient means that rent per room has a positive association with bathroom type. Table 6.2 shows that rent for rooms is high in bungalows that have tub with shower bathrooms.

Table 7.6.Multiple regression analysis: Rental values for bungalows

Variables	Regression coefficient	Standard error	t- value	Significance level
PLS	0.073	0.070	2.060	0.040
RMS	0.133	0.142	2.432	0.016
TLP	- 0.041	0.118	- 0.331	0.741
DOD	- 0.051	0.119	-0.405	0.686
AOL	- 0.201	0.063	- 3.154	0.002
INC	0.024	0.035	0.696	0.487
POO	0.089	0.072	2.138	0.033
LDZ	0.090	0.214	1.047	0.296
MDZ	0.066	0.080	1.388	0.166
HOT	0.034	0.387	0.607	0.544
NRM	0.146	0,247	2.357	0.019
KIT	0.560	0.265	5.347	0.001
BAT	0.037	0.132	0.811	0.418
TOT	0.016	0.235	0.548	0.584
HWC	0.045	0.072	1.454	0.147
HRC	0.012	0.112	0.364	0.716
ROC	0.072	0.058	2.061	0.040
NPS	0.019	0.070	0.447	0.665
NHF	0.179	0.056	3.963	0.001
NSG	0.435	0.049	7.783	0.001
Constant	0.522	0.466	1.119	0.264

$R^2 = 0.779$, SEE = 0.370, F – value = 54.399 probability of F <, = 0.05

Table 7.7.Stepwise regression analysis: Rental values for bungalows

Step	Variables	Multiple R	R^2	R^2 change	Regression coefficient	t – value	Sign. level
1	LDZ	0.796	0.633	0.633	0.089	2.038	0.026
2	NSG	0.832	0.691	0.058	0.484	11.863	0.001
3	BAT	0.854	0.727	0.036	0.058	1.384	0.167
4	KIT	0.863	0.742	0.015	0.675	10.578	0.001
5	NRM	0.868	0.750	0.008	0.205	6.651	0.001
6	NHF	0.874	0.758	0.008	0.224	6.241	0.001
7	AOL	0.879	0.767	0.009	- 0.228	- 5.203	0.001
8	RMS	0.881	0.771	0.004	0.147	2.695	0.007

F – value = 171.322

Kitchen type (KIT) is the fourth important variable and it accounts for 1.5% of variations in rents per month. The coefficient shows that rent per room has a positive relationship with kitchen type as shown in Table 6.2. This means that rents are high in bungalows that have separate or private kitchens.

The remaining four variables, namely NRM, NHF, AOL and RMS are not too important because each of them accounts for less than 1% of the variations in rents per month for bungalows. The coefficient of the number of rooms (NRM) indicates that a unit increase in number of rooms in a bungalow would lead to a 0.205 increase in rents per month. Also, the coefficient of number of health facilities (NHF) show that a unit increase in the number of facilities in neighbourhoods where bungalows are built, would result in a 0.224 increase in the rents per month. Furthermore age of layout (AOL) coefficient indicates that a unit increase in age of a layout would result in a 0.228 decrease in rents per month. Finally, the room size (RMS) coefficient shows that a unit increase in the size of a room would result in a 0.147 increase in rents per month

The most important determinants of rental values for rooms in bungalows as shown by the stepwise regression are location in low density zone, number of security groups and housing attributes such as bathroom and kitchen types. The focused group discussions (FGD) also identified location in low density zone and neighbourhood services like security as well as housing facilities being reasons for high rent per room per month. A participant from low density group said:

> The environment here is good in terms of security, good access roads, and the bungalows have private kitchens and tub/shower bathrooms. The high rent paid per room includes not only the room space but also these services and facilities provided.

7.4.2 The Effects on Rental Values for Blocks of Flats

The next rental values considered are the rents per month in block of flats. The results of the multiple regression analysis of rental values for blocks of flats are presented in Table 7.8. Note that toilet type, housing wall and roof conditions are excluded because 99% of the buildings have water closet, 93.8% have walls not cracked and 96.8% have roofs not leaking and hence they are considered as constants.

The overall performance of the analysis is fair as shown by R^2 statistics of 0.532 and F- value of 23.136. The R^2 value indicates that 53.2% of the variations in the rental values for blocks of flats are accounted for by the non location variables entered in the analysis. But not all the variables are equally important and to examine the relative contributions of these variables, a stepwise regression model was utilized. The model is denoted by

$RVF = a+b_1AOL+b_2ROC+b_3LDZ+b_4NSG+b_5NPS+b_6MDZ+b_7BAT$

$+b_8DOD + e$……………………………………………………………7.4

The results of the stepwise regression model are presented in Table 7.9

The most important variable is the age of layout (AOL), which accounts for 20.7% of the variations in rental values for block of flats. The AOL coefficient indicates that a unit increase in the age of layout would result in a 0.355 decrease in the rents per month for blocks of flat. This is evidently clear in older layouts like Fegge and Odoakpu where rents are lower than in relatively new layouts such as Omogba and Awada. This implies that rents per month are high if the layout is new.

The next most important variable is road condition (ROC). The variable accounts for 7.8% of the variations in the rental values. The coefficient of ROC shows that rent per flat has a positive association with condition of roads. This is because road condition affects the value of buildings in terms of rents paid. Table 6.2 which corroborated the result shows that blocks of flats along tarred or paved roads in the layouts attract higher rents.

Location in low density zone (LDZ) is the third most important variable and accounts for 5.6% of the variations in the rental values. The LDZ coefficient indicates that rent per month for flat has a positive relationship with density zone type. Table 6.2 shows that rent for flats are high if located in low density zones. As observed earlier, the high rent could be attributed to better infrastructures and services in the low density areas.

Table 7.8.Multiple regression analysis: Rental values for blocks of flats

Variables	Regression Coefficient	Standard Error	t- value	Significance Level
PLS	0.024	0.163	0.578	0.565
RMS	0.062	0.365	1.300	0.195
TLP	- 0.059	0.213	- 0.686	0.493
DOD	- 0.177	0.232	-2.150	0.032
AOL	- 0.365	0.143	- 5.562	0.001
INC	0.055	0.118	1.131	0.259
POO	0.057	0.320	1.143	0.254
LDZ	0.494	0.492	8.869	0.001
MDZ	0.251	0.217	4.494	0.001
HOT	0.079	0.943	1.460	0.145
NRM	0.061	0,365	1.093	0.275
KIT	0.014	0.563	0.362	0.718
BAT	0.144	0.182	3.460	0.001
ROC	0.159	0.178	3.531	0.001
NPS	0.360	0.291	4.784	0.001
NHF	0.072	0.157	1.389	0.166
NSG	0.644	0.158	9.032	0.001
Constant	5.414	3.767	1.437	0.154

$R^2 = 0.532$, SEE = 1.297, F – value = 23.136 probability of F <, = 0.05

Table 7.9.Stepwise regression analysis: Rental values for blocks of flats

Step	Variables	Multiple R	R^2	R^2 change	Regression coefficient	t – value	Sign. level
1	AOL	0.458	0.207	0.207	- 0.355	- 5.709	0.001
2	ROC	0.538	0.285	0.078	0.163	3.755	0.001
3	LDZ	0.589	0.341	0.056	0.332	7.910	0.001
4	NSG	0.649	0.414	0.039	0.615	10.342	0.001
5	NPS	0.695	0.475	0.061	0.406	5.742	0.001
6	MDZ	0.717	0.506	0.031	0.280	5.277	0.001
7	BAT	0.731	0.525	0.019	0.122	3.100	0.002
8	DOD	0.737	0.533	0.008	- 0.110	- 2.511	0.013

F – value = 171.322

The fourth most important variable is number of security groups (NSG), which accounts for 3.9% of variations in the rental values. The NSG coefficient indicates that a unit increase in number of security groups would result in a 0.615 increase in the rents per month for blocks of flats.

The next most important variable after the fourth step is number of primary schools (NPS). The variable accounts for 6.1% of variations in the rents per month for blocks of flats. The coefficient shows that a unit increase in number of primary schools would result in a 0.406 increase in the rents per month for the blocks of flats. As shown in Table 6.2, rental values are high in wards with more schools. Therefore, number of primary schools affects rents per month for blocks of flats.

The sixth important variable is location in medium density zone (MDZ). This variable accounts for 3.1% of variations in the rental values for blocks of flats. The MDZ coefficient shows that rent per month for flat has a positive association with density zone type as earlier observed and shown in Table 6.2. The Table shows that rent for flats are high in blocks of flats located in medium density zones. Again this could be attributed to better infrastructures and services in the medium density areas.

Bathroom type (BAT) is the seventh most important variable which accounts for 1.9% of variations in the rental values for blocks of flats. The BAT coefficient means that rent per month for flat has positive relationship with bathroom type. This is confirmed in Table 6.2 where rent per flat is high in blocks of flats that have tub and shower bathrooms. This is especially the case in buildings observed in Omogba, Awada and American Quarters. The last variable, date of housing development (DOD), is not significant because it contributes less than 1% of variations in rents per month for blocks of flats.

From the stepwise regression analysis, the significant determinants of the rental values for blocks of flats are age of layout, road condition, location in low and medium density zones, number of security groups, number of primary schools and bathroom type. Corroborating this statement is the focused group discussions (FGD) held. The report showed that rent per flat per month is high in new layouts, in flats along tarred roads, flats located in low and medium density zones and in neighbourhoods protected

by more security groups and with more schools. For instance, participants from low and medium density groups reported:

> Rent per month for flats is high because of good number of tarred roads, protection by both Anambra vigilante service (AVS) and Maiguides, good quality schools and more importantly Trans Nkisi is a new layout (less than 15 years old) free from congestion and noise.

7.4.3 The Effects on Rental Values for Duplexes

Finally, the rents per month for duplexes are examined in order to identify their determinants. Stepwise and non stepwise regression techniques were also used. The result of the multiple regression analysis (non stepwise) of rental values for the duplexes are presented in Table 7.10. The overall performance of multiple regression analysis of rental values for duplex is excellent and the R^2 statistics is highly significant as indicated by figure of 0.871 and moderate F- value of 34.816. The R^2 shows that 87.1% of variations in rental values for duplexes are accounted for by the non location factors. Despite this excellent performance, not all the variables are significant as indicated by the coefficients and t – values.

To determine the relative importance of these factors, a stepwise regression analysis was undertaken. The model is as follows:

$$RVD = a+b_1INC+b_2LDZ+b_3NPS+b_4BAT+b_5AOL+b_6NRM$$
$$+b_7MDZ+e \quad \text{..7.5}$$

The results of the stepwise regression analysis are presented in Table 7.11 and all the variables entered are significant in the overall explanation, except MDZ variable.

The most important variable is income per month (INC), which accounts for 67.3% of the variations in the rental values for duplexes. The INC coefficient indicates that a unit increase in income per month would result in a 0.198 increase in the rents per month for duplexes. This has been proved in Table 6.2 where duplexes are offered at

Table 7.10.Multiple regression analysis: Rental values for duplexes

Variables	Regression coefficient	Standard error	t- value	Significance level
PLS	0.058	0.167	0.998	0.322
RMS	0.038	0.274	0.480	0.632
TLP	- 0.025	0.177	- 0.211	0.834
DOD	- 0.044	0.199	-0.363	0.717
AOL	- 0.090	0.158	- 0.826	0.412
INC	0.147	0.142	1.539	0.128
POO	0.106	0.215	1.664	0.100
LDZ	0.998	0.479	6.698	0.001
MDZ	1.000	0.793	5.550	0.001
HOT	0.010	0.607	0.254	0.800
NRM	0.112	0,361	2.461	0.016
KIT	0.038	0.393	0.586	0.559
BAT	0.110	0.277	1.776	0.080
HWC	0.054	0.559	1.075	0.286
HRC	0.007	0.405	0.118	0.907
ROC	0.013	0.256	0.219	0.827
NPS	0.500	0.265	4.657	0.001
NHF	0.257	0.224	2.756	0.007
NSG	0.362	0.214	2.573	0.012
Constant	1.918	1.273	1.507	0.136

$R^2 = 0.871$, SEE = 0.572, F – value = 34.816 probability of F <, = 0.05

Table 7.11.Stepwise regression analysis: Rental values for duplexes

Step	Variables	Multiple R	R^2	R^2 change	Regression Coefficient	t – value	Sign. level
1	INC	0.823	0.673	0.673	0.198	2.702	0.008
2	LDZ	0.873	0.757	0.084	0.871	8.040	0.001
3	NPS	0.889	0.783	0.026	0.481	7.309	0.001
4	BAT	0.904	0.810	0.027	0.152	2.840	0.001
5	AOL	0.923	0.844	0.034	- 0.292	- 4.873	0.001
6	NRM	0.929	0.854	0.010	0.122	3.077	0.003
7	MDZ	0.935	0.863	0.009	0.201	2.720	0.008
	F – value = 86.827						

higher rents per month by the high income earners. These higher rents could be attributed to better facilities in the houses as well as the services in the environment in which they are located.

The second most important variable is location in low density zone (LDZ). This variable accounts for 8.4% of variations in rental values for duplexes. The LDZ coefficient shows that rent per month for duplex has a positive association with density zone type. This is corroborated in Table 6.2 where rents are high for duplexes located in low density zone. There is a deliberate provision of better roads, services and clean environment in the low density areas studied, especially the G.R.A. Consequently, the survey reveals that rental values for duplexes in the low density areas are higher.

The next most important variable after second step is number of primary schools (NPS), which accounts for 2.6% of variations in rental values for duplexes. The coefficient of NPS shows that a unit increase in number of primary schools in a ward/layout would result in a 0.481 increase in the rents per month. This supports the data in Table 6.2.

Bathroom type (BAT) is the fourth most important variable, which accounts for 2.7% of variations in the rental values for duplexes. The coefficient of BAT indicates that rent for duplex has a positive association with bathroom type. This is confirmed in Table 6.2 where rents are high in duplexes provided with tub and shower bathrooms.

The fifth most important variable is age of layout (AOL) and this account for 3.4% of the variations in the rents per month for duplexes. The AOL coefficient means that a unit increase in the age of layout would result in a 0.292 decrease in the rents per month. That is, the rent per month for duplexes is high if the layout is new. This result has also been confirmed in the previous analysis as well as the survey conducted.

The least important variable is number of rooms (NRM) in the buildings. This variable accounts for 1.0% of the variations in the rental values for the duplexes. The coefficient shows that a unit increase in number of rooms in a duplex would result in a 0.122 increase in the rents per month. In corroboration of the survey conducted, it means that the rents would be higher if there are more rooms in the duplex. Location in

medium density zone (MDZ) is not important because it accounts for less than 1% of variations in the rental values.

Based on the stepwise regression analysis, the determinants of the variations in rental values for duplexes are income per month, location in low density zone, number of primary schools, bathroom type, age of layout and number of rooms. Again, this statement is corroborated by the focused group discussion (FGD) held. Duplexes are owned or provided by high income earners and these duplexes are high if located in low density zones, new layouts, in neighbourhoods with more schools or if the duplexes have more rooms and tub/shower bathrooms. For example, a participant from the high density group commented:

> Most people in low density areas are high income earners (at least more than 100,000 naira per month) living in duplexes. The duplexes have average of 7 rooms and tub/shower bathrooms. The rent per month is high because there are more quality schools and the duplexes have modern facilities with spacious rooms.

The results of all the stepwise regression analysis show that substantial explanation of the variations in land, housing and rental values in the study area is provided by the non location variables. The variables are time of land purchase, age of layout, date of housing development (time attributes); plot size (space attribute); house type, number of rooms, bathroom, toilet and kitchen facilities (housing attributes); type of density zone (zoning policy attribute); income per month (socio – economic attribute); road condition, number of primary schools, health facilities and security organizations (neighbourhood attributes).

As shown in Appendix 3.6 to 3.10, the F- ratios of the overall stepwise regression models and the t – values of individual coefficient were used to test the hypothesis that the determinants of land, housing and rental values are a function of the non location variables. Based on this test, we accept the hypothesis that land, housing and rental values are a function of non location factors.

7.5 Comparison of the Effects of the Location and Non Location Variables

The purpose of the comparison is to establish the relative importance of the location and non location factors in the explanation of the variations in land, housing and rental

values of residential housing. The respective effects of the location and non location variables have been examined in this study. To compare the effects, both location and non location variables are entered in the stepwise regression analysis and R^2 change is used to determine which variables have more effects. That is, R^2 change is used to examine the contribution of each variable to the overall explained variance. The location variables are defined in chapter five to include distance to the CBD (dCBD) and distance to the major roads (dMR), while the non location variables are defined in Table 7.1

7.5.1. The Effects of location and non location factors on Land Values

The results of the stepwise regression analysis of both location and non location variables for land values are presented in Table 7.12 The results show that the F – value of 109.893 for land values is highly significant at 0.05 level and the R^2 statistics of 0.612 means that the eleven variables collectively account for 61.2% of variations in land values and that the R^2 values obtained are not chance occurrences. The R^2 change shows that the most important variable is time of land purchase (TLP), which accounts for 47.8% of the spatial variations in the land values. This is followed by bathroom type (BAT), age of layout (AOL) and house type (HOT), which respectively contribute 6.3%, 2.5% and 1.5% to the explanation of the variations in land values. The other seven variables are not too significant and important because they contribute less than 1% of the variations in land values.

Distance from the CBD (dCBD) was the only location factor entered, which accounts for only 0.5% of variation in land values. Therefore, TLP, which is a non location variable, is more important, accounting for 47.8% to the explanation of the variations in land values.

7.5.2 The Effects of location and non location factors on Housing Values

Table 7.13 shows the results of the stepwise regression analysis for housing values. The overall performance of the analysis is significant as indicated by R^2 value of 0.551 and F – value of 85.617, which means that 55.1% of variations in housing values are accounted for by the eleven variables entered and the R^2 values could not have occurred by chance.

Out of the eleven variables, the most important variable as shown by R^2 change is the number of rooms (NRM). This variable accounts for 32.5% of the variations in housing values. The second most important variable is age of layout (AOL), which accounts for 10.6% of the variations in housing values. The next most important variable after the second step is income per month (INC) and this account for 3.4% of the variations. Location in medium density zone (MDZ) is the fourth most important variable and it accounts for 3.7% of the variations in housing values. Number of primary schools (NPS) and bathroom type (BAT) respectively account for 1.6% and 1.2% of variations in housing values. From the seventh to eleventh step, the variables account for less than 1% of variations and are considered not too important in the explanation of the variations in housing values. Among these variables is the distance from CBD (dCBD), which is a location factor and accounts for only 0.3% of variation. This analysis means that non location factors, especially number of rooms (NRM) in buildings are more important in the explanation of the variation in housing values.

Table 7.12.Stepwise regression analysis (locational and non locational variables): Land values

Step	Variables	Multiple R	R^2	R^2 change	Regression coefficient	t – value level	Sign.
1	TLP	0.692	0.478	0.478	- 0.360	- 5.642	0.001
2	BAT	0.736	0.541	0.063	0.213	6.215	0.001
3	AOL	0.754	0.566	0.025	- 0.163	- 5.342	0.001
4	HOT	0.767	0.581	0.015	0.234	6.023	0.001
5	ROC	0.770	0.590	0.009	0.092	3.801	0.001
6	INC	0.774	0.596	0.006	0.086	2.936	0.003
7	KIT	0.778	0.602	0.006	0.171	3.678	0.001
8	dCBD	0.782	0.607	0.005	0.073	3.176	0.00
9	NSG	0.783	0.609	0.002	0.086	3.129	0.002
10	LDZ	0.785	0.612	0.003	0.084	2.451	0.002
11	DOD	0.787	0.614	0.002	- 0.145	- 2.250	0.025

R^2 = 0.612, F – value = 109.893 probability of F <, = 0.05

Table 7.13.Stepwise regression analysis (locational and non locational variables): Housing values

Step	Variables	Multiple R	R^2	R^2 change	Regression coefficient	t – value	Sign. level
1	NRM	0.571	0.325	0.325	0.349	10.106	0.001
2	AOL	0.658	0.431	0.106	- 0.106	- 4.117	0.001
3	INC	0.684	0.465	0.034	0.176	5.551	0.001
4	MDZ	0.710	0.502	0.037	0.228	6.838	0.001
5	NPS	0.722	0.518	0.016	0.132	3.704	0.001
6	BAT	0.731	0.530	0.012	0.131	3.804	0.001
7	ROC	0.737	0.540	0.007	0.070	2.430	0.015
8	dCBD	0.740	0.543	0.003	0.061	2.465	0.014
9	NSG	0.743	0.546	0.003	0.113	3.014	0.003
10	LDZ	0.740	0.550	0.004	0.130	3.058	0.002
11	TLP	0.748	0.552	0.002	- 0.074	- 2.288	0.020

R^2 = 0.551, F – value = 85.617 probability of F <, = 0.05

7.5.3 The Effects of location and non location factors on Rental Values for Bungalows, Blocks of Flats and Duplexes

The rental values are examined according to the building type, namely, bungalows, block of flats and duplexes. The results of the stepwise regression analysis of rental values for bungalows are shown in Table 7.14. The overall performance of the twelve variables entered is highly significant as indicated by R^2 statistics of 0.786 and F – value of 113.641. The value of R^2 means that 78.6% of variations in rents per month for bungalows are collectively accounted for by the location and non location factors. The contribution of each factor is indicated by the R^2 change.

The R^2 change shows that the most important variable is location in low density zone (LDZ), which accounts for 63.3% of the variations in the rents per month for bungalows. Number of security groups (NSG) in a ward/layout is the second most important variable and accounts for 5.8% of the variations in rental values for bungalows. The third most important variable is bathroom type (BAT), which contributes 3.6% to the explanation of the variations and kitchen type (KIT) is the fourth important variable, accounting for 1.5% of the variations. Number of rooms (NRM) in a building is the fifth most important variable which accounts for 1.4% of the variations while the sixth important variable is number of health facilities (NHF) in a ward/layout, which accounts for 1.2% of variations in the rents per month for the bungalows. The other six variables contribute less than 1% among which is distance from the CBD (dCBD) and hence are considered not too important in explaining the variations in the rental values for bungalows.

In Table 7.15, the results of the stepwise regression analysis of rental values for block of flats are presented. The overall explanation is significant with R^2 value of 0.535 and F – value of 36.134 at 0.05 level, which means that 53.5% of variation in rents per month for flats are collectively accounted for by the eight variables of location and non location factors entered. The contribution of each variable is shown by the R^2 change. The most important variable is age of layout (AOL) and it accounts for 20.7% of variations in rental values for block of flats. The next variables according to the order of importance are road condition (ROC) which contributes 7.8%, location in low density zone (LDZ) accounting for 5.6%, number of security groups (NSG)

Table 7.14.Stepwise regression analysis (locational and non locational variables): Rental values for bungalows

Step	Variables	Multiple R	R^2	R^2 change	Regression coefficient	t – value	Sign. level
1	LDZ	0.796	0.633	0.633	0.090	1.075	0.001
2	NSG	0.832	0.691	0.058	0.484	10.638	0.001
3	BAT	0.854	0.727	0.036	0.068	1.550	0.001
4	KIT	0.863	0.742	0.015	0.675	9.896	0.001
5	NRM	0.874	0.750	0.014	0.201	6.554	0.001
6	NHF	0.876	0.758	0.012	0.193	5.386	0.001
7	dCBD	0.880	0.770	0.008	0.121	3.542	0.001
8	ROC	0.883	0.775	0.005	0.105	3.257	0.001
9	RMS	0.886	0.780	0.005	0.150	2.824	0.005
10	AOL	0.888	0.783	0.003	- 0.182	- 3.364	0.001
11	PLS	0.889	0.785	0.002	0.077	2.445	0.015
12	MDZ	0.892	0.788	0.003	0.098	2.425	0.015

R^2 = 0.786, F – value = 171.322 probability of F <, = 0.05

Table 7.15.Stepwise regression analysis (locational and non locational variables): Rental values for blocks of flats

Step	Variables	Multiple R	R^2	R^2 change	Regression coefficient	t – value	Sign. level
1	AOL	0.458	0.207	0.207	- 0.355	- 5.709	0.001
2	ROC	0.538	0.285	0.078	0.163	3.755	0.001
3	LDZ	0.589	0.341	0.056	0.452	9.656	0.001
4	NSG	0.649	0.414	0.073	0.615	10.342	0.001
5	NPS	0.695	0.475	0.051	0.406	5.742	0.001
6	MDZ	0.717	0.506	0.031	0.275	5.277	0.001
7	BAT	0.731	0.525	0.019	0.122	3.100	0.002
8	DOD	0.737	0.533	0.008	- 0.110	- 2.511	0.013

$R^2 = 0.535$, F – value = 48.144 probability of F <, = 0.05

contributing 7.3%, number of primary schools (NPS) accounting for 5.1%, location in medium density zone contributing 3.1% and bathroom type (BAT) contributing 1.9% of rental values for blocks of flats. Date of housing development (DOD) is considered not too important because it accounts for less than 1% of variation. Distance of houses is not even entered in the stepwise analysis and thus only non location factors affect rents paid per month for blocks of flats.

Finally, the results of stepwise regression analysis of rental values for duplexes are shown in Table 7.16. The overall performance is significant as indicated by R^2 statistics of 0.535 and F- value of 83.098. This means that 53.5% of variations in rents per month for duplexes are accounted for by both location and non location factors. Their individual contribution to the variations is given by R^2 change.

The R^2 change shows that the most important variable is income per month (INC). This variable accounts for 67.3% of variations in the rents per month for duplex buildings. The second most important variable is location in low density zone (LDZ), which accounts for 8.4% of variations in rental values for duplexes. Number of primary schools (NPS) is the third most important variable and it accounts for 2.6% of the variations. The next most important variable after the third step is distance from the CBD (dCBD), accounting for 4.4% of the variations. Number of rooms (NRM) is the fifth most important variable and it accounts for 2.6% of variations in rental values for duplexes.

The sixth most important variable is bathroom type (BAT), which accounts for 1.3% of the variations. The least important variables are road condition (ROC) and housing roof condition (HRC) but they are not too important because each accounts for less than 1% of variations in rental values for duplex buildings.

Table 7.16.Stepwise regression analysis (locational and non locational variables): Rental values for duplexes

Step	Variables	Multiple R	R^2	R^2 change	Regression coefficient	t – value	Sign. level
1	INC	0.823	0.673	0.673	0.231	3.598	0.001
2	LDZ	0.873	0.757	0.084	0.700	10.187	0.001
3	NPS	0.889	0.783	0.026	0.379	6.681	0.001
4	dCBD	0.913	0.827	0.044	0.276	5.618	0.001
5	NRM	0.928	0.853	0.026	0.146	3.745	0.001
6	BAT	0.935	0.866	0.013	0.140	3.023	0.003
7	ROC	0.940	0.873	0.007	0.120	2.799	0.006
8	HRC	0.943	0.878	0.005	0.092	2.121	0.037

R^2 = 0.885, F – value = 86.728 probability of F <, = 0.05

From the results of the stepwise regression analysis, the most important variables in the explanation of the variations in land and housing values are respectively time of land purchase and number of rooms in a building, while the most important variables for variations in rents per month for bungalows, blocks of flats and duplexes are location in low density zone, age of layout and income per month, respectively. None of these variables is a location factor. Therefore, the stepwise regression results show that the non location factors are more important than the location factors in the explanation to the variations in land, housing and rental values.

The next chapter examined the theoretical and practical implications of these findings.

CHAPTER EIGHT
SUMMARY AND CONCLUSIONS

8.1 Summary of Major Findings

This study has examined the relative importance of location and non location factors in the determination of land, housing and rental values of residential housing in Onitsha. In doing so, attempts were made to determine the actors in urban land and housing supply and the conditions under which they operate, identify and account for the variations in land, housing and rental values of residential housing, examine whether or not the land, housing and rental values are determined by the location or non location factors as well as examine whether there is relationship between urban residential density and the land values.

The analysis revealed that the actors in urban land and housing supply are mainly non –natives and traders, whose average age is 50 years, educational attainment is primary school and income per month is above 90,000 naira. The analysis also revealed that there are significant variations in land, housing and rental values among the layouts in the study area. The observed pattern of the variations, to some extent, is a reflection of the period of development in the city and not location of the CBD. This is because the pre – independence developments in the core areas have lower values while the post independence developments in the outskirts are those with higher values.

However, the results of the respective regression models showed that the non location factors are more important than the location factors in the determination of the variations in land, housing and rental values. This is because the R^2 values showed that only 10.1% and 12.2% of variations in land and housing values respectively, and 14.9%, 16.5% and 22.2% of the variations in rental values for the blocks of flats, bungalows and duplexes, respectively, were collectively explained by the distance from the CBD and distance from the major roads.

Therefore, we accept the hypothesis that the distance from the CBD and distance from the major roads are not major determinants of land, housing and rental values. In addition, the dCBD coefficient revealed that land, housing and rental values increase with distances from the CBD, as against the findings of Alonso (1964) and Asabere (1982).

The R^2 values in the regression analysis of the non location factors indicate that they account for 60.9% and 54.9% of explanation to variations in land values and housing values respectively. Also, 77.9%, 53.2% and 87.1% of the variations in the rental values for the bungalows, blocks of flats and duplexes, respectively, are collectively explained by the non location factors. Hence, we accept the hypothesis that land, housing and rental values are a function of non location factors.

For the variations in land values, the stepwise regression shows that the most significant factors are time of land purchase, bathroom type, age of layout and house type. The most significant factors in the variations in housing values are the number of rooms, age of layout, income per month and location in medium density zone. Others are number of primary schools, bathroom type and road condition The results of the stepwise regression analysis for rental values show that the significant determinants of the variations in the rents per month for bungalows are location in low density zone, number of security organizations, bathroom type and kitchen type. Also, the determinants of the rental values for blocks of flats are age of layout, roads condition, location in low density zone and number of security organizations. Others are number of primary schools, location in medium density zone and bathroom type. The variations in the rental values for the duplexes are determined by the non location factors such as income per month, location in low density zone, number of primary schools and bathroom type. Others are age of layout and number of rooms.

Also, relationship between residential housing density and land values was examined. From the regression analysis, the land value coefficient showed a positive relationship with housing density. This means that land values affect housing density and therefore we reject the hypothesis that there is no relationship between housing density and land value. The implications of these findings are discussed in the sub sections that follow.

8.2 Theoretical Implications of the Study

This study has examined distance and non distance variables in the application of urban economic theories to the study of the determinants of land, housing and rental values in Onitsha. Prominent among these theories are the bid rent theory and hedonic price theory.

The bid rent theory is based on the works of Alonso (1964) which explains that land values are determined by the distance to the CBD. That is, land values would decrease with distance to the CBD. However, our findings revealed that the distance variable is not the most important determinant of land values in the study area. Specifically, time of land purchase is considered as the most important determinant of the variations in land values. As such it should be considered in the theory.

In addition, the findings revealed a positive land value – distance relationship against the negative relationship postulated by the bid rent theory. The result of the finding showed that land values increase with distance from the CBD. The implication is that the assumptions of the bid rent theory need some modifications. The assumptions are that, all employment opportunities are provided only at one centre, all land surrounding the centre is identical and all households have identical utility functions and income levels. For instance, the assumption concerning the location of all employment opportunities at the centre (in this case, Onitsha Main Market), probably can not be true in the study area. This is because of the other competing market centers such as Ochanja market, New Relief market, Head Bridge market and other commercial centers in the area. Thus, there are other choices where to trade and not necessarily the Main Market. This also affects the choice of where to live or buy land and house. In other words, the values of land, housing and rent paid are influenced by these other commercial centers. This is why the study predicted a positive, instead of, negative relationship between land values, housing values and rental values and distance to the CBD. That is, land, housing and rental values increase with distance from the CBD.

Moreover, land is not identical in both physical and economic senses as claimed by the bid rent theory. This is because, in the study area, zoning policy makes the networks of streets and roads in some areas better while the structural or neighbourhood

characteristics make some areas more or less protected. For these reasons, land values would vary, not because of distance from the CBD alone.

The hedonic price theory has been used by some scholars (Rosen, 1974; Megbolugbe, 1983; Arimah, 1990; Cheshire et al, 1998), to explain variations in housing values based on the structural, neighbourhood and location attributes of the housing stock. But, our findings indicate that structural and neighbourhood attributes are the most important determinants. That is, factors such as the number of rooms, housing facilities, roads condition and type of density zone are considered most significant. This is because the values of land, house and rent paid are mainly functions of the non location variables, especially structural attributes and not the distance variable alone. In this case, increase in housing values could be attributed to improvement in housing facilities such as spacious rooms, separate kitchen, better bathrooms and toilets as well as decent and aesthetic house type, irrespective of its distance from the CBD.

It then follows that the bid rent theory should incorporate not only location factors but more importantly non location factors. Also, the application of the hedonic price theory should focus more on the stock or structural attributes of the area than locational attributes. These modifications in the urban economic theories would provide a clearer understanding of the variations in the land, housing and rental values of residential housing. Therefore, the urban economic theories such as the bid rent theory, need to be revised to represent conditions in contemporary urban areas better, especially in developing countries.

8.3 Practical Implications of the Study

The findings of this study are relevant for urban planning and development, especially urban land and housing development. The study has revealed that the variations in land, housing and rental values are a function of the non location factors such as time of land purchase, housing and neighbourhood attributes as well as government zoning policy.

The variations have shown that there are both planning and development implications where land, housing and rental values are high and low. These implications could be

positive or negative. The positive implication of where land or housing values are high is that the market in land or housing clears rapidly for speculative reasons, so that there is no land or housing vacancy. The high land or housing values often result to denser and more compact city as evident in the physical structure of Onitsha. On the other hand, the negative implications of high land or housing values are increased problems of access to land and housing affordability. This declining affordability means that people live in higher densities and develop informal settlements or slums as seen in Okpoko layout.

Where the land values are low, the practical implications are that there may be, for example, land lying vacant for long periods, which makes it difficult to stimulate development, renewal and change without substantial subsidy. Also, the low housing or rental values are no more than a symptom of low demand often associated with economic decline or poor quality environments. As observed in this study, the low housing or rental values are an indicator of dysfunctional neighbourhoods which fail to provide the quality of life which those who can exercise choice in the market require. So, those who cannot exercise choice, build houses, even without adequate neighbourhood facilities and planning, as evident in Okpoko layout and in some parts of Woliwo. This is the primary source of urban expansion, urban sprawl and slum development.

As reported in the study, land values are mostly determined by the time at which the land is purchased, instead of the distance to the CBD. The practical implication of this lies in the fact that there are speculations due to inflation or interest rate in the land purchase or sale by the investors. This calls for effective land reform, to regulate the activities of the land speculators or owners so as to ensure that land is available and affordable for development. The existing Land Use Act has failed in this direction. Like in many other African governments, the Nigerian government has shield away from confronting the particular challenge of land reform. Its failure to support and legitimize trends in individual land ownership already set in motion by civil society, has led to the remarkable growth of the informal land market and a considerable weakening of the capacity of the government to effectively manage the land resources of the nation. This scenario is evident in the non native areas of Onitsha. To enhance that capacity, land reform, like the Gordian knot, must be cut. This is to bring land

assets of the majority of the population into the mainstream of the free market economy and enable them to use this asset effectively in their effort at wealth creation and their battle against poverty.

The analysis of the variations in housing values revealed that housing and neighbourhood attributes are the most important factors. As reported, this means that housing values or costs increase with house type, especially those that have spacious rooms, better facilities like bathrooms, kitchens or toilets. Also, the analysis revealed that housing values increase with road condition, number of primary schools, health facilities and security groups in a neighbourhood. The practical implication of this is that investors or developers should see housing to include not only the shelter alone but the environment around it. That is, in estimating housing values, structural characteristics of the house as well as the quality of the neighbourhood should be considered. This is because houses are often developed, especially at the suburbs, without access roads, as in some parts of Okpoko, Woliwo and Awada layouts. Therefore, there is need for the public agencies concerned to ensure that infrastructure plans or development plans are produced before any housing development. This would attract investors, increase housing values as well as ensure orderly, efficient, convenient and beauty environment.

The study has revealed also that rents per month for any building type should be assessed on the basis of the housing and neighbourhood attributes, instead of the distance to the CBD. Our analysis indicated that rents per month are mostly a function of number of rooms occupied, facilities in the house, type of density zone and the quality of the environment. This means that rents increase with housing, neighbourhood and zoning policy attributes. This has implications for both the private and public developers. For the private developers, the variables would aid in determining appropriate rents per month offered, while on the part of the public agency, the rents offered would help to assess the appropriate tax for the property. In fact, it has been shown that property tax contributes as much as 80 percent to the revenue of municipal governments in some developed countries (Balchin and Kieve, 1977, Ayeni, 1987). In Onitsha, such source of revenue is yet to be tapped because of inadequate machinery for property listings and valuation, despite the high rental values in the city.

Finally, the study confirmed a positive relationship between housing density and land values. This implies that where land values are high, denser and more compact layouts are likely to emerge as evident in Awada, Omogba, Odoakpu and Fegge layouts. The implication is that at higher density, there is little compensating open space provided and there is an overutilization of the available facilities and services. However, living at higher density makes it possible for large number of people to live within the city boundary, with access to the city's amenities and employment opportunities. This implies that the increased density enables individual residential areas to support good public transport and local services provided. But the arguments against the increasing density are that the areas may be developed in a poor co-ordinated way, with no useful outdoor public open space or play space being created for those who live in these developments. The suggestion for this double – edge nature of relationship is that although development at higher densities makes efficient use of land and provision of facilities, it should not lead to overdevelopment, town cramming or loss of urban open space.

8.4 Areas of Further Research

This study has demonstrated the need for more research on the non location factors as determinants of land, housing and rental values in the cities of the developing countries. This is because non-location factors such as time, space, socio-economic, zoning, housing and neighbourhood attributes, mostly affect land, housing and rental values. Other factors that could be investigated include the lending interest rates and behavioral expectations of land or house price growth. In addition, the study has shown that location factors are not important determinants of variations in land, housing and rental values. The implication is that the classical theory which suggests that the CBD and distance from it are the most determinants of land, housing and rental values cannot be applied in developing countries.

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APPENDIX 1

UNIVERSITY OF IBADAN
FACULTY OF THE SOCIAL SCIENCES
DEPARTMENT OF GEOGRAPHY

RESEARCH QUESTIONNAIRE

Dear Respondent/Landlord
This questionnaire is to seek information on issues relating to the values of land, house and rent in Onitsha. The aim is to examine factors responsible for their differences and how they vary. The study is strictly for academic purposes only and any information supplied would be treated in strict confidence. We would therefore appreciate your cooperation in supplying the necessary information requested.

Thank you.

Name of Enumerator……
Layout……
Ward/Number……
Name of Street……..
Questionnaire Number……..
Date of Interview……..

SECTION A: DATA ON SOCIO-ECONOMIC CHARACTERISTICS

1. Place of Origin……
2. Sex; (i) Male ☐ (ii) Female ☐
3. Marital Status (tick) (i) Single ☐ (ii) Married ☐ (iii) Divorced ☐
4. Age (tick) (i) 10-20Yrs ☐ (ii) 21-30☐ (iii) 31-40☐ (iv) 41-50☐
   (v) 51-60 ☐ (vi) Over 60 ☐
5. Educational Qualification (tick) (i) None ☐ (ii) Primary ☐ (iii)Secondary ☐
   (iv) University/Polytechnic ☐ (v) Others, specify ☐
6. Occupation (tick) (i) Civil Servant ☐ (ii) Trader ☐ (iii)Farmer ☐
   (iv) Professional ☐ (v) Unskilled worker ☐ (vi) Retired/Pensioner ☐
7. Income Per month (tick) (i) Below N50,000 ☐ (ii)N50,000-70,0 ☐
   (iii)N70,000-N90,000 ☐ (iv) N90,000-N110,000 ☐ (v) Above N110,000 ☐
8. How long have you been living in this area?.....

SECTION B: LAND AND HOUSING DATA

(a) Land acquisition, size and cost

9. Does this land belong to you (tick)? (i) Yes ☐ (ii) No ☐
10. If yes, how was the land acquired or purchased? (tick) (i) By Inheritance ☐
    (ii) From Private Owners ☐ (iii) From Government ☐
11. When was the land acquired? (tick) (i) Less than 15yrs ago ☐ (ii)16-30yrs ☐
    (iii) 31-45yrs ☐ (iv) More than 45yrs ago ☐
12. What is the size of this land or plot? (tick) (i) 50’ x 100’ (15m x 30m) ☐
    (ii) 80’ x 130’ (25m x 40m) ☐ (iii) 1000’ x 200’ (30m x 60m) ☐
    (iv) above 100’ x 200’ ☐
13. What is the title right to the land? (tick) (i) Customary ☐ (ii) Statutory ☐
14. Does the land have C of O (i) Yes ☐ (ii) No ☐

15. What was the cost of plot when it was acquired? (tick) (i) 0 ☐ (ii)Below N1million ☐ (iii) N1million-N1.5million ☐ (iv) N1.5million-2million ☐ (v)N2million-2.5million ☐ (vi) 2.5million-3million ☐ (vii) Above 3 million ☐
16. How did you source funds for the payments(tick) (i) Private Savings ☐ (ii) Credit from Government ☐ (iii) Mortgage ☐ (iv)Others specify……
17. How much do you think that this land will cost today N…….
18. What purpose is your land use for? (tick) (i) Residential (ii) Commercial (ii) Industrial (iv)Other Specify……
19. Has this purpose ever changed? (tick)(i) Yes ☐ (ii) No ☐
20. If yes, Specify the change……..

(b) Housing type and Standard

21. What type of house is this? (tick) (i) Bungalow ☐ (ii) Duplex ☐ (iii) Block of Flats ☐ (iv) Others specify……
22. If Bungalow, how many rooms are there? (tick) (i) Less than 4 ☐ (ii) 4 ☐ (iii) 5 ☐ (iv) 6 ☐ (v) 7 ☐ (vi) 8 ☐ (vii) Above 8 ☐
23. If Duplex, how many rooms are there? (tick) (i) Less than four ☐ (ii) four ☐ (iii) Five ☐ (iv) Six ☐ (v) Above Six ☐
24. If block of flats, how many floors? (tick) (i) 2 ☐ (ii) 3 ☐ (iii) 4 ☐ (iv) above 4 ☐
25. How many rooms are in each flat? (tick) (i) 2 ☐ (ii) 3 ☐ (iii) 4 ☐
26. What is the size of each sleeping room in this house? (tick) (i) 10'x12' ☐ (ii)12' x 14' ☐ (iii) 14' x 16' ☐ (iv)Above 14' x 16" ☐
27. When was this house built? (tick) (i) Less than 15yrs ago ☐ (ii) 16-30 yrs ☐ (iii) 31-45yrs ☐ (iv) More than 45yrs ago ☐
28. Does this house have a building plan? (tick) (i) Yes ☐ (ii) No ☐
29. Tick the setbacks of the house as follows.

Set Back	**<2M**	**2M**	**3M**	**5M**	**Above 5M**
Front of building					
Back of building					
Right side of building					
Left side of buildings					

(c) Housing construction materials

30. Which of these materials is the house built of? (tick)
    (i) Wall---------- 1. Cement ☐ 2. Mud ☐
    (ii) Roof---------- 1. Asbestos ☐ 2. Aluminium ☐ 3. Zinc ☐
    (iii) Floor---------- 1. Cement ☐ 2. Terrazzo ☐
    (iv) Ceiling---------- 1. Asbestos ☐ 2. Aluminium ☐ 3. Wood ☐
    (v) Window---------- 1. Glass ☐ 2. Wood ☐ 3. Metal ☐
    (vi) Door---------- 1. Flush ☐ 2. Timber panel ☐ 3. Metal ☐

(d) Housing Facilities

31. What is the source of Electricity in this house? (tick) (i) Government (PHCN/NEPA) ☐ (ii) Private (Generator Plant) ☐ (iii) Both ☐
32. If PHCN/NEPA, is it regular? (tick) (i) Yes ☐ (ii) No ☐

33. What is the main source of water supply to this house? (tick) (i) Pipe-borne in the house ☐ (ii) Pipe-borne outside the house ☐ (iii) Tanker water supplier ☐ (iv) Wells ☐ (v) Bore-hole ☐ (vi) Rain water ☐ (vii) Rivers/Streams ☐
34. What type of toilet is in this house? (tick) (i) Water closet (WC) ☐ (ii) Pit-latrine ☐ (iii) Pail or bucket ☐ (iv) Nearby bush ☐ (v) Others specify……
35. Are these toilet facilities shared? (tick) (i) Yes ☐ (ii) No ☐
36. What type of bathing facilities are in this house? (tick) (i) Bath tub with heater ☐ (ii) Bath tub with shower ☐ (iii) Shower alone ☐ (iv) Walled bathroom ☐ (v) Open fenced bath room ☐
37. Are these bathing facilities shared? (tick) (i) Yes ☐ (ii) No ☐
38. How is rubbish for solid waste disposed in this house? (tick)
(i) Collected by government ☐ (ii) Collected by Private contractors ☐ (iii) Public approved dump site ☐ (iv) Unapproved dump site ☐ (v) Others specify……
39. What kitchen facilities are available in this house? (tick) (i) Separate Kitchen ☐ (ii) Shared Kitchen ☐ (iii) None ☐

(e) Housing condition and quality

40. How would you rate the physical condition of this house? (tick)

(i)	Wall----------	1. Cracked	☐	2. Not cracked	☐
(ii)	Roof----------	1. Leaking	☐	2. Not leaking	☐
(iii)	Floor----------	1. cracked	☐	2. Not cracked	☐
(iv)	Ceiling----------	1. leaking	☐	2. Not leaking	☐
(v)	Window----------	1. cracked	☐	2. Not cracked	☐
(vi)	Door----------	1. cracked	☐	2. Not cracked	☐

41. How would you arte the quality of this house? (tick)

Quality	**V. Low**	**Low**	**High**	**V. High**
Physical condition				
Size of rooms				
Construction material				
Facilities				

(f.) Housing Cost

42. How much did it cost to build this house? N…….
43. How much do you think that this house would cost to build today? N…….
44. How much do you think that this house would be sold? (tick) (i) Below N5million ☐ (ii) N5million-N10 million ☐ (iii) N10million-N15million ☐ (iv) Above N15million ☐
45. How many tenants are in this house? ……..
46. What is the number of persons in the household of each tenants? (tick) (i) Less than 5 ☐ (ii) 5-10 ☐ (iii) Above 10 ☐
47. How many rooms are occupied by each tenant? (tick) (i) 1 ☐ (ii) 2 ☐ (iii)3 ☐ (iv) More than 3 ☐

(h) Housing rent

48. If rooming housing, how much is the rent for a room per month? N……

49. If Bungalow, how much is the rent per month? (tick) (i)N1,500-2,000 ☐ (ii) 2,000-2,500 ☐ (iii) 2,500-3,000 ☐ (iv) N3,000-3,500 ☐

50 If Duplex, how much is the rent per month? (tick) (i) N4,500-6000 ☐ (ii) 6,000-7,500 ☐ (iii) 7,500-9,000 ☐ (iv) 9,000-10,500 ☐ (v) 10,500-12,000 ☐ (vi) Above 12,000 ☐

51. If block of flat, how much is the rent for a flat per month? (tick)
(i) N3,500 – N4,000 ☐ (ii) N4,000-N4,500 ☐ (iii) 4,500 – N5,000 ☐
(iv) 5,000 – 5,500 ☐ (v) N5,500-N6,000 ☐ (vi) N6,000-N6,500 ☐
(vii) N6,500-N7,000 ☐ (viii) Above 7,000 ☐

52. How would you rate the reasons for the rent offered? (tick)

Quality	**V. Low**	**Low**	**High**	**V. High**
Size of land				
Size of room				
Quality				
Distance of CBD				
Accessibility				
Quality of Neighbourhood				

SECTION C: NEIGHBOURHOOD DATA

(a) Age and Neighbourhood Infrastructure

53. Estimate the age of neighbourhood in which this house is situates? (tick)
(i) Less than 20yrs ☐ (ii) 21-30yrs ☐ (iii) 31-60yrs ☐ (iv) 61-120yrs ☐
(iv) Above 120yrs ☐

54. Indicate the condition of the road or street in which the house is located? (tick)
(i)Tarred ☐ (ii) Untarred ☐

55. Does this road/street have drainage channels or gutters? (i) Yes ☐ (ii) No ☐

56. How many primary schools are in the neighbourhood? (tick)
(i) 1 ☐ (ii) 2 ☐ (iii) 3 ☐ (iv) 4 ☐

57. What types of health facilities are in the neighbourhood?
(i) Hospitals ☐ (ii) Clinics ☐ (iii) none ☐

58. How many are the facilities?
(i) 1 ☐ (ii) 2 ☐ (iii) more than 2 ☐

(b) Neighbourhood Land use and Condition

59. What is the dominant land use in this area? (tick) (i) Residential ☐
(ii) Commercial ☐ (iii) Industrial ☐ (iv) Institutional ☐

60. Does the neighbourhood have a layout plan? (tick) (i) Yes ☐ (ii) No ☐

61. What type of Environmental Pollution is found in the neighbourhood? (tick)
(i) Air ☐ (ii) Water ☐ (iii) Noise ☐ (iv) None ☐ (v)Others specify …….....

(c) Neighbourhood Crime and Security

62. What type of crime is often committed in the neighbourhood? (tick)
(i) Murder ☐ (ii) Armed Robbery ☐ (iii) Burglary ☐
(iv) Car Theft ☐ (v) Stock Theft ☐ (vi) Rape ☐ (vii) Assault ☐

63. Is there any security organization in the neighbourhood? (tick) (i) Yes (ii) No

64. If Yes, what type of Security organization is in this neighbourhood? (tick)
(i) Public organization e.g. Police, AVS ☐ (ii) Private organization e.g. MaiGuards, OMATA ☐ (ii) None ☐

65 How many are these security groups or organizations?
(i) 1 ☐ (ii) 2 ☐ (iii) 3 ☐ (iv) 4 ☐

(d) Neighbourhood Preference

63. How would you rate the reasons for having this property in this neighbourhood? (tick).

Quality	**V. Low**	**Low**	**High**	**V. High**
Cost of land				
Cost/price of house				
Rent offered				
Size of land				
Potential value of property in this area				
High density residential development				
Low density residential density				
Neighbourhood infrastructure/facilities				
Distance to market centres (CBD)				
Accessibility				
Level of security				

APPENDIX 2

The Format of FGD

Each discussion group followed the same format as follows:

1. Welcome and Introduction
2. Agenda and purpose of the discussion group
3. Discussion questions

- Do non-natives live in your neighborhoods?
- When was your land or building acquired or built?
- What is the size of this land and type of the house?
- At what cost was the land acquired or the house built?
- What are the number of rooms and facilities in your house/
- What are the sizes of these rooms?
- How would you rate the quality of this house?
- How much is the rent per month for a room or flat?
- How much do you think that this land or house will cost today?
- How would you rate the conditions of roads and other facilities in your neighbourhood?
- How far is the distance of your land or house to the main market?
- How would you rate the reasons for the variations in prices or cost of land, housing and rent paid between locational and non locational factors

4. Conclusion and Thanks.

APPENDIX 3

Test of the Hypotheses

The results of the determinants of land, housing and rental values in the multiple regression analyses are tested to accept or reject the study hypotheses. Analysis of Variance (ANOVA) is mainly used to accept or reject the hypotheses, based on the F-value which accounts for the collective explanation of the variance. The difference between computed F – value and Tabulated F – value is compared. If the computed F – value is greater than the Tabulated F – value, we accept the null hypothesis or otherwise reject. All tests are accepted or rejected at 5% level.

Hypothesis I

The distance from the CBD and nearness to the major roads are not major determinants of land, housing and rental values.

The ANOVA results for the location variables entered in the analysis of the land values variations are shown in Appendix 3.1

Computed F – value = 77.911/1.795 = 43.403

Tabulated F – value at 5% level, with 2 and 755 degrees of freedom = 3.00

Since the computed F – value is greater than tabulated F – value at 5% level; we accept that the distance from the CBD and nearness to the major roads are not major determinants of land values. Also, the ANOVA Table shows that the residual values are greater than the regression values and this means that the location factors do not give high explanation to the variations in the land values.

In the analysis of the variations in housing values, the ANOVA results for the location variables entered are presented in Appendix 3.2

Computed F – value = 32.281/0.604 = 53.467

Tabulated F – value at 5% level, with 2 and 755 degrees of freedom = 3.00

The computed F – value is greater than tabulated F – value at 5% level; hence we accept that the distance from the CBD and nearness to the major roads are not major determinants of housing values. In addition, the residual values are greater than the regression values which means that the distance variables do not adequately explain the variations in housing values.

Appendix 3.1.ANOVA Table: Land values (locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	155.822	2	77.911	43.403
Residual (within)	1355.225	755	1.795	

Appendix 3.2.ANOVA Table: Housing values (locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	64.562	2	32.281	53.467
Residual (within)	455.834	755	0.604	

The analysis of the variations in rental values are based on the types of buildings and Appendix 3.3 shows the ANOVA results for the location variables entered for the bungalows.

Computed F – value =16.051/0.516 = 31.098

Tabulated F – value at 5% level, with 2 and 303 degrees of freedom = 3.00

The results show that the computed F – value is greater than the tabulated F – value. Therefore, we accept that the distance from the CBD and nearness to the major roads are not major determinants of the rents per month for the bungalows. As shown in the ANOVA Table, the residual values are also greater than the regression values and thus, the distance variables do not give high explanation of the variations in rental values for bungalows.

Furthermore, the ANOVA results for the location factors entered in the analysis of the rental values for the block of flats are indicated in Appendix 3.4.

Computed F – value =92.169/3.062 = 30.104

Tabulated F – value at 5% level, with 2 and 330 degrees of freedom = 3.00

The computed F – value is greater than tabulated F – value at 5% level; hence we accept that the distance from the CBD and nearness to the major roads are not major determinants of rents per month for block of flats buildings. Also, the residual values are greater than the regression values which means that the distance variables do not give enough explanation to the variations in rental values for block of flats.

Finally, Appendix 3.5 indicates the ANOVA results for the location variables entered in the analysis of the variations in the rental values for the duplex buildings.

Computed F – value =28.800/1.975 = 14.585

Tabulated F – value at 5% level, with 2 and 93 degrees of freedom = 3.07

Also, the residual values are greater than the regression values and the computed F – value is greater than the tabulated F – value. Therefore, we accept that the distance from the CBD and nearness to the major roads are not major determinants of rents per month for duplex building.

In conclusion, the results of the ANOVA Tables show that at 5% level, the computed F – values are greater than the tabulated F – values. Hence, we accept the hypothesis that the distance from the CBD and nearness to major roads are not major determinants

of land, housing and rental values. This implies that the land, housing and rental values are mainly determined by non distance variables or non location factors as stated in hypothesis II.

Appendix 3.3.ANOVA Table: Rental values for bungalows (locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	32.102	2	16.051	31.098
Residual (within)	156.395	303	0.516	

Appendix 3.4.ANOVA Table: Rental values for blocks of flats (locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	184.338	2	92.169	30.104
Residual (within)	1010.365	330	3.062	

Appendix 3.5.ANOVA Table: Rental values for duplexes (locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	57.600	2	28.800	14.585
Residual (within)	183.639	93	1.975	

Hypothesis II

The land, housing and rental values are a function of the non location factors such as plot size, time of land purchase, date of development, age of layout, income, housing quality and condition, environmental quality and governmental zoning policy.

The ANOVA results for the non location variables entered in the land values variations are presented in Appendix 3.6

Computed F – value =46.273/0.776 =59.620

Tabulated F – value at 5% level, with 20 and 734 degrees of freedom = 1.52

The computed F – value is highly greater than the tabulated F – value and therefore, we accept the hypothesis that land values are a function of the non location factors. Specifically, the variations in land values as indicated in the stepwise regression are a function of the time of land purchase, bathroom type, age of layout and house type. The selected non location variables give high explanation of variation in housing values because the regression values are greater than the residual values.

Furthermore, the ANOVA results for the non location variables entered in the housing values variations are shown in Appendix 3.7.

Computed F – value =14.465/0.308 =46.889

Tabulated F – value at 5% level, with 20 and 734 degrees of freedom = 1.52

Since the computed F – value is highly greater than the tabulated F – value; we accept that variations in housing values are a function of the non location factors. The selected non location factors include the number of rooms, age of layout, income and location in medium density zone. Others are number of primary schools, bathroom type and road condition. Moreover, the residual values are smaller than the regression values which means that the non location factors give high explanation of the variations in housing values.

For the rental values, the ANOVA results are also based on the building types. Appendix 3.8 shows the results of the non location variables entered in the analysis of the rental values for bungalows

Computed F – value =7.460/0.137 =54.399

Tabulated F – value at 5% level, with 20 and 283 degrees of freedom = 1.52

The computed F – value is greater than the tabulated F – value which implies that the variations in rental values for the bungalows are determined by the non location factors. The stepwise regression shows that the significant factors include location in

Appendix 3.6.ANOVA Table: Land values (Non locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	925.469	20	46.273	59.620
Residual (within)	569.686	734	0.776	

Appendix 3.7.ANOVA Table: Housing values (Non locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	289.296	20	14.465	46.889
Residual (within)	226.431	734	0.308	

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Appendix 3.8.ANOVA Table: Rental values for bungalows (Non locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	149.193	20	7.460	54.399
Residual (within)	38.807	283	0.137	

low density zone, number of security groups, bathroom type and kitchen type. Also, the ANOVA table shows that the residual is smaller than the regression which means that the selected non location factors give high explanation to the variation in rental values for the bungalows. Hence, we accept that the variations in rental values for bungalows are a function of non location factors.

The ANOVA test for the rental values in block of flats buildings is shown in Appendix 3.9.

Computed F – value =38.930/1.683 =23.136

Tabulated F – value at 5% level, with 17 and 314 degrees of freedom = 1.75

The computed F - value is still greater than the tabulated F – value which means that the variations in rental values for blocks of flats are determined by the non location factors. However, the selected non location factors include age of layout, roads conditions, location in low density zone and number of security groups. Others are number of primary schools, location in medium density zone and bathroom type.

The ANOVA results of the rental values for the duplex buildings are also indicated in Appendix 3.10.

Computed F – value =11.388/0.327 = 34.816

Tabulated F – value at 5% level, with 19 and 76 degrees of freedom = 1.70

Since the computed F – value is greater than the tabulated F – value; we accept that the rental values for the duplex buildings are determined by the non location factors. The selected non location factors include income, location in low density zone, number of primary schools and bathroom type. Others are number of rooms and age of layout. The ANOVA results also show that the residuals are smaller than the regressions which imply that the selected non location factors give high explanation to the variations in rental values for duplexes.

The ANOVA results for testing hypothesis II indicates generally that the computed F – value is greater than the tabulated F – value and the residuals are smaller than the regressions. This implies that we accept the hypothesis that the land, housing and rental values are a function of the non location factors.

Appendix 3.9.ANOVA Table: Rental values for blocks of flats (Non locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	661.809	17	38.930	23.136
Residual (within)	528.359	314	1.683	

Appendix 3.10.ANOVA Table: Rental values for duplexes (Non locational variables)

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	216.380	19	11.388	34.816
Residual (within)	24.860	76	0.327	

Hypothesis III

There is no relationship between housing density and land values.

This hypothesis is first tested with ANOVA as shown in Appendix 3.11 and later confirmed with t – distribution test in appendix 3.12.

Computed F – value = 2.401/1.114 = 2.155

Tabulated F – value at 5% level, with 1 and 756 degrees of freedom = 3.84

Since the computed F – value is less than the tabulated F – value, we reject the null hypothesis that there is no relationship between housing density and land values. Hence, we accept that there is a relationship between housing density and land values.

This hypothesis is further tested using t – distribution. The t – values for the variables used in the one sample test are obtained from the formula:

$$t = \frac{\overline{x} - u_o}{s/\sqrt{n}}$$

where, $\overline{x}$ = mean of the observed variable

u_o = specified of expected mean, usually = 0

s = standard deviation

n = sample size

The degrees of freedom used in this test is n – 1.

Computed t – value for the housing density = $\frac{3.07}{1.056/\sqrt{758}}$ = 79.909

Computed t – value for the land values = $\frac{3.20}{1.413/\sqrt{758}}$ = 62.264

From the t – distribution table, p – value at 5% level and degrees of freedom of 757 = 1.96.

In this case, the tabulated t – value (i.e p – value) is highly less than the computed t – values, thus we reject the hypothesis that there is no relationship between housing density and land values. Also, the computed values at both lower and upper confidence intervals at 95% are higher than the tabulated t – value. Hence, we accept the hypothesis that there is a relationship between housing density and land values.

Appendix 3.11.ANOVA Table: Housing density and land values

Source of variation	Sum of square	d/f	mean square	Computed F
Regression (between)	2.401	1	2.401	2.155
Residual (within)	842.301	756	1.114	

Appendix 3.12.One sample t – Test Table: Housing density and land values

variables	N	Mean	Std. deviation	Std. error mean
Housing density	758	3.07	1.056	0.038
Land values	758	3.20	1.413	0.051

Variables	t	d/f	sign	mean Difference	95% confidence interval lower	upper
Housing Density	79.909	757	0.001	3.066	2.99	3.14
Land values	62.264	757	0.001	3.195	3.09	3.30