IMPACT OF KOGI STATE UNIVERSITY ON HOUSING DEVELOPMENT AND ENVIRONMENTAL QUALITY OF ANYIGBA TOWN, KOGI STATE, NIGERIA

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ABSTRACT

Liberalization of the establishment of tertiary educational institutions across Nigeria in recent times has created new growth poles as places or settlements where the institutions are located have benefitted from several associated social and economic benefits. However, the establishment of several of these new tertiary institutions have not been accompanied with the required investment in the building of on-campus student housing or hostel accommodation. This study therefore, analyzed the impact of the establishment of Kogi State University (KSU), Anyigba on housing development and environmental quality of the town. Amongst others the study examines the pattern of housing development and level of adherence to physical development regulations in the study area and the characteristics of neighbourhoods around the KSU campus where most of the off-campus student hostels are situated. As part of the study a total of 364 copies the questionnaire were administered on heads of households and landlords of the houses where students resided using a systematic random sampling. The focus of the questionnaire administration was to determine factors that influence housing development in neighbourhoods around the campus of KSU and the level of adherence to extant physical planning regulations in the development of these off-campus student hostels. Personal observation was also used to obtain data on the visual quality of the study area. Descriptive and inferential analytical techniques were adopted for the analysis of data obtained with the aid of the Statistical Package for Social Sciences (SPSS). Among others, the study revealed that 68% of housing used for off-campus student hostels did not observe the required plot ratio of 45 to 60% and setbacks of 6m in the front, 3m at the sides and back respectively while 26% of the houses did not have toilets and other required conveniences such as kitchens and bathrooms. The study further established that toilets are inadequate in 61.6% of the houses that had such facility, 28.3% had poor quality softscape elements, 46.7% had fair hardscape quality, 72% of the access roads are in poor condition. Amongst others, the study recommends a more rigorous physical development control in the area to stem the ugly scenario of unwholesome housing development and poor environmental quality.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Tertiary institutions contribute to the growth and improvement of the society and aid their host communities in achieving participatory democracy in the process of globalization (Ali, 2010). The location of tertiary institution in a community has been identified to be of immense significance to the overall development of the area. This is linked with Nasreen's (2015) concept of 'new idea'. Location impact therefore means the influence of the manifestation of such new idea on the environment. This new idea or concept can be conceptualised in form of the establishment of Tertiary Institutions encouraged by a State, Regional or Federal Government and an individual in a location. Investors and developers have realised the fact that location of a Tertiary Institution in an area or community could enhance rapid development of such area Socio-economically (Ehinmowo and Eludoyin, 2010). The sitting of a Tertiary institution in a community creates employment opportunity for both the skilled and unskilled labour, and consequently increase the population of the town as a result of people migrating into the town to seek employment (Ayobami, 1977). It could also result to changes in profitable activities, changes in building conditions and use in order to cope with the educational trends (Brennan *et al.*, 2004).

The governance of higher education the world over has shifted significantly since the past few decades, especially since the 1990s (de Boer and File, 2009). As a result of the pressure of budgetary limitations, national governments of some developing countries have reduced their expenditures on higher education. This has resulted in the liberalisation of the ownership and establishments of higher institutions which in turns

resulted in spatial development of its neighbourhoods (Middlehurst and Teixeira, 2012). Centripetal forces of attraction are the basic attribute of tertiary institutions irrespective of their geographical location; they are usually synonymous with the pulling of economic, social and cultural activities (O'Flaherty, 2005). At the neighbourhood level, students and workers are spatially clustered in locations near the campus as well as locations that offer enormous prospects (Rugg *et al*., 2002; Charbonneau *et al*., 2006; Smith & Holt, 2007; Hubbard, 2008).

In recent years, the Federal government of Nigeria has indicated enormous enthusiasm to the growth of tertiary education sector thereby establishing more institutions, especially universities and the liberalization of its ownership. While liberalizing the ownership of higher institutions, inadequate attention has been accorded to the provision of housing in the Institutions to provide for the influx of students and staff. In view of this inadequacy in complimentary housing provision, higher percentage of the students take succour in the off-campus as an alternative to on-campus accommodation. Owing to the inadequacy of on-campus student housing facilities in Nigerian tertiary institutions, Housing developers have identified a blooming off-campus student housing as a viable investment. However, off-campus student housing is associated with plethora of problems. For instance, Umaru *et al.* (2012) reported that off-campus student residence is characterised by hostilities and poor housing maintenance. Furthermore, although Amole (2009) noted that some students choose to live off-campus on their own preference, Olabisi, (2011) maintained that students' access to on-campus housing facilities is often limited.

The creation of Kogi State University (KSU) Anyigba in 1999 has exacerbated the rate of immigration of people to Anyigba Town at high rate (Ifatimehin & Ufuah, 2006). It has equally engendered unprecedented rate of immigration to the town, which has resulted in

unparalleled land use change in the entire University's host community through massive residential and rental housing development and renovation of existing housing stock to attract prospective users. More so, there is proliferation of physical development without approval from Kogi State Town Planning and Development Board. This has lead to the proliferation of unapproved and haphazard housing development. The institution has become a growth pole and a pull factor that attracts and creates substantial impact on the economic base of the host community and its environs. It has created ample job prospects to both indigenes and non-indigenes of the town.

Before the establishment of KSU, Anyigba town experienced relatively low population growth. However, the establishment of KSU has led to unprecedented increase in population of the town alongside housing development (Ifatimehin *et al.*, 2009). The effects of the institution on the town include but not limited to employment generation, socio-cultural development and the establishment of human resource and research training centre. Apart from the population growth occasioned by high fecundity in Anyigba, the influx of students, employees of the university, businessmen and women and informal artisanal workers owing to the presence of the University, has led to an increasing rate of housing development in Anyigba which inadvertently affects the environmental quality.

The increasing housing demand in Anyigba has resulted in rapid and haphazard housing development with resultant impacts on the quality of the environment of the area.

1.2 Statement of the Research Problem

The issue of location of tertiary education institutions has been studied from several perspectives. O'Flaherty (2005) for example, studied the implications of location of tertiary institutions on the economy of cities. Ifatimehin & Ufuah (2006), following O'Flaherty (2005) made a commendable improvement by studying the effects of tertiary institutions on rural economy. Furthermore, Ifatimehin *et al.* (2009) analysed the impacts of tertiary institutions on land use and land cover change. DiNapoli (2010) and Kelly *et al.* (2014) analysed the economic and social impacts of location of tertiary institutions on host communities. A further analysis by Kemiki *et al.* (2016) focused specifically on the impact of tertiary institutions on the physical development of their host communities. However, these studies were too general and failed to look at the impacts of tertiary educational institutions on housing development and environmental quality in particular.

Similar work like Owolabi (2015) focused on role of tertiary institutions on human capital development and their effects on national transformation adopting ex-post facto design. The study did not however address the question of environmental quality as it relates to the establishment of tertiary educational institutions. Ali (2010) carried out a study on the socio environmental impact of the higher institution on host community which was analysed within the background of the regional and sustainable development. The study made a giant stride in examining the impacts of tertiary educational institutions on social environment of the host community, however, it was short of addressing issues of environmental quality.

Previous studies focused primarily on the economic, social and land use implications of location of tertiary institutions on the host communities with little or no emphasis to analyse the effects of tertiary institutions on housing development and environmental

quality. This is a major gap in knowledge that this study seeks to cover with a view to aiding decision-making and policies on tertiary education institutions' students and staff housing development for the purpose of achieving coordinated and non-conflicting physical development of the host communities of tertiary educational institutions.

1.3 Research Questions

i. How has the physical development of Anyigba town evolved between 1999 and 2019?
ii. What is the nature of housing development in Anyigba town between 1999 and 2019?
iii. How has the establishment of KSU impacted on housing development and environmental quality of Anyigba?
iv. In what ways has the establishment of KSU and the demand for off-campus housing accommodation amongst its students influenced the pattern of physical development of Anyigba?

1.4 Aim and Objectives

The aim of this study is to examine the impact of Kogi State University (KSU) on housing development and the environmental quality of Anyigba town with a view to determining emerging physical development challenges in the area.

Pursuant to this aim, the evolved objectives of the study are to:

i. Assess the trend of housing development in Anyigba town between 1999 to 2019
ii. Examine the relationship between the establishment of KSU and housing development in the study area.

iii. Determine the influence of off campus student housing choice on the environmental quality of Anyigba town.

iv. Identify emerging physical development challenges arising from the pattern of housing development for off-campus students' accommodation in Anyigba town.

1.5 Scope of the Study

The subject scope of this study covered the determination of the impact or influence of the establishment of KSU on housing development and environmental quality of Anyigba town of Kogi State between 1999 and 2019. The choice of this period is informed by the fact that KSU was established in the year 1999. Particular emphasis were paid to the influence of the pattern of housing development and associated infrastructure such as roads, drainages and sanitary conditions of Anyigba amongst others since the establishment of KSU. The study focused on off-campus students' and staff housing development and how these affect the environmental quality of the study area. The study also investigated the extent of the provision of environmental amenities such as pipe-borne water, electricity, playgrounds, schools and health centres in the study area since the establishment of KSU.

This study covered the geographic boundaries of Anyigba town. However, the point of emphasis of the study was the location of KSU in the town. Therefore, for the purpose of comprehensiveness, the study was confined to 2km radius from the location of KSU.

1.6 Justification of the Study

Numerous researchers who had worked on effects of tertiary institutions focused on the economic, political, social and cultural impacts on the communities (DiNapoli, 2010). While doing these, emphasis on the impacts that tertiary institutions have on the housing

development and environmental quality has been minimal. This triggers idea for this research so as to fill in the gap.

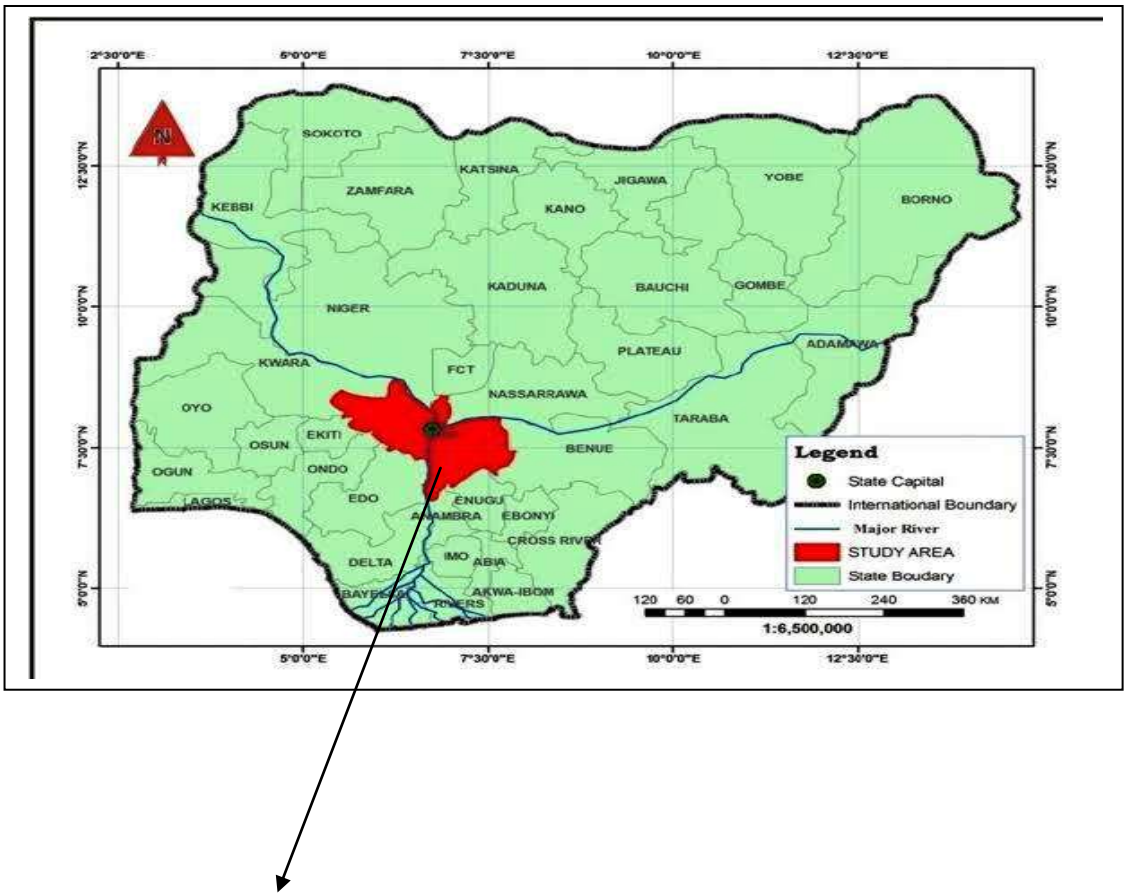
More so, the findings of this research will prove extremely valuable in explaining the real factors underlying housing development and environmental quality in Anyigba. This study will demonstrate the environmental importance and information about housing development for residents of Anyigba. It will also indicate how Kogi State Government through Town Planning and Development Board and other interested parties can assist in determining the effects and trends of housing development. Finally, this study will be useful for tertiary institutions, stakeholders and government in housing development. Particularly, the study will provide useful insight into the need to provide more on-campus accommodation. The study will reveal the haphazard nature of off-campus housing development and the negative impacts of such uncontrolled housing development on the physical and social environment of the host communities. Therefore, it will be useful for the regulatory agencies in controlling the haphazard development of off-campus housing for staff and students of tertiary education institutions in Nigeria.

1.7 The Study Area

1.7.1 Geographical attributes of Anyigba

Anyigba town is located on Latitude 7^{o} 15'N and Longitude 7^{o} 32' E. It has an average altitude of 420 meters above mean sea level (MSL). The estimated population of Anyigba is 18,907 persons as at 2002 which has grown to 34,494 people based on a growth rate of

3.25% per annum (UNDP, 2002). The differences in socioeconomic status as well as literacy level in Anyigba are insignificant in relation to the growth of the town (Ifatimehin & Ufuah, 2006). The sitting of Kogi State University in the town is apparently affecting housing development and environmental quality of the town. The location of Anyigba in Nigeria is presented in Figure 1.1



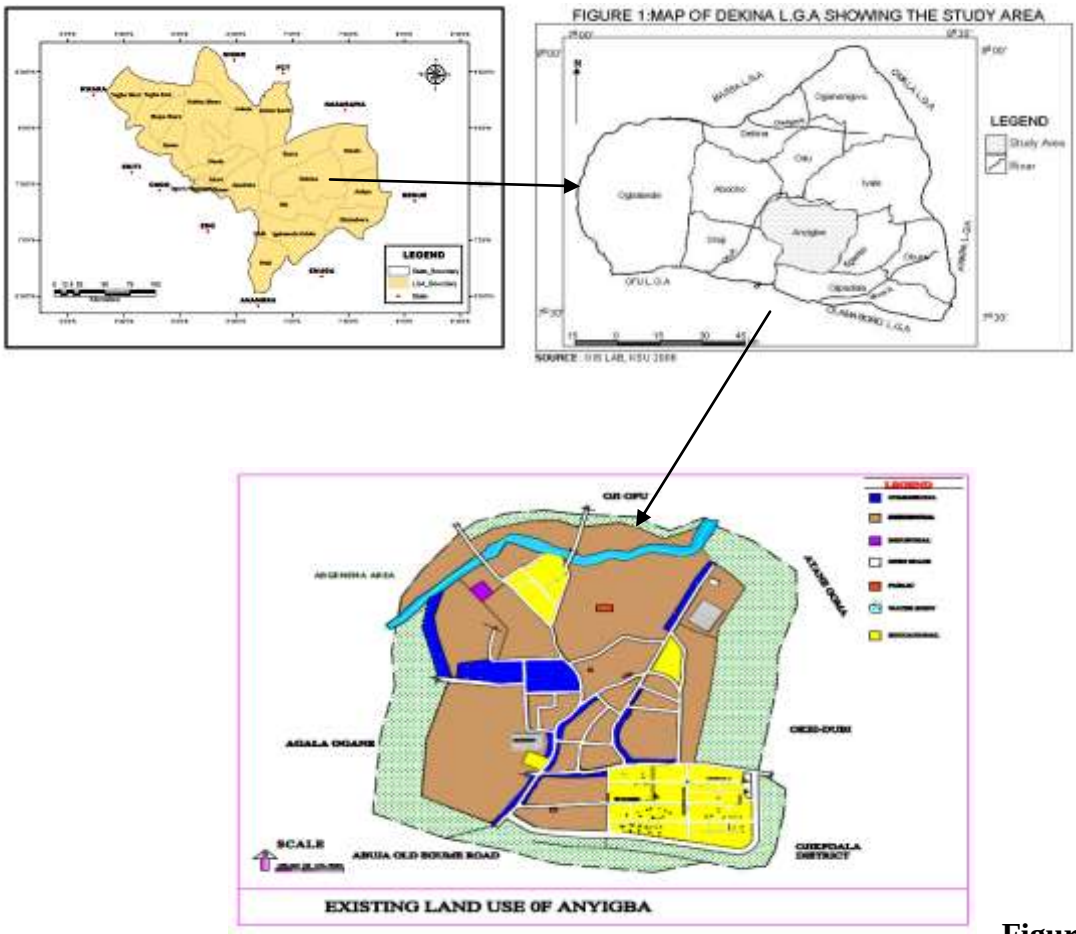


Figure 1:1 Location of the study area in context.

Source: Lands and Housing Services Bureau, Lokoja, Kogi State. (2019)

1.7.2 Historical development of Anyigba

Oral tradition have it that Anyigba town was founded by Ame-Ohega, a grandson of the 11th Attah of Igala whose name was Itodo Aduga some centuries ago. Ame-Ohega had seven sons (namely Aku Akpele, Akogwu Akpele, Oche, Itodo Ote, Onoja Agbagwula, Idoko Onu Iyale and Itodo Ogoh) with whom he found Anyigba and its composite sections (John, 2016). As people passed-by daily, they became amazed at the level of cleanliness in that location. Later on, it was discovered that it was Anyi who does the sweeping; thus, the place became synonymous with his name. It is generally believed that Anyi is the hunter's name while Gba is an Igala word which means to sweep. Therefore, Anyigba is roughly translated as 'swept by Anyi' (John, 2016).

Momodu (2016) reported that other legends have it that Anyigba was founded by a Anyi, one of the nine royal Igala hunters who used to settle in the forest temporarily until his hunted meats were well-smoked before leaving. In the course of time, Anyi decided to take permanent residence in Ajetachi, at the fringe of the forest. Anyi was a man who loved to keep his environment clean so he had a giant broom with which he swept his habitation every morning before proceeding to the bush for his hunting activities.

1.7.3 Weather and climate of Anyigba

Anyigba is located in the tropical region with both wet and dry climate; in terms of vegetation, it is located in the guinea savannah region, with average annual temperature of 25^{o}C and 1600mm precipitation. The weather of Anyigba is characterised by two main seasons as obtainable in other areas of North-Central Nigeria, namely the wet season and the dry season. The rainy/wet season lasts between April and October, while the dry season is experienced between November and March. It also experiences a brief interlude between these two seasons when harmattan is experienced (usually between late November and mid-February). The average temperature of the town is between 27^{0}C and 30^{0}C. Anyigba experiences rainfall of 1150mm x 1630mm. This places the community in a vantage position in relation to agricultural practices (Ifatimehin *et al.* 2006)

1.7.4 Relief and drainage of Anyigba

Najib *et al.* (2017) noted that the topography of the study area is characterised by gently undulating slope. The main river in Anyigba is called Ofu, which is the primary source of water for majority of the households in the town. However, there are other streams that can be categorised as seasonal. Incessant erosion has created other 'artificial gullies' that drains off the surface run-off (Najib *et al.* 2017).

1.7.5 Soil and vegetation of Anyigba

Anyigba is characterised with sandy and loamy soils. This supports farming as the major livelihood of the residents of the town. The soil is also relatively stable and this encourages structural development in the area. The study area is characterised by trees and grasses with sparse shrubs as found in other parts of the Guinea Savannah belt Ifatimehin *et al.* 2006).

1.7.6 Land-use pattern of Ayingba

Anyigba town follows organic development pattern. This may be linked to the fact that the town is a traditional town which master plan to guide its physical development has since expired. The town is navigable through a number of road networks which traverse to all the sections of the community; although, being a traditional settlement, some of the roads in the study area are too narrow for vehicular movement. The king's palace and the market are located at the centre of the town. There are a number of playgrounds and public/semi-public land uses in Anyigba such as health centres, police posts and schools (Tokula and Sunday, 2012).

1.7.7 Socio-economic characteristics of Ayingba

Tokula and Sunday (2012) stated that Anyigba is originally an Igala community. However, with the establishment of KSU, the town has assumed a multi-ethnic status with diverse ethnic groups like Bassa-Nge, Ebira, Yoruba, Hausa and Igbo inhabiting the community. Most of the old buildings in Anyigba are compound house type built with traditional building materials such as mud, wood, adobe and thatch. The modern houses,

however, are built with modern building materials. Majority of the residents are engaged in farming, hunting and trading.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Conceptual Framework

2.1.1 The concept of Housing

Housing is a basic necessity for the survival of man, ranking second on the hierarchy of human needs after food. The definition of what constitute housing has been subject to several debates. It has been noted that contrary to popular opinion, house and housing are not synonymous terms (David, *et al.*, 2012). A house denotes just the building consisting of walls and roof that protects the inhabitants from harsh elements of weather (Sulyman, 2015). As a result, Agbola and Alabi (2000) noted that a house is a symbol of physical protection, security, respect, psychological wellbeing and economic value to the family or

individual. In other words, a house is a mere shelter. On the other hand, housing transcends mere shelter (Jinadu, 2007; David *et al.*, 2012).

Agbola and Kassim (2007), Ndubueze (2009) and Ademiluyi (2010) argue that the concept of housing incorporates the environment, safety and the wellbeing of the residents. It is a major component of a household's consumption (Chatterjee, 1981); as such, it is regarded as a bundle of goods and services (Bourne, 1984). It has further been argued by Henilane (2016) that housing is the most important component of human life and survival.

A more holistic definition of housing is the one offered by FRN (2012). It defines housing as the process that entails the provision of secure, comfortable, beautiful, serviceable, inexpensive and exclusive habitation in a serene location/environment in a neighbourhood, sustained by constant protection of the built environment for the day-to-day activities of individuals and households within the neighbourhood, while showing their socioeconomic and cultural desires and preference.

Housing is now seen as a fundamental need and an inalienable human right (Amole, 2009; David *et al.,* 2012).For example the UN Declaration of human rights in the 1940s recognized housing as a right. Similarly, the United Nations Millennium Development Goals (MDGs) and consequently the Sustainable Development Goals (SDGs) recognizes the right to decent and affordable housing. Similarly, the Constitution of the Federal Republic of Nigeria (1999) stated unequivocally that the major responsibility of the government is to provide welfare services (including decent and affordable/subsidized housing) to its citizens. Section 16(1) (d) of 1999 constitution under the Fundamental Objectives of State Policy mandates the government "to provide suitable and adequate shelter for all citizens". However, the right to housing is a 'non-justiciable' rights,

meaning that claims cannot be laid on them in the law courts. Notwithstanding, Ebie (2009) still contends that housing is the first and most essential of all human rights.

2.1.2 Concept of student housing

Globally, the issue of student housing has attracted concerted concerns from academics, policy makers and non-governmental organizations (Jiboye, 2011). This is so because majority of the higher institutions of learning, particularly in developing countries, do not have enough on-campus accommodation for its students (Amole, 2009; Mohit *et al.*, 2010). The problem becomes more worrisome in sub-Saharan Africa where majority of the higher institutions have hostel accommodation only for a minute proportion of their students (Jiboye, 2011). In Nigeria, students' hostel accommodations in higher institutions are grossly inadequate; thereby increasing the rate of hostel squatting and consequently, overcrowding of hostel rooms. Therefore, students have devised alternative means of meeting their housing needs through off-campus housing.

Mohit *et al.* (2010) have demonstrated that off-campus student housing is a significant contributor to the housing market globally. Similar opinion was offered by Jiboye (2011) who argued that in Nigeria, rental housing development around tertiary institutions is a widespread practice. In fact, Jiboye (2009), Amole (2009) and Mohit *et al.* (2010) have established a link between students seeking accommodation off-campus and housing development in neighbourhoods where higher institutions are located.

2.1.3 Concept of development

Like most social science concepts, the concept of development is not amenable to a single and unambiguous definition. In recognition of this, Todaro & Smith (2006) saw development as a physical reality as well as a psychological state, in which societies has

obtained the means for securing a better life. Similarly, Coetzee (2001), noted that the major concern of development is the wellbeing of humanity. In other words, development is less concerned about economic growth and wealth. Following this, Gran (1983), defined development as the practical and social procedure whose goal is the emancipation of human prospects so that people can achieve the highest socially practicable and realistic control on all the accessible assets required for the satisfaction of basic human needs and safety.

Korten (1990) from the economic standpoint, defined development as a process of economic transformation for accelerated and increased economic growth. This definition centred on economic and human development. However, it is clear that economic and human development cannot be achieved in a vacuum; they are a function of the environment. Therefore, there is an environmental perspective of development.

The connection between environment and development is captured in the definition of development in the Nigerian Urban and Regional Planning Laws (1992). It sees development as the totality of human activities that alters or improves the configuration on, in, or under the physical environment. WCED (1987) opined that development is what humans do in a bid to improve/enhance the environment in which they live.

2.1.4 Concept of environment

Conceptually, environment encompasses social, physical and economic aspects. However, this research centres on the physical/ecological aspect of the environment. FEPA (1990) cited in Coker (n.d) defines the environment the totality of human surrounding, including plans, animals, land, air, water, and humans beings living therein

and the forces that connect them in one way or the other. Similarly, Coker (n.d) saw environment as comprising the water, air, land and the entire surrounding ecosystem. There is need therefore, for maintaining that environment is the entirety of space, time and natural living space of human being and other living things that exists.

It can be deduced from the foregoing that everything surrounding humans, including the houses, landscapes, land cover and activities across space are components of the environment. As a result, environment consists of the atmosphere, the biosphere, the lithosphere and all other layers of the earth.

2.1.5 Concept of environmental quality

Environmental quality denotes the features that make the environment acceptable, liveable and adorable. It refers to the standard worthiness of ecosystem and ecosystem services, including the value of air, water and biodiversity. As Rosa *et al.* (2004) cited in Ifatimehin *et al.* (2009) noted the impending pressure on the environment due to uncontrolled urbanization involve a wide range of greenhouse effects, change in biogeochemical cycles; extensive scattering and dumping of non-biodegradable municipal solid wastes (MSW); and constant release of liquid and gaseous pollutants, deforestation, rising level of water runoffs, a dwindling ground water recharge, emergence of flooding and a change in the natural water balance.

The foregoing argument indicates that development activities, including housing development, interferes with environmental quality. However, the quality of the built environment is central to sustainable urban development. Therefore, urbanization and the resultant housing development and environmental quality are related.

2.2 Review of Related Literature

2.2.1 Urbanisation and housing demand

The 21st century is a century of urbanization (Fawehinmi *et al.,* 2016). The rapid rate of urbanization has created several associated problems globally, such as poverty, environmental degradation and rising housing demand. When these concerns are not carefully taken into consideration and consequently addressed, the resultant effect is urban decay, blight and slum formation (Sulyman, 2015). Owoicho (2015) noted that as the world continues to urbanise, the demand for other supportive services, including housing, keeps rising. This is especially so because as population increases, the demand for more units of housing to house the rising population also increases. Consequently, urbanization and housing demand are composite phenomena that occur concomitantly. Housing demand has been defined in the literature as the amount of qualitative and quantitative housing units that housing end user is prepared and able to pay for at an agreed market price (Jinadu, 2007; Ademiluyi, 2010; Duruzoeh, 2015; Sulyman, 2015). Therefore, 'effective housing demand' must be supported by the means to pay. In other words, when the demand for housing is not supported by the willingness and ability to pay, it is seen 'ineffective demand', and thus, a mere wish.

2.2.2 Effects of housing development on the environment

Housing plays a very important role in disaster risk reduction, economic and physical development and ecological sustainability (Boehm & Schlottmann, 2001; UN-Habitat, 2006; WHO, 2012). The impact of housing on the environment was recognized by Mabogunje *et al.* (1978) who contended that unlike other human needs such as food and clothing, housing produces a significant level of ecological footprint and this is very visible where housing development occurs irrespective of the magnitude.

It has been noted that housing development is associated with a plethora of ecological impacts (Jaafar *et al.,* 2014). Similarly, Junnila & Horvath (2003) argue that housing development contributes to more than 50% of global human energy consumption. Furthermore, Doling *et al.* (2013) contended that the only way to minimize/mitigate the environmental impacts of housing is through the adoption of the philosophy of sustainable housing development. In other words, environmental sustainability forms a core issue in modern housing development.

2.2.3 Global issues in housing development

The significance of housing in the development of economies around the world has been recognized by several authors, including Chatterjee (1981), Onibokun (1985) and Agbola & Alabi (2000). Baqutaya *et al.* (2016) noted that the foremost concerns in housing development are issues of homeownership and affordability. Homeownership is a situation where an individual has a residential apartment regarded as a home. Notwithstanding, homeownership should not be confused with housing occupancy status which implies the status of the occupant of a given housing unit, whether owner-occupied or otherwise. However, housing affordability is not an easily definable concept.

Nguyen (2005) contended that housing affordability has become the larger focal point in all societies; and that the housing affordability dilemma is part of the major contentious problems within many developed and less developed nations. Nevertheless, explanations of the concept of housing affordability have been provided by Baqutaya *et al.* (2016), who submitted that the precise meaning of housing affordability is an extremely intricate issue, and it is the subject matter of diverse analyses and constant discourse among professionals. Outside the details of this discourse, a universal agreement can be reached

concerning the meaning of affordable housing, a concept that is premised on the suggestion that households are not supposed to spend more than 30% of their total earnings on housing. Households that pay more, particularly poor households are considered 'cost-burdened' and experiencing housing problem since they may experience problems in paying for other basic needs.

Therefore, housing affordability, in simple terms, is a situation where a households' expenditure on housing does not exceed 30% of its income, while still exercising considerable ability to cater for other needs such as energy, medicare, transportation, clothing and food. In other words, even when a household is able to pay 30% of its income for housing, such housing is still considered unaffordable if other needs of such household are not met.

2.2.4 Housing development in sub-Saharan Africa

Urbanization is seriously transforming housing demand and development in Africa, where the average rate of urban growth has remained 3.5% since year 2000 (UNDP, 2015). As a result, urbanisation in Africa is projected to surpass 50% by 2037 (UNDP, 2014). It has been observed by Bah *et al.* (2018) that sub-Saharan Africa has been experiencing rapid transformation in terms of population dynamics and urbanization. They further penned that this observable fact increases the economic problems confronting African cities, such challenges are manifested in high rate of unemployment, quantitatively inadequate housing, and poor/inadequate urban infrastructure. As a consequence, they maintained that though the housing sector differ across nations and regions, the main reality amongst emerging urban markets has been a rise in housing demand, in effect forcing up housing costs and pushing qualitative housing outside the reach of the greater part of the poor households who experience and express higher

housing need. Consequently, there has been a rise in the number of slum dwellers globally. Affordability problems are restricting the poor households from acquiring as well as climbing up the housing ladder. Despite the fact that all these tendencies are obvious, much of the research and writings on housing has been unreliably biased.

There abound a lot of evidence in the literature that for the most part, housing development in Africa is an important source of job creation (Terzi & Bolen, 2007), economic development and social transformation (Doling *et al.,* 2013). Despite these impacts of housing development in Africa in general and sub-Saharan Africa in particular, it is still reported that the region experiences a considerable deficit in housing (Bah *et al.,* 2018). Therefore, sub-Saharan Africa is bedevilled by inadequate housing supply in both qualitative and quantitative terms.

2.2.5 Housing development in Nigeria

Housing development has received considerable attention as a way of solving the housing demand of the growing global population through construction of new houses to address the rising housing needs. However, Ogunde (2013) insists that the goal of housing developments is not just providing housing units for citizens and inhabitants, but also consider other important aspects of housing provision such as environmental quality. He argues that the provision of suitable and standards utilities and services in an environment are a significant determinant of the decision to move into a new housing environment. This implies that environmental quality is a very vital aspect of housing development.

It has been noted by Olatubara & Fatoye (2006; 2007), Olatubara (2008), Amole (2009), Olotuah and Ajemifujah (2009), Omoniyi and Ajiboye (2011) and Ogunde (2013) that environmental quality is a major aspect of housing quality, and consequently, a major determinant of housing and neighbourhood satisfaction. However, despite these links

between environmental quality and housing quality, the study of students' off-campus housing has attracted little scholarly research. Yet, the effect of *studentification* is largely felt on the housing market of the host communities. However, the work of Amole (2009) and Mohit *et al.* (2010) are largely commendable in this regard, although only little attention was paid to environmental quality.

2.2.6 Effects of housing development on the environment

WCED (1987) argued that while environment is where humans live, development is whatever human beings do in order to change, alter or improve the environment in which humans live. They argued further that environment and development are two interlocking and interdependent concepts. For example, in attempting to supply sufficient and decent housing for humanity, the environment is usually altered.

Duruzoechi (2015) noted that the process of housing development involves tempering with the natural environment through cutting down of trees, clearing the bushes, excavation of the soil and superimposition of buildings in places that were initially vacant and occupied by flora and fauna. The effect of the aforementioned activities that are related to housing development is an undeniable loss of biodiversity. However, biodiversity losses have been linked to a reduction of the earth's bio-capacity.

WHO (2009) submitted that more than 7% of global carbon emission result from the construction/ development of housing. Similarly, Sulyman *et al.* (2017) in their investigation of the ecological footprint of housing in Minna reported that housing has a significant level of ecological footprint. In fact, they stressed that buildings have the highest ecological footprint. They concluded that all the materials used in housing

development (including timbers, sand and water) has significant amount of ecological footprint.

Furthermore, although cities occupy only about 4% of the earth surface, they house over 50% of global population, consume more than 33% of ecological resources and generate more than 35% of global pollution. As Olatubara (2008) observed, housing is one of the foremost elements of cities. Therefore, the relationship between housing and environmental quality cannot be overemphasized.

2.2.7 Overview of tertiary institutions and impacts on housing development

Ajayi (1996) and Altbach (2006) argued that it is difficult to define a higher institution without explaining their purposes, functions and values. Therefore, to define higher institutions three broad factors are important, namely purpose, function and value. The purpose of higher institutions, as propounded by Aristotle and Confucius, is to produce learned citizens for the sake of societal harmony (Jarvis, 1995; Frijhoff, 1997).

The function of higher institutions, on the other hand, is for the diffusion of knowledge (Newman, 1996). Finally, the value of higher institutions as presented by Ndlovu-Gatsheni (2017) is that it serves as the core of information distribution, research, an avenue that provide rational leaders, manpower development, encouragement of social and economic transformation, and international unity and international understanding. Therefore, higher institutions are centres for the production of advanced learning for the diffusion of knowledge in order to create intercontinental and international unity, understanding and development.

It has been noted that tertiary institutions affects the demand for housing units, and consequently, housing development (Ismail, 2014) owing to inability of existing housing stock to solve the housing need of students. This creates competition in the housing market, thus leading to spiralling housing demand from the teeming population of students. The residential location choice of students is strongly determined by proximity to the location of their institutions. Rugg *et al.* (2000), therefore, argues that students have the tendency to seek their accommodation within the radius of their education institution. As a result of this, neighbourhoods that are geographically close to higher institutions usually record high level of housing demand.

2.2.8 Issues and trends in housing development: growth and demand

Globally, housing has been recognised as the foremost item of household expenditure (Balchin, 2003). This may be linked to the characterisation of housing, *inter alia*, as a basic need and a symbol of man's development. Similarly, housing has been typified as one of the foremost indicators of the level of a nation's development. As indicated by Balchin (2003) in the context of United Kingdom, however, housing expenditure decreases with time – especially is the right housing development model (such as Thatcher's) is adopted and implemented.

As population continues to grow, there is a commensurate increase in the demand for housing. This is practically so in urban areas where majority of the global population now lives (Bull, 2003). In most cases, people who could not afford decent housing resort to the development of shanties and squatter settlements, thereby accelerating the growth of slums and informal settlements globally (Jones, 2017). Decent housing, therefore, exhibit the economistic characteristics of scarce resources. Technically, however, unlike other

economic goods, housing does not yield to the concept of resource mobility since excess housing in one region cannot be transferred to another region of housing shortfall. Hence, as Bull (2003) argues, housing development defies the production possibility curve. Interestingly, Gurran *et al.* (2017) argues that urban housing problems seem to portray both inadequacy in planning so much of the 'wrong' kind of regulation, leading to a chronic shortage of affordable housing and a mismatch between the location of low-cost homes and income earning opportunities. Overlaying these challenges are the profound environmental changes and risks arising from global climate change, and the need to deliver more environmentally sustainable forms of housing and urban development.

In realisation of the aforementioned shortcomings of the existing dracaena and debilitating urban planning laws that discourage sustained housing development, Tamaki and Edadan (2013) noted that market-based housing development is the panacea to the persistent exclusion in the housing development efforts. Yet, it has been noted that the demand for housing has continued to rise at an alarming rate following the development/creation of new households (Pennington *et al.*, 2012). However, the visible problem is that housing supply has not been able to keep pace with the level of new household formation globally (Schmuecker, 2011).

2.2.9 The nature of housing development

Housing does not exist in isolation; it is part and parcel of the community/neighbourhood where it is located (Galster & Magnusson-Turner, 2017). Furthermore, housing exhibits attributes of spatial fixity and in transferability (Musterd *et al.,* 2016). This positional nature of housing means that special attention should be paid to the development, provision, habitation and maintenance of housing.

As a positional economic good, the production and consumption of housing product can result to several adverse environmental effects (Kuhlmann, 2019). In fact, Hunt (2009) specifically noted that improper and sporadic housing development may result in severe social disorders. The implication of this is that the social and psychological preferences and desires of the end-users should be the primary determinants of the type of housing provided, and where. This is unarguably the *reason d'être* for the rise in housing development in locations where tertiary institutions are situated. Based on these assumptions, Salleh (2008) and Amole (2009b) revealed that an evaluation of the quality of indoor and outdoor environment of tertiary institutions' student housing environments is inevitable owing to the possibility of massive environmental alteration and the resultant environmental dissatisfaction.

In Nigeria, Ifatimehin *et al.* (2009) reported that the establishment of tertiary institution generally leads to tremendous land use and land cover changes. Umaru *et al.* (2012) noted that a very worrisome impact of residential pressure of off-campus students on host communities is that it inevitably leads to the emergence of slums. This impact is most felt by communities that are in proximity to tertiary institutions. The specific implications of location of tertiary institutions on the environmental quality of the host community werereported by Ali (2010. However, on the developmental front, a study by Kemiki *et al.* (2016) reveals that the location of tertiary institution in a community leads to rapid development of such community.

2.3 Impact of Tertiary Institutions on Host Communities

Several studies have shown that the establishment of tertiary institutions have significant impacts on their host communities. Such effects can be positive or negative depending on their magnitude and direction. Preeti, *et al.* (2014) penned that foreign direct investment

has a multiplier effects on the socio-economy and environment of a host country. In the same vein, investment made in a particular local environment has impacts on the host community. The establishment of KSU in Anyigba has transformed the once agrarian settlement to an economic hub and its environs. More so, Anyigba has continued to enjoy enormous physical developments from the public and private sectors. Carriers, (1985) asserts that owing to the relationship and close link between tertiary institutions and host communities, many communities have developed way beyond the stage they were before the establishment of an institution. The population of host communities increases in size and multiplicity with the establishment of tertiary institutions. These surfaces as students, academic and non-academic staff integrates themselves with the local population to build social networks that could become immensely beneficial to society at large. The influx of students, workers, businesspersons, increases the population. The resultant effect is what Kennedy *et al.* (1998), have observed. That internal migration takes different forms and pattern but the most significant is the movement from rural to urban areas. And, that rural-urban migration is usually, dominated by young able-bodied individuals in search of employment, schooling and other opportunities in the city.

The presence of a tertiary institution has tremendous impacts on the commercial activities of the host communities as more people who settle temporarily or permanently as students, staff and families/dependents do generate streams of income for variety of businesses associated with basic needs such as housing, clothing, fast foods, books/stationeries, computer and photocopying giving rise to bustling commercial areas with the establishment of tertiary institutions, instead of its former status as an agrarian society (Awah, 2005). It has been noted by Momodu (2016) that more than 75% of Nigerian students are off-campus residents. Therefore, off-campus environments attract investment since there is a ready and viable market for consumption products.

The impacts of the establishment of a tertiary institution in a community is not only limited to the positive perspective but also have negative impacts in relation to higher levels of crime and violence. This suggests that there are serious significant security implications of establishing a tertiary institution in any community. It is a well-known fact that urbanization brings with it crime and violence. As Ottong (2002), noted that rapid urban growth results in problems of urban congestion, overcrowding, poor housing, poor environment and above all crime and other social vices.

In Nigeria, Umaru *et al.* (2012) noted that host communities of tertiary institutions experienced both positive and negative impacts. The positive impacts include socialization and economic development; while the negative impacts include increasing crime rate, cultism, overcrowding as well as tension and hostility between indigenes and students. Isola (2017) argued that the positive impacts of the establishment of tertiary institution in a locality outweigh the negative effects. He observed an increase in employment opportunities, a rise in the standard of living and improvement in social capital of the residents of the host community.

2.3.1 Challenges of off-campus student housing

Off-campus accommodation has gained widespread acceptance an patronage by Nigerian students. However, Inyang *et al.* (2018), opined that off-campus accommodation affects the achievement of the goal of learning since it necessarily creates artificial polarization among students. Contrarily, Ghani and Suleiman (2016) had a different perspective about the impact of off-campus residence on achievement of goals by arguing that there are inherent inequalities in access to institutional goals. Notwithstanding the "inherent inequalities'" argument, Aluko (2011) and Owolabi (2015) maintained that students'

housing location (on-campus or off-campus) affects their academic performance. More so, off-campus accommodation is characterized by vulnerability to security threats and exploitation of the students by private housing developers (Umaru *et al.,* 2012; Ghani and Suleiman, 2016; Inyang *et al.,* 2018). Ekwowusi (2012) also reported the problem of unaffordability in off-campus student housing environment. Owing to the high rate of insecurity in off-campus housing environments, Ifaturoti (2017) observed that availability of security personnel/officials increases the housing choice of off-campus student residents.

Uncontrolled and unplanned pattern housing development are visible in off-campus environments where the developers are primarily interested in profit maximization at the expense of maintaining the environmental quality of the community (Kemiki *et al.,* 2016; Ifaturoti, 2017; Inyang *et al.,* 2018). Furthermore, Amole (2009) reported that off-campus accommodation is characterized by inadequate services such as poor electricity and potable water supply.

Sagada (2009) also reported that off-campus student housing development is associated with unauthorized land use conversion. In similar vein, Aluko (2011), Umaru *et al.* (2012) and Momodu (2016) opined that the poor planning and lack of observance of planning standards in the development of most off-campus housing environments confers the status of slums on the host communities. Consequently, most of the host communities of tertiary institutions are characterized by overcrowded housing condition, inadequate potable water supply and poor sanitary conditions (Ghani *et.al,* 2016). As a result, off-campus student residences have been associated with health issues such as outbreak of malaria and other epidemics (Umaru *et al.,* 2012).

2.3.2 Off-campus students' housing development pattern

Off-campus housing development is characterised by deviation from planning standards and regulations (Sagada, 2009; Kemiki *et al.*, 2016). Furthermore, unauthorised land use change is a widespread practice in off-campus student housing environment where the major concern of the developers is to maximise profit at the expense of the health and safety of the residents on the one hand, and the quality of the physical environment on the other (Umaru *et al.,* 2012). Hence, the rate of housing development is tantamount to the rate of admission (Aluko, 2011). Similarly, Nimako *et al.* (2012) noted that although homeowners and landlords in off-campus communities do not obey physical planning regulations, they set specific stringent rules and regulations for student-tenants to abide by.

Expression of disdain for planning authority and consequent refusal to seek development approval has led to the development of sub-standard housing facilities for off-campus students (Umaru *et al.,* 2012). Existing buildings are subjected to consistent conversion to residential uses, thereby creating inconvenience for the residents (Jabar *et al.,* 2012). Although the off-campus students are not satisfied with the substandard condition of the housing they occupy (Aluko, 2011; Ogeah *et al.* 2011), their choices are limited as many developers are generally uninterested in ensuring application of planning standards. Therefore, off-campus students' accommodation are characterized by substandard housing condition (Agbola, 2005; Owolabi, 2015). According to Yunus *et al.* (2018), a spatial analysis of off-campus student housing reveals major irregularities in the morphology of the host community. They maintained that host communities of tertiary

institutions in Nigeria exemplify poor town planning and are therefore vulnerable to environmental disasters and accessibility problems.

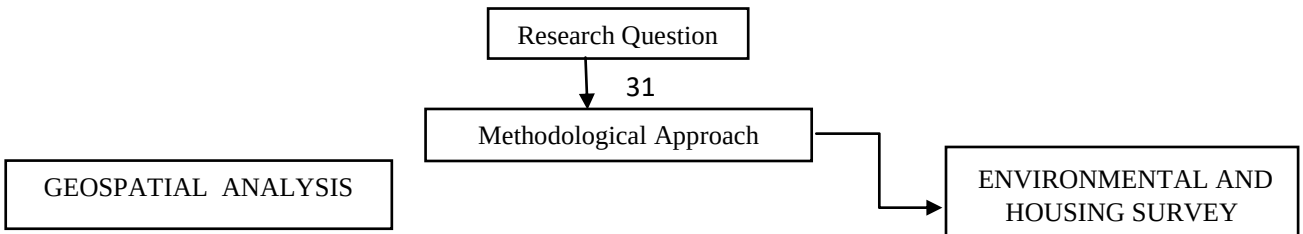
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

Asika (2005) stated that research designs are classified into three, which are: survey design - this type of design is cross-sectional and longitudinal; experimental design - experimental designs are with control and succession quasi-experimental design; and ex post facto design – this is a one-case design of which the researcher uses symbols. This research is adopting the survey design approach.

As shown in Figure 3.1, the data required for this study are twofold, namely: geospatial data on the one hand and socioeconomic, environmental and housing data on the other. The geospatial data were used to produce the land use and land cover change maps of the study area. On the other hand, environmental and housing data were used to assess the rate of housing development, homeownership, housing affordability, occupancy ratio, housing choice, environmental quality and environmental/housing satisfaction of the residents of Anyigba town. The survey design flowchart adopted for this study is shown in Figure 3.1.



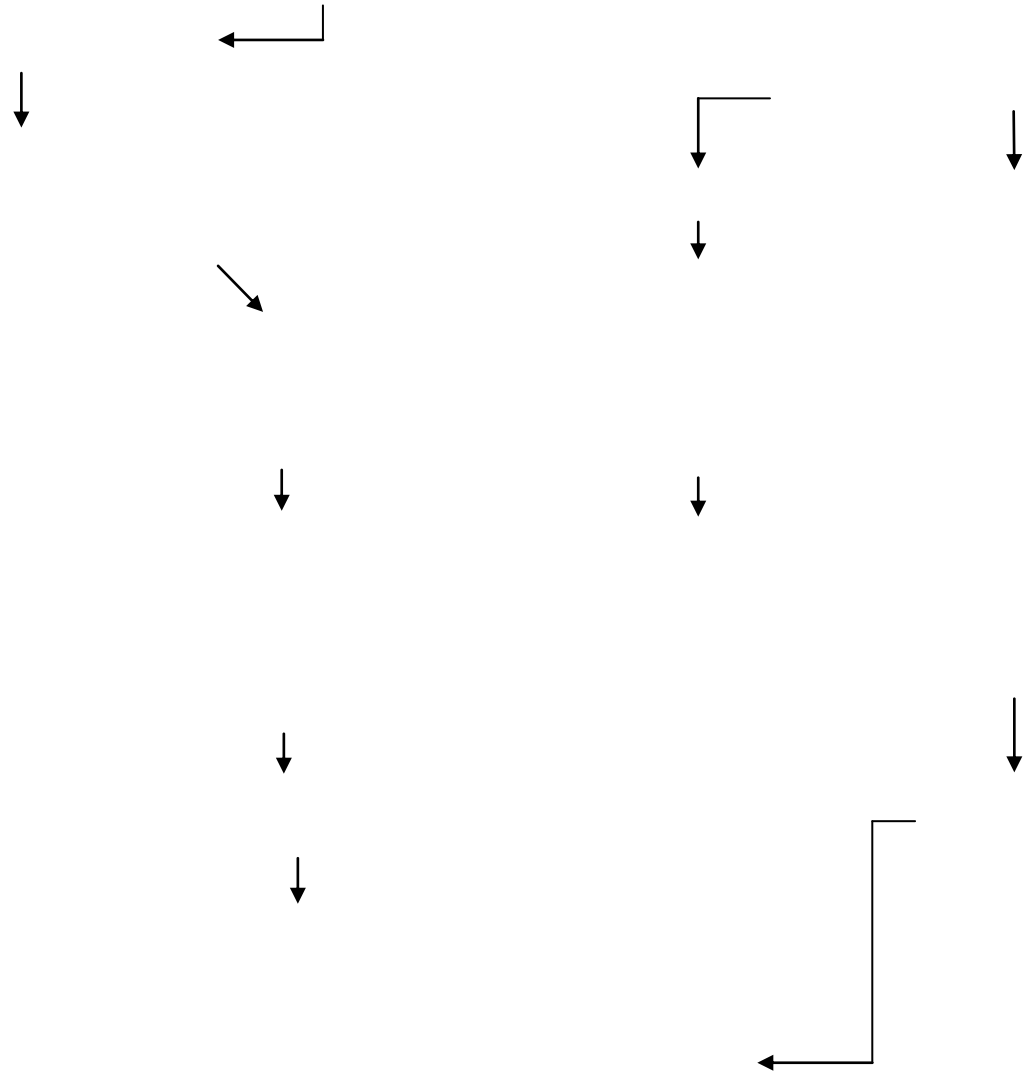


Figure 3.1: Survey Design Flowchart

Source: Author's analysis (2021)

The research will appraise the effects of tertiary institution on housing development and environmental quality in Anyigba in order to ascertain whether or not KSU has positive

or negative effects on the subject matter using the survey design approach. The approach will be adopted because the study involves a field survey where questionnaires will be administered, personal observations will be made and oral interviews conducted to ascertain the rate of housing development in the study area.

3.2 Types and Sources of Data

The study acquired data from the two main sources of data collection, i.e. secondary and primary sources.

3.2.1 Primary data

Primary data involves data that are collected from the field by the researcher or field assistants' first-hand (Morenikeji, 2006). Primary data for this study were obtained through questionnaire, physical observation and oral interview. The questionnaire was used to collect socioeconomic (gender, age, marital status occupation and, income) and housing data (such as housing ownership status, age of buildings, quality of buildings and household size) for the study. Data on environmental quality were collected with the aid of observational checklist. The required data include landscape conditions, plot ratio, sanitary conditions and availability of trees. Physical planning officials were engaged in an oral interview to obtain data on professionals' perception of the impacts of the establishment of KSU on housing development and environmental quality of Anyigba. Table 3.1 summarises the data required and the method of analysis for each objective that have been evolved for this study.

Table 3.1: Data Required and Methods of Data Collection and Analysis

Objective	Data Required	Data collection	Data Analysis

		Instrument	
Assess the growth trend of housing development in Anyigba between 1999-2019	LandSatTM and NigeriaSat1 images for 1999, 2009 and 2019, and geographic coordinates of sampled locations in Anyigba	Garmin 6 eTrex GPS, Image download from USGS and GLCF	Land Use and Land Cover Change Analysis using IDRISI Selva
Examine the relationship between the establishment of KSU and housing development in the study area.	Data on the housing stock in Anyigba before and after the establishment of KSU	Google Earth/Satellite imageries of Anyigba in 1998 and 2019	IDRISI Selva
Determine the influence of off-campus housing development on the environmental quality of Anyigba.	Students' housing choice, landscape conditions, plot ratio, sanitation and availability of trees	Likert Scale questionnaire and observational checklist	Chi-Square and cross-tabulation
Identify emerging physical development challenges arising from the pattern of housing development for off-campus students' accommodation	Residents' perception of student accommodation, and developers' view of off-campus housing	Structured questionnaire	Correlation analysis and descriptive statistics (mean and standard deviation)

Source: Author's analysis (2021)

3.2.2 Secondary data

Secondary data are those data that are extracted from existing sources (Morenikeji, 2006). Secondary data is classified into two, namely: published and unpublished sources. The secondary data were used to 'sharpen the focus' of the study by providing already existing information on housing development and environmental quality of the study area. Therefore, the secondary data will aid the elimination of duplicity of research.

Existing data on housing development in Anyigba before and after the establishment of KSU were obtained from Kogi State Town Planning and Development Board (KSTPDB) and other relevant publications, Satellite Imageries were obtained from Google Earth and

United State Geological Services. This was with a view to guide the assumptions and conclusions of this study with regard to the impacts (whether positive or otherwise) of KSU on housing development and environmental quality of the host community. All other secondary sources of data (especially as presented in the literature review) are acknowledged.

3.3 Instruments of Data Collection

The major instruments that were used to gather the required data for the study are questionnaire, physical observation and LandSat images.

3.3.1 Questionnaire

A well-structured questionnaire was used to collect the data on the demographic and socioeconomic attributes of the residents of Anyigba. Copies of the questionnaire were administered at the level of individuals since the study was made up of socio-culturally disaggregated population whose opinions cannot be effectively measured at the households' level. The respondents were, therefore, the individual residents of Anyigba town. The data collected include household size, perception of environmental quality and level of environmental satisfaction among the residents of the study area. Oral interview was used to obtain the professionals' views on the impacts of KSU on housing development and environmental quality of Anyigba.

3.3.2 Physical observation/reconnaissance survey

Physical/reconnaissance surveys were conducted to collect the data on environmental quality indicators of Anyigba using an observational checklist. Physical observation of

the study area, particularly neighbourhoods occupied by the students was carried out in-situ using camera and measuring tape as instruments and photographs were also be taken for identification. Reconnaissance surveys were conducted to assist the researcher in identifying the types of housing design and development as well as the environmental quality that were prevalent in the study area.

3.3.3 Landsat images

Satellite/landsat images of 1999, 2009 and 2019 were obtained from United State Geological Survey (USGS). This were used to identify the direction of housing development in the study area since the establishment of KSU. They were also used to detect land use and land cover changes in Anyigba from 1999 to 2019, and to make projections on the future trajectories of environmental changes that are likely to result from uncoordinated housing development in the study area. The offset method was adopted to update the base map of Anyigba by identifying the existing physical structures/buildings; thus, in-depth ground-trothing was established. The buildings were effectively included or removed as the case may be. This involved 100% of present elements using observation method for identification and ground-trothing with the aid of field book, base map, eraser, pencil and field assistants.

3.4 Study Population and Sample Size

3.4.1 Study population

An attempt to determine the sampling frame for the study proved abortive because the data on housing development for the study area was not available. As a result, a proxy alternative was resorted to. This proxy was achieved by dividing the entire human population of Anyigba by the average household size of Kogi State which was 5 persons per household (National Bureau of Statistics, 2016).

The population of Anyigba was 34,999 as at 2002 (UNDP, 2002). The population of students was 17,381, Academic staff was 749 while Non Academic staff were 668 persons. Therefore, the total population of Anyigba as at 2002 was 53,797.

The population of Anyigba within the 2k radius from KSU was 18,907 as at 2002. This was projected from 2002 to 2019 using exponential formula to arrive at 34,494 people harboured within 6899 households. See Appendix I for details.

3.4.2 Sample size

In a bid to have a fair representation of the population of this study, Dillman's (2007) formula for estimating a desired sample size from a giving population was adopted to arrive at 364 sample size. See Appendix II for more details.

3.4.3 Sampling technique

In selecting the sampled population a ystematic random sampling technique was adopted to sample the respondents for this study. The choice of systematic random sampling is based on its ability to ensure unbiased chance of inclusion for every resident of Anyigba while guaranteeing wide and consistent area coverage. Therefore, the household population of 6,899 was divided by the sample size of 364; in this case, all the streets within 2km radius to KSU were identified for random selection while households along

the selected streets were sampled for the interview. However, the selection of the physical planning professionals for oral interviews was purposively done. This is because the professionals may not be readily available for the exercise. Therefore, the professionals who were readily available and who volunteered to partake in the exercise were interviewed to know the level of development approval in Anyigba.

3.5 Method of Data Analysis

The data acquired through physical survey will be collated by means of various data analytical techniques. The spatial data will be analysed using remote sensing tools such as IDIRISI to determine the rate of land use and land cover change in Anyigba. The acquired images will be analysed using GIS techniques provided by IDRISI 17.02 (The Selva Edition software). Training sample sets will be generated for the period under review (2008 – 2019). A proper classification of these imageries will be done by adopting the Maximum Likelihood technique through which information on the level of housing development, vegetation and environmental quality will be determined.

Qualitative and quantitative techniques of data analysis were adopted to analyse the socio economic, demographic and housing data collected for the study since the research is exploratory and descriptive in nature. The research hypothesis was tested using Analysis of variance (ANOVA).

3.5.1 Method of Data Presentation

The updated feature on the map were presented as the current base map of Anyigba. Similarly, the outputs of the GIS analysis were presented as maps. More so, frequency table, charts and graphs were used to present the findings from the socio economic, demographic and housing development and environmental quality data.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

This section is divided into sub-sections which include the trend of housing development in Anyigba between 1999 and 2019, the relationship between Kogi State University (KSU) Anyigba and Housing Development, influence of Off-Campus Student Housing Development on the Environmental Quality of Anyigba and the emerging Physical Development challenges arising from the pattern of Off-Campus Students Housing in Anyigba.

4.1 Trend of Housing Development in Anyigba between 1999 and 2019

4.1.1 Land-use and land cover of Anyigba in 1999

Figure 4.1 shows that the study area had a total built-up area of 4,084.29 hectares as at 1999, while the vegetation area was 28,780.11 hectares which was a proportion of 12.43% to 87.57%. This revealed that there was more of vegetation than the built-up area as at 1999 before the establishment of KSU.

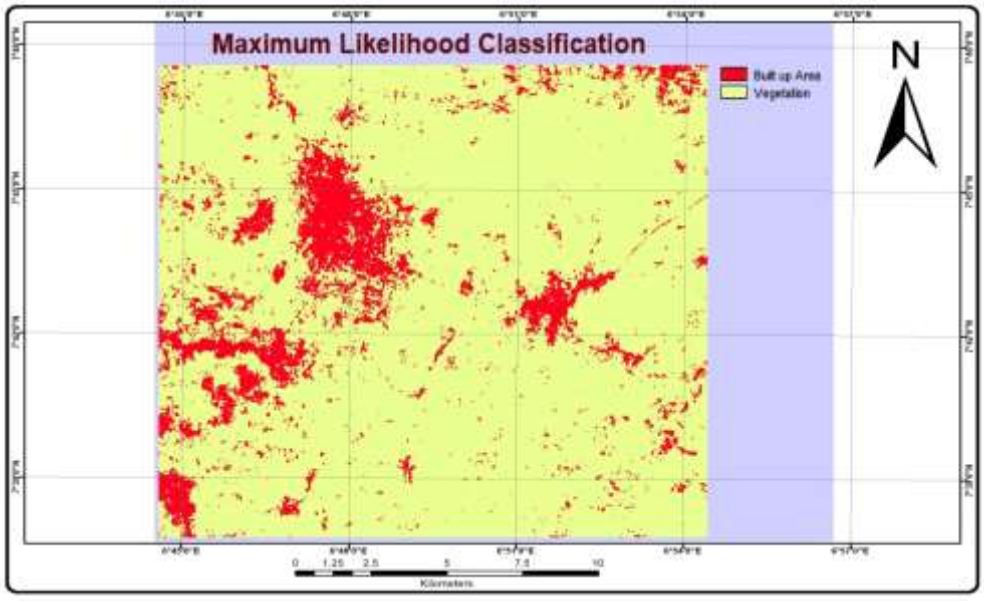


Figure 4.1: Land-use and Land Cover of Anyigba in 1999

4.1.2 Land-use and land cover of Anyigba in 2009

Figure 4.2 revealed that by 2009 the total built-up area of Anyigba had increased to 9,053.10 hectares, while the vegetation area had also decreased to 23,811.30 hectares. This shows that while the proportion of land occupied by the built-up had increased to 27.55% in 2009, the total area of vegetation had decreased to 72.45%. This revealed that there was a significant increment in the built-up area and substantial decrease in the vegetation area between 1999 and 2009, situations that can be majorly attributed to the establishment of KSU and the influx of more people and investors to Anyigba.

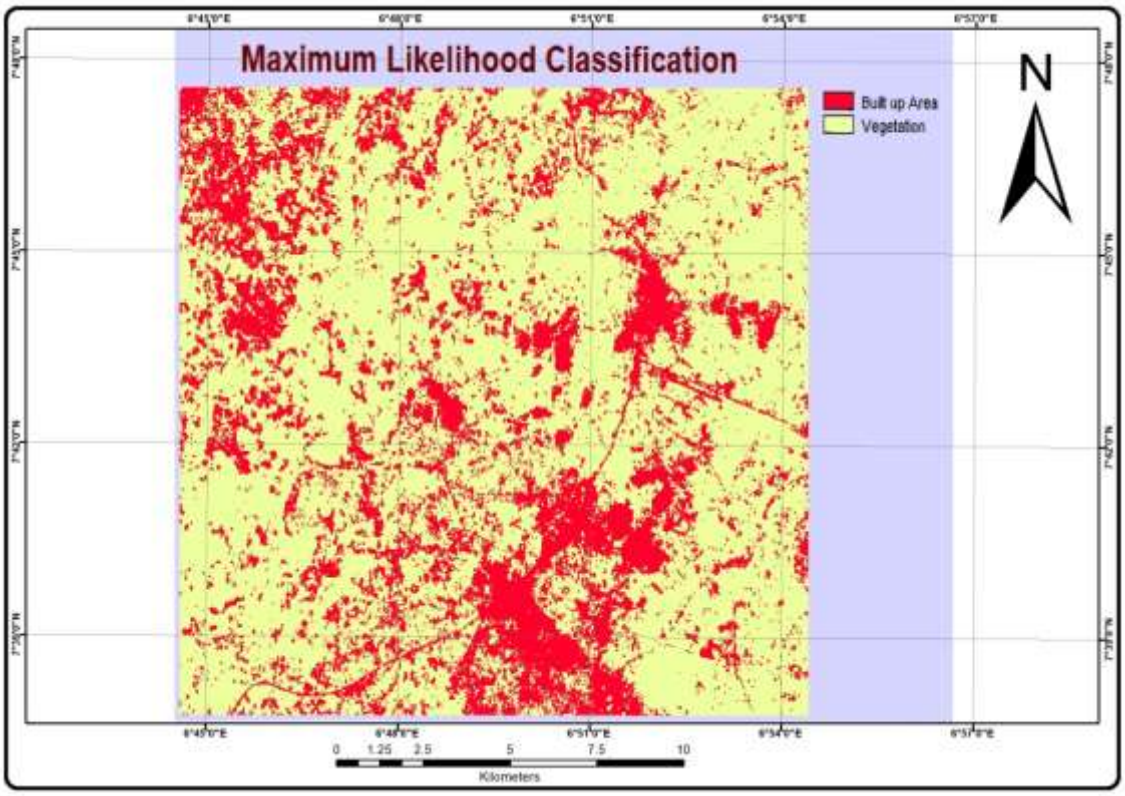


Figure 4.2: Land-use and Land Cover of Anyigba in 2009

4.1.3 Land-use and land cover of Anyigba in 2019

As shown in Figure 4.3 the study revealed that by 2019 the total built-up area of Anyigba further increased to 12,605.67 hectares, while the area of vegetation cover had decreased to 20,258.73 hectares, meaning that the total built-up area of Anyigba had increased to of 38.36%, while the total area of vegetal cover had decreased to 61.64%. This relative

increase and decrease in the built-up area and vegetal cover respectively can be attributed to the increase in housing development engendered by the established of KSU.

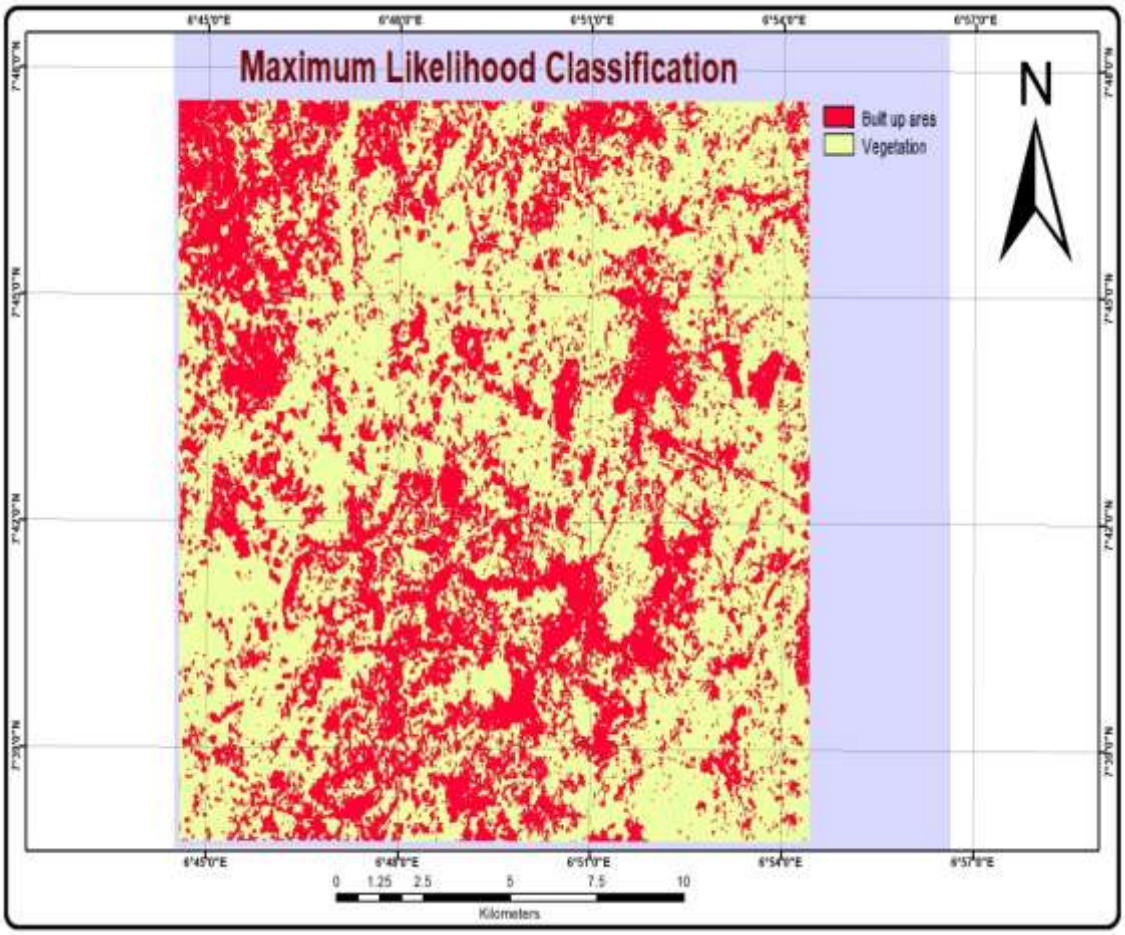


Figure 4.3: Land-use and Land Cover of Anyigba in 2019

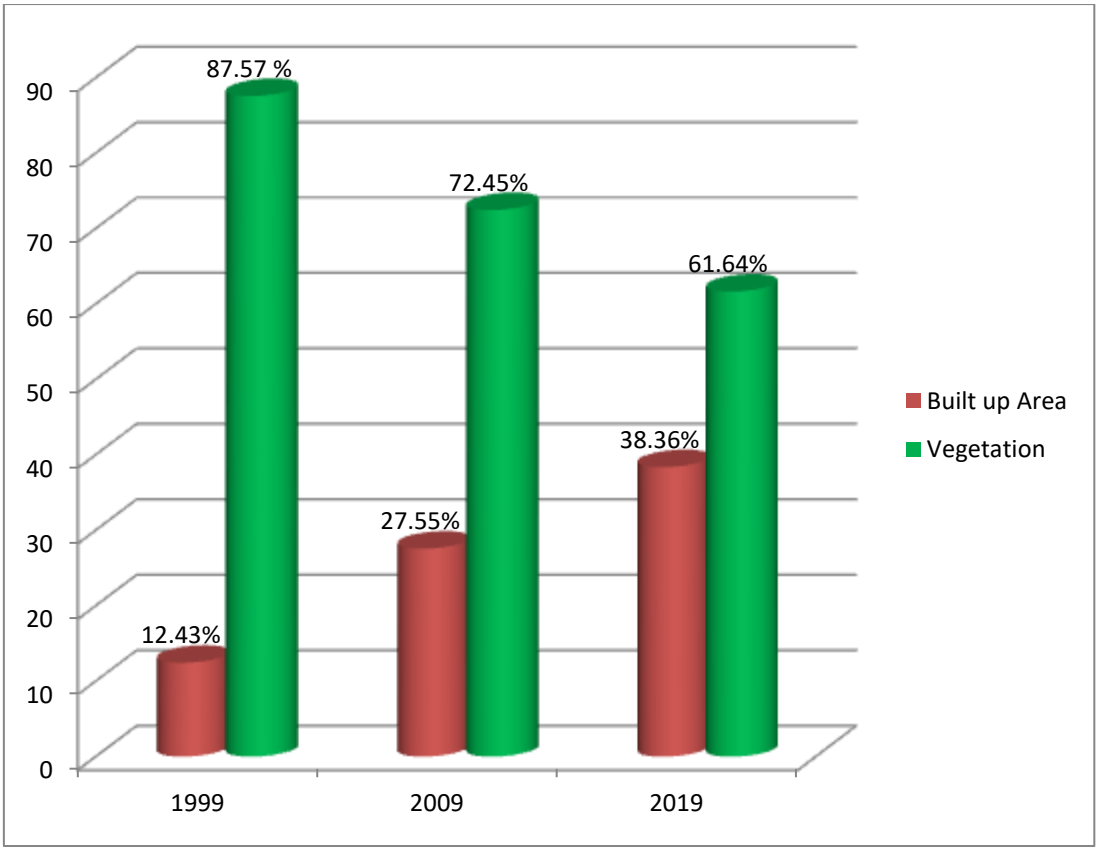


Figure 4.4: Trend of Physical Development in Anyigba between 1999 and 2019

4.1.4 Summary of the trend of development in Anyigba between 1999 and 2019

Figure 4.4 shows the trend of physical development in Anyigba between 1999 and 2019. The Figure revealed that the built-up area of Anyigba in 1999 constituted 12.43% while the vegetation and other undeveloped parts constituted 87.57%. However, as depicted in Figure 4.4 as at 2009, the built-up area of the study area had increased to 27.55% while vegetation had decreased to 72.45%. This increase in the proportion of the built-up area indicates a growth of about 110.82% in the housing stock in the study area between 1999 and 2009. Between 2009 and 2019, the total built-up area in Anyigba rose to 38.36% while the vegetation decreased to 61.64%, also indicating 68.62% increase in housing development in the area. This therefore, indicates that although the study area

experienced an increment of about 154.3% in housing development between 1999 and 2019, the growth has not been uniform over time. It was realized that the proportion of the growth was more between 1999 and 2009. The implication of this is that the establishment of KSU can be said to have significantly impacted the rate of housing and physical development of Anyigba.

4.2 The Relationship between Kogi State University (KSU) and Housing Development in Anyigba.

4.2.1 Length of residency in Anyigba

Table 4.1 shows that 3.57% of the respondents had resided in the study area for less than a year, 18.96% had stayed in their housing units between 1 and 2years, while another 43.31% had resided in their residential units for between 3 to 4years. Another 35.16% had resided in Anyigba for 5 years and above. This therefore, indicates that 96.43% of the respondents had resided in the study area for more than a year.

Table 4.1: Length of Residency

Year(s)	**Frequency**	**Percent**
Less than 1	13	3.57
Between 1 and 2	69	18.96
Between 3 and 4	154	42.31
5 +	128	35.16
Total	**364**	**100.0**

4.2.2 Housing type

Figure 4.5 shows that 45% of the respondents resided in semi-detached flats, 29% in bungalows, 25% were tenement housing residents and 1% was residents of single detached flats. This indicates that there were diverse housing types in Anyigba.

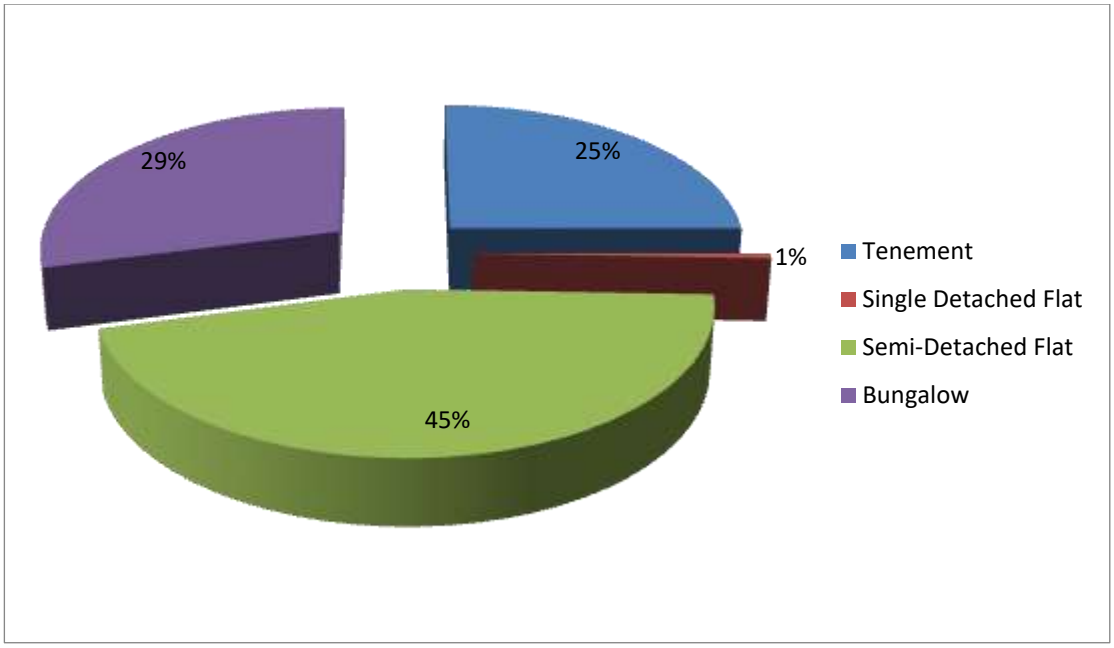


Figure 4.5: Housing Type

4.2.3 Household size

Figure 4.6 shows the household size of the respondents in the study area. It shows that 25.27% of the respondents were members of a-single person households. A total of 45.33% of the households had between 2 and 7 persons, another 28.85% had between 8 and 10 persons, while 0.55% of the households had more than 10 members. The high rate of single-person households in Anyigba is linked to students' off-campus residence in the area.

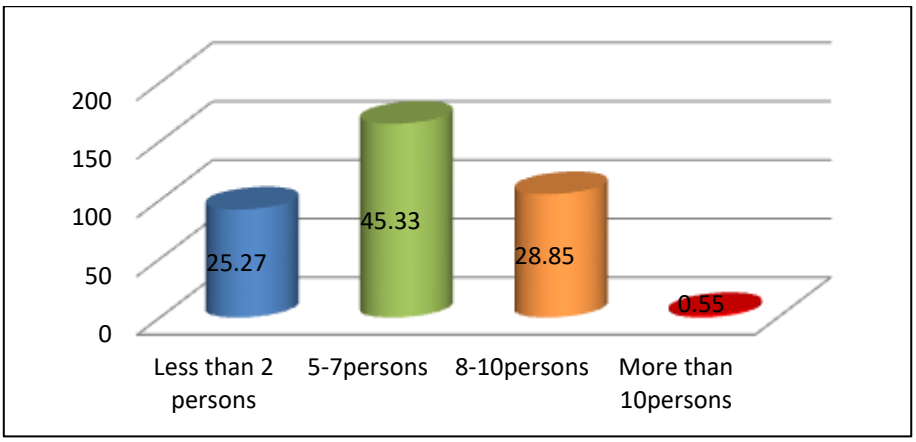


Figure 4.6: Household Size

4.2.4 Housing ownership status

The housing ownership status of the respondents revealed that 52.7% of the respondents were owner-occupiers. Another 47.3% of the respondents indicated that they were renter-occupiers. Majority of the renter-occupiers were students and staff that were resident in off-campus housing accommodation.

4.2.5 Mode of housing acquisition (for owner-occupiers)

The mode of housing acquisition among the owner-occupiers in the study area shows that a total of 44.79% of the respondents acquired their housing units through direct purchase and 55.21% of them were personally developed.

4.2.6 Approval of building plan before development

The survey conducted in a bid to know whether or not there was building plan approval before housing development revealed that 89% of the developers had no building plan approval from Kogi State Town Planning and Development Board, while a mere 11% had approved building plans before development. This analysis revealed the reason for haphazard development and poor environmental quality of the study area.

4.2.7 Yearly housing rent (for renter-occupiers)

The average yearly rent paid by the renter-occupiers in Anyigba is presented in Table 4.2. The table shows that the majority (40.7%) of the renter-occupiers paid between N50,000 and N70,000 for housing per annum. Another 26.2% paid between N30,000 and N50,000 per annum, while 21.5% paid between N70,000 and N90,000 per annum. A total of 7.5% tenants paid N90,000 and above, while a mere 4.1% of the renter-occupiers reported that they paid less than N30,000 as their housing rent per annum. This implies that house rent in Anyigba was relatively moderate.

Table 4.2 Yearly Housing Rent for Different Housing Types

Rent	Housing Type	Frequency	Percent
Less than N30,000	Rooming	7	4.1
N30,000-N50,000	One room Self contain	45	26.2
N50,000-N70,000	Two rooms Self contain	70	40.7
N70,000-N90,000	Two bedroom	37	21.5
N90,000 +	Three bedroom	13	7.5
Total		**172**	**100**

4.3 Influence of Off-Campus Student Housing Development on the Environmental Quality of Anyigba

4.3.1 Reasons for off-campus housing choice

Several factors were responsible for the choice of off-campus housing accommodation among the students and staff resident in the study area. Figure 4.7 revealed that 32.3% of the respondents resided off-campus in Anyigba because of proximity to the University, 16.5%, 19%, 14.6% 7.4%, resided off-campus as a result of less stringent rules, cost, availability of amenities and serene environment respectively while 6.3% of the student respondents stated that they chose to live off-campus because of other reasons. This shows that the choice of off-campus residence is tied to numerous factors in the study area.

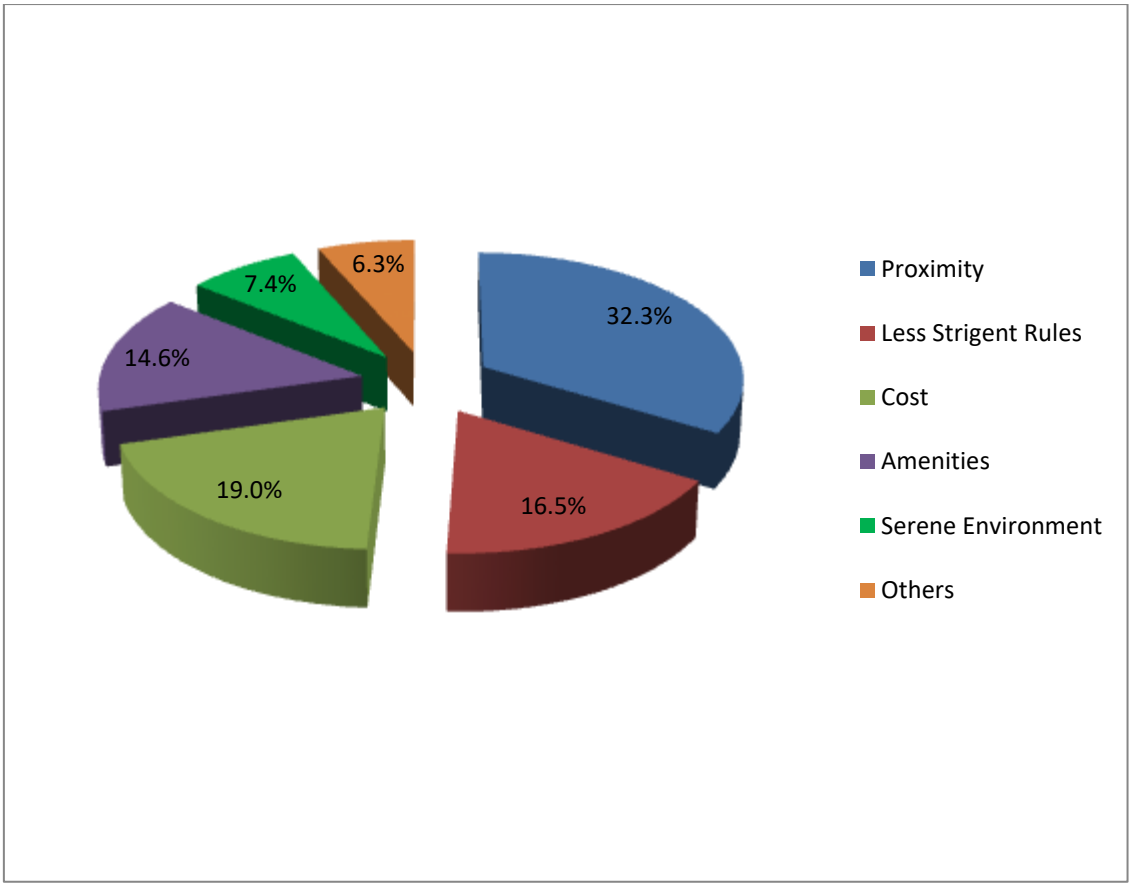


Figure 4.7: Reasons for Off-Campus Housing Choice

4.3.2 Quality of house walling materials

The analysis of the quality of the materials used for house wall construction in the study area is presented in Table 4.3. The study shows that 29.1% of the housing units inhabited by the respondents were constructed with high quality walling materials such as Bricks, Tiles, Paint, Concrete and Stone. Another 46.2% of the walling units of the houses were constructed with moderate quality materials such as Tiles and Paint. However, it is worrisome to note that 24.7% of the houses had their walls constructed with low quality materials like mud and sand screed without plastering. These housing units may be prone to poor visual quality and their life spans may be shortened owing to the poor quality of the walls.

Table 4.3 Quality of Walling Materials

	Frequency	Percent
High	106	29.1
Moderate	168	46.2
Low	90	24.7
Total	**364**	**100.0**

4.3.3 Quality of floor materials

Figure 4.8 presents the results of the survey of quality of the materials used in flooring the houses in Anyigba. Only 2% of the houses were floored with high quality materials such as Ceramic tiles, Marble and Terrazzo tiles. Another 49% each of housing in the study area was floored with moderate and low materials such as Tiles and Sand screed. This may expose the floor of the buildings to natural dampness during wet seasons, and thus, affect the life span of the building structures.

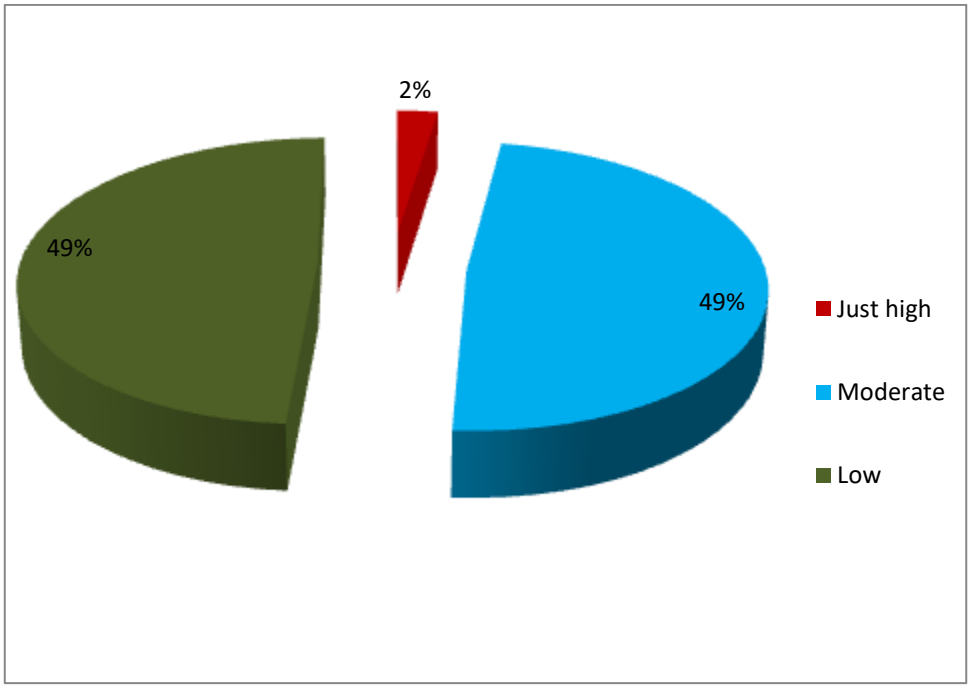


Figure 4.8: Quality of Floor Materials

4.3.4 Quality of roofing materials

The appraisal of the quality of roofing materials used in the study area is presented in Table 4.4. The Table shows that only 0.3% of the houses surveyed were roofed with very high quality materials such as Metro Tiles, Concrete clay tiles and Asbestors, while 26.9% of the houses had their roofs constructed with high quality roofing materials Such Aluminum sheets. Another 23.4% of the houses in the study area were roofed with moderate quality roofing materials like corrugated roofing sheet. The study further revealed that 49.5% of the housing units were roofed with low quality materials such as Cameroun zinc. The high proportion of housing with poor quality roofing materials may therefore, likely impact negatively on the wellbeing of the residents by exposing them to high weather conditions.

Table 4.4 Quality of Roofing Materials

	Frequency	**Percent**
Very high	1	0.3
High	98	26.9
Moderate	85	23.4
Low	180	49.5
Total	**364**	**100.0**

4.3.5 Aesthetic quality of the housing structure

Figure 4.9 shows that aesthetic quality of the housing structures surveyed in Anyigba. It was discovered that 1.1% of the houses had very poor aesthetic quality in relation to Color, Landscape and pattern, 26.37% had poor aesthetic quality like Pattern and Color, and 46.15% had fair aesthetic quality. Interestingly, however, 26.37% of the housing structures surveyed had good aesthetic quality such as Color, Shape, Pattern, Landscape, Visual weight proximity and movement.

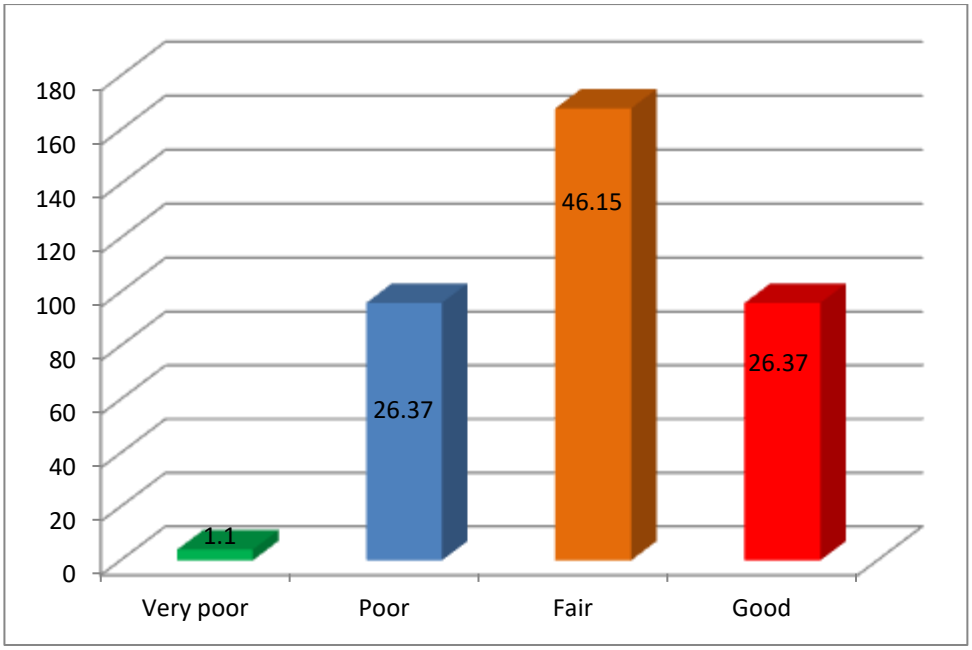


Figure 4.9: Aesthetic Quality of the Housing Structure

4.3.6 Structural quality of the housing

Table 4.5 presents the analysis on the structural quality of the housing units surveyed. A total of 0.3% of the houses had very poor quality structure, 27.7% had poor quality structure, 46.4% had fair quality structure, while 25.5% had good quality structural appearance (see Plates I to IV). It can be deduced that 71.9% of the structural quality of housing in the study area is fair and good.

Table 4.5 Structural Quality of the Housing

	Frequency	Percent
Very poor	1	0.3

Poor	101	27.7
Fair	169	46.4
Good	93	25.5
Total	**364**	**100.0**

Plate I: Very poor housing condition

Plate II: Poor housing condition

Plate III: Fair housing condition

Plate IV: Good housing condition

4.3.7 Housing maintenance culture

Figure 4.10 shows the housing maintenance culture among the households in the study area. A total of 23.35% of the households practiced good housing maintenance culture such as preventing maintenance, condition-based maintenance, predictive maintenance and periodic maintenance while 30.22% of the households indicated fair housing maintenance such as predetermined maintenance. However, 45.33% of the households exhibited poor maintenance culture as a result of their inability to adopt preventive,

predictive and condition-based maintenance while 1.1% of the households exhibited very poor housing maintenance culture. This shows that 56% of the houses in the study area exhibits poor and very poor housing maintenance culture.

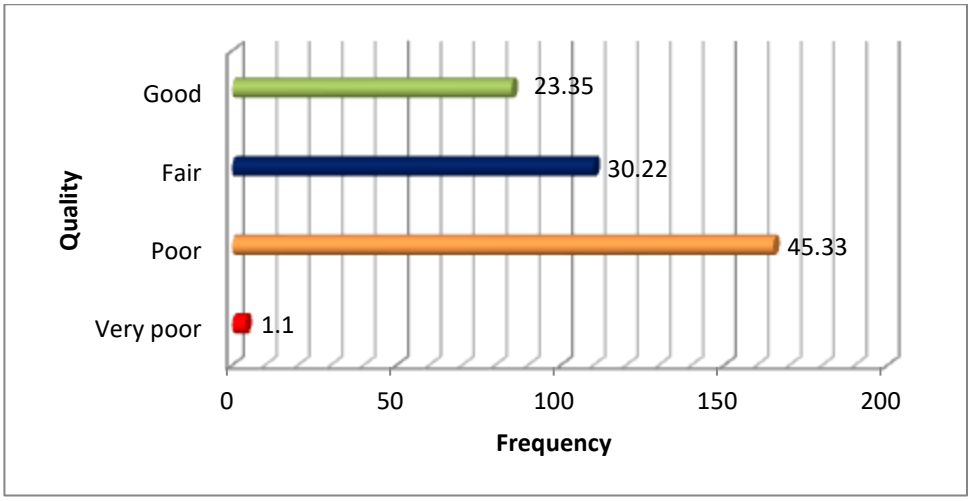


Figure 4.10: Housing Maintenance

4.4. Physical Development Challenges Arising from the Pattern of Off-campus Students Housing in Anyigba.

4.4.1 Quality of hardscape

The analysis of the quality of the hardscapes (hard landscapes and pavements) of housing in the study area is presented in Table 4.6. The Table shows that 0.8% of the houses in the study area were characterized by very poor hardscapes. Another 27.5% of the houses' hardscapes were poor while 46.7% were fair and 25% were good. This means that only one-fourth of the hardscapes in Anyigba are of good quality.

Table 4.6 Quality of Hardscape

	Frequency	Percent
Very poor	3	0.8
Poor	100	27.5
Fair	170	46.7
Good	91	25.0
Total	**364**	**100.0**

4.4.2 Quality of softscape

The quality of softscapes (flowers and ornamental trees) of housing environment in Anyigba is shows in figure 4.11. The figure shows that 1.1% and 28.3% of the households had very poor and poor softscape quality respectively. Additionally, the study shows that 22.53% of the households had just fair softscape quality. However, 25.82% of the households in Anyigba had good quality softscape.

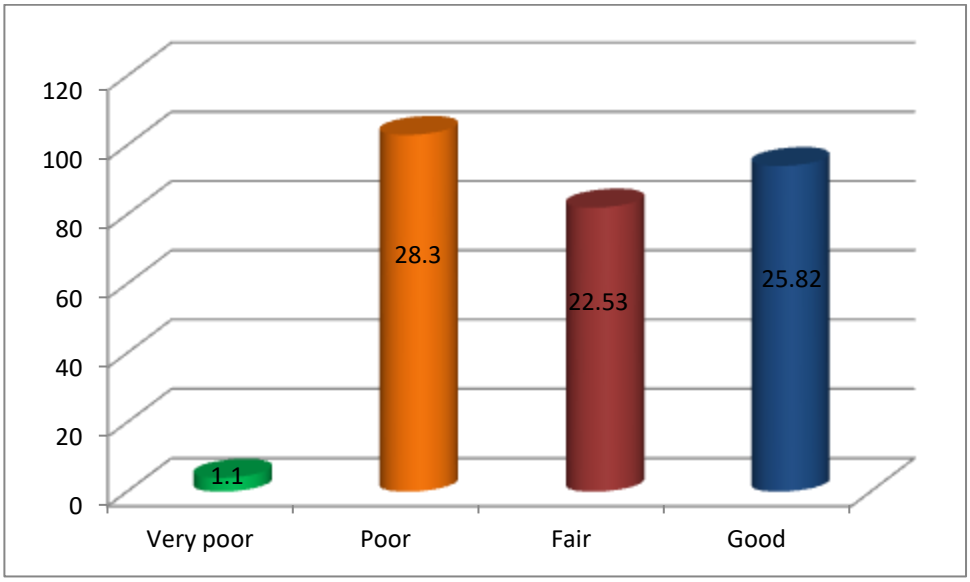


Figure 4.11: Quality of Softscape

4.4.3 Condition of access roads to houses

Table 4.7 presents the analysis on the condition of access roads to the housing units in the study area. The Table shows that 1.1% of the access roads (streets) to residential units were in a very poor state due to lack of drainage channels, unpaved surfaces and lacked

maintenance while 72% were poor as a result of inadequate drainage channels, blocked drainages and unpaved surfaces. The Table also shows that another 1.1% was fair due to blocked drainages and pot holes at irregular intervals, while yet another 25.8% were good as a result of paved surfaces, adequate drainage channels and well maintained (see Plate V to VIII for conditions of roads in the study area).

Table 4.7 Condition of Access Roads to Houses

	Frequency	Percent
Very poor	4	1.1
Poor	262	72.0
Fair	4	1.1
Good	94	25.8
Total	**364**	**100.0**

Plate V: Very poor road condition

Plate VI: Poor road condition

Plate VII: Fair road condition

Plate VIII: Good road condition

4.4.4 Condition of parking spaces

The condition of parking spaces in the residential areas in Anyigba is shown in Figure 4.12. It was discovered that 25% and 24% of the residential units surveyed in the study area had good and fair parking space respectively. However, the analysis also revealed that 49% and 2% of the residential units had poor and very poor parking spaces respectively. Inadequate and poor parking spaces can lead to on-street parking, and consequently, traffic congestion.

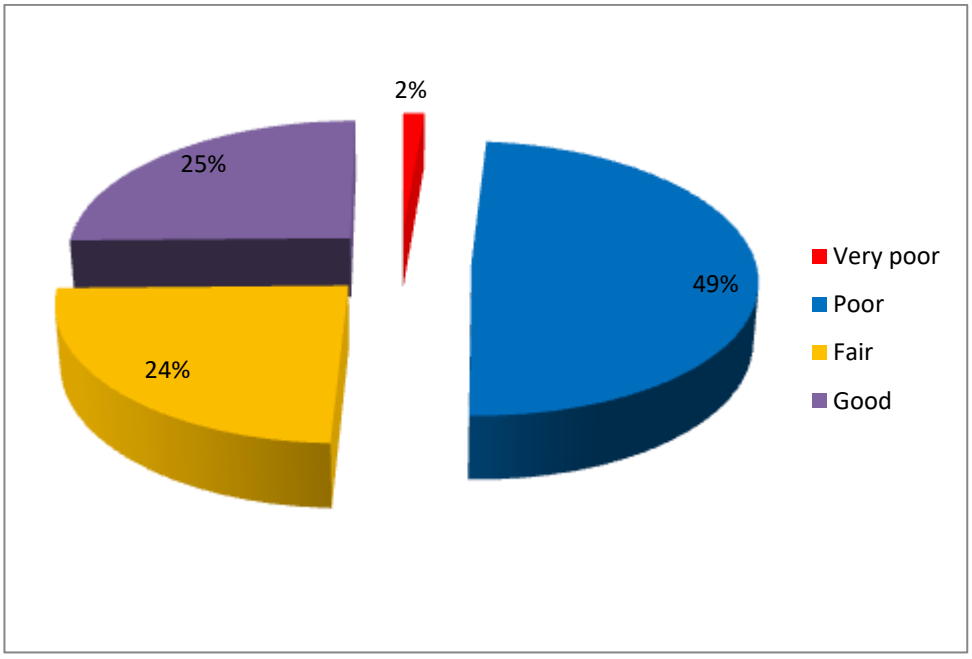


Figure 4.12: Condition of Parking Spaces

4.4.5 Condition of open spaces

The condition of open spaces in the study area is presented in Table 4.8. It was discovered that 1.1% of the total open spaces in Anyigba were very poor, 26.1% were poor, and 46.2% were fair. Consequently, only 26.4% of the open spaces were in good condition.

Table 4.8 Condition of Open Spaces

	Frequency	Percent
Very poor	5	1.4
Poor	95	26.1
Fair	168	46.2
Good	96	26.4
Total	**364**	**100.0**

4.4.6 Sanitary condition of Anyigba

Table 4.9 presents the results on the availability and conditions of sanitary utilities among the houses in Anyigba. The Table shows that 52.7% of the houses surveyed had waste bins, while waste bins were not available in 47.3% of the houses. Similarly, 52.7% had wastewater drainages, while 47.3% of the houses drained their wastewater on open surfaces, thereby contributing to the poor visual quality of the environment .

Table 4.9 Availability and Condition of Sanitary Utilities

		Frequency	Percent
Waste bins	Available	192	52.7
	Not available	172	47.3
Wastewater drainages	Available	192	52.7
	Not available	172	47.3
Toilets	Available	364	100.0
	Not available	0	0
Condition of wastewater drainages	Fair	192	52.7
	Poor	79	21.7
	Total	**271**	**100**

Plate IX: An indiscriminate waste dump site

Plate X: A littered street in Anyigba

4.4.7 Sources of water for domestic consumption

Figure 4.13 show the pattern of access to water for domestic uses in the study area. The figure shows that the residents of the study area obtained their water for domestic consumption from different sources. A total of 22.25% of the respondents sourced their water for domestic consumption from boreholes. The figure also shows that 52.75% of the respondents sourced the water they use for domestic activities were from the stream, while 25% of the respondents obtained their domestic water from water vendors.

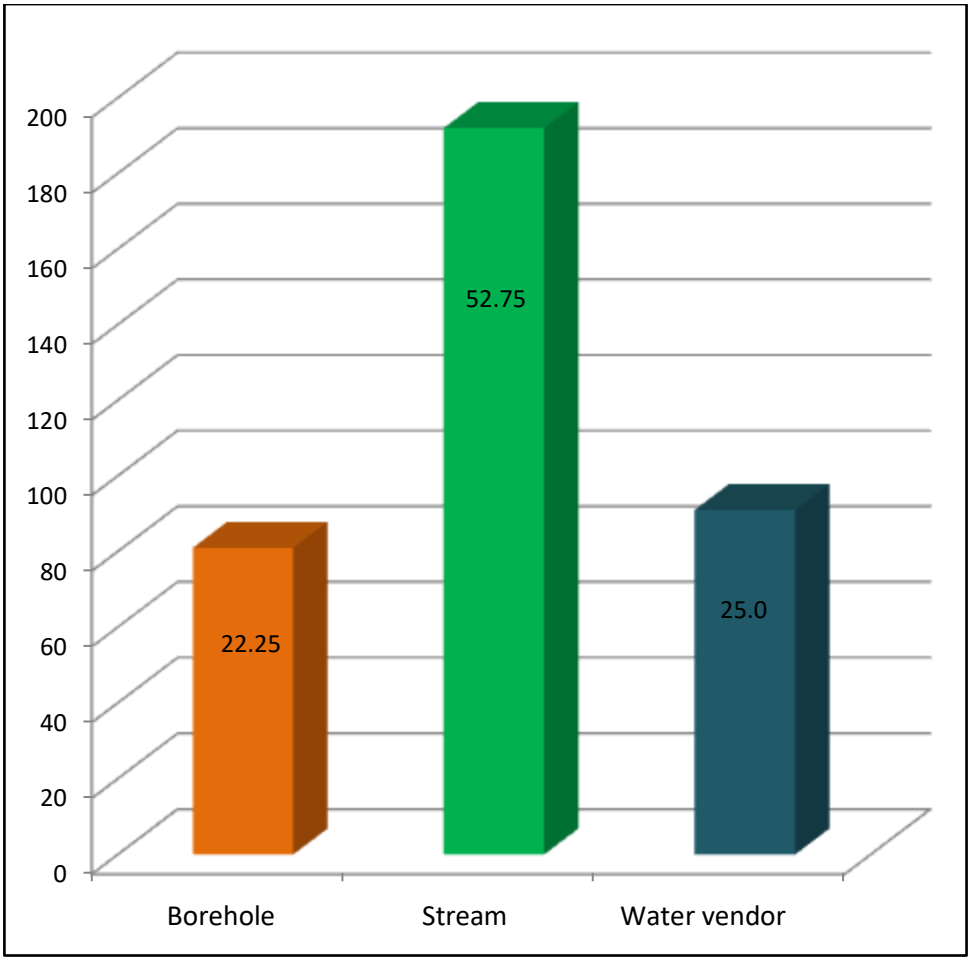


Figure 4.13: Sources of water for Domestic Consumption

Plate XI: Water vendors at a Borehole

Plate XII: Water tankers for water vending at the stream

Plate VIII: Ofu stream as a source of water

4.4.8 Sources of domestic energy

Table 4.10 presents the sources of domestic energy used by households in Anyigba. With regard to the households' domestic energy for lighting, 24.2% of the households used personal power generating sets, 29.1% used solar panels while 46.7% relied on public power supply. However, 0.5% of the households in Anyigba used Liquefied Petroleum Gas, 25% use kerosene stoves while 74.5% relied on charcoal and firewood for cooking. The use of generators for lighting and wood fuels for cooking has significant negative effects on the quality of the physical environment.

Table 4.10 Sources of Domestic Energy

		Frequency	Percent
Sources of domestic energy for lighting	Personal power generating sets	88	24.2
	Solar panels	106	29.1
	Public power supply	170	46.7
	Total	364	100.0
Sources of domestic energy for cooking	Liquefied Petroleum Gas	2	.5
	Kerosene stove	91	25.0
	Charcoal and firewood	271	74.5
	Total	**364**	**100.0**

4.4.9 Overview of physical development challenges in Anyigba

The study conducted on an assessment of the physical development challenges in Anyigba shows that the study area is faced with poor road condition, lacked drainage channels, lacked portable water supply and also had poor sewage condition. Others challenges are pressure of rapid urbanization, overcrowding, haphazard development and inadequacy of infrastructural facilities.

Anyigba has no Master Plan and lacked approved Layout from Bureau of Lands and Urban Development. More so, 90% of the houses developed in the study area have no physical development approval from Kogi State Town Planning and Development Board.

4.4.10 Relationship between housing choice and environmental quality in Anyigba

The relationship between housing choice and environmental quality was examined using multiple regression analysis technique as shown in Table 4.11. The analysis revealed that housing choice is perfectly correlated with environmental quality (r = 1). Therefore, there

is a statistically significant relationship between housing choice and environmental quality since *r* is not greater or less than 1.

Table 4.11 Relationship between Housing Choice and Environmental Quality in Anyigba

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	1.000[a]	1.000	1.000	.00000	1.000	1767321671952965 0.000	11	259	.000

a. Predictors: (Constant), Sources of water for domestic consumption, Quality of hardscape, Quality of softscape, Quality of floor materials, Aesthetic quality of the housing structure, Condition of access streets, Condition of open space, Quality of roofing materials, Condition of parking space, Size of open space, Quality of walling materials

b. Dependent Variable: Reason for off-campus housing choice

4.5 Summary of Findings

The study revealed that the trend of housing development in Anyigba between 1999 and 2019 increased from 12.43% as at 1999 to 154.3% in 2019 as a result of the establishment of KSU which has significantly impacted the rate of housing development and environmental quality of Anyigba.

The data collected on the length of residency in Anyigba showed that 96.4% of the respondents had resided in the study area for more than 2 years which was influenced by the establishment of KSU. A total of 74% of the housing types in the study area were

single and semi-detached buildings as a result of multiple rooms required for off-campus student accommodation. Another 74.8% had more than 5 persons per households, this was exacerbated by the pairing of student in the rooms.

The study also revealed that 52.7% of the housing was owner- occupier out of which 89% of the owner-occupiers had no building plan approval from Kogi State Town Planning and Development Board before development, this has led to haphazard development and poor environmental quality of Anyigba.

The data on yearly rent paid by the renter-occupier revealed that 66.9% of the respondents pays N50,000 - N70,000 and above for one room and two rooms self-contain while 29% pays N90,000 for two and three bedrooms and above, this implies that house rent in Anyigba is relatively moderate.

The reason for off-campus housing choice is proximity, cost effectiveness, amenities and less stringent rules, these amounts to 82.4%.

The study equally revealed that 71.9% of housing in the study area were structurally sound. A total of 55.7% housing in the study area are regarded as good and fair, while housing maintenance culture was rated 46.4% practiced poor and very poor housing maintenance culture which could be hazardous to lives and in turn affects the environmental quality negatively.

The survey conducted on physical development challenges arising from the pattern of off-campus students housing in Anyigba revealed that the quality of hardscape is 46.7% fair, 29.4% of softscape elements are very poor and poor, this imply that the overall quality of hardscape and softscape elements in the study area are poor.

The condition of access roads to houses are poor, this constitutes 72%. Their surfaces are not paved and maintained, they also lacked drainage channels and storm water erodes the road anytime it rains, domestic waste water also empties to the access roads.

The findings revealed that the condition of parking spaces is 51% poor, open spaces are 46.2% fair, there are indiscriminate waste disposal at incidental open spaces and thus having negative impact on the environmental quality of Anyigba.

The relationship between housing choice and environmental quality in Anyigba was determined using the following predictors (constant), Sources of water for domestic consumption, Quality of hardscape, Quality of softscape, Quality of floor materials, Aesthetic quality of the housing structure, Condition of access streets, Condition of open space, Quality of roofing materials, Condition of parking space, Size of open space, Quality of walling materials and the Dependent Variable which is the reason for off-campus housing choice revealed that housing choice is perfectly correlated with environmental quality ($r = 1$). Therefore, there is a statistically significant relationship between housing choice and environmental quality since $r = 1$.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Establishment of tertiary institutions have tremendous impacts on the housing development and environmental quality of the host communities. Tertiary institutions act as growth factors and growth poles to the communities hosting them. This study has revealed that the establishment of KSU has engendered a unidirectional growth pattern in

Anyigba. However, the growth rate was higher between 1999 and 2009 than between 2009 and 2019. In other words, higher physical/housing development in Anyigba is more noticeable during the earlier years of the establishment of KSU. These notwithstanding, housing development in the study area is evidenced by inadequate (or complete absence) of physical planning and development control. This has led to arbitrary and unhealthy housing development without taking into cognisance the possible environmental and health impacts of such developments.

An important factor responsible for off-campus housing development is the relative inability of on-campus housing to provide adequate, accessible and affordable accommodation to the teeming student population. In most cases, the student population far outstrip the available hostel accommodation. More so, staff housing shortage (and in some cases, availability) necessitates off-campus residence by some staff of higher educational institutions. The situation in Anyigba is worrisome as both staff and students' on-campus accommodation are grossly inadequate, thereby necessitating off-campus residence as the only available solution.

This study has also revealed that establishment of higher educational institutions and consequent population explosion and physical/housing development affects vegetal cover of the host community. This, in turn, affects the biodiversity of the area. Similarly, the physical quality of the environment is affected through continuous uncontrolled and unplanned process of housing and structural development. The study has also shown that the quality of the environment is a significant determinant of housing choice. However, proximity, less stringent rules and affordability are some of the most important determinants of the choice of residential location among off-campus residents.

5.2 Recommendations

This study suggests the urgent need to prepare and or implement a workable master plan for Anyigba. This will go a long way in guiding physical development in the town on the one hand, and checkmate and consequently forestall uncontrolled and haphazard housing development on the other. However, it is suggested that the plan should be prepared incrementally to prevent implementation lag.

The study also recommends that every developer must prepare and submit their building plan to Kogi State Town Planning and Development Board for approval. Furthermore, every residential building plan other than an Estate must be accompanied with a Site Analysis Report (SAR) and a comprehensive Environmental Impact Assessment Report (EIAR) for other developments so as to ascertain the level and severity of the impacts of the development on the physical/surrounding environment before approval is granted. There is therefore the need for adequate monitoring and control of physical development activities in the study area. This will go a long way to ensure the achievement of reasonable environmental quality in the study area.

The need for adequate enlightenment of the residents is also suggested, especially in terms of housing maintenance and the quality of construction materials to be used. This will help in boosting the physical quality of the residential units in Anyigba.

There is also the need to construct more hostels in the university in order to increase on-campus housing stock. This will engender an increase in on-campus residence since this will address the problem of proximity.

5.3 Suggested Area for Further Study

This research suggests the following area for further studies

i. The cost of on-campus hostel accommodation in selected Higher Institution of Education.

ii. Analysis of road networks and interconnectivity in Anyigba Town

iii. Preparation of a Comprehensive Land use Plan for Anyigba Town.

iv. Appraisal of Infrastructural Facilities Utilities and Services in the study area.

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Appendix I: Sampled Questionnaire

DEPARTMENT OF URBAN AND REGIONAL PLANNING SCHOOL OF ENVIRONMENTAL TECHNOLOGY FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

QUESTIONNAIRE ON: IMPACTS OF KOGI STATE UNIVERSITY ON HOUSING DEVELOPMENT AND ENVIRONMENTAL QUALITY OF ANYIGBA TOWN

Dear Respondent,

I am **AKUBOH, Ugbede Jacob,** a final year postgraduate student of the Department of Urban and Regional Planning of the above mentioned Institution carrying out a research on the topic: **'Impacts of Kogi State University on Housing Development and Environmental Quality of Anyigba'.** I will be very grateful if you will have the time and interest to participate in this exercise. To be sure, this research is purely an academic exercise; as such, your privacy is guaranteed and all information you provide will be treated with utmost confidentiality.

SECTION A: SOCIOECONOMIC CHARACTERISTICS

1. Gender (a) Male (b) Female
2. Age group: (a) Below 18 years old [ ] (b) 18-28 years old [ ] (c) 29-38 years old [ ] (d) 39-48 years old [ ] (d) 49-58 years old [ ] (e) 59-68 years old (f) Above 68years old
3. Educational Background: (a) None (b) Informal Education (c) Primary school [ ]; (d) Secondary [ ]; (e) Post-secondary [ ]; (f) Postgraduate [ ]
4. Marital status: (a) Single [ ] (b) Married [ ] (c) Separated [ ] (d) Divorced [ ] (e) Widowed [ ]
5. Occupation----------
6. Average monthly income (a) Less than #18,000 (b) #18,000-#38,000 (c) #38,001-#58,000 (c) #58,001-#78,000 (d) #78,000-#98,000 (e) More than #98,000

SECTION B: HOUSING UNITS INFORMATION

7. Housing Type (a) Tenement (b) Single Detached Flat (c) Semi-Detached Flat (d) Bungalow (e) Duplex (f) Others (Please, specify).....
8. Length of residency in the apartment: (a) less than 2years (b) 2-4years (c) 5-6years (d) 7-8years (e) more than 8years
9. Household size (a) less than 2 persons (b) 2-4 (c) 5-6 persons (d) 7-8 persons (e) more than 8 persons
10. Housing ownership status (a) owner-occupied (b) renter-occupier
11. If owner-occupied, what was the mode of acquisition? (a) Direct purchase [ ] (b) Transferred ownership [ ] (c) Personally Developed (d) Other arrangements (please, specify).....
12. If renter-occupier, what is the yearly housing rent? .....

13. Please, specify the reason for the choice of off-campus residence.....
14. Quality of walling materials (a) Very High (b) Just High (c) Moderate (d) Low (e) Very Low
15. Quality of floor materials (a) Very High (b) Just High (c) Moderate (d) Low (e) Very Low
16. Quality of roofing materials (a) Very High (b) Just High (c) Moderate (d) Low (e) Very Low
17. Do you have certificate of occupancy? (a) Yes (b) No
18. Did you obtain building plan approval before developing this structure? (a) Yes (b) No
19. Have you ever made modifications/adjustments to this structure? (a) Yes (b) No

SECTION C: ENVIRONMENTAL QUALITY SURVEY

ELEMENTS	INDICATORS	RATING				
		5	4	3	2	1
BUILDING	Aesthetic quality of the housing structure					
	Structural quality of the housing structure					
	Evidence of housing maintenance					
	Quality of hardscape					
	Quality of softscape					
ACCESSIBILITY	Condition of access street					
	Condition of parking space					
OPEN SPACE	Condition of open space					
	Size of open space					

NOTE: 5 = Very good; 4 = Good; 3 = Fair; 2 = Poor; 1 = Very poor

20. Availability of waste bins (a) Available (b) Not Available

21. Availability of wastewater drainages (a) Available (b) Not Available

22. Condition of wastewater drainages (a) Very good (b) Good (c) Fair (d) Poor (e) Very poor

23. Availability of toilets in the house (a) Available (b) Not Available

24. Source of water for domestic consumption (a) Public tap (b) Borehole (c) Well (d) Stream (e) Water vendor (f) Others (please, specify) .....

25. Source of domestic energy for lighting (a) Personal Power Generating sets (b) Solar Panels (c) Public Power supply (d) Others (please, specify)……..

26. Source of domestic energy for cooking (a) Electricity (b) Liquefied Petroleum Gas (c) Kerosene stove (d) Firewood (e) Charcoal (f) Others (please, specify)……..

THANK YOU

Appendix II: Population Projection

$Pn = Po\ (1+r/100)^{n}$ where

Pn = Expected population =?

Po = Base population = 18907

r = growth rate = 3.63%

n = Number of years = 17 years

:. $Pn = 18907\ (1 + 3.63/_{100})^{17}$

$18907\ (1 + 0.036)^{17}$

$18907\ (1.036)^{17}$

18907 (1.8244)

Pn = 34,494 people.

Therefore, 34,494 is divided by 5 to arrive at 6,899 households which represent the sample frame for the study.

Appendix III: Sample Size Calculation

$$Ns = \frac{(Np)(p)(1-p)}{(Np-1)(\frac{B}{C})^2 + (p)(1-p)}$$

Where; Ns = completed size needed (notation frequently used is n)

Np = population size expected (notation frequently used is N)

P = proportion expected to respond to questions (50% or 0.05 is most conventional)

B = acceptable degree of error in sampling (0.05 = ±5%; 0.03 =± 3%)

C = Z statistic associated with confidence interval (1.645 = 90% confidence level; 1.960 = 95% confidence level; 2.576 = 99% confidence level)

Therefore;

$$Ns = \frac{(6899)(0.5)(1-0.5)}{(3781-1)(\frac{0.05}{1.96})^2 + (0.5)(1-0.5)}$$

$$Ns = \frac{1724.75}{(6899-1)(\frac{0.05}{1.96})^2 + (0.5)(1-0.5)}$$

$$Ns = \frac{1724.75}{4.7390}$$

$$Ns = 364$$