INFLUENCE OF LAND USE CONVERSIONS ON PROPERTY RENTAL VALUES IN SOUTH WEST, NIGERIA

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A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY (PhD) OF TECHNOLOGY IN ESTATE MANAGEMENT AND VALUATION.

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ABSTRACT

The unabated land use conversions and their unprecedented consequential influence on rental value performances in south west Nigeria necessitated this study. Hence, the aim of the study is to examine the influence of land use conversions on property rental values in Ikeja, Osogbo and Akure with the view to providing baseline information that could guide real estate investment decisions. The aim was achieved through the examination of the causes of land use conversions in the study areas between 2004 and 2019, the assessment of before and after use rental trend of converted properties, the determination, using predictive model, the influences of land use conversions on property rental values in the study area as well as the analysis of the location variation in rental values caused by the pattern of land use conversions. The methodological approach adopted for the study reflected the nature of quantitative data required. Data on the causes, trend and influence of land use conversions on rental value performances for the study period were collected using primary sources and analysed using both descriptive and inferential statistical tools. The study however, achieved its first objective through the analysis of data on the causes of land use conversions using descriptive and inferential statistical tool. The second objective of the study was achieved through the scrutiny of the aggregated rental values data and land use conversions sourced through primary data sources which were later analysed through inferential statistical tool (trend analysis). Objective three was achieved through the assessment of the influence of land use conversion variables on rental values using Structural Equation Model - Analysis of Moment Structure (SEM-AMOS) graphics. Analysis of Variance was used to achieve objective four. The study revealed that, economic factors stand out as a major land use conversion factor across the study areas; there was a reasonable rise in the values of after use conversions across the study areas which makes investment in after use conversion a better investment option; land use conversion activities have 25%; 74% and 96% influences on rental values in Osogbo, Akure and Ikeja. The study therefore concluded that the consistent unabated rise in illegal land use conversions especially in the study areas is traceable to ineffective institutional framework (Osogbo and Akure) and unguided population influx (Ikeja). The study among other things recommended the formulations of policies / regulations that are proactive, protective and competitive that will strengthen the institutional framework at the state levels, facilitate the adherence to law and order and move the states towards being a perfect liveable and sustainable city.

TABLE OF CONTENTS

CHAPTER FOUR:

APPENDICES

LIST OF TABLES

11

Figure	LIST OF FIGURES	Page

Plate	**LIST OF PLATES**	**Page**

CHAPTER ONE

1.0   **INTRODUCTION**

1.1   Background of the Study

The radical change in urban population witnessed in the last two centuries has been described as enormous and alarming (Loehr, 2020; Digha, *et al.,* 2018; Arora, 2017; Sogbon & Olujimi, 2015; Thuo, 2013; Ogunleye, 2013 and Thuo, 2010). For instance, the rapidity of transformation of urban areas in major Nigerian cities is said to have severe economic, socio-cultural, and physical implications. Urban population growth globally has increased from 3.032 billion to 7.509 billion between 1960 and 2020 (Gagakuma, 2021; The World Bank Group, 2017; United Nations, 2012; Araya & Cabral, 2010). While the population of countries in the developed economies is expected to grow marginally from 0.96 billion to 1.06 billion, the annual average growth of countries in the developing world is projected to increase from 2.67 billion to 3.92 billion between 2011and 2030 (Kolowe, 2014).

The population of Nigeria was reported to be 206.1million in 2020, with a 2.6% average annual growth rate and 52% urban population (World Population Index, 2019). Previous studies have shown that urban settlement tends to expand in size and shape as the urban population increases, the demands for land and land resource use increases (Xu, 2020; Owoeye, 2020; Owoeye, 2016; Carruthers, 2003 and Duany *et al*., 2001). Hence, Clos (2016) asserted that urbanisation is a significant driver of urban land use conversions but has several negative consequences. Despite the negative impact of city expansion on the social, economic and environmental spheres of the cities, urbanisation remains a global phenomenon with ample opportunities that go parallel with development (Gagakuma, 2021; Degualem, 2018; Clos, 2016; Curran & de Sherbinin, 2004 and de Groot *et al.,* 2002).

The intricate interactions between man and his physical environment through modern innovations in science and technology and the ever-increasing pressure on demand for land for various purposes caused by the increase in population and urbanisation have led to land use incursions. The incursions have led to land use conversions which is gradually becoming a global issue (Musa *et al.,* 2020; Degualem, 2018; Larson, 2015; Dutta, 2012; Davis, 2009; Verburg *et al.,* 2004; Irwin & Geoghegan, 2001). Therefore, it is imperative to note that land supply to meet the dynamic demand for land is limited due to its static nature, resulting in urban land scarcity. More so, urbanisation, informal land market structure, regulations or policies and programmes initiated by the government or the culture of the people have restricted or denied vulnerable groups access to land as well as the possibility for accurate prediction and detection of urban land use conversions in developing nations (Kolowe, 2014; Ogunleye, 2013; Adebayo, 2009; Nuhu, 2008; Nuissl *et al*., 2008; Knox & McCarthy 2005). The pressures to further convert competing land uses from one land use to the other that promises the highest and best use have been acknowledged in the literature to signify grievous danger in the coming years if nothing is urgently done to avert it (Oosterbaan *et al*., 2012 and Lambin *et al*., 2003).

Ojikpong *et al.* (2016) and Akintunde (2015) averred that the gradual but unswerving infiltrations of commercial land use into residential land space in most major cities in Nigeria have severe implications for the survival of the national housing stock and rental stability. Rent is a significant linking string that binds the property market with the national economy; hence changes in macro-economy dynamics affect the supply of urban housing as well as property rental values (Oyedeji, 2018; Nkolika *et al.*, 2018; Dang & Low, 2011; Peng & So,

2002). They further declared that land use conversions or incursions common in the urban areas are gradually extending to rural areas. These scholars argued that Calabar and Jos' situation is not different in recent years as the cities have and are still witnessing unprecedented residential land use incursions, thereby putting undue pressure on the dwindling residential accommodations stock with skyrocketing rentals. A prominent striking feature of Nigeria urban cities are the aesthetic problems, gasping rental market, urban crime and shantytown formation due to rampant cases of land use conversions/infiltration and contestations (Ajibola *et al*., 2012 and Ajibuah, 2010). Though the quest for the optimisation of returns from real property investment by investors has led the Nigerian property market to its current gasping and the unpredictable state as rentals in the market are influenced by varieties of both intrinsic and extrinsic factors (Kemiki *et al*., 2018; Gwamna & Yusoff, 2016; Aliyu *et al.*, 2015; and Iroham *et al.,* 2013). However, as a significant determinant of property values and a substantial contributor to the national economy, property market analysis without a thorough assessment of rental performance may not produce the desired result.

In finding a solution to the situation, the study empirically investigates the influence of land use conversions on residential and commercial property rental values in Ikeja, Osogbo and Akure, all of which are cities and state capitals South-West Nigeria.

1.2 Statement of the Research Problem

Studies on land use change or conversions have been in the following areas: spatial variation of commercial land use rental values (Offiong *et al.,* 2018); the impact of population growth on rental values (Ajayi *et al.,* 2017); planning implications for changing the use of residential buildings (Ayo-Odifiri *et al.*, 2017); the Spatio-environmental dimension of residential land

22

use change (Olanrewaju, 2016); land use dynamics and land use structure; urban expansion and its implication on land use (Njiru, 2016); agricultural land use conversions (Museleku, 2013); impact of dumpsite on property values (Bello & Ajayi, 2010); environmental impact assessment of urban land use (Nuissl *et al.,* 2008); dynamics of land use/cover change (Mundia & Aniya, 2005); the dynamics of land use degradation (Olson *et al.,* 2004). None of these previous studies has independently assessed the causes or determiners of land use conversions in multiple cities. This has created a knowledge gap which this study intends to fill.

More so, earlier studies as Akanbi *et al.* (2019); Alarnewan (2019); Babatola and Oni (2017); Korah and Cobbinah (2016); Ojikpong *et al.* (2016); Sogbon and Olujimi (2015); Ogungbemi (2012); Cobbinah and Amoako (2012) sees the traditional methods adopted in solving issues of unauthorised land use conversions in Ministries of Lands specifically in Nigeria and Ghana as outdated. These studies observed that operations in most of the Ministries of Lands are yet to be digitalised, hence could not cope with modern-day development. The below optimal performance of the institutional framework is said to have contributed to the uncontrolled and uncoordinated land use conversions, which often triggered unfavourable urban rental regime in Nigeria (Alarnewan, 2019; Adegbola & Oluwole, 2018; Olarewaju, 2016; Ankeli *et al.,* 2015; Opatoyinbo *et al.,* 2015 and Cunningham *et al*., 2005). The abysmal performance failure of Ministries of Lands both in conduct and structure leading to the call for a contemporary method for solving unauthorised use conversions has created a gap which this study will fill.

Even though rent is a significant determiner of property values and an essential contributor to the national economy, the influence of land use conversions on property rental values performances is under-researched in Nigeria (Ayo-Odifiri *et al.,* 2017 and Olarewaju, 2016). The failure to assess rental value performances of converted residential properties in the study area is a gap that needs to be filled.

On the contrary, studies carried out in developed nations with adequate land use data revealed various models and methodological approaches adopted in assessing the dynamics of land use conversions and its influence on urban rental performances with precisions (Wray & Cheruiyot., 2015; Batista e Silva *et al.,* 2014; Wenliang *et al*., 2012; He *et al*., 2012 and Kaza *et al.,* 2011). These factors make it difficult for generalizations based on findings of studies conducted in developed nations to perfectly fit into situations in developing countries. Attempts by previous scholars at determining the influence of land use conversion activities on rental values in most cities in Nigeria have not yielded the desired result. It is a gap which the current study has filled by developing a predictive model that can be used to measure the influence of land use conversion factors on property rental values in the study areas.

The non-strictly regulated property rental market, unguided land use conversion, especially from residential to commercial use and government policy inconsistency towards housing provision have been used as an alibi for the unpredictable rental regimes in Nigeria. The analysis of rental variation caused by the pattern of land use conversion has not been done in any of the previous studies. It thus created a knowledge gap which this study intends to fill.

Examination of the research mentioned above revealed that the problem gap is the near absence of literature that thoroughly examined the causes and influence of land use conversion on the rental values of converted properties in Nigerian cities from the viewpoint of residential to commercial land use conversions. Earlier studies have observed that the intensive competition for urban land use resulting in the current rapid urban land use conversions, especially from residential land use to commercial land use, has contributed to distortion in the master plans and the absurd urban rental regime in most cities in Nigeria (Ebube & Emoh, 2022; Ankeli *et al.,* 2020a; Olarewaju, 2016; Iroham *et al*., 2013 and Oni*,* 2009). Previous studies have further observed that socioeconomic factors, the below optimal performances, and the structure of the various bodies/agencies charged with the administration of urban land use traceable to institutional ineffectiveness are the causes of urban rental problems in Nigeria. Therefore, the present study seeks to complement and extend previous research efforts in this field by filling the gaps observed above.

1.3   Aim and Objectives of the Study

The aim of the study is to examine the influence of land use conversions on property rental values (conversions from residential to commercial use) with the view to providing a baseline information that could guide real estate investment decisions in Ikeja, Osogbo and Akure. To achieve the aim set for the study, the specific objectives are to:

    i.   examine the causes of land use conversions in the study area between 2004 and 2019

   ii.   assess the trend in rental values of before and after conversion uses in the study area

  iii.   determine, using predictive model, the influence of conversion factors on property rental values in the study area

iv.   analyse the location variation in rental values caused by the pattern of land use conversion.

1.4.   Research Questions

In pursuance of the research objectives, the following research questions were raised:

1. What are the causes of land use conversions in the study areas between 2004 and 2019?

2. What is the nature of the rental trend of before and after conversion use in the study area?

3. Is the influence of land use conversions on rental values statistically significant across the study area?

4. Is there any location variation in rental values caused by the pattern of land use conversions in the study area?

1.5   Justification for the Study

The influence of land use conversions on the rental values of residential properties converted to commercial uses is the main focus of this research. This was hitherto not given significant consideration despite their impact on both national and local economy but recently have become a topical issue of global and regional discourse (Oladimeji, 2010). The untimely intervention by the necessary agencies to take action when needed has significant consequences on land use activities. This has manifested in city behavioural pattern, inhabitants, businesses and more broadly the urban morphology (Mtawali, 2019; Seto *et al.,* 2011; Poelmans & Van-Rompaey, 2010 and Yuri, 2005).

Nonetheless, before modern-day civilisation in Nigeria, land was traditionally considered an asset that parents should bequeath to their children; hence, actions on land were not viewed with much seriousness as it is today (Igbinosa, 2011). Modern-day civilisation and the realisation of the critical role land plays in human life have, however, broadened man's perception of the land.

Issues concerning land and land resource use are presently viewed with interest by both public and private investors. Man's interest in land ownership comes from the expected benefits derived from its use (residential, commercial, agricultural, industrial and other uses approved by the state's law). These derivable benefits could be in the form of financial benefit [rent or sale] and non-financial [prestige, political or social]. The urban rental housing (residential) subsector plays a vital role in the real estate sector of the national economy (Ankeli, 2021a and Daniel *et al.,* 2017). The current development in the Nigeria property market has raised investors' interest to invest in the nation's real estate sector, hence justifying the need for a study of this nature. The study will further expose the need for investors, practitioners, academia, and other stakeholders in the built environment to understand residential and commercial property rentals' performances in the study areas. Again, the lack of robust studies that systematically analysed the impact of land use conversions on rental values of properties in multiple cities in the country is a setback. Hence the need for a comprehensive, evidence-based study that will adequately analyse the consequence of land use conversions on performances rental values of properties in Ikeja, Osogbo and Akure.

As real property investment is capital intensive and takes reasonable time to recoup, the need to critically examine the causes and influence of land use conversion factors on rental values

of properties become imperative. Hence, as a pioneering work in this direction, it is considered timely, desirable, and justifiable as it complements the efforts of previous scholars in the field.

1.6   Scope of the Study

The study's focus is restricted to the independent assessment of the influence of land use conversions on property rental values (residential to commercial use conversion) in Ikeja, Osogbo and Akure, South West Nigeria from 2004 to 2019. A time frame of sixteen (16) years was adopted due to the period it takes for the influence of land use conversions activities to manifest. The adoption of sixteen years' time frame is to buttress the assertion of Lambin *et al.* (2003) that, a systematic analysis of transactions in land carried out over a reasonable timescale, aid in the uncovering of the overall philosophies that could provide clarification and prediction of behaviour that can be used for future generalisation.

The choice of 2004 to 2019 timeframe was due to the fact that the Nigeria economy which the real estate market is a player, within this period witnessed boom, recession and recovery. The effect of the two major economic crises of 2007/2008 and 2016 negatively affected the Nigeria economy. The study further extended the coverage area to three cities (state capitals in southwest, Nigeria), which were hitherto not considered in previous studies. Also, issues concerning design and redesign of the property physical structure do not form part of this study.

1.6.1 Rationale for the choice of study area and time for the study

Though, there are six states in the South West geopolitical zone of Nigeria with robust economic, political, historical, demographic and vibrant rental market. These states are Lagos state, Ogun state, Oyo state, Osun state, Ondo state and Ekiti state. Out of these states, Lagos, Ogun, Oyo and Ondo can be classified as first-generation states, while the researcher sees Osun and Ekiti as an emerging or new states compare to the other four states in the zone due to their year of creations and level of development. All the selected cities are the state capitals of the in each of the three states with vibrant property markets. Two of these states can be classified as first-generation state (Lagos and Ondo) due to the year of their creation and the third one a relatively new or an emerging state capital (Osun).

First, in Lagos state, the city of Ikeja was picked as the choice is borne out of the fact that there exist full and rich information on land /property use and rental value performances from which a more significant deal of issues that are of importance to the current study can be learned. More so, her current status as the state capital, business destination, industrial hub, and the commercial nerve centre of Lagos state has and still witnessing tremendous growth in terms of demography and commercial activities (Oyedeji, 2021; Oloke *et al.*, 2013 and Dekolo *et al*., 2013) is a ground for its selection for the study. Ikeja has enormous and highly diversified property investment potential, particularly in the residential subsector of the Nigeria real property market, thereby making the metropolis one of the most vibrant and active property investment market in Nigeria (market maturity). Over 90% of the nations' post consolidated banks and insurance companies head offices are located in Lagos, with more than half of this number in Ikeja to be precise (Babawale *et al.,* 2012).

Again, the concentrations of notable public and private (national and international) institutions/establishments and other landmarks attract people to Ikeja, which was initially designed to be a predominantly residential area. These have significantly contributed to the current 'confused status' of Ikeja (as a purely residential or commercial area), a population explosion of the city with a land area of 49.92KM^2 and population size of 313,196, that is, the population density of about 17,254 persons/km^2, (NPC, 2006). These factors have made the city too prone to urban land use incursion or infiltration, contestation and absurd rental regime (Babawale *et al.,* 2012)*.*

Osogbo, the capital city of Osun state, though not as vibrant and active in the real property market as Akure and Ikeja, was picked for this study because of its status as an emerging state capital with relatively cheap land cost and cost of living. These have served as a magnet pulling investors into the city. Again, the effect of demographic spill-over due to the saturation of Ibadan and Lagos is a factor that is gradually making Osogbo city a significant investor's dreamland with undue pressure on land use in recent time. However, the effect of this is the gradual incursions of commercial activities into the core residential areas of the metropolis, thus making Osogbo urban landscape to be experiencing land use problem as residential apartments along arterial roads or streets are steadily being converted to commercial use of either shop/stores, offices or malls (Ankeli *et al.,* 2015). Hence its selection for the study is considered timely and appropriate as Osogbo is an emerging city situated between older and more vibrant cities, rental behaviour due to the influence of land use conversions in the state could be evaluated and used as a rationale for assessing the pattern of rental performances in the relatively newly created states in South West Nigeria.

Akure, an ancient city with a rich cultural heritage, beautiful natural landscape, friendly business environment, and various tourist attraction sites, is not left out in this new development trend. The urban area of Akure is currently facing the problem of land use abuses (incursion), illegal use conversions, distortion of urban morphology, housing shortages and segregated rental, gentrification and shantytown formation (Adeoye, 2016 and Olotuah, 2002). Among other factors, these have made Akure metropolis prone to land use conversions problems, hence a choice for this Study.

The chosen timeframe for this research work was the period from 2004 to 2019 as data for a study of this nature need to be drawn from a specific time frame particularly as it is a phenomenon that takes place almost daily in our urban areas. None of the earlier studies has gone beyond ten years; hence, this research work represents a bold empirical step in this direction.

Nigeria as a nation witnessed two major economic crises within the timeframe selected for the study. The economic crisis or recession of 2009, which was widely believed to have been caused by the combinations of the 2007 and 2008 global financial crisis after-effect and the dipping in the oil price leading to the severe dropping of oil revenue in 2016 with the massive balance of payment deficits. These have grave negative consequences on the real estate market, a significant player in the national economy.

The actual manifestation of democratic transition (rule) achievement in Nigeria was said to have started in 2004 (Oduola, 2018), hence the selection of 2004 as the base year for this

study. Again, it was the global year of gradual economic recovery after the economic meltdown and the year of consolidation reform in the Nigerian banking sector, which severely impacted Nigeria's property market. The Nigerian economy, in which the property market subsector is a significant participant, has, between 2004 and 2019, witnessed period of boom, recession and recovery, which determines categories and momentum of land use conversions and their effects on property rental values. 2004 is the beginning of business year of operation at the popular computer village (market) in Ikeja. Oni, (2009) observed that, the opening up of the market for business operation significantly changed the real property rental market of Lagos state, particularly, the Ikeja property market. Hence, the availability of adequate and relevant data on the subject matter informed the adoption of the period (2004 to 2019).

Finally, the Study has decided to use two principal land uses as its subject scope – residential and commercial land uses due to their predominant use in the urban areas and susceptibility to conversions of use. There exist very few studies in the country that systematically analyse the influence of land use conversions on the rental values of more than one property types. The current study thus, proposed the adoption of a modified and broader framework from previous research for the identification and analysis of land uses conversions variables, the extent of their influence on residential and commercial property rental values performances in the study areas.

1.7   Basic Assumptions

The Study assumes that:

i. Land Use Conversion is used in its strict sense to mean the changing of a building or property use from residential to commercial use. Hence the term will be used interchangeably to mean the same thing in this study

ii. Land use conversions in the study areas are done freely without compulsion or interference by persons other than the property owners.

iii. The market rental values of residential and commercial property used for this study are the market rents determined by the interaction of the market forces of demand and supply without institutional interference obtained from the records of practising Estate Surveyors and Valuers (ESV) in the study areas.

1.8   The Study Area

For this Study, Ikeja, Akure and Osogbo have been selected. The distinct land use conversions factors for each of the locations were identified and their likely influences on property rental values independently isolated. Their descriptions are as follows:

1.8.1   Description of Ikeja

Ikeja is the capital of Lagos state and a formidable part of the metropolitan city of Lagos, about 10.5miles approximately 17 KM northwest of Lagos, south-western Nigeria. Ikeja lies on Latitude 6.5965that is Lat (DMS) 6^0 35' 47N, Longitude 3.3421 that is 3^0 20'32E on the elevation of 128 feet above sea level with a population of 795,049 people with a population growth rate of 5% per annum and cover total land space of 49.92km^2 (Dekolo *et al.,* 2013). A perfect example of a typical African community that through history grows through expansion, transformation and development, it falls under the administration of the old Western Region with such other city as Epe, Ikorodu, Agege, Badagry and Mushin until the

creation of states in 1967 and Ikeja took over the administrative position of the capital city of Lagos from Lagos Island. These factors eventually led to the influx of more people to the city, more competitive economic activities, and more competitiveness among the different land uses in the area. Ikeja is a major local government area in Lagos state being the capital of Lagos state and a local government administrative Headquarter in Lagos.

Dekolo (2013) and Oni (2009) asserted that, apart from its status as the capital of Lagos state, Ikeja is the administrative headquarters of the Ikeja Local Government Area and situated in the north-central part of Lagos state. Ikeja shares common boundaries with other local government areas as Ifako-Ijaiye, Agege, and Alimosho in the western edge; Kosofe, and Mushin local government areas in the eastern part, while in the southern axis it shares a boundary with Oshodi-Isolo local government area and Ogun State to the north fringe as depicted in Figure. 1.2. Apart from its status as a capital city and local government headquarter, the serene neighbourhood, presence of industrial activities, a vibrant commercial nerve-centre, an international air gateway, and the sharing of common boundary with another state in the country and other saturated local government areas within the state makes Ikeja a destination point for different classes of people. For example, the rich who want a comfortable and serene place to build their home, people in business who want to partake in the exciting business market of Ikeja, fun-seekers who are in dare need of nightlife and job seekers looking for employment, among others. These have subjected Ikeja to all manners of land use abuses ranging from incursion to illegal use conversions resulting in urban housing shortages and high rentals, distorted city morphology and slum formations. Hence, the city of Ikeja is a suitable choice for this Study.

The city was founded by Akeja Onigorun, an Awori hunter who first settled there. Hence this new settlement was therefore named after Akeja-Onigorun, a deity worshipped in Ota, the ancestral home of the Aworis, and till date, the majority of the settlers in Ikeja are the Aworis' that migrated from Ota - an Awori town in Ogun State which is about 24km North of Ikeja township which was in the wake of migration of Yorubas from Ile Ife to Ota in the 15th century. The raids of the city for slaves continue till the mid-19th century.

The linking of Lagos with Ibadan by rail in 1901and the expansion of Lagos as a port city changed Ikeja into both residential and industrial suburb of Lagos which marked the beginning of the gradual influx of people into Ikeja. Today Ikeja is the home of one of the busiest international airports in Nigeria, the Federal Airport Authority of Nigeria (FAAN), the Accident Investigation Bureau, Nigerian Civil Aviation Authority, Computer Village, Headquarters of National and Multi-National Companies and the State Secretariat. It is a model city and the official seat of the Government of Lagos. Ikeja is the dream land for those who prefer the mainland of Lagos. It is the industrial hub of Lagos with very vibrant property market maturity. Ikeja is one of the cities in Lagos state that has experienced and still experiencing geometrical rise in her property rental values. The housing market (residential) is currently contending with issues of dominance, inversion and secession from commercial use which has changed the previous status of the city from predominantly residential district to mixed district which is a major reason for the selection of the city for this study.
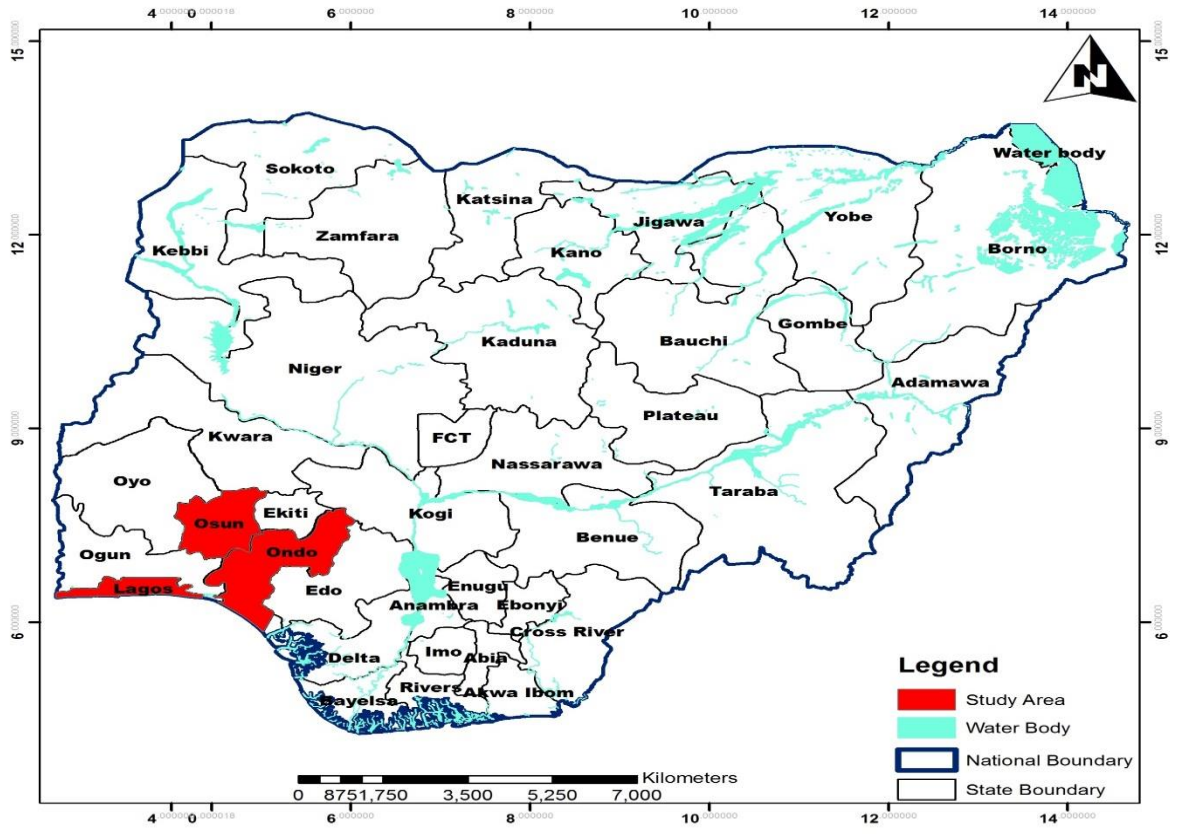
Figure: 1.1:   Map showing the study areas (Lagos, Ondo and Osun States in Nigeria)
Source: Urban and Regional Planning Department, FUT, Minna (2019)
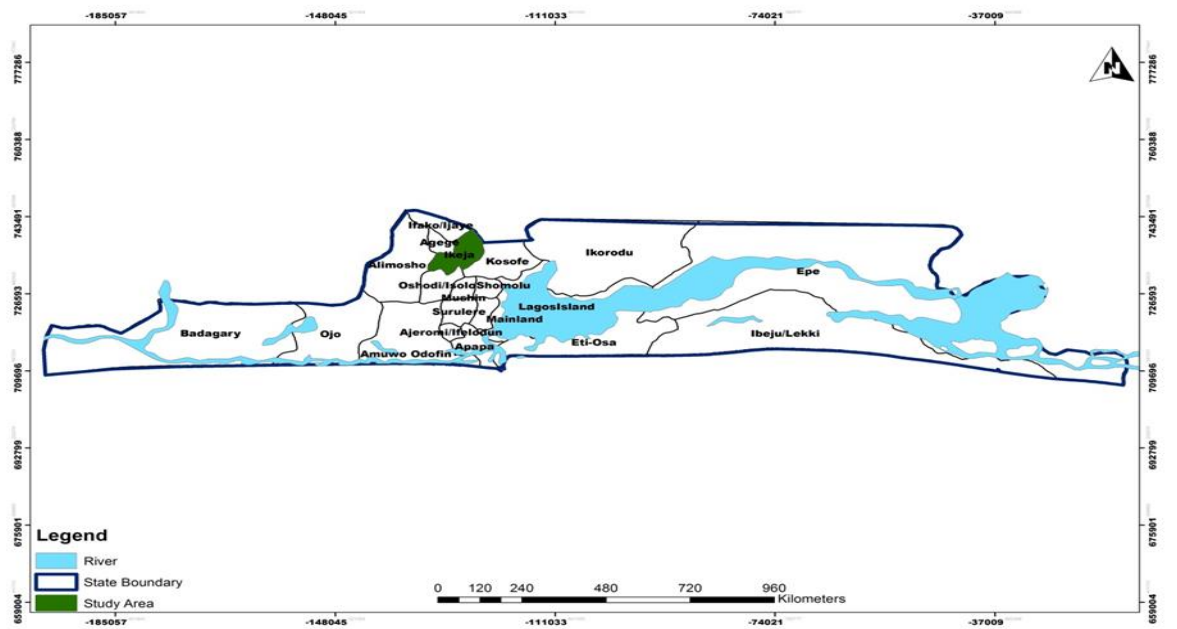
Figure.1.2: Map showing the position of Ikeja and other local government areas in Lagos
Sources: Department of Urban and Regional Planning FUT, Minna (2019)

1.8.2   Description of Akure

The existence of Akure as a traditional Yoruba city predates the advent of colonial rule in Nigeria. It was an independent region before its inclusion into the great Benin Kingdom in the 19th century, but by 1894 the control of the region fell under British colonial rule. In 1939, Akure became the provincial headquarter of Ondo province. Akure is a medium-size city currently located within Ondo State in the south-western region of Nigeria, which in 1976 became local government headquarter and capital city of Ondo State. It lies approximately on latitude 70°15' north of the Equator and longitude 50°15' east of the Greenwich Meridian.

The rapid growth in population and the increased relative political influence of the city as a state capital has dramatically enhanced its sudden expansion in socioeconomic activities. The 1991 national population census put the city population at 239,124 while the population estimates of 1996 put the city population at 269,207, while the 2006 population estimate put the population of the municipal at over 350,000 people. The change of Akure morphology over time as a state capital reflects its new status with the attendant demographic, poverty, and housing problems experienced in other similar medium-sized Nigerian cities (Ogunleye, 2013 and Adebayo, 2009).

The city of Akure is approximately 700 kilometres South West of the Federal Capital Territory, Abuja, and about 350 kilometres to Lagos, the industrial hub and commercial nerve centre of the nation and the former capital of Nigeria. Adeoye (2016) asserted that the rate of urbanisation in the city of Akure outpaces the degree of economic development and thus concluded that her current urbanisation rate could be higher than that of other emerging cities

in the country. However, Omole (2000) observed that the high influx of people from the rural areas into the city of Akure with the resultant consequences of urban congestion, deteriorating neighbourhood, unsanitary housing environments, high poverty level, infrastructure overuse and urban land abuses with slum formation as a result. As the final solution to this problem, Olanrewaju (2004) suggested complete urban renewal through rehabilitation and upgrading programme to facelift the city and enhance its liveability.

Akure, the headquarter of Akure North and Akure South, is a peaceful city well known for cocoa production, a university and an airport town, a gateway to other South West states like Osun State from the northern part of Nigeria. A city with fertile land for agricultural practices at the urban fringe, several tourist attractions sites, hospitable people, and culture has made the city home to both free-born and visitors. Akure has witnessed rapid population growth, thus making the city a significant business destination in the South West, Nigeria. The urban area of Akure is currently facing the problem of land use abuses–incursion, illegal use conversions, distortion of urban morphology, housing shortages and segregated rental, gentrification and shanty town or slum formation, which if left unchecked, could pose a grievous danger on the social wellbeing of the inhabitants as well as housing sustainability. It is on this basis that Akure was picked for the Study. The first disgusting thing that a first timer into the city of Akure is the human and vehicular congestions around Oja Oba (Oba Adesida), Oke Ijebu and Araromi axis of the city with conflicting property use outlook.
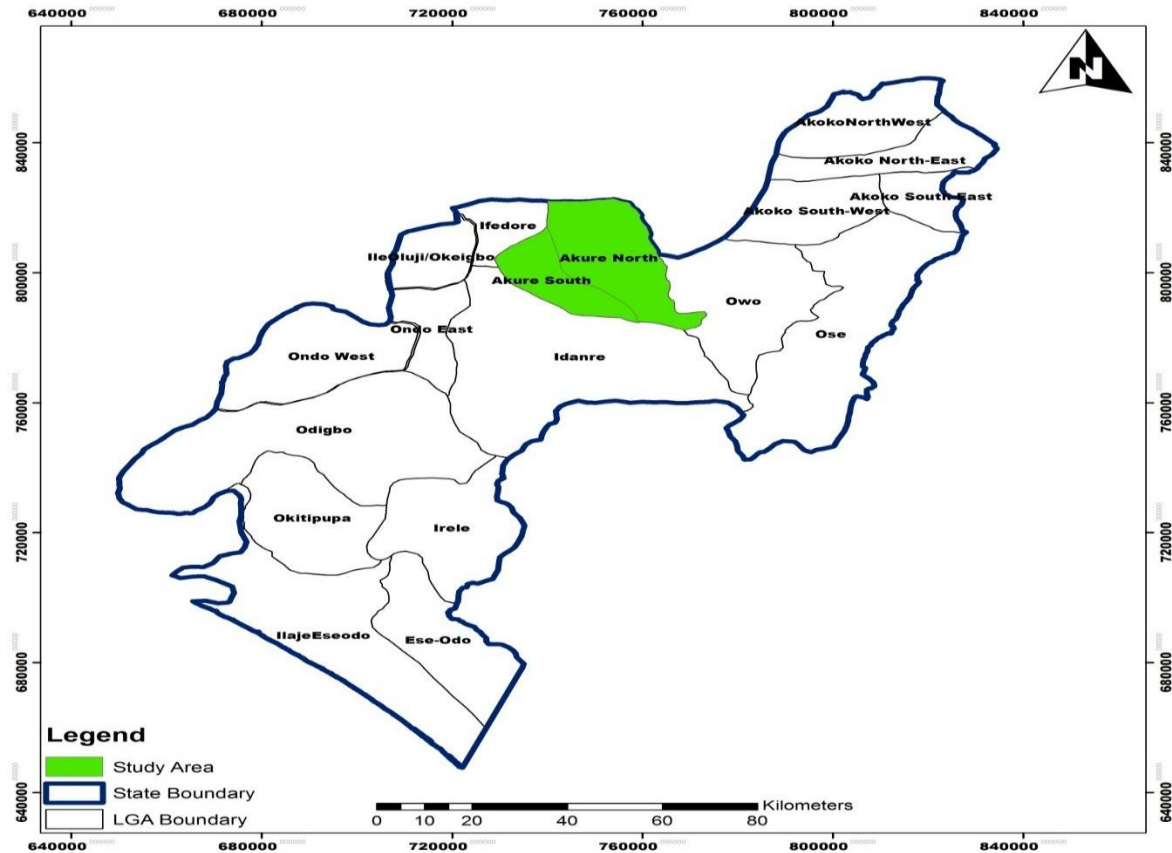
Figure 1.3:   Map showing the location of Akure in Ondo State
Source: Urban and Regional Planning Department, FUT Minna (2019)

1.8.3 Description of Osogbo

Osogbo, the capital of Osun State, is a city located almost at the centre of the State in South

Western Nigeria. It is about 88 kilometres to the northeast of Ibadan, the capital city of Oyo

state and about 100 kilometres to South of Ilorin, the capital of Kwara state and 115

kilometres northwest of Akure, the Ondo State capital. According to Eades (1980) in Gasu

et al. (2016), Osogbo is a town situated between Longitudes 4° 28' 43'' and 4° 40' 12'' East

and Latitudes 7° 42' 10'' and 7° 51' 10' North. It is almost of equal distance from Ile-Ife

(48km), Ilesha (32km), Iwo (48 km), Ikirun and Ila-Orangun (46km) and Ikire (48km). The

2006 population census provisional result put the population of Osogbo urban area to about

156,694 inhabitants. Osogbo has a relatively vast land area of about 4,700 hectares. It has an annual average rainfall of 1150mm, which span from April to late October or at times early November; with a little break in July or August, while the dry season runs from December to March, which is the period that usually witnesses intense heat with less humid and hot climate than what other parts of southern Nigeria experience. The strong effect of the harmattan wind usually heralded the dry season. It lies primarily in the deciduous forest area that spread towards the grassland belt of Ikirun, north of Osogbo. The city is situated on an elevated land of well over 500 meters (800 feet) above sea level and drained by Osun River and its tributaries such as Rivers Ogbaagba, Gbodofon and Okoroko (Okooko), Olohunkoro, and other streams (http://www.osogbocity.com).

Osogbo is a settlement in Osun State popularly called '*Osogbo Oroki, Osogbo Aro'* known for art and craft (batik). A university town that is peaceful and less expensive to live in, it has various tourist attraction centres prominently, among which is the Osun grove, a World Heritage Site (WHS) by the United Nations Education Scientific and Cultural Organization (UNESCO), Ataoja Palace, Arugba Court and Susan Wenger House. The city is currently undergoing rapid growth in population, city expansion and infrastructure development, thereby putting undue demand pressure on land use. The resulting consequences have been city morphology distortion, land use infiltration and conversions, gentrification and slum formations.

Gasu *et al*. (2016) opined that Osogbo became a notable commercial town with the advent of the railway in 1907, which brought the colonial government to the threshold of the city. Industrial and commercial expansions have always received adequate attention from the

settlers and immigrants from other parts of the country. The most energised parts of the city in terms of commercial activities are Gbongan Road, Okefia, Alekuwodo / Olaiya axis, Old Garage, Ayetoro area, MDS area, Ajegunle area, and the area along and around Station Road where almost all the ethnic and religious groups in Nigeria are represented trading side by side in harmony.

The city of Osogbo became a tourist centre for her famous Osun Osogbo festival celebration, which attracts people from far and near places every year with the enlistment of the Osun grove was in 2005 declared as a world heritage site by the United Nations Education Scientific and Cultural Organization (UNESCO). The annual Osun-Osogbo festival is usually celebrated in the last week of August of every year. (www.sunnewsonline.com/new/trending).
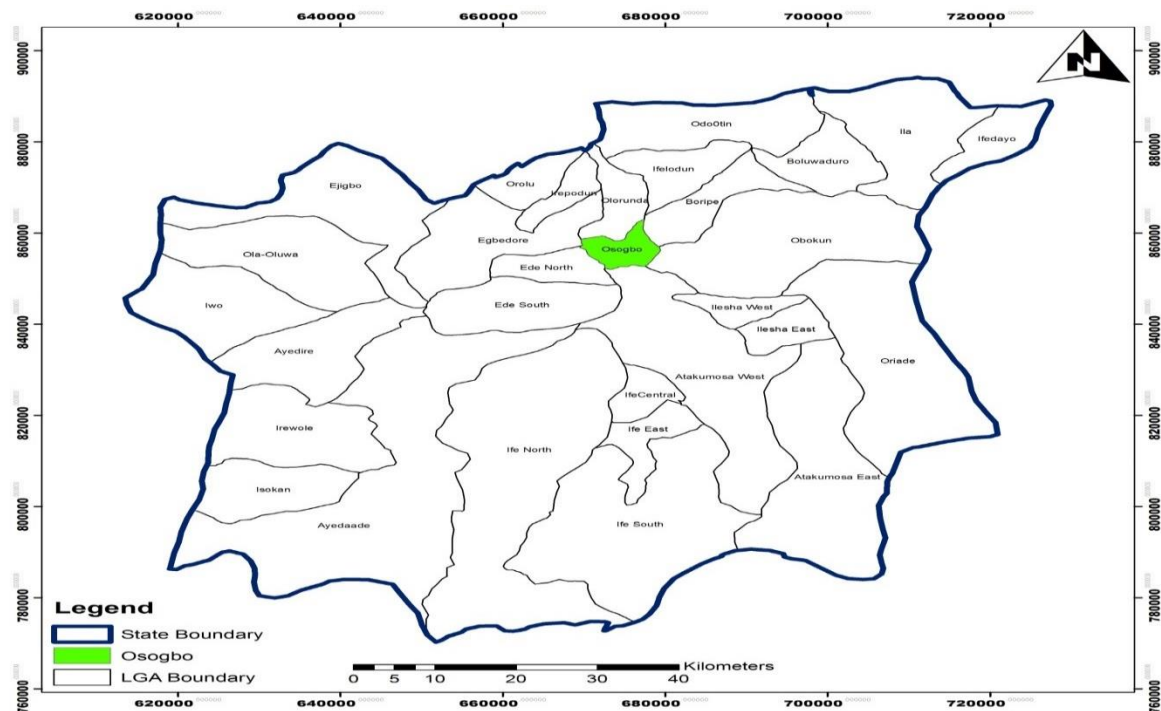
Figure 1.4   Map showing the location of Osogbo in Osun state
Source: Department of Urban and Regional Planning Federal University of Technology, Minna (2019)

1.9   Limitations of the Study

The execution of the research work was limited by some challenges encountered in the cause of the data gathering process. The outbreak of the novel corona virus (COVID 19) pandemic in Nigeria delimits the latitude of data gathering procedure. The restriction on movement, stay at home order, social distancing and other similar orders of the Presidential Task Force on COVID 19 hampered data collection/processing cost and elongated the time required for data collection as questionnaires that would have been fill and returned within a short time, take weeks and months. The effect of the Presidential Task Force on COVID-19 truncated the initial plan of the researcher to adopted quantitative and qualitative research method for the study. The initial plan of one - on - one interview, focus group discussion, Key Informant Interviews were all cancelled due to the Presidential Task Force on COVID-19 order. However, through covert visits and persistent phone calls a total response rate of 88.9% was achieved which shows the data obtained from the field were adequate. Similarly, the dearth of data on conversions of property in the Ministry of Lands and Physical Planning in Osogbo and Ondo State Ministry of Works, Lands and Housing constituted serious limitation to the study. Though, with concerted efforts, reasonable and useful data, considered adequate and appropriate were retrieved and used for the study.

CHAPTER TWO

2.0   LITERATURE REVIEW

2.1   The Concept of Land and Land Use

Anderson (1971) cited in Sogbon and Olujimi (2015), canvassed the analysis of the concept of land use by the splitting of the words into land and use. Land, signifying real estate, the physical earth surface and resources thereon and other property, while use, encompasses all human activities within and around any given location or area due to social developmental limitations. Hence, land use may be viewed as the decisive occurrence of human developmental processes, which could be due to social, economic, political or other means that result in the transformation of the society. Sogbon and Olujimi (2015) therefore advise that land use should not be seen from a deterministic point of view, that is, from the reflection of the social process but dialectically attached to the activities of man and other social processes involved.

Land is the primary commodity of nations (especially nations in the developing world) with production value. It is the part of the universe that provides support for life, space for living, construction and the development of various social, political and economic activities. It is an essential asset for the development of any nation, a unique commercial asset as no society can develop or exist without it and the crux of the practice of real estate management and valuation profession (Oseni, 2014; Hu *et al*., 2012; Nuhu, 2011 and Food and Agriculture Organisation [FAO], 2003). Land as an asset is indestructible, immovable and limited in supply due to its static nature. It has three-dimensional aspects - the portion of the earth surface, space above and beneath the surface and any other thing either attached to or growing on it. Land is seen the world over as an investment option, a good hedge against inflation, a

key engine for national economic development and a source of a nation's capital appreciation. (Abbas, 2016; Chivakul *et al*., 2015 and Liang *et al.,* 2006).

2.1.1   Land in the African context

In African land goes beyond its ordinary context of the physical entity to biological and even spiritual connotations. Land is seen as deity in some communities in Nigeria (Ajeh in Idoma land), as people (Gbagi land, Yoruba land, and Nupe land), as sources of cure for some illnesses and a place to live and farm. Land plays a critical role in Africa subregional development. In African, land is considered a public asset that belongs to the present generations, past generations and unborn generations. The outright sale of land by any member of the society is considered a taboo in most African communities, particularly, in most communities in Nigeria.

It is in connection with above assertions that land have been given a broad spectrum of both natural (the ground, soil and everything above and below) and artificial (buildings, trees and other structures) contents, which explain and support the maxim *quic quid plantatour solo solo cedit,* meaning whatever thing that is attached or affixed to land is part of the land. This maxim gives the land common public ownership, which Ezejiofor (1989); Kludz (1974); Obi (1963) and Lloyd (1962) cited in Oseni (2014) disagreed. In their opinion, as quoted in Oseni (2014), the maxim is not the right, and the best reflection of African customary law and thus should not be applied in an African setting. On the contrary, the proponents of the maxim, such as Nwabueze (1982); Coker (1966) and Olienu (1962), affirmed in Oseni (2014) that customary law understood land with broad application to include the soil, buildings and such other things accepted to be part of the land by nature.

In an attempt to explain the nexus and significance of land to man, Nuhu (2011) argued that a vibrant relationship exists between man and land, which is entrenched in the society's dynamic culture. Land is often considered as property because it can be owned with the right of the ownership exercised thereon. Every tradition or culture recognises and accepts its three essential attributes or characteristics of the ability to be held and engaged as a common property which signifies its non-exclusiveness but competing use quality; indispensable resources for human habitation, which makes its adequate availability in quantity and quality essential for the stability, security and the sustainability of a nation (Emoh, *et al.,* 2013 and Nuhu, 2008).

The issues of the possibility of the exclusive benefit of land to its owner has ignited reasonable concerns among researchers. Land is generally believed to belong to the public and must be scarce in order to satisfy wants. To unravel the mystery, there is a need for one first to understand what public property or good is. A public good is any good that is non-exclusive and non-rival due to its unique characteristics. It must be non-excludable and non-rival as its usage by one person does not reduce the capacity or preclude the other person from its usage (Babatola and Oni, 2017; Njiru, 2016; Nuhu, 2011 and Randall, 1987). However, Abbas (2016) opined that a non-rival resource use would have a zero-marginal cost; hence he disagreed with the above assertion on the ground of its failure to include a zero incremental cost of provision and opportunity cost variables, that is, the alternative benefits from a specific use that is foregone. He added that the definition had not prohibited public good from being scarce as the non-exclusivity of land use denotes its non-availability for use by other users.

Nuhu (2008) asserted that land that was ordinarily considered to be a gift of nature to an average traditional African is now a thing of great marketable value as land to accommodate the ever-expanding and congested urban centres is scarce. He traced the cause of urban congestion and city growth to urbanisation with the resultant consequences of population pressure and socioeconomic and environmental problems ranging from unemployment to land use conversions and other abuses. However, in an attempt to further analyse the pattern of urban land use and in a Nigeria settlement that, land use allocation in Minna, a city in Nigeria was used. The study revealed that the Niger state government between 1999 and 2005 approved 5,363 applications for residential land use; 536 for commercial land use, while 12 applications were approved for industrial land use; 26 applications granted for agricultural land use and 33 application was granted for religious purposes in the city. The study, which brings out the administrative inefficiency and the lack of effective policy framework in the state, concluded that land policy in use in the country is outdated and needs to be repealed as it is a clog in the wheel of urban mass housing delivery.

Effiong (2011) opined that land use had been viewed from the perspective of conditions of human activities such as residence, commerce, agriculture, forestry and building construction that alter land surface processes including biogeochemistry, hydrology and biodiversity, as a dynamic process with ever-changing pattern in response to man's demand for the use of human resources. He further asserted that there is no universally accepted classification system or definition of land use, and it will be challenging to develop any as land use can be viewed from different perspectives that suit the different user or professions. Hence land use in the context of this study is viewed from the perspective of the use of land for residential habitation and commercial purposes, and land use conversions are the commercialisation of

residential land uses, which in the present case refers to conversions or change in the use of purpose-built residential property to commercial uses in Ikeja, Osogbo and Akure.

2.2   The global historical evolution of land use conversion

Building or land use conversions as the case may be is a phenomenon that is not restricted to just a single area or region but a global spectacle. Steele and Gleeson, cited in Akakandelwa (2012), observed that building use conversions process began in Australia as far back as when vital decisions relating to cities' futures were taken based on planning. It was the consequences of the 19th-century colonial development resulting in the urbanisation of the country. Patricia (1985), cited in Akakandelwa (2012), also submitted that the rapid expansion of economic activities, beyond the confine of an urban area, resulted in the incursion of business activities into areas meant for other uses as residential areas. It marks the beginning of urban land use conversions from residential land use to commercial land use in the city core of London Borough, Holloway, Islington at about 1307. This phenomenon of the changing trends of urban land use through the conversions of residential land use to commercial land use became noticeable in the United States of America at about 1800 due to demographic and economic factors (The SEMCOG, 2003). The procedures and manifestation of the consequences of urban land use conversions vary from locality to locality, depending on the purpose of the conversion exercise. Ankeli *et al.,* (2020) argued that, the occurrence of this phenomenon has taken a more drastic and dangerous trend in the developing countries especially, Nigeria due to lack of effective administrative framework.

Henehan *et al.* (2004) asserted that change of use is generously used to describe the alteration in the level of associated building risk in terms of both the functional and characteristic

changes in allowable land use. For instance, a change of use concerning zoning may not likely trigger alterations to the site or existing structures, but when a building has moved to a riskier use like a change of use in terms of building code, it may trigger alteration to the structure or the site where it is situated. A major driving force of change in use is man's desire to exploit land resources to their highest and best use, while the demand for land resource use triggered the change of use. Therefore, the current study is hinged on the philosophy of property use conversion or change in property use where material alteration to property design or major alteration may not be required.

2.2.1   The global concept of land use conversions

Change itself is a phenomenon that is said to be permanent and inevitable regardless of its source and type, thus change, or conversions in or of the usage of property from one use to the other is believed to be part of urban growth (Gwamna and Yusoff, 2016; Adebayo, 2009; Nwachukwu and Ukpabi, 2009). The evolution of urban land use conversions predates mans' idea of modern-day city planning. Thus, research in this area evolved due to the determination of man to identify, forecast, and entirely control the damaging environmental effects of changing land use and provide sufficient critical information on socioeconomic factors and the identification of land use conversions drivers. Conversions or change in land use could take different forms as conversion could be in the form of converting from one use type to the other in relation to its use pattern in the locality, or the modification of a particular land use type in term of land use intensity and the alteration of land use characteristics, attributes or qualities which did not altered the quantitative or the physical structure of the building but changes the nomenclature of the building use type say from residential to commercial or from low income to high income residential property (Ebube and Emoh, 2022;

Ankeli *et al.,* 2020; Kalu *et al.,* 2017 and Peter *et al*., 2017). Land use conversions are a common phenomenon in the urban development process, and they can occur within and outside the urban areas.

The most vulnerable urban land use to the conversion process is residential land use. Land use change or conversion is an all-embracing term used to cover man's interaction with the physical earth surface that helps alter or modify. On the other hand, land use conversion is the total or partial substitution of a particular land use function with another useful function. For example, the conversion from residential land use to commercial land use in urban land use function. A man usually initiates land use conversion to obtain his essential needs through his interaction with the natural environment resulting in the alteration of the earth surface. Though a long age practice of man, its recent intensive dimension is monumental and said to be more than ever before in the history of man. These and other factors have led to environmental and socioeconomic consequences at the local and global scale (Museleku, 2013 and Balogun *et al.,* 2011).

2.2.2   Land use conversion experience from other nations

Olson *et al*. (2004) opined that the reflection of the actual man's engagement in the use of land and other processes of the environment within a period and space which shows the effect of such interactions on the city morphology, including infrastructure breaks down, urban housing shortages and high rental values are the consequences of land use conversions. Hence, land use conversions should be a critical knowledge for the design of effective land management programmes has recently become topical issues of national and international concern. Xu (2020) studied land use conversions in the central cities of Osaka and Tokyo

metropolitan areas and found that the metropolitan areas seem to be more attractive to commercial and residential activities but due to the insufficient availability of land spaces for both uses, competition for use often ensues between these land uses, with the consequences of inversion, succession and dominance of use.

Loehr (2020) however, using Germany and Cambodian land use conversion process, submitted that land use conversions developmental process that occurs with lack of control do not take place only in developed countries, but also in threshold and developing nations of the world. The study observed that, even where legal framework exists, the level of compliance with such legal framework becomes questionable as land owners and developers often pursue their private goals which in most cases do not necessarily comply with the intentions of the public and the planners. In Manila, in the Philippines, a study conducted by Kelly (1998) discovered that political ideology plays a crucial role in land use conversions in the country as political groups easily circumvent law and regulations guiding land use. Urbanisation, industrialisation and globalisation have been identified as the fundamental forces of development that have engendered illegal conversions of land uses, triggered urban crime and other forms of transformations and the shaping of modern-day societies (Hove *et al.*, 2013; Chen, 2012 and Chen *et al.*, 2011).

Wenliang *et al.* (2012) posited that the rapid development of the petroleum industry and the lack of strategic planning for the resultant urbanisation in Daqing city have led to her expansion and many socioeconomic and environmental problems that the city is currently facing, majorly in the area of urban land use conversions. Therefore, the need to evaluate the urbanisation process and formulate policy recommendations that would enhance sustainable

development in the city became inevitable. To achieve this aim, the Study developed two multilevel models - an Integrated System Dynamic SD and CLUE-S model (known as SD-CLUES) and an Integrated SD and Stochastic Cellular Automata Model (SD-CA). The results of both models were different from each other. The SD-CLUES model clusters new urban developments in the downtown area or along the major transportation route, thereby revealing the exogenous driving forces that play a significant role in shaping urban spatial dynamics. While the SD-CA model, on the other hand, spread new urban development over the whole study area. Findings revealed that in the explanation of the urbanisation mechanism of the city of Daqing, the SD-CA model is a better option as the stochastic factor in the model impacts significantly on the accuracy of modelling. It will be challenging to apply this method in many countries in Africa, including Nigeria, due to the need for accurate land use data sets and technicalities involved; hence there is a methodological gap.

2.2.3 Land use conversion experience in Africa – Nigeria, Ghana, Kenya and Ethiopia

Farinmade (2010) avers that land use conversions occur as soon as the use of a particular land is changed from its initially allocated use functions due to either invasion and succession, economic rents, highest and best uses, among other factors as urbanization or the combinations of all. Ogungbemi (2012) observed that the conversion process most often begins in Nigeria as the incursion of other land uses, mostly commercial activities, into residential areas, which, after a while, take predominance of the land area. This kind of conversion is usually obvious of property along arterial roads or streets, which is a common scenario in Ikeja, Osogbo and Akure.

Adegunle *et al.* (2016) opined that change in use or conversions is the use of land or buildings thereon for any other purpose(s) different from that for which such land or building was initially zoned approved and intended. Akanbi *et al.* (2019) assessed land use conversion purpose in the city of Minna, Niger state, Nigeria. The study found that, land and residential property in the city have and are still going through the process of conversions from the initial purpose of acquisition to their current usages as the coverage locations for the study have undergone substantial level of conversion from residential use to commercial/mixed use, resulting in the problems of indiscriminate waste disposal, traffic congestion and many others. The inevitability of change in the use of land become more evident with man's desire to meet up with his insatiable wants, hence in an attempt to achieve his wants, man continues to exploit every opportunity availed by land use dynamism without necessarily considering its adverse effects on the environment, and the various other land uses (Adegunle, *et al.,* 2016 and Ayotamuno, *et al.,* 2010). However, Jelili, *et al.* (2008) cited in Sogbon and Olujimi (2015), affirmed in their statement that conversions and redevelopment of urban land/property to accommodate the ever-expanding businesses is the manifestation of the effect of urbanisation. Ogungbemi (2012) argued that an increase in the demand for land use triggers a change of use which is synonymous with an increase in the intensity of use.

According to Ojo and Ojewale (2018), illegal land use conversions are occurrences that often come with rapid urbanisation, which generates opportunities and challenges for land managers and administrators, policy stakeholders, and lubricates globalisation. Though it is not a new phenomenon in Nigeria, its form, effect, and context have been under-researched. Researchers as Jelili *et al.* (2017); Onyemaechi (2013); Ogungbemi (2012); Jelili and Adedibu (2006); Samson *et al*. (2006); Okeke (2000) and Onyebueke (2000) have established

links between informal land use, residential land use and population density. These scholars, therefore, concluded that the ever-increasing rate of unemployment and the recent economic downturn in Nigeria seem to have made the informal sector the only alternative route of survival for the less privileged and unemployed Nigerian hence a new vista for land use abuses.

Adegunle *et al.* (2016) examined the determinants and effects of change in the use of landed property and its implications on rental values of properties in Ibara and Oke-Ilewo areas, Abeokuta. The Study employed descriptive and inferential statistical tools in the analysis of data obtained from the field. Findings from the study revealed that the observable conversions in property use in the study areas are the conversions of residential land use to commercial land uses. The resulting consequences are the structural modifications, vertical and horizontal increase in floor levels and space sizes, complete renovations, and redevelopment were some of the significant physical changes noticed which are consequential to high rental values of the affected property, among other things. Gwamna *et al.* (2015) examined the impact of urban land use changes on the rental values of residential property in the Kaduna metropolis. They concluded that conversions (changes) in urban land use are inevitable irrespective of its nature and origin as change is part of urban growth. The methodological approach adopted by the researchers was the survey research design while data were analysed using structural Equation Modelling (SEM). The study found that all the factors identified influences land use conversions (change) in the study area, with land use planning having the highest effect. The effect of land use change on residential property rental value was discovered to be 27 per cent. This Study did not practically discuss the effect

of land use conversions on property values and focused only on one land use class- residential land use to the neglect of the other land use types.

Ukor *et al*. (2016) used remote sensing to develop and acquire land use /land cover changes and their effects on the environmental quality of urban centres in the world's developing countries. Nature, spatial and sequential dimensions of land use conversions and the resultant consequences in the study area were analysed. The study adopted primary data acquired from Google Earth Pro Satellite Imagery and land use data collected using questionnaire and other relevant issues. The study found that between 2002 and 2013, there was about11% increase in the built-up area and a 194% increase in shrubland (including areas cleared in anticipation of physical development). On the other hand, the vegetation land covers decreased by 50.28 percent within the same period. It also revealed an unguided land use conversion in the study area with negative implications for sustainable development. This Study, just like Morenikeji *et al.* (2015), focused on conversions or change in the general land use land cover with a particular focus on agricultural land use which is not the focus of this study. Morenikeji *et al*. (2015) applied remote sensing and geographic information systems to monitor land use dynamics in Minna. The study employed Landsat TM (Thematic Mapper) satellite images for 1986, 1996, and 2006 Landsat ETM+ (Enhanced Thematic Mapper Plus) images for 2011. The study findings revealed a marginal agricultural land use increase (54.195% in 1986 to 58.15% in 1996). 2011 however, witness a significant rise of about 89.11%. The natural vegetated area coverage for 1986 decreased from 44% to 0.20% in 1996. By 2006, it extended to 24.32% and in 2011, decreased to 5.77%. The development rate of the built-up area between 1986, 1996, 2006, and 2011 is 0.81 per cent, 2.93 per cent and 4.06 per cent respectively. The Study attributed the loss of naturally vegetated area to urban growth and

expansion, human activities and gully erosion. This study focused on the general land use and land cover change which is tilted more towards agricultural land use, while the emphasis of the on-going research is on the effect of urban land use conversions on the rental values of residential and commercial property.

Owoeye and Ogunleye (2015) studied urban development and land use change around Ekiti State University (EKSU), Ado-Ekiti, Nigeria. They observed that several variables characterise the urban ecological systems, and their interactions modify and influence the effective operations of ecosystems and the benefits man derives from them. Urban morphology and the city structural outlook are affected or shaped by changes resulting from man's action. The Survey Research Design (SRD) methodological approach was adopted for the study. Findings of the Study revealed that development influences the spatial heterogeneity in the area of variation in the change in land use and land cover of the study area. Even though the research findings sound reasonable, applying a more advanced scientific approach would have empirically brought out other specific salient factors that impact land use.

Effiong (2011) attributed the global problem of land use conversions to demographic factors and the expanding agricultural and other human activities requiring more land. In his attempt to study the changing trends in land use in the Calabar River area, he studied the various land uses and changes between 1967 and 2008. The procedure adopted for the study involved the gathering of data from both topographic maps and satellite imagery. The study, however, revealed montages of land uses, which include: the built-up areas, plantation, and fallow land/scattered cultivation, high forest and low forest mangrove, river and quarry. The worst

affected land uses the high forest, which decreased by 29.92 % at the rate of 0.73 % per annum. The study focused more on agricultural land use to the neglect of the other land use types.

Braimoh (2006) analysed the spatial change of residential land use in Lagos, Nigeria. In the Study, residential land development was classified into three regions with different population densities. The level of land use changes was mapped from satellite images, and logistic regression was adopted to model the probability of residential land use as a variable of a spatially explicit biophysical and social dataset. Residential land use conversions were noticed around the low population density district of the city, which occurred on the highest elevations, around the rural land district with the potential of population change, and at the farthest distances from the inner-city core as well as the industrial zones. The study, however, revealed that new residential land use conversions in the high population density district occurred in areas not too close to major roads, waterworks, and protected forests. The increasing rates of land use conversions in the low to medium density districts presupposes that the dominant process of land-use conversions is the intensification of residential areas. The current rates of conversions have significant policy implications for urban management in the city. The findings of this work contradict the general opinion that land use conversions, especially from residential to commercial uses, usually take place close to or along arterial roads. The study, however, did not empirically show the influence of the conversions on capital or rental values of real property. Thus, this study, therefore, among other things, identified the causes of land use conversions and filled the obvious gaps identified in the previous studies.

Asamoah (2010) studied the changing pattern of urban land use in Ghana to determine the rate of property conversions from residential to commercial land uses within the Kumasi Municipality. The study adopted both descriptive and inferential statistical tools for the analysis of data obtained for the Study. Findings revealed a severe demand pressure on urban housing (residential land use). Most of the available residential housing stock had been converted to shops, offices or business centres (commercial land uses), with the residential property market subsector currently experiencing an abnormal high rental value. The Study reported only one side of the occurrences in the broader property market as it did not reveal the rental market behaviour of commercial property. The research is a single city study focusing on Kumasi rental market. The non-independent study of Kumasi and any other cities in Ghana to determine the causes and influence of land use conversions on rental values is one of the knowledge gaps which the current research will attempt to fill.

Baffour *et al.* (2011), who, through a critique of relevant literature, examined the extent of urban land use planning in Ghana, tried to provide essential inputs for the efforts in the country through the formulation of an operative and proficient urban land use planning model that will offer solution to the incessant land use conversions and other land use challenges in the country. He adopted the insights of the human action theory for the study. He discovered that the actual causes of the problem in Ghana included such factors as lack of relevant knowledge on the significance of planning, economic factors, high planning regulations compliance cost, among others. The study did not link the influence of land use conversions on property values; hence no clear explanation was given on the relationship between land use conversions and urban land use planning in the study area; thus, there is a gap to be filled.

Diriba *et al.* (2016) and Tesfaye (2015) identified industrialisation, expansion of informal land market, residential expansion, and infrastructure developments as factors that induced urban land use change in the expansion areas of Addis Ababa. Museleku (2013) conducted a study on the causes and effects of conversions of agricultural land use in the Kiambu interface, an urban fringe in Nairobi. The study uses inferential and descriptive statistical tools to analyse its data and established several institutional and legal frameworks, causes and effects on a household level.

2.2.4   Causes of urban land use conversions

Urban land use pattern depends greatly on the availability and effectiveness of policies and regulations that guide the internal structure and space utilisation of the city (that is, the city's growth). Previous researches on land use conversions conducted by notable scholars such as Ojikpong *et al*. (2016); Adegunle *et al*. (2016); Bafana (2016); Gupta (2014); Ogungbemi (2012); Akakandelwa (2012); Aluko (2010) and Rojstaczer *et al. (*2001) confirmed the interplay of multiple factors such as demographic, economic and socio-cultural factors, defective land use policies and ineffective institutional enforcement mechanism, urbanisation, poverty, invasion, succession and dominance which vary from one locality to the other to be the significant causes of land use conversions in most major cities of the world.

2.2.5   Identified causes of urban land use conversions in other Nations

Seto and Kaufmann (2003) identified direct foreign investment and relative rates of productivity generated by land associated with agricultural and urban uses as drivers of urban land use change in the Pearl River Delta of China. The researchers opined that it is not the local land users that determine land use conversions but large-scale investments in industrial

development. The work of Seto and Kaufmann (2003) undermined the influence, contributions and power of local people, politics and programmes as the success or otherwise of any programme that has to do with land and resource use depended greatly on the locale.

Verburg *et al.* (2004) appraised the patterns of land use conversions and its determinants in the Netherlands and submitted that land use-conversions are the consequences of the multifarious interactions between man and his physical environment. Thus, a critical examination of land use conversions and their determinants could assist in selecting the appropriate theory to adopt for each location and engendering the advancement of better theoretical understandings. Their Study opened a new vista for the cross-fertilisation of ideas on the analysis of the pattern of land use change from different disciplines. The Netherlands was picked for the Study due to its rich land use database, while both the historical and recent urban land use changes were studied. The study's outcome showed that residential, commercial, recreational areas and industrial land use expanded significantly within the period under Study. They attributed the expansion to the combination of locational measures, neighbourhood interaction and spatial policies. The study focused on the practices that regulated the spatial pattern of land use conversions. However, the inability of the Study to empirically evaluate the macro processes that enhance land use conversions such as demographic, environmental and economic factors is a major flaw and a gap that needs to be filled.

The study of Olson *et al*. (2004) on land use change impact and dynamics concludes that, it is essential for the establishment of a framework for land use research due to the intricate nature of the connection that exists between man and his interaction with the immediate

physical environment and how this affects the pattern and related changes of land use. On the other hand, Yuri (2005) listed historical development, topography, accessibility characteristics, neighbourhood characteristics, economic factors, institutional, infrastructural development and technological development to be the factors influencing land use conversions in Jakarta, Indonesia. Lambin *et al*. (2006) identified technology, economic needs, political factors, institutional variables, demographic and cultural heritage to be the drivers of land use conversions.

Parker and Filatova (2008) observed that the interactions between social and biophysical landscapes with demographic growth, economic development, the concurrent changing social conditions taking place with land cover and climatic change influenced land use conversions. However, to solve land use conversions problems scholar all over the world have modelled several empirical and theoretical approaches or concepts to explain the various causative factors or determinants of land use conversions. These exercises' outcome is the varieties of explanation tailored to the perspective through which it is viewed. Findings from previous studies on the factors or drivers of land use conversions globally has revealed that it had contributed significantly to the alterations and the modifications of cities aesthetic with the consequential negative effect of distortion of city master plan, infrastructure decay, breeding of urban sprawl and slum formation, housing shortages and high urban property rental values (Arora, 2017; Ukor *et al*., 2016; Gwamna *et al.,* 2016; Adegunle *et al.,* 2016; Akakandelwa, 2012; Effiong, 2011; Parker & Filatova, 2008; Pyykkönen, 2006 and Braimoh, 2006). Hence the need to establish the relationship between land use conversion drivers and their influence on rental values of the vulnerable property types become inevitable.

2.2.6 Identified causes of urban land use conversions in Nigeria

The recent invasion, succession and dominance in most Nigerian urban metropolis, especially cities along major transportation routes, have been traced to the massive urbanization rate. A significant effect of this phenomenon is the high rate of property use alteration or conversions and distortion of the physical cities landscape, thereby impeding sustainable development within the city core (Sogbon & Olujimi, 2015 and Adebayo, 2009). Adebayo (2009), in his evaluation of the impacts of urban land use changes on property values in Victoria Island, Lagos metropolitan city, Nigeria attributed the reason for the continuous changing pattern of urban land use (conversions from residential land use to commercial land use) in the study area to demographic and economic factors especially the complementarity advantage which economic activities gain. Simple descriptive analytical tools were employed in the analysis of data obtained from the field for the Study. Findings from the Study revealed increasing demand for commercial land use with the potential of yielding high rental values in the study area. This factor has triggered a hike in the market prices of property, use conversions and illegal land use incursion. The study did not show if there was a corresponding increase in the supply of property that matches the demand. Also, the position of residential property rental values in the study area was not adequately explained, and the effects of such factors as institutional and environmental factors were not included as factors that could cause urban land use conversions.

Egbenta (2009) evaluated the changing pattern of residential land use in the Enugu urban area of Enugu state of Nigeria for a period of 11 years that is from 1997 to 2008, using simple statistical tools for data analysis. His study validated the postulation of economic theory premised on the idea that the expansion of economic activities in any city will lead to the

gradual absorption of the abutting land uses through space competition and the ability to pay higher rent (bid rent theory). It explains the changing status of residential property along major busy streets or roads converted to commercial property. The study's findings revealed that residential land uses along Okpara Avenue, Ogui Road, Market Road, Abakaliki Road, Zik Avenue, Agbani road and Chime Avenue have been converted to commercial land uses. The reasons for the conversions include economic factor (high demand and quest for profit maximisation), the physical ageing of property, non-compatibility of uses and the effect of proprietary interest as property are 'illegally' converted without considering the effect of such conversions on the adjoining land. The submission of Egbenta (2009) was consistent with the previous submissions of Parker and Filatova. (2008) and Lambin *et al.* (2006) but negates the assertions of recent researchers as Gwamna *et al.* (2015); Adegoke (2014); Ogungbemi (2012) and Uju and Iyanda (2012) who view urbanisation as a compelling and robust factor for the conversions of residential land use to commercial use.

Babatola and Oni (2017) observed that previous research in Nigeria was lopsided, focusing on metropolitan residential housing deficit with complete neglect of land use conversions and other such issues. The study assessed the inter-user conversions of buildings within the study area and adopted the inter-user dynamics of metropolitan Lagos housing stock. Simultaneously, the Logistic Regression Model and Markov Chain Transition Matrix were used to analyse data collected from the field. The study found that buildings in the study area were being used for the purpose(s) that were entirely different from that for which they were initially approved, and the inter-use function conversions disfavour residential land use. The study does not establish the impact of inter-user conversions on the property market or the

state's economy. It did not identify the drivers of inter-user conversions and their effects on property values in the study area.

Ogungbemi (2012) examined factors affecting land use change and its attendant problems. The study identified rapid urbanisation of the third world countries, especially Nigeria, to have resulted in the arbitrary changes in the use of land with the consequential effect of using a single land or building for multi-purposes thus making it difficult for one to clearly define or demarcate the role or function of the land or building. Though it is common knowledge that activities compete for space in urban areas, especially the city's central business district, this scenario seems to be more pronounced between residential and commercial land uses. Apart from urbanisation, the study considered succession, invasion, dominance and economic reasons to be the other drivers of land use conversions.

Brown and Chikagbum (2015) assessed the effects of urbanisation on the pattern of land use change in Bori, River state, Nigeria to determine the rate of urbanisation and its effects on land use change. The study employed primary and secondary data as its main data source, and the statistical tool used for the analysis of data obtained was a chi-square test. The outcome of the study revealed a demographic change in Bori as the population increased from 6,000 inhabitants in 1972 to 23,741 inhabitants in 2013, with the associated result of high demand pressure on land for residential and commercial land uses resulting in unhealthy competition for space among the various urban land uses conversions of use, incursions and other similar urban land use abuses. The study did not consider other variables or factors like institutional, economic and neighbourhood characteristics that could impact the land use conversions pattern of the study area.

Gwamna and Yusoff (2016) affirmed the position of as they argued that the increasing rate of the urban population globally has led to a general increase in the demand for land in cities around the world. Demand for land is usually derived demand. The surging population of the urban area must have a place of abode and where to transact their regular businesses; all this requires land use. Hence residential and commercial land uses are among the numerous competing urban land uses. However, residential land use is considered the biggest user of urban land space (Gwamna *et al.,* 2015; Adegoke, 2014; Ogungbemi, 2012; Uju & Iyanda, 2012; and Alonso 1960). Furthermore, Gwamna & Yusoff, (2016) stated that any significant increase in urban population stimulates a proportionate upward movement in demand for land for residential uses, which attracts other land uses with a consequential effect on the rental values of property predominantly residential and commercial property.

The position of earlier scholars as Brown and Chikagbum (2015); Ogungbemi (2012); Adebayo (2009) and Egbenta (2009); which focused more attention on economic data, demographic and natural condition as the major causes of land use change/conversions was contested by Hersperger *et al.* (2018) who argued that, the premise on which the assumptions of earlier studies were based was not strong enough. Recent meta-analytical studies have shown that policies, plans and regulations on urban land use are the major drivers for the different land use conversions (van Vliet *et al.,* 2016). In order to substantiate the position, the study further submitted that how people react to economic opportunities facilitated by government policies serves as a significant impetus for land use conversions, which suggests that the prospects and limitations for urban land uses are shaped by the actions of both regional and international governmental policies and programmes. Summary of all the literatures reviewed on land use conversions is attached as appendix G

2.2.7 Deductions from the identified land use conversion factors

The present study has observed that the underlying and proximate factors or the synergetic combinations of factors responsible for land use conversions are the same globally. Though some specific insignificant variations prevailing as sociodemographic, geographical and technological variations could intermittently interact to modify man's interest in land use and management (Thuo, 2013; UNDESA, 2010; Farinmade, 2010; and Mundia & Aniya, 2005). These factors according to Museleku (2013) have been identified to have an explanatory effect on land use conversions. Hence, the present study, have clustered the factors or variables identified from literature and considered to be applicable causes of land use conversions with a specific focus on change in the use of property from residential building use to commercial building use in the study into six broad factors.

The clustered factors are economic, institutional, environmental, demographic, infrastructure and sociological variables. The constituents of each of these variables are as listed: Economic Factors considered are rental gain and other pecuniary considerations, demand and supply factors, unemployment rate , taxes, and income levels; Demographic Factors considered population increase, composition of the population (age), gender, ethnicity and family size/status; Environmental Attributes considered include location, neighbourhood quality, socioeconomic activities, topography, transportation and traffic issues; Sociological Factors are prestige, taste, security, culture and class distinction; Infrastructural Factors include electricity (power), road, water supply, school, communication; Institutional Factors are government policies and regulations, penalties, enforcement, structures and conducts. These factors are further encapsulated in the concept below.

Figure 2.1: Causes of Land Use Conversions framework

Source: Author (2019)

The construction of the above framework does not follow any known order as each of the Land use conversions factors has equal contributory chances to land use conversion activities in the study area. The framework was designed and presented to graphically show the authors' grouping or stratifications of the various conversion factors identified in the literatures reviewed. Early researchers on land use conversions opined that land use conversions from residential to commercial use in Nigeria are triggered by the interactions of the intertwined land use conversion factors (Adegunle *et al.,* 2016; Adepoju *et al., 2016;* Ukor *et al*., 2016; Gwamna *et al*., 2016; Effiong, 2011 and Braimoh, 2006). This arouses the interest of the researcher to investigate the assertions of the earlier scholars by subjecting these factors to test in the study area to see their level of influence on rental values in each of the study locations.

2.3 Residential Property Rental Values: Literature from other Nations

Sermons and Seredich (2001) assessed the responsiveness of land and location-based accessibility and mobility solution involving the measurement of employment access-based gravity-type in a joint Multi-Nominal Logit (MNL) model residential location and vehicle ownership. Household variables were emphasized for the prediction of location preference. Findings from the study show that a reduction in location cost, even in the city's populated areas, may have a marginal impact on vehicle and household trip-making availability. However, this model restricted the choice set of residence locations to only five clusters, ignoring the potency or variability within each cluster; hence a gap in methodology is provided.

To test the mono-centric city theory, Ding (2004) studied the impact of the emerging residential land market and land policy reform on urban spatial development characteristics in Beijing. The study, which covered eight years, used empirical analysis to evaluate the relationship between distance from the city centre, land values and land use intensity. Findings revealed that the urban residential land values and land development density tend to decrease with distance to the city centre, location, and land use competitiveness affects its rent curve and value. The study, though, affirmed that while land values for commercial land use increase towards the city centre, residential land use increases away (outward) from the centre. Similarly, a study by Chinh *et al.* (2020) isolated three groups of factors that could impact on land values in an attempt to support Government policy making and regulating land use rights market in Vietnam through evaluating the method and process of transferring values of natural resources into the national account system. This was done by re-systemising the classical and modern theories as well as identifying the factors affecting the land values

in Vietnam. The study revealed that, the adoption of value theory and the development of land value maps supports the effective management and regulation of land use rights. Urban land use change is a major driver of the universal environmental change and a central factor of the global sustainable development agenda.

In the bid to explain urban decentralization, Baum-Snow (2006) carried out a study of 138 city centres spanning 40 years in the United States of America. The study employed the mono-centric city model. It dwells more on highways construction to test further the validity of previous studies assertions that the presence of efficient and effective transportation system decreases residential land value at the city core as demand for them dropped by 10% due to the expected decline in the population of the city core as metropolitan area population spreads out along the new highways. Baum-Snow's work revealed a 28% reduction in the urban population, which confirmed previous researchers' assertion. However, this work's accuracy or validity can be questioned as it adopted a single variable (highway) and a mono-centric city model out of the numerous variables and models available.

Davis and Palumbo (2006) evaluated the price of residential land in large United States of American cities. Forty-six large metropolitan American cities were studied within a time frame of 20 years. The study set objectives were achieved through data sources from several data sources by developing a database of property values, land cost, structures and residential land values. Findings from the study show that residential land values started to increase in most of the cities from the mid-1980s, and the trend continued till around 1998 when almost all the large cities in America experienced a remarkable increase in residential land values. It also revealed that residential land value accounted for about 50% of the property market

values. The variables sourced and used for this study are the property variables, but other variables like environmental, economic, and social variables that could impact residential land values were not considered. The inferences of the study depicted a generalised conclusion on the residential land market performances of the forty-six cities without paying attention to locational and specific neighbourhood qualities of each of the cities, presents a reliability and validity gap.

Gu (2007) studied 141 house prices near the Batong Line in Beijing, China, to validate the effect of submarket rail transit through hedonic price modelling. The study combined both empirical and theoretical analysis to assume that rail transit submarket impact exhibits different characteristics for the different property class. The higher value premium is produced in commercial property near the city core compared to those at the urban fringe, while residential properties are the opposite. The study findings revealed that the Batong Line positively impacts residential property values in the suburbs with a feeble impact near the city centre, thus explaining the frequent property use conversions in the study area. In Tongzhou, a city located farther from the city core, residential housing prices increase by 1.8% for every 1,000m one moves closer to the train stations. While Chaoyang, located closer to the city core, experienced the train station's minimal impact on land value and housing prices.

Kryvobokov and Wilhelmsson (2007) adopted a hedonic price model to determine the statistical significance of locational attributes on apartment pricing where distance gradients for accessing the central business district of Donetsk, Ukraine, were investigated in the various geographical directions of the city with the adoption of spatial weight matrix for the

detection of spatial autocorrelation. Results of the regression carried out were compared with the valuation opinions of valuation professionals, and the finding shows that Donetsk is a mono-centric city, and there exist shreds of evidence of corresponding attributes with the results of other earlier studies carried out in North America and Western Europe in terms of magnitudes and signs. However, this finding seems not to be conclusive as the study focused solely on location, which is one of the several variables that influence apartment pricing; hence there is a knowledge gap.

In order to determine the factors influencing the value of residential land in the United States of America covering a large number of the metro area, Davis and Heathcote (2007) and Davis and Palumbo (2008) constructed land price indices using a residual approach where land values were inferred from the observed housing prices by subtracting imputed structure values thereby ascribing the residue to land. This approach was also adopted by Case (2007) to evaluate the value of land put into residential and non-residential uses. The application of this approach can quickly produce negative values for non-commercial land uses, and in some instances, very high values are attached to the land, which may reflect the physical or regulatory encumbrances involved in building on acquired land, rather than the acquisition costs itself. The approach's major setback lies in its reliance on secondary information as analyses are based on inferences rather than an analytical tool which is a gap that needs to be filled.

Rauterkus and Miller (2011) assessed 5,603 residential property transactions in the Jefferson County area of Alabama in the United State of Ameria to estimate the walkability differences measured by Walk Score to explain the variability in property values. The study, which

covered a period of 5years, adopted the Ordinary Likert type scale Regressions Model (OLSRM). Findings revealed that residential land value increases with walkability, that is, after ensuring that population growth and land sizes are controlled. Though evidence abound that with more vehicles in the neighbourhood, the impact reverses. However, findings from a study of this nature cannot be generalized as the county and total population studied compared to the size of America in terms of landmass, and population size is a minute proportion hence making the study not to have much significance in terms of generalisation of its findings. The need for real estate price trends determination to financial analysts and institutions, investors and policymakers cannot be overemphasised. It has been severally used to broaden a nation's credit and market performance horizon and financial strength (Hepsen & Vatansever, 2011).

Verougstraete and Zeng (2014) studied Hong Kong's city, where the housing unit price premium is said to be in the range of 5% to 17% for those residences close to the rail station. The study affirmed previous transportation and real estate experts' assertions that enhanced accessibility to attractive and efficient transportation systems increases residential land values. It further revealed that housing unit price due to land value addition could increase even above 30% if transit-oriented designs such as residential structures that facilitate and protect pedestrian access to commercial amenities or the provision of pathways connected to railway stations are incorporated into property design. This opinion was based on perception and lack of empirical data to back up the assertions made; hence investors would need to be careful in deciding based on this opinion. However, Boitan (2016) argued that the aftermath of the global economic instability had made real estate development and perception an area of interest for local, global investors and competitors alike. Randeniya *et al*. (2017) assessed

the need for residential housing price estimate and emphasized the significant role the residential property market plays in fundamental human needs, economic development, and nations' general developmental trend which applies to both developed and developing nations.

2.3.1 Residential property values: Literature from Nigeria

Most Nigeria capital cities, including Ikeja, Osogbo, and Akure, have undergone, and they are still experiencing cycles of changes in their demographic, physical form and socio-economic constituents with the consequential effect of land use conversions which have in one way or the other affected residential and commercial rental values. For example, occupiers of residential accommodation first considered the location and utility maximization of property in their choice of accommodation; for users of commercial property, prime and accessible locations and areas with profit maximization potentials are considered paramount. In contrast, the property owner considered the highest and best use potentials of the site; hence competition between uses is created. This assertion supports the view of most classical rent theorists and Belachew (2013), who opined that some sites have locational advantages, thus attracts greater demand, and greater value due to the possibility of a beautiful view, good road connections and other transportation network with less or no noise, and all other kind of public and private services. While the classical rent theorists believe that distance and locations are the most influential factors. Simultaneously, the land/city manager argued that besides location and transportation cost due to the city centre's distance, other essential factors such as neighbourhood, environmental, and property variables exist.

Since discussions on urban land use and rental values have recently become a typical issue globally and an issue of national discourse in the emerging rental market economies, there is the need for a critical examination of these escalating issues in an emerging rental market like Nigeria. However, an academic debate has established a broad synchronization between real estate value instability and its significant effect on nations' financial stability and economic activities. For instance, the National Bureau for Statistics [NBS] (2015) mentioned that the Nigerian property market provides a vast potential cause of growth for the nation, hence understanding the property market growth and combinations was limited to its required use in national accounts. Olugbenga *et al.* (2017) posited that real estate investment had been identified as a veritable financial source, with real estate a significant sector for reviving a nation's economic growth. Thus, adequate and timely information on the actual and expected real estate residential values is essential. Various factors determine residential and commercial property rental values.

Ajibuah (2010) observed that urban crisis within the Kaduna metropolis in Nigeria have caused unbalanced property uses against urban planning regulations, which has affected residential property rental values. Gandu (2011) argued that the reasons for intra-urban migration are in most cases without-monetary considerations but the availability of infrastructures such as safety, good road network, security, water supply, peace, quiet and family ties. Ajibola *et al.* (2012) assessed land use planning on residential property' values in the Agege residential neighbourhood of Lagos, Nigeria, by comparing two areas within the neighbourhood. Both descriptive and inferential statistical tools were adopted in the analysis of data obtained from the field. The data was collected through questionnaire administration. The study's findings revealed a significant level of disparities in residential property' values

within the planned and unplanned residential areas, a statistically significant relationship between property value and land use planning. However, this study did not analyse other factors that could affect the values of residential property in the study area.

Uju and Iyanda (2012) studied the determinants of residential land values in Onitsha in Anambra state of Nigeria through a comparative analysis of locational and non-locational factors. To prove the importance of location and non-location factors in determining residential property values in the area under study, the methodology employed to achieve the aim of the study is questionnaire administration and stepwise regression analysis. Findings from the study showed that the non-location factors (the time of the land purchase and the available open spaces) contribute immensely to the variation in residential land values. However, Cao *et al.,* (2021) averred that, residential properties could be assessed base on their market values, hence; the use of the non-location factor seems bogus and inappropriate. The study did not critically analyse other non-location factors such as institutional factors, prestige and socio-cultural variables. Oloke *et al*. (2013), the existence of a trade-off between travel costs against rents, population densities and distances from the central business district validate the proposition of the early theorists; thus, a study on the property market and the impact of economic and environmental characteristics in Magodo residential neighbourhood in Lagos, Nigeria using questionnaires was conducted. Findings from the study indicated that distance travelled and property cost does not affect property values as proximity to a major highway, security, good road network in and around the neighbourhood, number and size of bedrooms, conveniences and drainages system. It is, however, contrary to the propositions of Ding (2004), Baum-Snow (2007) and Gu (2007) and the assumption of earlier rent theorists.

Emoh *et al.* (2013) evaluated the contributions of the various determinants of residential land values variations in Onitsha, Nigeria, through the use of factor analysis and principal component analysis in the analysis of spatial variations and the relationship that exists between the 31 identifiable factors influencing residential land values in the study area. The methodology adopted for the study was regression analysis. Findings from the study suggested that there are thirteen significant factors shaping land values in the study area. These factors were subsequently ranked in priority as accessibility, neighbourhood quality, land title, zoning regulations, transportation, rent, improve the tax system, the quality of the environment, view of amenities, travel time to and from the city centre and the irrevocable power of attorney. Like Oloke *et al.* (2013), the study emphasised neighbourhood and location characteristics as the determining factors. In an attempt to study the relationships between macroeconomic variables and the price of urban housing, Ong (2013) adopted the multiple regression statistical models to analyse the data obtained from the field. Findings from the study revealed that Gross Domestic Product, population, government policy and property's capital gains tax are the critical determinants of house prices. The study, like the previous study of Emoh *et al.* (2013) and Oloke *et al.* (2013), did not pay adequate attention to environmental and infrastructure characteristics, which are also important determinants of property values.

Kemiki *et al.* (2014) studied the impact of factory noise and dust on a residential settlement's rental values in Ewekoro in Ogun state of Nigeria. The study adopted hedonic price modelling and found that the externality of dust and noise diminishes the amount of rent the prospective tenants are willing to pay. Tenants' willingness to pay does not just depend on

the externalities of dust and noise alone; several other factors need to be tested; hence gap exists that needs to be filled. Adegoke (2014) critically examined factors that determine the rental values of residential property in Ibadan Metropolis of Oyo state of Nigeria, using the hedonic price model of stepwise regression basis. Findings of the study further show that the number of living rooms, availability of burglar alarm and number of bathrooms were the most influential factors determining residential property rental values in the study area. The study considered only the property attributes or variables but neglected other important attributes such as neighbourhood, environmental, and accessibility attributes, influencing rental values of residential property.

Iroham *et al.* (2014) conducted a comparative analysis of two gated residential neighbourhoods. One the neighbourhood is open access and the other restricted access (Crown Estate and Victoria Garden City) in Lekki Peninsula, Lagos, Nigeria to determine the differences in rental values of these property classes. It will guide real estate investors and policymakers in the decision-making process. The administration of questionnaires was done to elicit information from respondents, and the data obtained from the field were further analysed through the use of relevant statistical techniques (frequency distribution tables and t-test). Findings of the study showed that the gate's introduction does not impact residents' choice but location impacts significantly on residents' choice for both estates. The study further revealed the existence of a significant difference in property rental values between both estates. The study's finding is in line with Emoh *et al.* (2013) and Oloke *et al.* (2013). The study failed to consider other non- locational factors and the contents of existing lease agreements that could impact the rental values of the property.

Sani and Gbadegeshin (2015) studied the nature and factors influencing the private rental housing market in Kaduna metropolis, Kaduna state of Nigeria from tenants and property managers' viewpoints. The aim of the study was achieved through the adoption of a descriptive statistical tool for data analysis. The study's findings show a different rent payment pattern while the degree of default in the payment of rent by tenants is very high. This study's thrust is more on tenants' behaviour concerning the ability to pay rent, which is an aspect of property management and hence did not deal exhaustively with other areas of residential property values, which is a gap to be filled. Harvey and Jowsey (2004), cited in Gwamna and Yusoff (2016), concluded that households of the same social, economic and cultural background and people of the same race and religious affiliation prefer to live alongside others. The study confirmed the assertion of Gandu (2011) that the primary reason for living together is not financial.

Otto *et al.* (2020) however reviewed literature on some conventional urban models that showcase the current patterns of residential property rentals and prices in cities, and identified the conventional models that mirrored the actual situation which reflected the decisions of landlords and tenants of residential properties to reside in their current areas in the city. The study observed that issues of spiralling residential property rentals and prices in cities are of serious concern that are gradually and steadily pushing the low-income and the middle-income residents to the squatter settlements where rents are relatively affordable. It further revealed a mixture of socioeconomic, cultural and behavioural factors which played predominant role in influencing the behaviour of residential property tenants and landlords in the search for residence within the city to the extent that squalor settlements are preferred by many, rather than the presumed obvious influence of conventional model of city structure.

Social factors as safety of lives and property, security and economic variables were confirmed by the tested hypotheses to be the major determinants of residential choice in the city. The study therefore recommended measures that can improve the standards of city liveability, housing affordability, sustainability and livelihood need to be considerately implemented in real time by the city stakeholders

Ankeli *et al*. (2015) and Iroham *et al*. (2014) opined that, transactions in the rental property market are determined by the interaction of the market forces of demand and supply; hence urban property rentals are often fixed by the property owners at their discretion. Previous studies as Korah and Cobbinah (2016); Ojikpong *et al.* (2016); Sogbon and Olujimi (2015); Ogungbemi (2012); Cobbinah and Amoako (2012) have established a correlation between urban land use conversions and property rental values. The non-conforming land uses in most cities in Nigeria has led to the descriptions of these cities as an expression of distorted landscape and chaotic shanty development with massive illegal and unauthorized property use conversions, high urban rental, inadequate public infrastructure, noise and pollution (Ankeli *et al.,* 2018; Sogbon & Olujimi, 2015 and Farinmade, 2010). The importance of residential property rental was further stressed by Alkali *et al.* (2019) as they observed that organizations and individuals had directly and indirectly used residential property rentals to influence practical decision making in economic and investment policy conduct. Summary of the review is attached as appendix H

2.4   Commercial Property Rental Values. Literature from other Nations

Yusoff *et al.* (2010) assessed the return on investment for commercial property in Johore, Malaysia, to determine the return on investment from commercial property within the study

area. The study adopted descriptive statistical tools for analysing the data obtained for the study. It defined the basic types of commercial property structure used to include single-storey shophouses, two-storey shophouses, three-storey shophouses and four-storey shophouses within the study area. Findings of the study revealed investment in commercial property look more attractive than investment in other sectors, and gross rates of return on commercial property investment are from 4% to 8% per annum, which explained the reason for the high rental values of commercial property in the study area as there exists stiff competition among space users. This study concentrated solely on shopping centres, ignoring other relevant property classes within the scope (offices, hotels and restaurants/eateries). The inclusion of these commercial property classes could give a better reflection or view on the return on investment in commercial property in the study areas.

Nicolas *et al*. (2010) examined the prices of residential and commercial land across the United States of America by constructing land price indices for twenty-three Metropolitan Statistical Areas (MSAs). The methodology employed for the study was the hedonic regressions model, which used valid data of transactions in land from the mid-1990. The study's findings suggested a dramatic appreciation in the values of both commercial and residential land uses for an extended period but hit its peak in 2006 and 2007 and after that began to nosedive. It demonstrates the volatile nature of the property market, which indicates the unpredictability of land prices within the period. This study's findings cannot apply to the situation in Nigeria due to the exact land transaction data problem.

Batista-e Silva *et al.* (2014) adopted a modelling approach to estimate the demand for industrial and commercial land uses in given economic forecasts. The study posited those

recent innovations in land use place more emphasis on a spatial and thematic resolution and the prospect of modelling larger geographical sizes of the earth surface. Urbanization, innovations and computational capabilities are aiding the production of data with sufficient details; hence integrated approaches to land use modelling depend on developing interfaces with specialized models in the various fields. The study aimed at establishing a direct procedure for the estimation of demand for industrial and commercial land that can be usable in the circumstance of land use and value modelling for more comprehensive coverage, especially in areas with a land data problem. It thus proposed using a base model against the null model, which was used and validated in some European countries by estimating land use for the year 2006, and the observations were compared with simple trend extrapolations. The results indicated that the proposed approaches obviously outclassed the 'null model' but did not consistently outperform the linear extrapolation. Again, the uncertainty analysis further shows that the proposed models' performance is sensitive to the nature and quality of input land use and value data. The study considered two principal property types, but the model proposed did not consider the specific demand variables for commercial property as applied to our locality.

Cheah *et al.* (2015) asserted that excess supply of office accommodation in the Malaysian Golden Triangle of Kuala Lumpur (GTKL) and the consequences of the sluggish demand for the same is the nose-diving pressure on the performance of office space rental in the study area. Questionnaires were administered to the respondents for a more detailed, precise and better understanding of property rental performance and their applicability in the study area. Simultaneously, secondary data was used to obtain scholars' opinions in literature, data on building certifications and the average building rents. Regression analysis was used for data

analysis. The study's findings indicated the possibility of improving office building rental value by charging reduced rent for sitting tenants, which can probably attract more foreign firms and the inclusion of Multimedia Super Corridor (MSC) Green certifications. This study's crux is GTKL; though located at the city core and a vibrant business hub, it represents a minute area in terms of land space and can only show partial behaviour of the Malaysian property market. Generations of findings from a study of this nature to cover the entire Malaysian property market will not be appropriate, hence the need for further independent study of other areas.

2.4.1   Commercial property rental values. Literature from Nigeria

Commercial property is any development or land use that entertains business operations, held as an investment and used for business purposes by tenants who pay rent for the use of the property or the owner of the property who though pays no rent but derived profit from the operation the property is used for, an investable composite of retail and office property (Bello *et al.,* 2018, Ozigbo & Ozigbo, 2013 and Bello, 2012). The uniqueness of the property types and their importance for the survival of human business transactions have encouraged research in several studies on determining commercial property' rental values.

Oni (2009) decomposed the road network into its explanatory variables in line with other property value determinants in his study of the contribution of the determinants of land value variability in commercial property values in Ikeja, Nigeria. The study adopted multiple regression modelling and consequently derived a model for predicting property values variability in the study area. Findings from the study show a significant relationship between the variables. This study, however, focused solely on the road network as the determinant of

commercial property rental value. In contrast, other determining factors such as property characteristics, security, economic, socio-political and other environmental and institutional variables that could equally impact the variability of land use type were not considered in the study. In terms of subject and geographical scope, the study is restricted to only one land use type and a geographical area in Lagos; hence, there was no room for further efforts that could be use in the validation of his findings. It is this, and other gaps identified that this research will fill.

However, in appraising the strategic position of rentals in commercial real property investment, Udoekanem (2014) argued that, as an essential variable for the determination of property investment viability, and as a source of income for property owners and a significant expenditure component to the users, any significant change in the performance of rent affects the nations' economy, thus as value determinant, issues concerning property rentals requires a thorough analysis

Aliyu *et al.* (2015) examined the causes, effect, and impact of traffic congestion on commercial property' rental values within the Bauchi metropolis. To evaluate the effect of traffic congestion on the rental values of commercial property in the study area, data collected from the field was analysed using SPSS and Microsoft Excel packages. The study's findings revealed a significant impact of traffic congestion on commercial property rental values.

Bello *et al.* (2018) carried out a comparative study of hotel and commercial property investment attributes in South West Nigeria. They argued that Investment in real estate goes beyond the annual tenancy or short leases usage of property to include varied renting patterns

of accommodation as short let and timeshare. The study empirically highlighted and compared commercial property investment attributes with hotel investment by measuring their performances through occupancy rate analysis (by employing a questionnaire survey). The variables used for the study include ownership, a pattern of letting, state of repairs, sources of income, among others. The statistical tools used for the analysis of data are descriptive and inferential techniques. The study findings revealed that commercial and hotel property have four similarities in the qualitative variables and eight differences in the other variables used. Also, the Kolmogorov Smirnov (K/S) two-sample tests indicated no significant difference in the occupancy rate of commercial property (0.89) and hotel property (0.80). The study, however, adopted a broad subject scope. Hotels are of different types/ classes and can as well be classified under commercial property type. Different types of commercial property existed. Hence, the precise term as five-star hotels and departmental stores would have brought out more the validity and beauty of the work. Summary of literature review on commercial property rental values is attached as appendix I

2.4.2 Deduction from literatures on residential and commercial property rental values

Residential and commercial property are two most highly demanded property types globally as postulated in the literatures reviewed. The literatures revealed the important roles these property types play in a man's life. Apart from providing complementary services that can hardly be separated from each other; they are essential variable for the determination of property investment viability. The owners of the property use them as sources of income and a significant expenditure component to the users. Any significant change in the performance of rent from these property types affects the nations' economy. Therefore, the thorough

analysis of issues concerning rental value determination, is of interest to the current study as it forms the bases for the present study.

2.5   Property Values Determinants. Evidence from Developed and Developing Nations.

Several studies have been conducted on determining land and property values throughout the globe and a trending phenomenon in the developing world. Harvey *et al. (*2004) conceptualized urban housing as a multi-dimensional compendium of goods and services that affect its value. Stacy, Macpherson and Zietz (2005) reviewed 125 recent studies on the use of hedonic modelling for estimating United States house prices revealed the potency of the model in the reasonable handling of quite several issues in the valuation of urban housing. Its adoption has been applied in the valuation of both the obvious and not so apparent components of property like the size of the kitchen, square footage, plot size, bathrooms, among others, as well as quantifying the effects of other variables like availability of water, school quality, closeness to a landfill or distance to high voltage lines, and the effect of non-market financing.

Stratton (2008) conducted a study on the analysis of investment decisions in commercial property with a specific focus on the spatial concentration of office property and the effect of this commercial property type with other land uses on the value of office property in the study area. The study sought to determine the connection between spatial clustering of property use as offices and their values. The space size, location, transportation infrastructural facilities availability were the variables used for the study. Findings from the study show that the intensity of office development positively affects office property values as the property are reaping the economic benefits of clustering. Stratton's study confirms

Cloete and Chikafalimani (2001) position in their study on the overview of the property industry in Malawi. The size of the property, security, quality of finishes, design, location, and the street condition are the scholars' factors that affect Malawi's property values.

Studies from other African countries have argued that apart from urbanization, other variables determining property values are location, demographic, socioeconomic, institutional and other infrastructural facilities serve as property value determinant. Arimah (1992) conducted a critical study where an empirical analysis of urban housing demand determinants of a city in an emerging economy- the city of Ibadan, Nigeria, was presented through Rosen's (1974) two-step estimation procedure. He regresses housing values on all the housing qualities by fitting the best functional forms from where a set of marginal prices is obtained. These minimal prices so obtained represent the estimation of households' willingness to pay for minimal increases in individual housing attributes. He afterwards used the minimal implicit prices and the various housing attributes as endogenous price and quantity vectors in the demand function appraisal. The result of findings of the study indicated that the significant determinants of the demand for urban housing attributes in the city of Ibadan, Nigeria are the income of the house seeker, prices of the property due to the new attributes', family size, and the socio-economic strata /occupation of the household head. It contradicts the findings of Adegoke (2014).

Rikko and Dung-Gwon (2006), cited in Kolowe (2014), conducted a study that can be considered appropriate in land market value estimation in Nigeria in peri-urban centres. The study was conducted in six selected peri-urban centres of Jos, Nigeria. The criteria used for selecting these locations include their location, size, scale, and developmental pressure, while

the study aimed at ascertaining land prices at the Jos-urban fringes concerning the surrounding rural and urban factors responsible for the variation. Urbanization was found to be a major significant factor determining land values in the city. It is in line with the submissions of Aliero *et al.,* (2022); Ogunbemi (2012); Brown and Chikagbum. (2015) and Gwamna and Yusoff (2016). Furthermore, Oyebanji (2003) observed that factors that determine property values in Nigeria are numerous and diverse, among which are demography, change in fashion and taste, effects of institutional dynamics (culture, religious belief, and legislation), economic factors, environmental factors, complementary uses, and accessibility.

Kolowe (2014) argued that location imposes some degree of value on a property; hence, it explains why some people opt for some particular neighbourhood, no matter the cost of land or property in such a neighbourhood and their socio-economic status. Kolowe (ibid) confirmed Ezra's (2006) position, who conducted a study on variations in land values in Jos, Nigeria. The result of findings from the study revealed, among other things, that lots with good accessibility tend to attract higher values than those in an inaccessible or not too accessible location. Security is another variable that plays a significant role in influencing property values. Prospective clients always indicate their willingness to pay a higher price if they are within a secured neighbourhood (Kolowe, 2014; Olujimi, 2010 and Olujimi & Bello, 2009).

However, Uju and Iyanda (2012) argued that the transportation system's improvement has significantly reduced the impact of distance or location on property value/land price. Recent researches on urban studies pay more attention to non-locational factors that determine urban

land values. Sumila *et al.* (2012) studied the living conditions, rents, and their determinants in slum areas of Nairobi and Dakar. Rental housing in the study areas was critically investigated, and deductions made. Comparative analysis of the informal rental market subsector of the two countries (Senegal and Kenya) property markets were studied using the World Bank's data on households for the two countries. Hedonic regression analysis with a log of rent paid every month as the dependent variable was conducted to identify rent drivers in these slum settlements. The unit size and quality, the infrastructure of the unit and neighbourhood level, neighbourhood conditions and location, and the tenancy agreement were the four explanatory variables sets adopted for the analysis.

The multivariate regression analyses indicated a perfect correlation between property rentals in the two distinct slum settlements with the same variables as property rentals rise with unit size and quality of buildings. Property with basic amenities such as water, electricity and reasonable access to toilet facilities command a higher rent. Simultaneously, other neighbourhood factors such as security and proximity to schools positively impact Dakar's property values.

2.5.1   Deduction from literatures on property rental values determinants.

The determinants of property rent are numerous but depend on the geographical location and the desire of man towards what he considered valuable to him as at when he needed the property. Literature has shown that the diverse property value determinant includes demography, change in taste and fashion, effects of institutional dynamics (culture, religious belief, and legislation), economic factors, environmental factors, complementary uses, and accessibility. In all, the study has shown that property value determinants are the same

globally but varies from location to location. This has guided this work in the area of rental value assessment in each of the study locations.

2.6   Location Variation Trend in Property Rental Values. The World View

Spatial variation in rent and the reasons for the variation become obvious where critical trend analysis is done. In Hong Time Series Analysis and a Shock-Response Analysis of the Vector Auto Regression (VAR) Model was adopted by Jeong and Kim (2009) to determine retail rental trends and possible spatial variation in property rental South Korea. Rental data used for the study were compiled by the Bank of Korea - BOK, the Kookmin Bank, and the Korea Statistics Office covering the period of January 1995 to February 2008. The outcome revealed a segregated urban rental and a steady rise in the overall outcome with a short sluggish period. The study found a positive correlation between retail rents and office rent, property management, consumer price index and housing deposit basis, while a negative relationship exists with interest rates.

Berg (2002) observed that urban housing price variation is common everywhere in the world. He concluded that the primary drivers of urban housing price equilibrium are the country, city, or region's socio-cultural and economic factors. Socio-cultural variables such as the consumers' taste and fashion, way of life, custom, and social value chain affect property prices and engender socio-class segregation with the consequential effect of urban rental variations. More so, the effect of economic performance on urban housing has been documented in literature worldwide (Udoekanem, 2014 & 2015; Michael, 2001; Mayer & Somerville, 2000; Pamuk, 1999; and Ojima *et al.*, 1994). Gross Domestic Product, interest and exchange rates affect a nation's employment rate and consumers' purchasing potentials

with resultant influences on property price equilibrium. Berg (2002) only focused on the socio-cultural and economic variables, neglecting other essential variables such as infrastructure availability and government policies that can also cause rental variation in urban areas.

In an attempt to investigate the variations in office property rent in Ankara, Ustaoğlu (2003) adopted the hedonic regression model for the estimation of hedonic price indices of office rent through the use of cross-sectional data of Ankara office property market for 2002, which was expected to adequately explain the actual position of variation in office property rent in the study area. Two models were developed (model 1 and 2) with the inclusion of location variables in model 2. The test results revealed that locational characteristics were significant in explaining the variation in the rental price of office accommodation in the study area. The other variables, namely, physical characteristics and the type of lease agreement, were also evaluated from the assessment results of Model 1. Hence the final empirical result revealed spatial variation in office property rent in the study area and that locational characteristic have a significant effect and best explains the spatial variations in office property rent in the study area. This study focused on locational and property attributes to neglect non-locational factors such as neighbourhood infrastructure, economic and institutional factors that could also impact the variation of office property rent in the study area.

De Bruyne and Van Hove (2006) adopted the geographical approach to explain the spatial variation in house prices in Belgium. The study revealed that urban housing prices vary from one geographical location to another and even within and between localities or municipalities. According to previous studies, these local differences depend on several

factors ranging from income level and disparity, property characteristics to demographic effects (Leishman and Bramley, 2005; Bardhan *et al*., 2003 and Malpezzi, 2002).

De Bruyne and Van Hove. (2006) argued that a critical factor that is not always considered is cities' geographical location. A well-located neighbourhood in terms of proximity and accessibility to the city core and other essential parts of the city attracts special rent to itself as the distance from the city, and the time one spends on travelling to the city from home either for employment or other economic and social functions affect the amount a prospective tenant will be willing to pay for urban housing. A model that reveals the geographical effect of urban house prices for 589 cities in two central Belgian regions of Flanders and Wallonia was developed in 2001 following economic geography literature. The model brought out the unique features of the two regions in politics, economic and geographical differentiation. However, the study's findings confirm with the usual expectations that environmental barriers have significant adverse effects on housing price, but found a useful difference between the areas and the transportation means studied. The variables considered for building the model used for this study are typical of developed countries; hence, due to location differentiation and technology level, not all the findings of this study can be generalized to cover countries in the developing economies.

Njiru (2016) appraised the implication of urban expansion on land use in Kiambu County of Kenya. The study used data collected on land use and land cover change from 1986 to 2014 through remote sensing, past information, and data from the literature for the computation of spatial/temporal variations in urban settlement expansion and the intensity of land use land, cover changes. GIS overlay operation was also used for change analysis. The study indicated

90

a significant change in land use and covered within the study period with the high rate of urban growth resulting from increasing urbanization which accounts for 41.6%. In land cover change, the study revealed agricultural land conversions to built-up (61.5 %) with the consequence of a severe decline of agricultural land, unemployment, increasing property values and segregated urban rent, breakdown of a social tie, interaction and lifestyle.

2.6.1   Location variation trend in property rental values in Nigeria

Location variation in urban property rental value is a global phenomenon in which the trend is gradually becoming an issue of grave worry to the real property industry stakeholders. According to Mueller (1999), as cited in Iroham *et al.* (2013), the term real estate trend is commonly used to describe the continuous change in transactions' overall performance or behaviour in the real property market. Iroham *et al.* (ibid) opined that this trend could either be downward or upward, horizontal or vertical, subject to the sequences of the related identifiable changes projected into a plausible future. The phenomenon occurs mostly due to the overall economy's performance, the presence of urban infrastructure, changes in mortgage rates, speculations, or other fundamental and non-fundamental reasons. It could be linked to the heterogeneous nature of activities traded in the global property market with no fixed geographical locations called market hence its susceptibility to economic, social and institutional forces.

Nwuba (2008) justified the need for the critical analysis of office property rental trend in Abuja, Nigeria, by submitting that a critical examination of rental performance would help investors in the planning and projection of cash flows, aid developers in critical investment

decision making while helping real estate professionals and researchers in the provision of data needed for property valuation. The current changing trend in the local and global economy, especially in the performance of urban real estate investment, is a pointer to the need for a careful evaluation of real property investment decision making processes. Alkali *et al.* (2019) asserted that various economic parameters might influence real estate price variation.

Oyewole (2013) posited that the examination of the performance of real estate investment, be it commercial or residential, is at this critical moment significant as in most parts of the world, attentions are gradually shifting to investment performance analysis. It is in line with Marquard and Von-Eije's position in Dabara *et al*. (2014), who argued that assumptions, expectations, and the likely predictions of the future are the reasons for investment decision-making. Bjorklund cited in Iroham *et al.* (2013), conducted a study to determine if variations in rent levels exist between Stockholm locations. The study was conducted for residential rent between 1990 and 1997 from the viewpoint of investors. An increase in the annual rent charged for private residential property was compared with that of the official increase arrived at through official negotiation for property owned by the municipality to assess the excessive hike in rent. The study's outcome revealed a variation in rental values in the property market in the study area. The findings of a study conducted by Bjorklund cited in Iroham *et al.* (2013) was not different from Oni (2009) and Oni (2003), who developed predictive models for commercial property values estimation in an emerging economy using Ikeja, Nigeria, as the case study. The models were developed using data on rental values collected through oral interview and questionnaire administered on occupiers of commercial property in the study area and Estate Surveyors and Valuers (ESV). The data was analysed

using the polynomial regression model. The findings, among other things, confirmed spatial variation in property rental values in Ikeja which is one of the study area locations for the current study.

Iroham *et al.* (ibid) assessed the trend in rental values of commercial property in the commercial hub of Akure, Nigeria, to keep investors abreast of the rental trend Akure which is also a study location for the current study. Oyemekun, the commercial hub of Akure, was transformed from residential area to commercial district through land use conversions which accounts for the spatial variation of property rent along this part of Akure and other parts of the city. The study area's commercial property are purpose-built office complexes, converted office space, and shopping malls. The study is cross-sectional survey research that used questionnaires as the main instrument for collecting primary data. In contrast, descriptive and inferential statistical techniques were used to analyse data. The study revealed that the principal types of commercial property in the area are the converted offices (53%), and the professionally managed property types are the shopping complexes (46%). However, the purpose-built office space has the highest significant level at R^2 of 0.9 with a p-value of 0.000 at a 95% confidence level. The specific factors responsible for the trend in the rental values were not empirically analysed in the study.

2.6.2   Deduction from literatures on location variation and trend in rental values.

It could be deduced from the findings of the literatures reviewed that it will be difficult to have a uniform rent applicable to certain property types in Nigeria. Operations in the Nigeria property market are not strictly regulated, as transactions in the market are left for the free

interaction of the market forces of demand and supply to determine. Hence, rent is fixed without recourse to any law.

It is the derivation of these idea that have guided the researcher in the use of aggregate annual rental values of the property types studied in each of the locations to assess rental trend.

2.7   Global perspective of the Influence of Land Use Conversions and Externalities on Rental Values.

As a concept developed in the sphere of welfare economics, externalities have been defined by Miller (1999) as the consequence of human economic activity that spills over to affect a third party that could be either positive or negative. Hence, improper land use conversions, insecurity, noise and traffic congestion caused by demand pressure on land or the location of a shopping mall in an area are harmful externalities that could adversely affect adjoining residences by either decreasing the capital or rental values of their property. In contrast, a shopping centre's appropriate location within a neighbourhood is a positive externality that benefits the residential area.

Hosch and Koehlinger (1997) observed that there had been instances where property owners challenged a proposed rezoning or development of commercial complexes on the ground that the conversions would adversely influence the value of their residential property. On the other hand, Crafts (1998) argued that either the conversions of residential property to commercial use or re-zoning do not negatively influence rental or capital values. His argument was premised on the report of the Henniker Planning Board in New Hampshire, which states that 'the siting of 9,800 square foot pharmacy on the edge of a commercial area

will not negatively impact the values of the neighbouring residential property in the town of Henniker'. It further substantiates Kahn and Case (1977) 's assertion that the conversions of residential development to commercial use help boost the values of other residential property developments in the neighbourhood.

More recently, Loehr (2020) argued that strong and well-organized beneficiaries which try to reap incremental or higher land rent or values often drives the processes of land use change. The study further observed that, land use conversion cost has been greatly externalized to the extent of involving the poorly organized group or the society at large. It thus opined that if the cost or burden of conversion is on the society, then, it should be allowed to participate in the drivable benefits. Frew and Judd (2003) studied property rental at a micro-level and discovered that high-level commercial activities in a residential neighbourhood bring about a severe reduction in residential property' values. Franklin and Waddell (2003) evaluated the influence of different employment types' accessibility on single-family residential property values. They found that university and commercial land uses are positively associated with rental and market values, whereas closeness to industrial establishments and local schools is negatively linked with rental and market values in Seattle.

Batalhone *et al.* (2002) studied proximity to sewage treatment plants on residential property in Brasilia. The study, however, employed the closeness of some specific commercial land uses as a group of control variables. All the commercial variables used were found to have adverse price effects except for fruit and vegetable shops and gas stations. Mahan *et al.* (2000) discovered a negative relation between rental values of residential property close to converted commercial uses and those located far away. However, commercial land use

proximity was used in the study as control variables while investigating proximity to wetlands and its influence on residential property prices. Findings from the study revealed that as distance increases between the two-land use, residential land use value increases. Although their expectation was the opposite due to the popular notion of convenience, one should ordinarily expect rising residential property values with proximity to commercial land uses. However, Repoport in Oduwaye (2013) posited that, individuals' aspirations towards achieving his culturally derived satisfaction have implications on land use, hence, included factors as ethnicity, origin, tradition and religion to be part of the culturally influencing factors of land use conversions that bring about externalities and land use infiltrations in urban land use. The determination or inclusions of culturally influencing factor as land use determinant is outside the scope of the current study.

2.8   Influence of Land Use Conversions and Externalities on Rental Values in Nigeria.

Unauthorised conversions of residential property to commercial use are common in urban centres in Nigeria with grievous externalities. The government uses zoning, which is an aspect of police power, to control or minimize the effect of external diseconomies infiltrating from one land use type to the other. Alade and Oduwaye (2012) postulated that, a major constraint to urban land use efficiency in Nigeria is the lack of capacity building on urban land management. Hence the existence of zoning laws to segregate the various land use types from each other and imposes control measures that could reduce diseconomies' spill over, the incursion of one land use into the other and other forms of externalities become necessary. Though it is a fact that residential and commercial land uses are like two faces of the same coin that can hardly be detached from each other, the type and magnitude of the externalities

that come with the incursion of commercial activities into residential areas are enormous and quite threatening (Adepoju *et al.,* 2016; Adegunle *et al.,* 2016; Ong, 2013 and Farinmade, 2010). Despite the observable diseconomies and the externalities that come with urban land use, scanty research work focuses on its influence on property rental values in South West Nigeria.

2.9 The Rent and other Related Theories as it Applies to the current Study.

2.9.1 The Rent Theory

Understanding the rudimentary concept and theory of rent and other related theories are considered necessary since the crux of this study is on the influence of land use conversions on property rental values. To Smith (1776) cited in Bochnovic (2014), the generator of rent is demand, while Ricardo (1819) viewed rent as an existing differential in production cost. He further asserted that, Von Thunen (1826) developed a model where the residual value of rent hinges on the differential cost of production, considering transportation costs, while Karl Marx attributed monopolistic conditions to the origin of rent.

According to Bochnovic (2014), Alonso was the first to adapt Von Thunen's model and relate it to the urban environment as he predicted in his model stiff competition among the different urban economic activities for which their ability to pay rent based on the choice of location and consequential value distribution will determine their spatial settlement in the city. Udoekanem (2014) observed that rent as an essential concept in land economics theory has its origin in the rise in individual enterprises, rights and responsibilities due to the collapse of feudalism. He thus defined rent as the economic return to land resources. In contrast, Manganelli and Murgante (2017) view rent from the classical approach to mean the

remuneration of a scarcely productive factor (land). Rent, therefore, is the payment made by a party (an inferior interest holder), usually the tenant, to another party (superior interest holder) the landlord for using his land, buildings or both. From this assertion, it therefore, becomes more evident that the payment of rent is tied to the benefits (positive or negative) derivable from the use of land; hence various theories on rent have been formulated.

In his analysis of the various rent theories, Bochnovic (2014) opined that, William Petty (1623-1687) and Richard Cantillon (1680-1734) developed the natural state and natural price theory where revenue from land and the expenditure can be balanced and the price determined. The theory sees land and labour as the only sources of a nations' wealth. François Quesnay (1694-1774) and Jacques Turgot (1727-1781) emphasized the usefulness of agriculture in their theory but failed to consider the effect of capital. The model formulated, however, recognized three significant groups of variables in the economy: the productive group of agricultural workforces and farmers, the sterile group of industrial workforces-artisans and merchants, and the administrator group of landowners who appropriate the whole surplus as rents. Like Petty and Cantillon, these great minds thought the only sources of wealth on land are labour from agriculture; thus, little or no consideration was accorded rent.

Berg (2000) argued that Quesnay developed the concept of differential rent before the emergence of other land economists like James Anderson and David Ricardo. However, Adams Smith and David Ricardo were the first theorists to introduce the concept of capital or the theory of rent in the 18th century with a specific focus on the relationship that exists between land and labour, particularly in the agricultural land use, which has in recent times

become an issue of significant concern among rent theorists. It is also imperative to note that the determination of rent was never the early economists' concern not until Adam Smith (1723~1790) introduced the issue of capital and other variables of surplus that were accepted. Park (2011) identified significant gaps of inconsistency and contradictions in Adam Smith's theory of rent, as the various rent types were never identified and correctly classified. However, Smith's ideas about urban rent ignited the interest of classical economists like Thomas Malthus (1766-1834), David Ricardo (1772-1823), John Stuart Mill and James Mill (1773 - 1836); Johann Heinrich von Thünen (1780-1850), Max (1818-1883) and Hurd (1903) as cited in Bochnovic (2014). The failure of Von Thunen and Alonso's theories to adequately address or incorporate other externalities that affect land values and rent paid for the use of land, according to Bochnovic (2014) prompted later theorist like Straszheim, (1973); Muth, (1969); Mills, (1967); and Wingo (1961) to action.

Wingo (1961) developed a free time variable localization theory modelled on Alonso's assumptions and the concentric ring city idea with less attention paid to the relationship between transportation cost and position rent. Wingo's theory focuses on the totality of the relationship between the component and its surrounding environment which is the crux of the current study. The model considers every portion of the land use and relates it with both the social and economic activities operating in the locality. Qina *et al.* (2016) thus opined that bearing in mind the specific uses (land uses like residential, commercial, among others), this set of interactions is replicated in many offer prices.

Rent as a significant determiner of property values and an important contributor to the national economic growth of nations is sensitive to operations within the environment and

often respond commensurately to changes in the neighbourhood. Hence can be said to be a localised phenomenon that respond more quickly to environmental and other factors. The existence of all variable and their interactions with each other are prelude to rental performances. The payment of totality of attentions to every detail of the entwined relationship that exist within the components of the immediate surrounding environment is necessary. For instance, land use conversions from residential to commercial use which is gradually becoming an issue of regional concern if not urgently address can crumble the economy of a nation. It effects on city aesthetics and property rental value performances is monumental (Ankeli *et al*., 2020). Hence the need to carefully analysed land use conversions causative factors and it influence on converted property rental values is not negotiable, if the economy is to grow. Thus Wingo (1961) theory is the underpinning theory for the current study.

2.9.2 The loss aversion and the regret theories.

Nations have adopted loss and regret aversion theories in the achievement or successful implementations of policies and regulations that would have ordinarily been thought to be unimplementable. Both loss and regret theories influence investors rational behaviour and investment plans. According to Gächter *et al*. (2010), man's interest and thoughts are usually focused or often directed towards the avoidance of whatever thing that could diminish their values or wealth rather than that which increases the worth. Hence, his first line of action is always doing what will either increase the value of what he possessed or at worst to sustained the current worth but not to do anything that could diminish it. Thus, Thaler *et al.* (1997) cited in Ayinla *et al.,* (2021) opined that the risk of losing worth is usually weighed twice the

possible expected gains. Investors are often careful in taking decisions to avoid regretting not adopting an alternative decision at a future date.

Well-documented literature has revealed that the implementation of well-thought-out ideas, regulations and other measures on land use conversions control in Nigerian cities has been frustrated in the time past. Hence, most major Nigerian cities are currently in a state of dilemma on how to combat land use conversion problems and its influence on property rental values. Real property is believed to hedge against inflation or loss aversion; hence it is possible to apply loss and regret aversion theories as a motivational model for solving land use conversions threat on property rental values in Nigerian cities. The application of motivational theories as loss and regret theories could engender compliance to law or regulations by space users, landowners or investors rather than the application of mandates or the use of force to control or minimise human actions which are often resisted or reluctantly comply with; hence, Ayinla *et al*. (2021) therefore observed that mandate by the government is just an enforcer but not a motivator.

Evidence from the field further suggested that reasonable proportions of the land use conversions and planning regulation measures in the study areas were not strictly observed and thus ineffective (Ankeli *et al.*, 2020; Adegunle *et al.*, 2016 and Adebayo, 2009). The assertions are however, in line with the submission of Ayinla *et al.* (2021), Hansen and Jespersen (2013) and Wells (2010), who doubted the effectiveness of the risk of the sanctions defaulters of policies or regulations are likely to face and whether such sanctions or the mere threat of it will augment or engender the achievement of the desire goals of the policymakers and behavioural changes of the defaulters. The policy measures or models in use in the study areas have proved ineffective except for Ikeja. Lagos state which has recorded some levels

of improvement in her land use conversion drive due to the improved structure and conducts in the Bureau for Lands. Though, the sustenance of the current land use conversion drive and stimulation of property owners/investors and space users' attitudinal change towards the policy's inherent benefits in land use conversions and rental values is gradually attracting attention more than ever before. Just like the suggestions of Ayinla *et al.* (2021) on Building Information Modelling (BIM) implementations, this study recommends the need for the adoptions of a complementary strategies to policy mandate. Loss and regret aversion theories is therefore proposed as an alternative motivational model to the conventional policy regulation stance and the mandate or force measures of successive governments for combating the influence of land use conversions on property rental values in the study areas.

2.9.3   The nudge concept theory

Ayanla *et al.* (2021) asserted that the nudge theory is an alternative mean through which governments can bring about positive social changes via a 'motivational' tactics or by imperceptible techniques to achieve the desirable policy outcomes. Ayinla *et al.* (2021) opined that nudge theory is a good example of a non-forced compliance concept which Thaler and Sunstein (2008) has defined as an architectural choice which any part thereof modifies the behaviour of people in a predictable manner without forbidding any opportunities or meaningfully altering their economic inducements.

The nudge concept theory has been adopted in nations of the world for policymaking and implementations with documented records of successes. Oliver (2013), Wells (2010) and John *et al*. (2009) reported the importance of automatic default enrolment with opting-out option for pensioners as it reduces the chances of financial burden on taxpayers due to

workers negligence. As a process that suggests indirect methods through which human behaviour and decision making can be influence towards achieving the desired positive outcome, the application of nudge theory concept as one of the land use conversions control measures targeted at positively reducing the negative influence of land use conversion on property rental values will be a welcome innovation in the study areas. Ankeli *et al.* (2020a) and Ogungbemi (2012) submitted that the current policy measures of forcing, coercing and mandating adopted by government for controlling land use conversion in Nigeria urban centres have brought about reactance and reduce trust. The nation therefore needs strategies that will be people friendly, encourages decision making processes by assisting people to think, make right and better decisions by offering them options from where choices can be made in order to achieve the desire outcome. Government and stakeholders in the built environment can therefore explore the model by altering the real property market environment in a way that, the automatic cognitive processes are triggered in line with the expected outcome, which in this case, the observance of land use regulations that will bring about behavioural change towards responsive and sustained positive rental trend.

2.10   Conceptual Framework

Land use conversions as a phenomenon with both accumulative and universal effect on nations' economy, its drivers have remarkably contributed to the modification and alteration of cities structures and socioeconomic primacies (Ogungbemi, 2012 and Yuri, 2005). The major challenges of most metropolitan cities especially in the third world nations, is population explosion and the ever-increasing urbanization rate, leading to cities' socioeconomic and environmental problems.

However, Clos (2016) and Njiru (2016) observed that the exertion of demand pressure on urban land use is traced to multiple factors, including the rapid rate of urbanization entwined with rural-urban migration. Hence, has the twin consequences of urban land use encroachment resulting from the change in the size, outlook and demographic form of once a small isolated population neighbourhood to a larger, interconnected socio-economic nucleus with modern-day infrastructures and city problems as property use conversions, gentrification, shantytowns formation due to overcrowding and the inability of the urban poor to meet up with the new urban rent regime (Bosikun *et al.* 2021; Opatoyinbo *et al.,* 2015; Seto *et al.,* 2011 and Poelmans & Van-Rompaey, 2010). The basic amenities and infrastructures (such as water supply, primary health care, urban housing and transportation) and physical land space to meet the need of the teeming population are not at a commensurate level with the urban population in most cities of the developing nations (Cobbinah & Niminga-Beka, 2017 and Popoola, *et al.,* 2016). The consequence of this is usually land use incursion resulting from land use abuses, acute shortage of urban housing/high rental or housing prices, crime, high poverty rate and other environmental problems. However, Oyekanmi (2008) warned that the current surge in population growth, if unchecked, would exacerbate and accentuate social and economic problems that may be extremely difficult, if not impossible, to solve.

In Nigeria, the recent trend of converting every available spot in our urban centres to informal economic activities calls for serious concern. Urban planning regulations and management compliance failure, socio-cultural values, insecurity, poverty and unstable property values are linked to the illegal springing up of informal economic activities, including the commercialization of urban residential land space and increasing conversions of traditional

land use to other uses, through urban land use abuses (Adegunle, 2016; Korah & Cobbinah, 2016; Howell & Timberlake, 2014; Ogungbemi, 2012 and Cobbinah & Amoako, 2012). A thorough understanding of the residential property rental market will assist academia, practitioners and investors to have sufficient knowledge of the influence of land use conversions on property rental values.

Scholars have developed several models or concepts to resolve use conversions' issues (Gwamna & Yusoff, 2016; Brown & Chikagbum, 2015; Akakandelwa, 2012 and Yuri, 2005). Yuri (2005) developed a framework for assessing the physical structure and pattern of land use change from residential use to commercial land use in Mampang Parapatan, Jakarta, Indonesia. The postulation of the framework reflects a one-way causal relationship between the influence of residential land use conversion to commercial land use and structure and pattern of land use in the study area.

However, it was observed that, Yuri (2005) framework did not empirically measure the influence of land use conversions on the rental values of the converted property hence a gap in knowledge was created that the present study will fill. Also, the framework did not make provisions for reassessment of the outcome of the analysis which could either be positive or negative. If negative, what will then happen? Furthermore, the individual or collective influences of land use conversions variables on rental or capital values was not defined or measured by any of the previous concept, hence another gap created that need to be fill. To fill the identified gaps, the current study adopted the use of a predictive model to determine the influence of land use conversion activities on rental values. The Yuri (2005) framework is as presented in Figure 2.2 below:
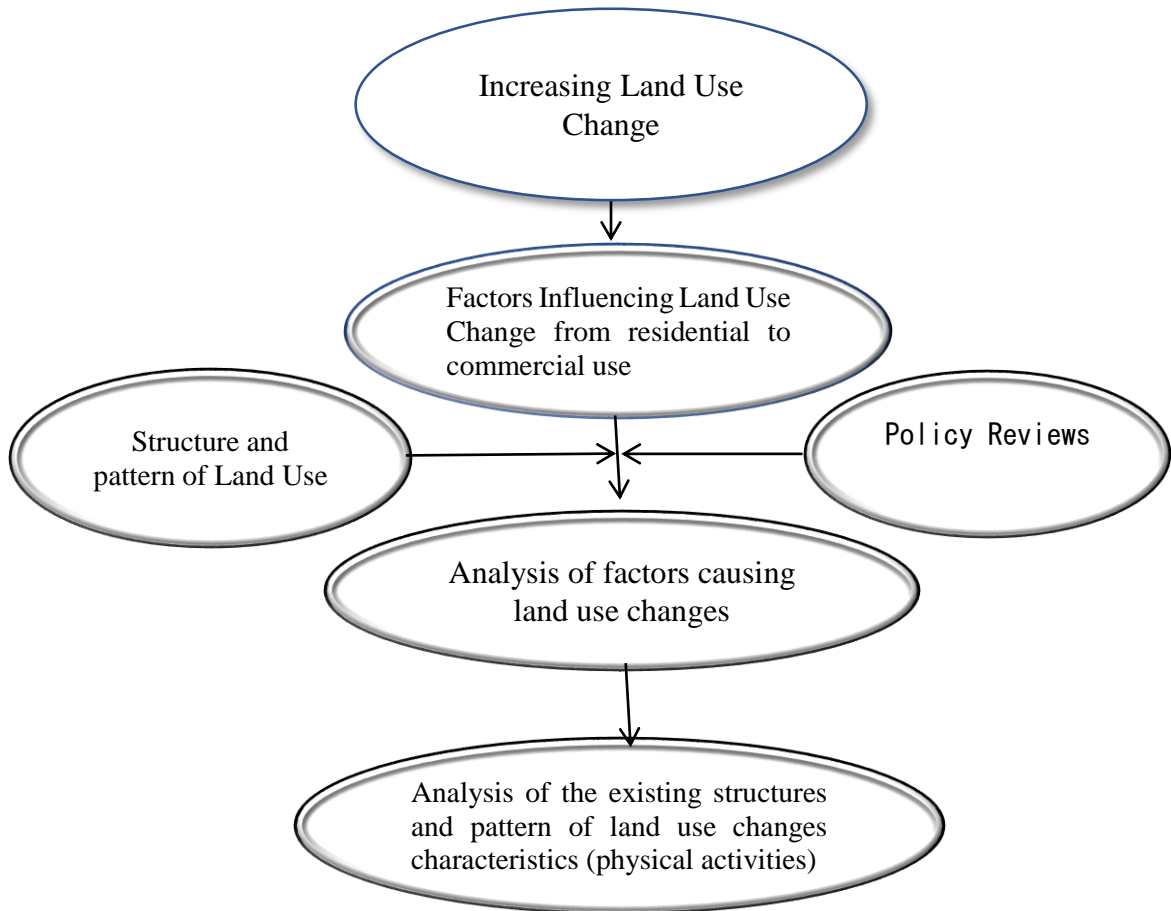
Figure 2.2: Pattern of land use changes in Mampang Prapatan residential area
Source: Yuri, (2005)

The one-directional stance of Yuri's concept, the none attachment of the framework to any

form of property values, be it rental or capital value, has created a platform or the need for a

framework that will incorporate the observable defects in Yuri's concept. Therefore, it is on

this premise that the current study has developed a conceptual framework to address the

deficiencies in Yuri's concept by including a two-way directional model using rental values

as its basis for assessment.

Akakandelwa (2012) studied the effect of residential to commercial land use change in Lusaka and concluded, among other things, that the sudden change in land use has adverse effects on the residential property market. The study linked the conversions of buildings from residential use to commercial use to factors like demand and supply, population growth, Profit maximization, social benefit/maximum comfort; Increase in demand for commercial use; Fashion and taste; easy Accessibility and Government policy decisions.

Akakandelwa's concept technically shows that only five factors contributed to land use in Lusaka, with a one-way causal relationship between land use conversions and its drivers. The framework did not attach any property values (capital or rental). Also, the framework did not explain the implication of the influence of land use conversions on either rental or capital values performances. It did not make provisions for the assessment or reassessment of rental or capital value trends in Lusaka or the possibility of evaluating the influence of the land use conversions on rental values in Lusaka. All these constitute gaps that the current study filled; hence, the framework developed by the current study takes care of the inadequacies of Akakandelwa's framework presented in figure 2.3.
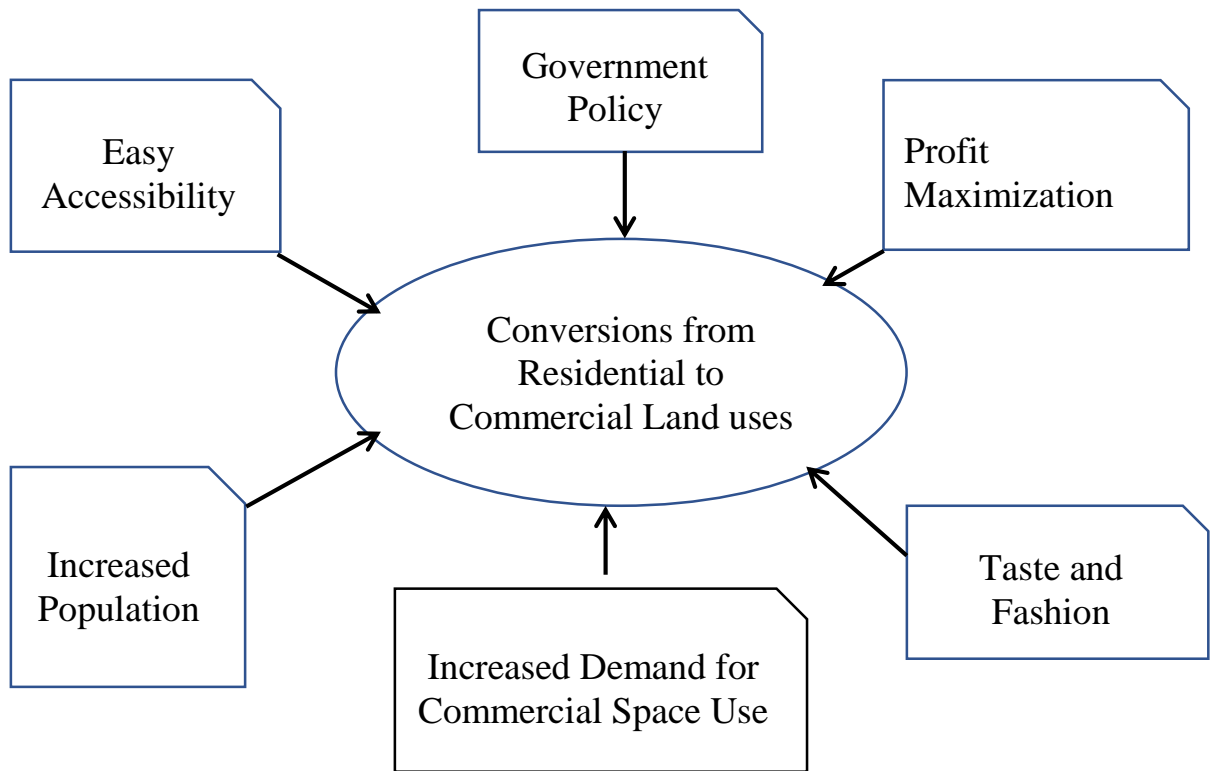
Figure 2.3:   Framework for factors responsible for land use change from residential to commercial land uses in Lusaka

Source: Akakandelwa (2012)

Museleku (2013), in an attempt to investigate the causes and effects of agricultural land use conversions in Kiambu interface, a Nairobi urban fringes adopted World Bank (1999) and UNEP (2002) land use management framework with some adaptation. Though good governance is a significant determinant of sustainable agricultural land use, the author, therefore, opined that the effectiveness of existing policies and other institutional frameworks, public involvement in the management and land use forms the basis for measuring land use conversions.

The framework did not show the final effect or manifestation of the outcome of variables used in its development. It only shows that effective public participation can lead to land use planning, which can lead to effective public participation but what the framework intends to achieve is unknown. The focus of Musseleku's framework was more on administration; discussion on the other aspect of land management was not deliberated or analysed in the concept. Therefore, the gaps created serve as the basis for developing a new and more explicit framework that filled the observed gaps. Museleku's framework is presented in figure 2.4
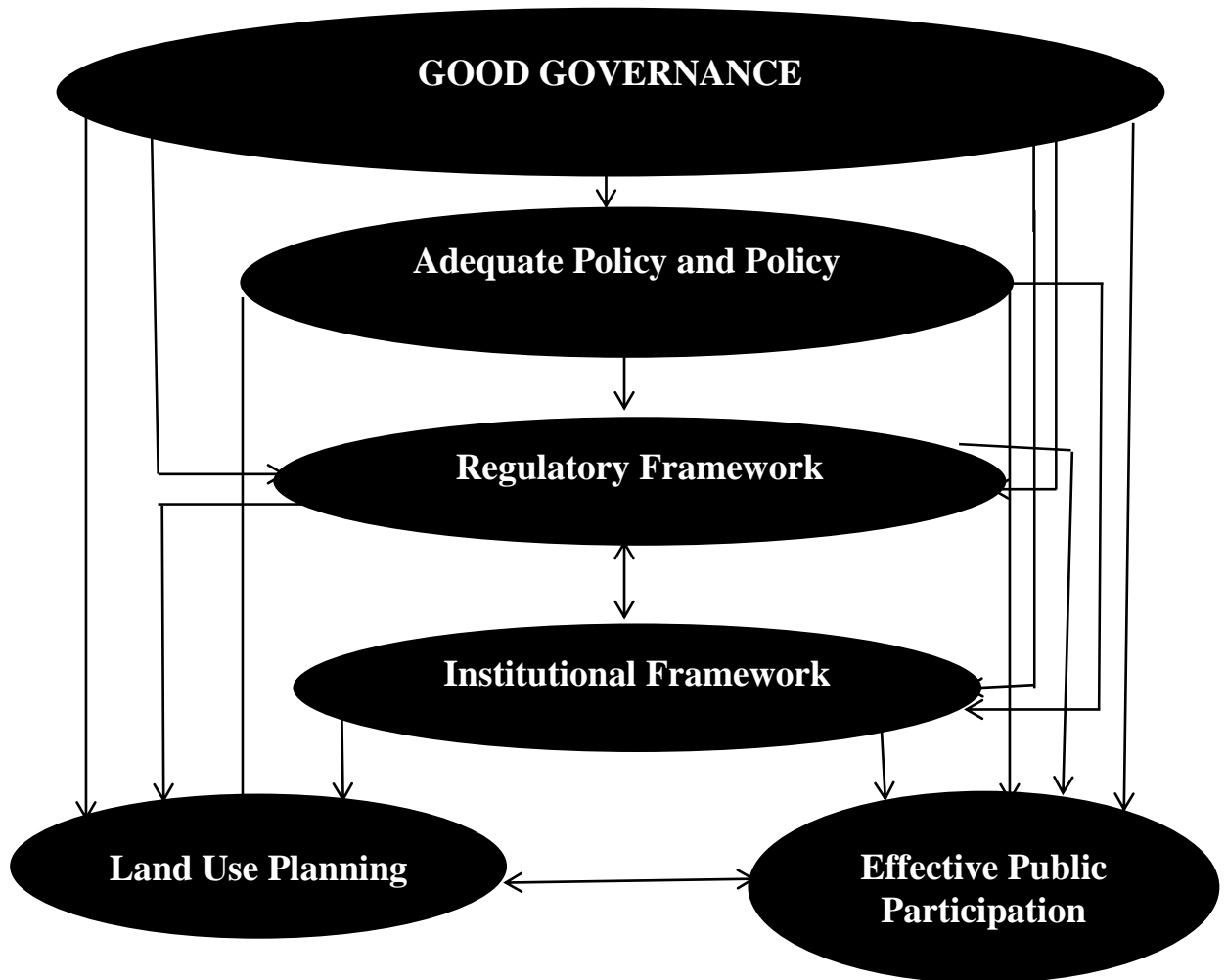
Figure 2.4: Land Use Management Model
Source: World Bank (1999) and UNEP (2002) adopted by Museleku (2013) with Adaptations

To date, governments, especially in the developing countries, have devoted little attention to issues of land-use conversions, or at best treat it with flippancy despite the widely acknowledged premise that residential land use commercialisation negatively affects the environmental, social and economic status of urban cities (Ojikpong *et al.,* 2016; Korah & Cobbinah, 2016; Ogungbemi, 2012 and Cobbinah & Amoako, 2012).

Ikejiofor (2006), cited in Odunola and Odunjo (2015), argued that no single Nigerian city had advanced an effective management strategy for urban growth. Thus, most urban land supply for development in major cities is done outside government regulatory frameworks. Critical urban infrastructure as housing development is left in private investors' hands with investment motives, thereby creating housing inadequacies due to the ever-increasing population and the dwindling residential housing stock in our urban centres. Residential housing supply is not increasing, but the few available ones face the challenges of conversions from residential to commercial uses (Ojikpong *et al.,* 2016 and Akintunde, 2015). People will need a place of abode; hence competition arises between uses that the highest bidder carries the day (rent bid theory).

Ankeli *et al.* (2019) opined that the consequential adverse effects of not according the influence of land use conversions on rental values the desired concern it requires by government, investors and other stakeholders are monumental. The consequences could range from high or location variation in urban rentals, distortion of city morphology, urban crime, the aesthetic problem of the city, conflicting land uses, property devaluation, economic imbalance, environmental and health hazards, and land /property ownership contestation, among others. For a better understanding and a comprehensive analysis of the

current situation and to find a permanent solution, there is the need for thorough conceptualisation, assessment and understanding of the causes, trends and the influence of land use conversions, especially residential land use commercialisation on property rental values.

From the three previous frameworks studied, none of the frameworks adequately addressed the influence of land use conversions on property rental values in their various countries, neither can it be adopted and applied to the situation in Nigeria. Rather, the frameworks merely presented land use conversion factors without showing or explaining their contributory influence on property values (see Akakandelwa, 2012 and Yuri, 2005). More so, the three frameworks exhibited a one-way directional causal relationship between land use conversions and its determiners. Museleku (2013) framework focused on institutional factor with no attention given to the other land use conversion factors or variables. These has created gaps which the present study has filled through the analysis of the data collected from the field and drawing from the literature reviewed on land use conversions. The study has therefore, achieved its aim through the examination of the causes of land use conversions, assessment of converted property rental trend, evaluation of the influence of land use conversions on rental values in the three cities studied and by been able to analysed location variation in rent in Ikeja, Osogbo and Akure which is evidential as a strong prove of achieving the set objective.

Literatures reviewed revealed that none of the previous studies independently examined the influence of land use conversions on rental values of converted property in multiple locations (Ojikpong *et al.,* 2016; Korah & Cobbinah, 2016; Brown & Chikagbum, 2015; Ogungbemi,

2012; Cobbinah & Amoako, 2012; Akakandelwa, 2012 and Yuri, 2005). The implication is that property rental values performances could not be appropriately determined due to the influence of land use conversions. Most cities in South West Nigeria shares a lot of similarities in terms of structure, conduct and operations; hence are prone to land use conversions and rental variability. Also, none of the earlier studies evaluated the trend and influence of land use conversions on converted property rental values. More so, influence of the variables mentioned or identified to be land use conversion factors on property rental values have not been evaluated by any previous studies. Furthermore, among the literature reviewed especially those related to land use conversions in Nigeria, none have discussed location differentiation in rent or rental trend performances of two principal land uses (residential and commercial).

This study, therefore, examined the influence of land use conversions on property rental values (residential to commercial uses), through the evaluation of the influence of land use conversion factors on rental values in each of the study locations and the assessment of the before and after use rental values trend of converted property. This was achieved through data collected from Estate Surveyors and Valuers, Ministries of Works, Lands and Housing, Ministry of Lands and Physical Planning and Agencies operating under the Bureau for Lands in the various states studied. More so, frameworks from previous literatures studied were appropriately modified by the incorporation of some elements or conceptual alteration to suit the current study. To validate the probable outcome of the research exercise, pilot survey was conducted for each of the locations in proximate local government areas to the ones understudy where two streets each were sampled and used for the study. The outcome of the

predictive models used for the study revealed indicators relevant for land use conversions and their influences on rental values in the study areas.

To fill the identified gaps in the previous framework studied, the author put together an extensive construct of models and variable indicators identified in literature by the critical evaluation of previous models and the variables used. The defects in the previous frameworks and constructs used were identified and adequately taken care of in the current conceptual framework. The meticulous evaluation of the earlier concepts, adequate review of relevant literature, collection and analysis of data has helped the author to come up with a diagrammatic concept targeted at correcting the observed defects in the previous frameworks in literature and could be used to solve the problem of the influence of land use conversions on rental values in the study area. The conceptual framework is presented in figure 2.5 below.
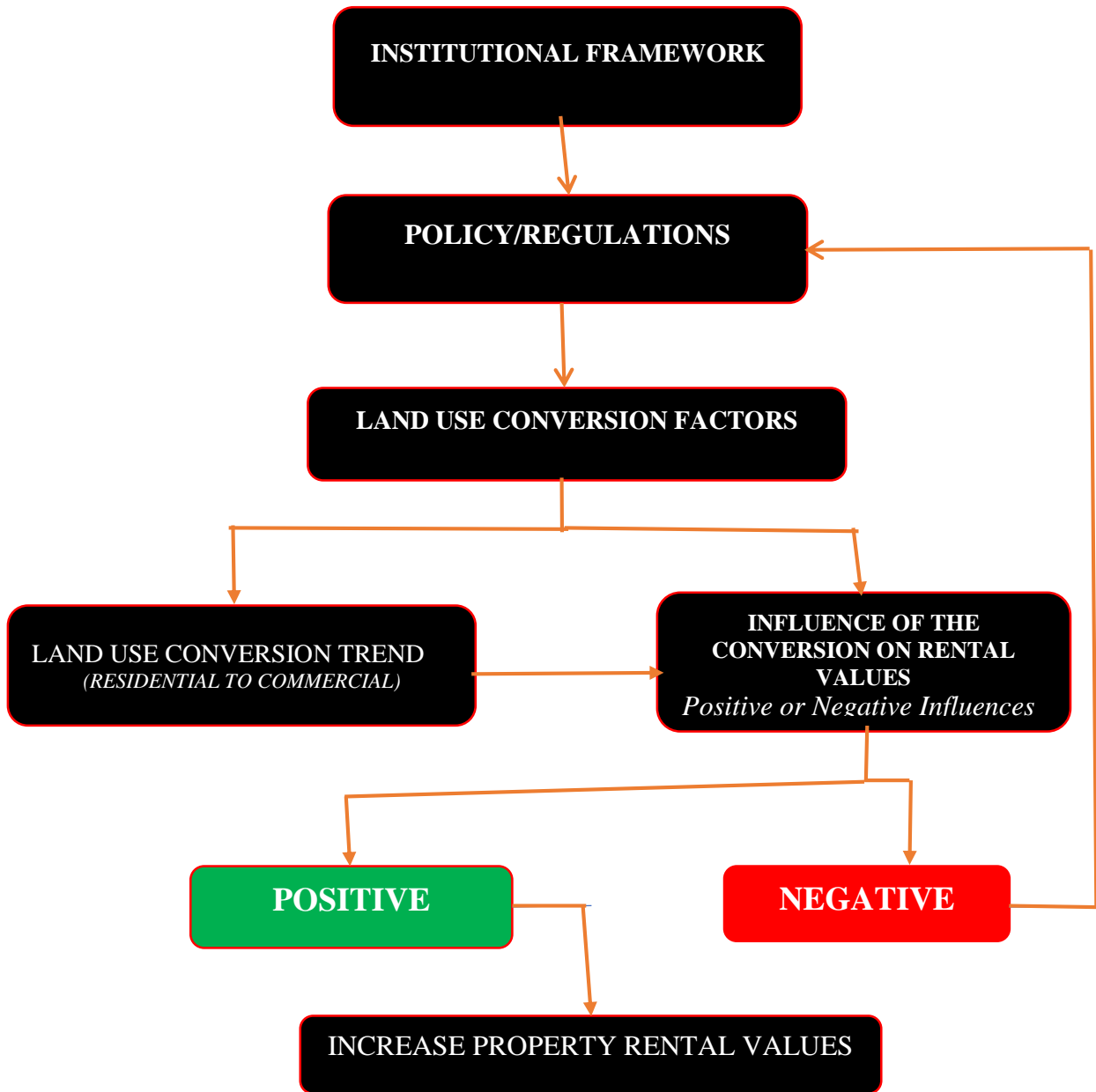
Figure 2.5: Conceptual Framework for the Influence of Land Use Conversions on
         Property Rental Values
Source: Author, (2019)

Figure 2.5 incorporated the missing links in the previous framework for land use conversions

framework by proposing the need to address the issues of land use conversions in the urban

areas through institutional framework that could be used to check the other land use

conversions determiners. The structure of the Ministries or Agencies charge with the direct

responsibilities for land use and management need to be known. In all the three states visited for data collection, the organisational structure of Lagos State Bureau for Lands stands out. This was reflected in the low rate of unauthorised conversions recorded in the state within the study period. Activities in the Bureau for Lands were divided among the sections created in the Bureau. The sections are Land Use Charge Unit (LUC), Lagos State Building Control Agency (LASBCA) and Lagos State Physical Planning Permit Authority (LASPPPA) with each of these sections handling specific professional functions. The Bureau for Lands only handle issues related to the issuance of Certificate of Occupancy and land allocation. The other states merged these functions in Ministry of Works, Lands and Housing as in Ondo State and Ministry of Lands and Physical Planning as it is known in Osun State. The structure in Lagos State helped in the conduct of activities in the Bureau.

The framework also advocates for the identification of the fundamental factors that cause land use conversions in the study area. These factors are often checkmate by the regulatory or policy framework of the ministry. The regulatory or policy framework are the policy formulations of the government that must be protective, proactive, prudential and competitive so as to allow the ministry staff to have strong and better understanding of urban problems and city management. The determination of the conversion factor, the trend and influence of land use conversions on the rental values of converted residential property in the study area. The post analysis (quantitative) interview conducted informed the need for the inclusion in the proposed framework a concept that could further suggest the possibility of evaluating the negative influence of land use conversion on property rental values from the perspective of the likely feedback from respondents on the implications of the influence of land use conversions determinants on rental values. It however, makes the concept unique as

it creates room for two-way interactions between the causes of land use conversions and its implications on property rental values. Hence, it has helped in filling a technical gap observed in previous studies as Museleku (2013); Akakandelwa (2012) and Yuri, (2005).

2.11   The Gap in Knowledge Identified

Related literature reviewed revealed the existence of several knowledge gaps which will be difficult for this study to fill all the identified gaps. Hence the concern of this work is to fill the gaps covered by its objectives. The gaps to be fill by the present research are:

The non-existence or near absence of any known previous literature that examined land use conversion determinants in three cities despite been a threat to economic development and sustainability is a gap that was identified and filled by the current study.

The recent trend in urban rental regime across cities of the country, especially, cities in South West Nigeria, occasioned by the uncontrollable and unguided conversion of property use from residential use to commercial use with unprecedented negative effect on the national economy calls for urgent national attention. Despite this and the role rent plays as a significant determiner of property value and contributor to national economic development, its performances are overlooked. There exists no previous literature that have presented independent assessment of the influence of land use conversion factors on converted property rental performance in any known city in Nigeria. The failure to provide a document that could guide real estate investors and the national planning commission in this direction presents a serious gap that the documentation of the findings and recommendations of the current study has attempted to filled.

The difficulty in generalisations of findings of studies on land related subject conducted in developed nations to perfectly fit into situations in the developing countries due to methodological technicalities is a challenge. Though, attempts by previous scholars at determining the influence of land use conversion activities on rental values in most cities in Nigeria have not yielded the desired result; hence presented a gap that this study have filled. In an attempt to fill this gap, the current study therefore developed and use a predictive model to independently established and presented the influence of land use conversion activities on property rental values in the three cities in South West Nigeria.

The Nigeria property rental market is not strictly regulated by any known effective legal framework nor based on any parameter. But freely allow rent to be determined by the interaction of the market forces of demand and supply, thereby creating the problem of segregated urban location rental variations. The issues of segregated urban location rental variations caused by the pattern of land use conversions in Nigeria has not been addressed in any known literature from Nigeria. Hence this study will be the first major step to extend the frontier of knowledge in this direction by filling the identified literature gap.

The research therefore aim at filling the knowledge gaps in the area of the lack of documents that examined the critical land use conversion factors in Ikeja, Osogbo and Akure; assessed converted property rental performances trend which have been long overlooked in the study area; predicting the influence of land use conversion activities on converted property rental values in Ikeja, Osogbo and Akure and the determination of the existence of segregated rental variation in the study area cause by the pattern of land use conversions.

CHAPTER THREE

3.0   RESEARCH METHODOLOGY

3.1   Research Paradigms

Recent studies on research paradigms and philosophies revealed the difficulties in the classification or categorisation of research, especially in the area of entwined methodologies and meanings concerning the ontology, epistemology, doxology and axiology, as well as the placement of quantitative and qualitative research approaches (Tekin & Kotaman, 2013; Mkansi & Acheampong, 2012; Saunders *et al.,* 2012; Henderson, 2011; Gray, 2009; Johnson & Onwuegbuzie 2004; Caelli *et al.,* 2003; Ritchie & Lewis, 2003; Johnson & Duberley, 2000).

Previous studies have also shown that paradigm suggests the design, structure and context, the systematic scientific and academic thoughts as well as the value assumptions of an investigative work (Mkansi & Acheampong, 2012; Henderson, 2011; Gray, 2009; Crowther & Lancaster, 2008; McNabb, 2008 and Denzin, 2005). Their studies have distinctively classified research worldview into three philosophical classifications to include critical postmodernism, interpretivism and positivism. Out of the categories listed, the positivism is considered to be the most ideal and appropriate for this study. This is because the aim of the study is to examine the influence or cause - effect relationship between phenomenon and the prediction of the influence of a construct on another, which is also the aim of positivist enquiry.

Positivism research philosophy depends mostly on the researcher's view as it is based on the ideology that science is the only means to learn about the truth as it is a trustworthy fact that

knowledge gained through measurable observations provide bases for reliability and rationality (Mkansi & Acheampong, 2012; Denscombe, 2007 and Morgan, 2007). Positivistic thinkers use scientific approaches, and structure the process of knowledge acquisition through quantifiable measures to achieve accuracy in their description of constructs and the association between them, discovering the truth about phenomenon and empirically presenting it as it is. The crux of the present study is the influence of land use conversions on properties rental values, that is, conversions of use from residential to commercial uses in South West Nigeria. The association between the variables was quantifiably measure to achieve the aim of the study through a participatory data collection process. The researcher was directly involved in taking notes but played the role of an objective and unbiased data collector and interpreter as findings were observable and quantifiable.

Positivism philosophy is believed to be in line with the empiricist view of reasoning about knowledge which is assumed to stern from human experience (Saunders *et al.,* 2012; Srivastava & Rego, 2011 and Kothari, 2004). However, Crowther and Lancaster (2008) and Myers (2008) opined that the deductive research approach is associated with the positivist study as researchers in this type of research are expected to focus or concentrate on facts and are independent of the research, thereby making the research to be completely objective. The current research problem, which the researcher is seeking answers to, stern from human actions and experiences, where the researcher, who is an independent data collector, is expected to make logical inferences from the data analysed. Lee (2014), Collis and Hussey (2014), and Kamal (2011) observed that the philosophical underpinning of the positivism school of thought is the quantitative research approach which is also the research approach

adopted for this study as data collected for the study are quantitative data using a questionnaire survey.

Researchers globally base their research work on philosophical viewpoints that reflect and capture their thought or belief concerning the world. Hence the possibility of adopting multiple paradigms in a research design depends on the research type, what the researcher intends to achieve, and the perspective the research is viewed from. Following the above narratives, the philosophical assumption underpinning the present study is positivism. The assertion of Mkansi & Acheampong (2012) and Morgan (2007) that a trustworthy fact is a knowledge gained through measurable observations further justifies the researcher's choice of positivism paradigm as the philosophical rationale for the study.

3.2   Research Method

This is the strategy of enquiry that flows from the basic underlying research assumptions to research design and data collection (Myers, 2008). There, however, exist other peculiarities in the research modes, but the most commonly used research method classifications are qualitative and quantitative research methods which on one side either try to explain the peculiarities concerning the nature of knowledge or how the world is perceived to be by people and the eventual purpose of the research. On the other side, the research method is used to explain the way in which data are collected and analysed and the type of generalizations and representations derived from the data. An obvious basic difference between the two research types (qualitative and quantitative research) is in the form of data collection, analysis and presentation

Quantitative research results are presented in a logical, statistical manner through numerical or statistical data. Data are collected through the use of surveys, questionnaires and experiments that are analysed, reviewed and numerically tabulated. Variables are measured using samples of the subject phenomenon to be researched, and the relationship between the variables are expressed using effect statistics as relative frequencies, differences between mean scores, correlations with the primary focus of theory testing.

The aim of the current study is to establish the influence or cause-effect relationship between land use conversion variables and rental values in Ikeja, Osogbo and Akure. The methods or procedures for achieving the aim were established before the conduct of the actual study, with a well-prepared set of research questions formulated. It is deductive in nature; hence, the essential processes in the study are critical reasoning through objectivity and unbiased influences on the research outcome. The processes that caused the occurrence of use conversions and the influence of the use conversions on rental values were noted and quantitatively analysed, resulting in the logical, statistical inferences (deductive) made. Hence the research methodology adopted for the study is quantitative.

3.3   Research Design

Research design is the path or the research plan that the researcher intends to follow in the conduct of the research. It shows the fundamental components of the research study, that is, the research instruments, population of the study, data collection method, data analysis and presentation, which work together to answer the research questions. Therefore, the research design adopted for the study is the non-experimental research design.

According to George *et al*. (2004) and Carl-Erik *et al.* (2003), a non-experimental design is targeted at establishing a known cause and investigating its effect on a phenomenon. Samples were, however, not created but already exist and developed in their natural state. The study, just like other previous similar studies of Ankeli *et al*. (2021); Offiong *et al.* (2018); Ajayi *et al.* (2017); Ayo-Odifiri *et al.* (2017); Adegunle *et al. (2016);* Oloke *et al.* (2013) and Ogungbemi (2012), adopted non-experimental research design in order to investigate land use conversions causative factors and property values. The reason for adopting a non-experimental research design is that it is quantitative in approach; it helps to determine the existing cause and investigate its effect on the phenomenon under study. Again, since this study has specific research questions targeted at determining the influence and cause-effect relationship of the occurrence of an uncontrolled variable (independent variable, in this case, land use conversions factors) on the performances of a phenomenon (the dependent variable, in this case, property rental values).

The current research requires quantitative data on the already existing determinant of land use conversions in the study area to investigate its influence on rental values. Non-experimental research design which does not require any change or alteration of the variables by the researcher is therefore considered appropriate and therefore adopted for the study.

3.3.1   The Research Approach

As a quantitative study with emphasis on objective measurements, the approach used to achieve the research objectives is as follows: The study formulated research questions to guide the efforts towards achieving the research objectives. Relevant literature was reviewed to gain more knowledge on the research problem and to identify the knowledge gap.

Quantitative/ numerical data were collected through structured questionnaires and surveys. The data collected were analysed using statistical instruments (on the identified critical land use conversion factors and other variables as annual rentals) and Structural Equation Model (to predict the influence of land use conversions activities on rental values). The outcome was presented in numerical format, arranged in charts, tables, and figures used for the study or generalized across the group (Ikeja, Osogbo and Akure) to explain the phenomenon studied. The study, however relies on deductive logic to provide solutions to the recurrent contemporary urban problem. The approach is as presented in the schematic presentation below.
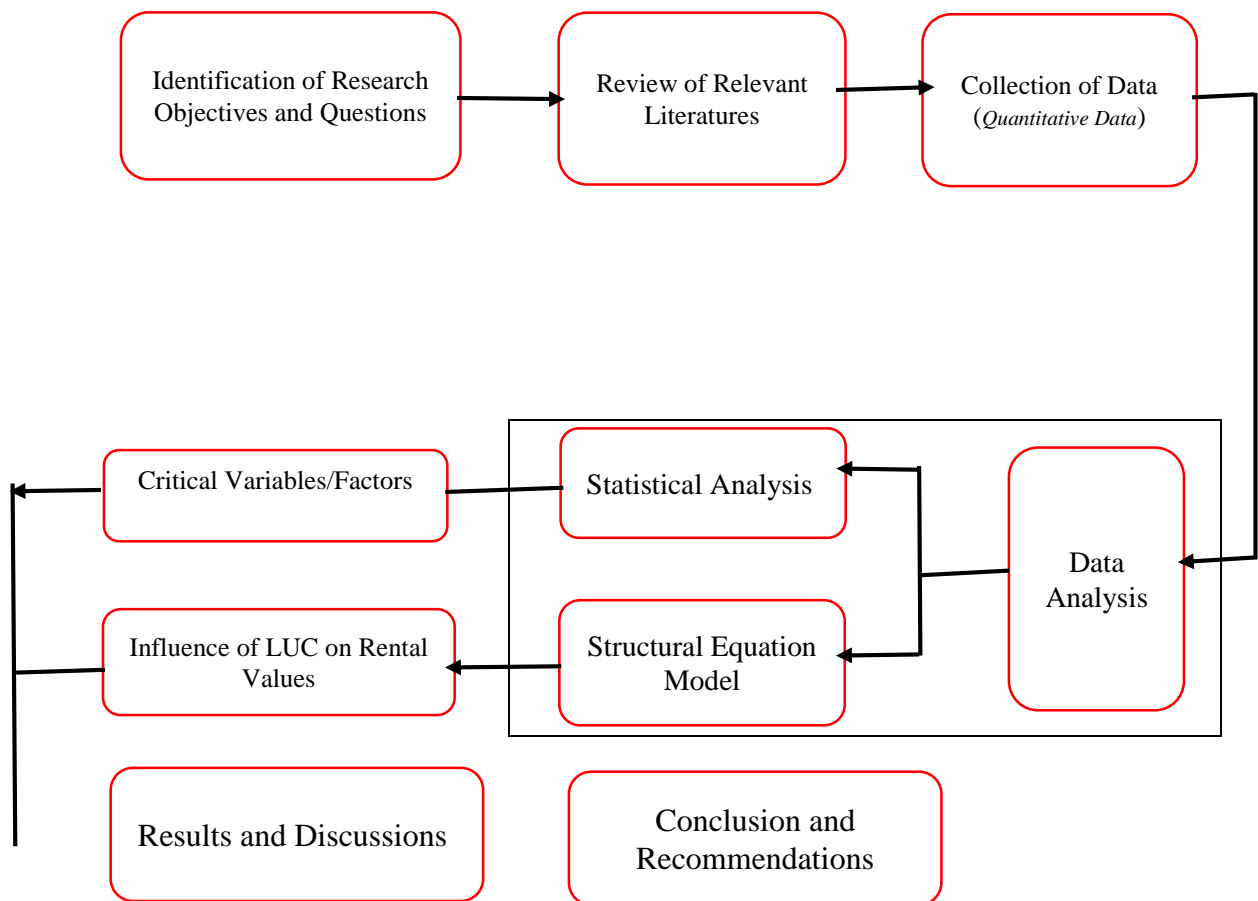
Figure 3.1:   Research Approach and Design
Source: Author, (2019)

Figure 3.1 above shows the approach the researcher adopted in the execution of the entire research work. The aim and objectives that needed to be achieved were conceptualized and identified. The research questions that needed to be answered by the research objective were also identified. Next, relevant literatures were gathered, searched and reviewed to identify gaps that need to be filled by the research based on the research objectives. After that, data collection processes to achieve the objectives followed. The data collected were analysed using both descriptive and inferential statistical tools like tables, graphs and other descriptive means for objective one and part of objective two. Inferential statistical tools as Trend Analysis were used for objective two, Structural Equation Model [SEM] using Analysis of Moment Structure graphics [AMOS] was used for objective three and Analysis of Variance [ANOVA] was used for objective four. The findings were discussed from where conclusion and recommendations are drawn.

3.4   Instrument for Data Collection

The instrument that was used for the collection of data for the study is the close-ended questionnaire:

3.4.1   Close-ended questionnaire: As quantitative research, a close-ended questionnaire was used to collect relevant information from the respondents. The relevant data collected are rental data for the study period, from Estate Surveyors and Valuers, landlords or tenants.

The instrument was used for the study due to its possibility of eliminating data or responses considered to be irrelevant from the onset, easy to rate answers from a large population, and the questions are usually easy and quick to answer. It helped the researcher obtain the required data from the field as the respondents were guided through the questions asked, which are tailored towards achieving the research's set objectives. The questionnaire survey used were standardized to ensure reliability and validity as the study's outcome is an independent analysis that may be specific to the study location or generalized to cover South West Nigeria. A questionnaire survey was used to collect primary data for all the objectives of the study.

In developing and standardizing the questionnaire for the study, the researcher first decided the type of information required for the research work and what needed to be collected. Other previous similar efforts that have been made were searched for and studied. Their questions were reviewed with permission, and the flaws were noted. The next stage was the drafting of the close-ended questionnaire. Then check was made to see if the questions were placed in logical order. The draft questionnaire re-read, adding specific instructions and other necessary information for better clarifications was done. The questionnaire format was checked with specific attention paid to the layout and readability, and experts in this area did the logic and content clarity. The questionnaire was first test run before taking to the field.

The closed-ended questionnaire used for the study consists of two sections (see Appendix A, B and C). Section 1 focused on the demographic characteristics of the respondents; section 2 deals with issues related to land use conversions and rental values in the study area. The

questionnaire was designed using a 5point Likert type scale to solicit information from the respondents besides other close-ended questions contained in the questionnaire.

3.4.2   Survey research data collection method

According to Glasgow (2005), a survey is a data collection tool for conducting survey research. Survey research is conducted to make statistical inferences concerning the population under study. Surveys can be used to get information from large population size, gather demographic data that describe the sample's composition and get information on attitudes that are difficult to measure in an accurate term using observational techniques (Ponto, 2015; Barrett, 2010; Creswell, 2008; Lance & Vandenberg, 2008 and Clough & Nutbrown, 2007).

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The present research involves establishing the influence of a determined cause (land use conversion variables) on the performance of a phenomenon (rental values) from which generalized or specific inferences can be made. The research scope was also defined by using dependent (in this case, rental values) and independent (land use conversions) variables, using clearly defined research questions that were raised towards guiding the efforts towards achieving the research objectives. Therefore, it became imperative for a survey to be conducted to examine the cause-effect relationship between constructs and their influence on a phenomenon in the field to achieve the aim of the study; which is the evaluation of the influence of land use conversions on property rental values in the study area.

3.5   Source of Data for the Study

The study explores primary data sources. Dawson (2009) observed that the basic sources of quantitative data are primary data collected through surveys and questionnaires with little observation. The survey could be done in person, online or by phone, and the observation could be the practical counting or recording of the number of times an event occurs, which could be translated into numerical data. Primary data are raw data/information obtained from the respondents (field survey) through questionnaire administration. For this study, primary data are information relating to or answering questions on the causes and influence of land use conversions, the trend in property rental values caused by the pattern of land use conversions. Primary data were required and used for all the other objectives of the study.

3. 6   Nature of Data Required and Measurement

As a quantitative study, the data required are purely primary data, and the specific data required for each of the objectives are as explained. For this study's **first objective** (which is to examine the causes of land use conversions in the study areas), data required include data on number of land use conversions applications received and approved, number executed on-site, institutional influence as policies/regulations of the government, enforcement procedures and punishment; and infrastructure provision as roads and electricity. The respondents provided answers/data on the nature and causes of land use conversions (property use conversions) from residential to commercial use. Answers to the questions were analysed using descriptive and inferential statistical tools using tables, factor analysis, mean score, chi square and standard deviation, which helped to achieve Objective One of the Study.

For the **study's second objective** (which is to assess the rental trend of before and after use conversions in the study areas between 2004 and 2019), the data that were required, sourced and used for analysis are annual rental value data obtained from Estate Surveyors and Valuers and landlords of the converted property, but where the landlord could not be reached, tenants were used. The data were sourced through questionnaire administration. An inferential statistical tool (Trend Model) was used for the analysis as it shows the rental movement or performances of both after use conversions and before use conversions for each of the study locations. The use of the trend model helped in the graphical presentation of the individual performances of rental trends in Ikeja, Osogbo and Akure.

Data required for **objective three**, which is to determine, using predictive model, the influence of conversions factors on property rental values in the study area are quantitative land use conversions data and annual rental values for the period under study. Data for this objective were sourced through questionnaires administered on estate surveyors, Ministry of Lands and Physical Planning in Osogbo, Ministry of Works, Lands and Housing in Akure and other similar agencies as Lagos State Building Control Agency (LASBCA), Lagos State Physical Planning Permit Authority (LASPPPA) and landlords or tenants of the converted property. The data obtained were analysed using an inferential statistical model [Structural Equation Modelling Technique (SEM) using the Analysis of Moment Structure graphic (AMOS)], which predict the rate of influence of land use conversion activities on rental values. Hence Objective Three was Achieved.

Objective four (to investigate the location variation in rental values caused by the pattern of land use conversion in the study areas). The objective required quantitative data on annual rental values obtained through questionnaires administered on Estate Surveyors and Valuers, landlords or tenants of converted properties in the study areas. These data were further analysed using the inferential statistical tool [Analysis of Variance (ANOVA)], which seeks to find out if the variation or the differences between groups are significant or not. In this case, the ANOVA test conducted measures the level of rental variations in the study area. The objective was measured on an ordinal scale.

3.7   Population of the Study

The target population considered relevant for this study consists of Estate Surveyors and Valuers practicing and managing properties in the study areas, relevant officers of Ministries of Works, Lands and Housing in Akure, Ministry of Lands and Physical Planning in Osogbo, Lagos State Building Control Agency (LASBCA), Lagos State Physical Planning Permit Authority (LASPPPA)] as well as owners or tenants of converted residential properties in the study areas.

The Estate Surveyors and Valuers and ministry staff were selected using a haphazard sampling technique. Those that are required to answer questions on the study are expected to possess certain qualities. The expected respondents should be professionals who have adequate knowledge of the problem at hand and are prepare to answer questions with precision and traces of mastery. For the property owners (landlords) or tenants, their

population was determined based on the number of converted properties selected for the study. Details of the sample size are discussed under the section titled sample size (3.7.3)

3.7.1 Sampling Technique

The study adopted the multi-stage sampling technique as it allows for a progressive sequential approach that requires samples drawn at the various sampling stages. Firstly, the entire residential and commercial property along the arterial roads in the selected neighbourhoods within the three study areas of Ikeja, Akure and Osogbo were identified (enumeration survey). Secondly, the selected areas within the neighbourhoods were clustered and later classified /stratified into zones. This is congruent with the classification strategies of Ogunleye (2013); Adebayo (2009); Olujimi & Bello (2009). Hence, five zones (1, 2, 3, 4 and 5) were carved out of the delineated neighbourhoods (cluster/stratified sampling). In each of the study areas with attention paid more to buildings on both corridors of the arterial roads to determine the influence of land use conversions on the rent of the identified properties. Thirdly, in each zone, a street was randomly selected with those properties that exhibit conversions characteristics selected and counted (haphazard sampling). Questionnaire was administered on the property owner, where the owner could not be reached; it was administered on tenants. The questionnaires' questions are homogenous thus can be answered by either party. Thus, the sampling technique adopted for the study seems to be more convenient and suitable as it fast-tracked the selections of property owners and tenants for questionnaire administration, enhances the collection of good quality and standard data from the field.

The Estate Surveyors and Valuers across the study area were selected using random sampling technique. For Ministry staff in Ikeja, only staff of LASBCA and LASPPPA that possesses the requisite qualification and have attained the set grade level that were picked for questionnaire administration (purposive sampling). Staff of Ministry of Works, Lands and Housing in Akure and Ministry of Lands and Physical Planning in Osogbo that possess the criteria for the exercise were selected using random sampling technique.

3.7.2   Sampling frame

According to Bello (2009), sampling frame is the list or quasi-list of elements from which a probability sample is selected. Frankfort-Nachmias and Nachmias (2008) opined that study's generalizability is the drive for sample and the strategy for sample design. For selecting respondents in the various state Ministry of Works, Lands and Housing (Akure), Ministry of Lands and Physical Planning (Osun), in the specialized agencies under the Bureau for Lands (Lagos), and Estate Surveyors and Valuers in the study areas, random sampling was used. Each of the already known sample or groups from where reasonable and unbiased data can be obtained are given equal probability of being chosen. For each of the study area, the population of the Ministry staff who are in the offices that handle land use conversion issues were randomly picked for questionnaire administration. Unbiased random sampling was considered important and used for the study because conclusion drawn, was the true reflection or representation of the responses of the respondents.

As the professional who is in the best position to provide information on property rental values and background information on land or property use conversions, Estate Surveyors

and Valuers' services were engaged. Information on the actual or original approval, the number of applications for use conversions approved or rejected, causes and trend of use conversions were obtained from the various ministries of lands and agencies in the study areas. The sample frame for the Estate Surveyors and Valuers active in the management of residential and commercial property in the study areas was taken from the 2019 Directory of the Nigerian Institution of Estate Surveyors and Valuers and list of active members of the profession who are practicing in the study area at the three state branches (Ikeja, Osogbo and Akure).

However, the actual sample frame of building was determined by adopting a census survey of buildings on both corridors of the selected locations' arterial roads. These are two bedrooms, three bedrooms and tenement buildings previously used for residential purposes that have under gone conversion process (converted residential buildings to commercial use). Similarly, property in the same category that are in the process of conversion but have not become operational were captured. These types of property were identified base on the amount of advance rent paid by the tenant to the landlord and the answer provided to the question on previous and current use of the property. Tenement building used for the study are multi-tenanted buildings sharing common facilities as toilets, bathroom and kitchen. Though the design varies, as some have large common compound (compound house) and others have corridor or passage (the Brazilian style design) shared by the tenants. The property types are usually design with each room facing each other, which earn it the popular name among property users "Face- me- I – Face – You". The arterial roads considered in each of the three locations are: Allen Avenue, Adeniyi Jones, Toyin Street, Afolabi Aina Street and Makinde Street for Ikeja in Lagos State; Obafemi Awolowo Road, Gbongon Road, Egbetedo Street, Alekwuodo and Fagbewesa Streets for Osogbo in Osun State; Oyemekun

Road, Arakale Street, Fanibi Street, Araromi street and Oke Aro (Idanre road) for Akure in Ondo State.

The total number of properties on both sides of the arterial roads in all the selected locations were identified. The actual number of properties converted which is one thousand three hundred and seventy-nine (1,379) as identified during the enumeration (census survey) was subsequently picked to form the study sample frame for the study.

3.7.3   Sample size

Glasgow (2005) opined that there are five fundamental factors for determining sample size, including the degree of precision desired by the researcher, desired statistical power, the degree of ability for the stratification of the population, and the relevant unit of analysis to be selected. These were considered and applied in the determination of sample size for this study. Hence, Frankfort formula for sample size determination as adopted by Kothari (2004) and Bello (2009), which incorporates these factors, was considered appropriate and used for the study. More so, its simplicity in usage and the acceptable confidence level are the other factors considered by the researcher for its adoption for the study. The formula is given as:

$$n = \frac{Z^2 X\ N\ X\ \sigma^2}{(N-1)e^2 + Z^2\sigma^2} \qquad\qquad (Equation\ 1)$$

n = Sample Size

Z = Standardized normal value and taken at 1.96 for a 95% confidence level

σ = standard of deviation which was put at 0.5 depicting a safe decision enhancing large enough samples

N= the number of the respondents in the neighbourhood

e = Acceptable error margin put at +/-5% (the precision) but most often taken at 0.03

while the appropriate sample size was determined by applying the Frankfort formula for sample size determination adopted by Kothari (2004) and Bello (2009).

The application of Frankfort formula for sample size determination as adopted by Kothari (2004) and Bello (2009), gives the sample size for Akure, Ikeja and Osogbo, which invariably constituted the number of questionnaires administered on the respondents. Hence, the number of questionnaires administered on the respondents for each of the locations are 205 for Akure, 195 for Ikeja and 196 for Osogbo respectively. The total actual number of questionnaires that were eventually returned and considered suitable for analysis from the study area are 183 (89%) for Akure, 185 (95%) for Ikeja and 162 (83%) for Osogbo. Table 3.1 presents the details of the sample frame and size for all the selected respondents in the study area.

Table 3.1: **Sampling Frame and Size for converted buildings in Ikeja, Akure and Osogbo**

Location	Number of properties on both sides of the arterial roads in the study area	The actual number of buildings converted (**Sample Frame**)	Number of Questionnaire Distributed (**Sample Size**)	Questionnaire Retrieved	% Rate
AKURE	1,067	492	205	183	89
IKEJA	1,560	442	195	185	95
OSOGBO	760	445	196	162	83
TOTAL	**3,387**	**1,379**	**596**	**530**	**88.9**

Source: Author, (2019)

3.8 Data Collection Method

Quantitative research collects its data principally from the field (primary data) through questionnaire, survey or poll. For this study the survey questionnaire was the principal mean used for data collection.

3.8.1   Questionnaire administration

Data on the causes of land use conversions in the study areas were collected from Ministry of Works, Lands and Housing, Ministry of Lands and Physical Planning, Lagos State Building Control Agency (LASBCA) and Lagos State Physical Planning Permit Authority (LASPPPA). Data concerning (before and after use conversion) rental values of the properties spanning from 2004 to 2019 were obtained through questionnaire survey from the records of Estate Surveyors and Valuers practising and managing property in the study areas, and landlords or tenants of converted property in the study area.

Data collected from the various Ministries/Agencies and Authorities were from Directors, Deputy Directors and other top senior officials on Grade Level 10 and above who filled the administered questionnaire. A reconnaissance survey by the researcher in Ikeja revealed that the top management staff in LASBCA and LASPPPA are professional in the built-environment and engineering related profession. Twelve (12) professionals in LASBCA and LASPPPA picked for the study met the threshold set for questionnaire administration. They were considered relevant and haphazardly selected and appropriately used for the study. Ministry of Works, Lands and Housing in Akure and Ministry of lands and Physical Planning in Osogbo have 23 and 15 of such professionals each which were selected using haphazard sampling and were also used for the study.

All the Estate Surveyors and Valuers in Akure and Osogbo were used for the study. For instance, in Akure, 22 Estate Surveyors and Valuers were selected and used for the study, while 25 Estate Surveyors and Valuers in Osogbo were picked and used for the study. Ikeja

have a total of one hundred and twelve (112) practicing Estate Surveyors and Valuers out of which fifty-six (56) of the Estate Surveyors and Valuers managing property in Ikeja constituting 50% of the Estate Surveyors and Valuers were selected on whom questionnaires were administered. In all, out of the total of One Hundred and Fifty – Three (153) questionnaires administered on the respondents (ESV and Ministry staff) across the study locations, only One Hundred and Twenty – Four (124) questionnaires were appropriately completed and returned for analysis representing an 81.05% response rate (see Table 3.2). Data on rental values used for this study were collected directly from Estate Surveying and Valuation firms' records in the study areas and transformed through calculation to aggregate annual rental from where rental index was calculated.

Table 3.2 presents detailed information on the questionnaire administered and retrieved from the respondents. The Table revealed that 153 questionnaires were administered across the study locations on Estate Surveyors and Valuers, the staff of the Ministry of Works, Lands and Housing in Akure and Ministry of Lands and Physical Planning in Osogbo, Lagos State Building Control Agency and Lagos State Physical Planning Permit Authority. Out of the numbers administered, only 124 questionnaires (comprise 74 questionnaires returned by ESV, and 50 questionnaires returned by Ministry staff) were well-filled, returned and considered adequate for analysis representing 81.05% of the total number. The Estate Surveyors and Valuers did not return 29 questionnaires for analyses, representing 18.95%. Ondo and Osun states operate the Lands ministry while Lagos state operates the Bureau for Land with specialized Agency and Authority for land use conversions and other related issues. It is therefore important to note that the 443 questionnaires administered on the

landlords or tenants of converted properties in the study area does not form part of the questionnaires presented in Table 3.2.

The Estate Surveyors from whom information on property use and rent payable were obtained were further stratified into three groups. The full-time practitioners are in full estate surveying and valuation practice with no other business(s). The part-time practitioners are though practising estate surveying and valuation; however, they also engage in other venture(s). The freelance Estate Surveyors and Valuers are those practising on temporary or causal bases with no specific office address but are often very active, especially in real estate agency and management. The researcher contacted most freelance surveyors through the specific property under their management and their attendance at the various state branches professional meetings. The Ministry of Lands and Physical Planning staff selected for the study are those in the built environment professions on Grade Levels 10 and above.

Table 3.**2**   **Questionnaire Administered on Estate Surveyors and Valuers and other Ministry staff**

Locations	Estate Surveyor and Valuers (ESV)	Number of ESV	Ministry of Lands	Number of Questionnaires Distributed	Number Retrieved
AKURE	Full Time Practitioners	14	23	37	34
	Part Time Practitioners	04	00	04	04
	Freelance	04	00	04	04
	Total	**22**	**23**	**45**	**42 (93.33) ***
IKEJA	Full Time Practitioners	23	12	35	25
	Part Time Practitioners	14	00	14	10
	Freelance	19	00	19	15
	Total	**56**	**12**	**68**	**50 (73.53) ***

OSOGBO	Full Time Practitioners	15	15	30	25
	Part Time Practitioners	05	00	05	03
	Freelance	05	00	05	04
	Total	**25**	**15**	**40**	**32 (80.00) ***
	Grand Total	**103**	**50**	**153**	**124 (81.05) ***

Source: Author, (2019)   * Figures in parenthesis are in percentage

3.9   Data Analyses Techniques

The collected data for the study were analysed using the appropriate statistical tools (that is, inferential statistical tool), which include: mean (used to determine the weighted mean of the respondents' perception on land use conversions causative factors), chi square (to test the goodness of fit of the model) and principal component analysis (show the contributions of the critical conversion factors) was used for the achievement of Objective One of this study. The results are presented in Tables. The result of the mean score average of land use conversion determinants, the standard deviation which shows the degree of association in the responses of the respondents on use conversion determinants in Objective One was presented using tables.

Inferential statistic (Trend Analysis) was used for the analysis of data collected to achieve Objective Two. Trend Analysis model using time series data was used to show the rental trend, movement or performance of the converted property. The R^2 values generated in the trend model were used to determine the accuracy and reliability of the models' predictions

138

or forecast, while the least square linear regression equations generated were used for rental value predictions. The established predictions helped to guide real estate investors in decision making and decision taking concerning the investment decision to accept or reject. Objective Two of the study was achieved through the application of this technique with the result of the aggregate annual rental values, the rental index, mean score and standard deviation conducted presented in tabular format and figures. Graphs and Figures were further used to explicitly display the results or the outcome of the analysis for easy and better comprehension.

Objective Three was achieved using inferential analytical tool SEM (Structural Equation Model using Analysis of Moment Structure). According to Wolf *et.al.* (2013) SEM is an analytical tool that has the strength of flexibility and thus can be adopted for various data types across alternative model. Though earlier researchers recommended the use of sample sizes that have minimum samples size of 200 or 5 to 10 times greater than the number of survey questions (Wolf *et.al.,* 2013). On the contrary, Sideridis *et al.* (2014) found that a sample size of 50–70 is adequate for the conduct of SEM. Jingfeng *et.al.* (2017) uses sample size of 132 to run SEM test identifying critical factors influencing the rents of public rental housing delivery in Nanjing. Hence, having a sample size of 567 for this study meet the minimum sample size requirements for SEM operation.

SEM was therefore used for the determination of the influence of land use conversion variables on rental values across the study locations. The Analysis of a Moment Structure (AMOS) graphics shows the covariance of the conversion variables on each other and the contributory influence of each of the variable to land use conversion activities in the study

area. The influence of land use conversion activities on rental values in each of the study locations was explained by the fusion of the conversion variables into the conversion model, hence Objective Three of the study was accomplished. The SEM-AMOS result was present in graphics and tables.

The analytical tool used to achieve Objective Four was Analysis of Variance (ANOVA) to determine location variation in the rent of the converted property caused by the pattern of land use conversions. ANOVA and Post Hoc test were run for each of the property types in the study locations. The ANOVA and Post Hoc test results determine variations in rent in the study area, hence, provided answer to Objective Four. The result of the ANOVA test and Post Hoc test are presented using tables.

3.9.1   Technique for examining the causes of land use conversions.

To achieve the first objective of this study (which is to examine the causes of land use conversions in Akure, Osogbo and Ikeja), the researcher first embarked on a reconnaissance survey of the areas to familiarize himself with the area. Census survey of buildings, especially those fronting arterial roads, was done to select the converted property. After that, a questionnaire was administered on the targeted respondent to determine the causes of use conversion in the neighbourhood. The data obtained from the field were analysed using inferential statistical tools and presented using tables and graphs, measured on a nominal scale.

As a study that examines the influence of a cause (Land Use Conversion) on the occurrence of a phenomenon (Rental Value Performance), chi-square test was performed for each of the

locations to establish the association in the responses of the targeted respondents on the causes and effects of land use conversions on property rental values and to determine how well the sample data fit the distribution from the population (to test the goodness of fit). The chi-square test is a research measurement instrument that enables researchers to assess a model's fitness through the null hypothesis significance test approach; hence, the chi-square value is said to be a traditional measure for overall model fit evaluation (Shi *et al.,2019;* Alhaddad, 2015; Che-Rusuli *et al.,* 2013; Hair *et al.,* 2011 and Carmines & McIver 1981). The formula for the chi-square test adopted for the study is as presented:

$$\chi^2 = \frac{\sum(O-E)^2}{\sum E} \qquad (Equation\ 2)$$

Where O - is the observed frequency and E - is the expected.

The arithmetic mean was used to determine the average of the rental data obtained from the field from where the rental index for the property types were calculated. The formula used for the Arithmetic mean calculation is:

$$\bar{X} = \frac{\sum(FW)}{N} \qquad (Equation\ 3)$$

Where $\bar{X}$ = mean, F- is the frequency, W- weight

Standard Deviation was used to determine the responses of the respondents relating to the determinants of land use conversions and rental performances of before and after use conversions in the three study locations. The Standard Deviation (SD) was calculated using Equation 4

$$SD = \sqrt{\frac{\sum(x_i - x)^2}{N}} \qquad (Equation\ 4)$$

Where:

SD = Standard Deviation

x_i = the asset periodic returns,

x = the mean return and

N = the number of observations

The Rental Index derived from the calculated aggregate average annual rental values of all the property types in the study area was calculated using

$$RI = \frac{\Sigma P_1}{\Sigma P_0} X \ 100 \qquad\qquad (Equation \ 4)$$

Where RI = Rental Index, P_0 = base year rent and P_1 = current year rent

Paired Sample T-Test was also conducted on the outcome of the before and after use conversions' rental index to determine the existence or otherwise of significant differences in the rent.

The cognitive and affective workings of the respondents' attitude towards the causative variables of land use conversions were tested through the use of Relative Importance Index (RII), which is a suitable tool for the prioritisation of indicators/variables rated on Likert type scale similar to that used by Estelami (2005) and Somiah *et al.* (2015). It provided evidence on a predictors' relative importance and allows for the identification of the essential criteria based on the respondents' responses. The adoption of Likert scale become necessary as it helps in the measuring of the attitudes of the respondents by asking the respondents to provide relevant answers to series of questions contained in the questionnaires based on their conviction on the research topic concerning their extent of acceptance or otherwise; hence

tapping into the cognitive and affective workings of the respondents' attitudes. The five-point

Likert scale format adopted which according to Johns (2010) permits degree of freedom of

opinion and the ease of data analysis on the expectations that intensity of experience is linear,

just like Johns (2010) and Lorenzo *et al.* (2008) was based on scores ranging from strongly

agree = 5, Agree = 4, Undecided = 3, Disagree = 2 to Strongly Disagree = 1.

The Kaiser Mayer Olkin (KMO) and Bartlet's test of sphericity was conducted for sampling

adequacy of the data set, its reliability and validity. The principal component analysis will be

used to further exposed the total variance in the components. Finally, standard deviation,

weighted mean scores and rental differentials between after use conversion and before use

conversions for each year will be calculated and delineated.

3.9.2 Technique used for assessing the before and after use rental values of converted property in the study areas

Data on current and past rent passing on the selected property in the study areas were obtained

from Estate Surveyors and Valuers practising in the areas. To answer research question two

and achieve Objective Two of the study, to assess the before and after use rental trend of

converted property in the study area, rental data collected were analysed using inferential

statistical tools (Trend Analysis using time series data). The trend analysis shows the

graphical trend of rental performances across the study locations. As an independent study

involving three locations, the use of trend graph for the explicit explanation of rental

performance become more necessary.

Time Series is a sequential measurement of the same variables obtained over a given period, usually at a regular time interval. The data may not necessarily be independent or uniformly distributed, but the observations' ordering is significant as any alteration in the order could alter the data's meaning. Hence, the study's rental data were yearly from 2004 to 2019, which invariably helped build the trend model for the study.

Trend lines were used to graphically present the rental performances of 2-bedroom, 3-bedroom and tenement buildings in the study areas. It also helps in the displaying of data sets trends and the analysis of future predictions. The fluctuations in data were smoothened out through trend lines moving average; hence a more clearly trend pattern is shown. The determination of the level of trend reliability and the accuracy of the forecast or predictions made were done using the R^2 value. However, an R^2 value at or near one is said to produce the most accurate trend line. The study thus generated least-square linear regression equations for predictions of rental values. The equation is in this form:

$$\mathbf{y} = \mathbf{k}\,\mathbf{x} + \mathbf{b} \qquad\qquad\qquad\qquad (Equation\ 5)$$

where:

y is the dependent variable (rentals of the properties before and after use conversions)

k is the slope of the line, which equals the change in the y value divided by the change in the x value;

x is the independent variable (year or period, but in this case, the year is used); and

b the y-axis intercept of the line.

3.9.3 Technique for determining the influence of land use conversions on the rental values of residential and commercial properties

The data required and collected for this Objective are quantitative (primary) data, analysed using inferential statistics analytical tool - Structural Equation Model (SEM) using Analysis of Moment Structure (AMOS) graphics. The structural equation model is a statistical analytical tool that is now widely recognized and used to execute multiple simultaneous assessments and correct measurement errors in estimation processes. According to Hair *et al.* (2006), SEM has gained universal acceptance, especially among academics and social science researchers, due to its diverse advantageous capabilities. It combined exploratory factor analysis with multiple regression (Che Rusuli *et al.,* 2013; Hooper *et al.*, 2008 and Ullman, 2001).

It as well combined both mathematical and statistical tools to understand a system. However, Grace (2006) opined that SEM is an alternative paradigm in quantitative analysis that solves the problems of the traditional techniques that often target effect isolation and reduction through association description, estimation of parameters, and testing a statistical hypothesis, hence presenting relationships in both graphical and equational model. SEM's ability to simultaneously compare variances, mean and regression coefficients across multiple subject groups underpin the choice of its usage for this study as an evidence-based study involving the isolation of cause-and-effect relationship among the variables.

3.9.4 Technique for analysing locational variation in the rental values of residential and commercial properties

The primary data collected and used for the Objectives Two and Three were as well required for this Objective. The average annual rental data collected were analysed using inferential

statistical analytical tools [Analysis of Variance (ANOVA)]. Analysis of Variance investigates or dictates the significance or otherwise of the result of a survey or experiment conducted. It tests between groups to know if there are differences or variance between them. ANOVA compares variance between populations. Since the objective is to establish or investigate if locational variation exists in rental values of the properties cause by the pattern of land conversions, it becomes imperative for ANOVA test to be conducted.

Table 3.3 reveals the summary of approaches, data required, the instrument for data collection, measurement scales, and data analysis method utilised to achieve the set objectives for the study.

Table 3.3:   Summary of Method of Data Analysis

Objective	Data Collected	Method/ Approach	Data Collection Instrument	Source of data collection	Analytical tool
To examine the causes of land use conversions in the study areas	Data on the causes of land use conversions, the nature of approval sought and granted	Quantitative	Questionnaire	Ministries of Lands, Landlords or Tenants in Ikeja, Osogbo and Akure,	Both Descriptive and Inferential statistic (Tables, chi square)
To assess the rental trend of before and after use conversions in the study areas	Data on annual rental values and land use conversions data	Quantitative	Questionnaire.	Estate Surveyors, Ministries of Lands and Landlords or Tenants	Inferential statistics (Trend Analysis).
Determine, using predictive model the influences of conversion factors on the rental values of converted properties in the selected study areas	Data on annual rental values and land use conversions data	Quantitative	Questionnaire	Estate Surveyors, Ministries of Lands Landlords or Tenants	Inferential statistics (SEM)
Investigate the location variation in rental values caused by the pattern of land use conversion.	Data on annual rental values	Quantitative	Questionnaire	Estate Surveyors and landlords or tenants	Inferential statistics (ANOVA)

Source: Author, (2019)

Table 3.3 presented the summary of data analysis and techniques adopted in achieving each of the research objectives which were set to achieve its aim. Data collected were aggregated in line with the objectives of the study before they were reviewed. The data collected for each of the objectives were further triangulated to show their linkages and to ensure adequate flow of the research idea, bases for adopting the technique and sequence. Thereafter the data were analysed from where conclusions were drawn. As a concerted process, the triangulation done was targeted at the achievement of a relevant, appropriate, feasible and actionable set of aim or goal.

However, it is important to note that triangulation process does not constitute research methodology, thus, the researcher ensures that issues of confidentiality and consent were adequately taken care of from the onset of the research. The data types, format, data collection methods and the suitability of their applications to the objectives were identified; hence there was no need for site revisitation for data recollection. The available data were actually collated and aggregated before the graphical presentations of the triangulated results to reveal the probable strengths and weakness of the various variables used for the study. The researcher takes note of data collection period to keep track of the relevancy or otherwise of the data collected, and also due to the fact that the triangulation involves the use of trend data.

Preliminary review of the triangulation exercise was done to ensure good representations of data needed and collected, the biases or otherwise in the collected data, consistency of the data collection methods and the observations of data collection ethical standards to confirm the reliability, validity and credibility of the data sources. However, they exist no fixed rules for data analysis in triangulation process, but there are several other activities that the process may require; the researcher ensures that relevant processes were followed and critical observations made concerning the linkages, process categorization and

usefulness of the data to the set goal(s) of triangulation, through which findings from different objectives relate to each other with the necessary gaps in the data highlighted. Since the current research requires the use of trend data (rental data), the researcher take adequate note of data sources whether single or multiple data sources.

More so, working research questions related to the goal(s) of data triangulation were formulated/developed to either confirm or refute the hypotheses of earlier work in the same area. As a critical stage in triangulation process, the researcher opened up his thought as widely and creatively as possible. for new ideas, perspectives and explanations to emerge which led to the identification of gaps in data. It is also possible for additional data to be added or the dropping or modification of research question/hypothesis. The modified research question/hypotheses are then reconfirmed and the convergence of data supporting or not supporting the research question/hypothesis are used to generalized or draw actionable, practical and logical conclusions from the exercise.

CHAPTER FOUR

4.0   **RESULTS AND DISCUSSION**

4.1   Analysis of Respondents' Demographic Profile

The respondents who provided necessary data on the causes of land use conversions, property usage and rental values are presented in this section. Information analysed includes matters relating to educational qualification and professional status, positions and years of experience in professional practice, especially property management (Estate Surveyors and Valuers), and knowledge of land use conversions. Tables 4.3 to 4.5 presents the detailed profile of respondents in these categories in the study areas.

Table 4.1 present the profile of Estate Surveyors and Valuers in the study areas that provided information on the use, historical and current rental values of the selected properties in the study areas. The result revealed that all the Estate Surveyors and Valuers that answered the questions across the study areas possessed either First Degree (BSc) or Higher National Diploma (HND) in Estate Management and Valuation as their basic qualifications. The table further showed that 80.4% of the respondents are registered with the Nigeria Institution of Estate Surveyors and Valuers (NIESV) and the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON), thus can practice in Nigeria. 26.8% and 35.7% of the respondents are principal partners and partners, respectively, while 37.5% are Senior Estate Surveyors.

The implication of Table 4.1 is that, the respondents are academically and professionally prepared, sound, qualified, knowledgeable and better positioned to provide answers to research questions two, three and four which are on issues relating to rental values. Their positions in their employment, wealth of experience in estate surveying and valuation especially in property management are germane to the study

and have helped to better the quality of work and contributed to knowledge in real property investment

and research development in the country. It proves the quality of the data obtained from the field and the

reliability of the data source.

Table 4.1:   Profile of Estate Surveyors and Valuers in the Study Area

LOCATIONS	OSOGBO		AKURE		IKEJA	
	F	%	F	%	F	%
ACADEMIC QUALIFICATION						
PhD	01.0	04.0	02.0	09.1	00	00
M.Sc / M. TECH	07.0	28.0	06.0	27.3	15.0	26.8
B. Sc / B. TECH / HND	17.0	68.0	14.0	63.6	41.0	73.2
Total	25.0	100.0	22.0	100.0	56.0	100
PROFESSIONAL QUALIFICATION						
FNIVS	02.0	08.0	02.0	09.1	00	00
ANIVS + RSV	18.0	72.0	18.0	81.8	45.0	80.4
ANIVS	05.0	20.0	02.0	09.1	11.0	19.6
Total	25.0	100.0	22.0	100.0	56.0	100
CURRENT POSITION						
Principal Partner	20.0	80.0	14.0	63.6	15.0	26.8
Partner	04.0	16.0	06.0	27.3	20.0	35.7
Senior Estate Surveyor	01.0	04.0	02.0	09.1	21.0	37.5
Total	25.0	100.0	22.0	100.0	56.0	100
PROFESSIONAL PRACTICE EXPERIENCE						
Less than 5 years			02.0	09.1	00.0	00.0
6 years to 10 years	01.0	04.0	05.0	22.7	08.0	14.3
11 years to 15 years	20.0	80.0	10.0	45.5	12.0	64.3
Above 16 years	04.0	16.0	05.0	22.7	36.0	21.4
Total	25.0	100.0	22.0	100.0	56.0	100
LENGTH OF PROPERTY MANAGEMENT EXPERIENCE IN THE AREA						
Less than 5 years	00.0	00.0	02.0	09.1	00.0	00.0
6 years to 10 years	01.0	4.0	05.0	22.7	08.0	14.3
11 years to 15 years	20.0	80.0	10.0	45.5	12.0	21.4
Above 16 years	04.0	16.0	05.0	22.7	36.0	64.3
Total	25.0	100.0	22.0	100.0	56.0	100
INVOLVEMENT IN LAND USE CONVERSIONS ACTIVITIES						
YES	17.0	68.0	20.0	90.9	54.0	96.4
NO	08.0	32.0	02.0	09.1	02.0	03.6
Total	25.0	100.0	22.0	100.0	56.0	100

Source: Author, (2019)   *Note: F= Frequencies; %= Percentages*

The educational levels of respondents (landlord and tenant) as depicted in Table 4.2 are 85.2%, 71% and

17.8 of the respondents in Osogbo, Akure and Ikeja respectively hold certificates below first Degree or

Higher National Diploma. It further revealed that Ikeja has the highest number of respondents, that is, tenants or landlords with higher certificates than National Diploma (82.2%). A more significant percentage of the respondents in the study areas are tenants with a percentage rate of 80.9% for Osogbo, 78.1% for Akure and 96.2% for Ikeja. One can, therefore, infer from the result from the field data that tenants are more accessible than landlords in the study areas. Most of the tenants are businessmen who care more about businesses than paper qualifications. The table also revealed that significant numbers of the respondents have stayed in the study areas for more than nine years (98.1% for Osogbo, 67.3% for Akure and 89.2% for Ikeja).

The implication of Table 4.2 to the study is that, the adequate knowledge of the study location by the respondents and good educational attainment have contributed to the relevant and reliable responses to the questions in the questionnaire. This have in no small measure helped in the quality and robustness of the research work.

Table 4.2   Demographic Profile of Landlords / Tenants in the Study Areas

LOCATIONS	OSOGBO		AKURE		IKEJA	
	*F	%	F	*%	F	%
ACADEMIC QUALIFICATION						
M.Sc / M. TECH	2	1.2	10	5.5	25	13.5
B. Sc / B. TECH / HND	22	13.6	43	23.5	127	68.7
ND AND BELOW	138	85.2	130	71.0	33	17.8
Total	162	100.0	183	100.0	185	100.0
STATUS OF PROPERTY USER						
Tenant	131	80.9	143	78.1	178	96.2
Landlord	31	19.1	40	21.9	07	3.8
Total	162	100.0	183	100.0	185	100.0
LENGTH OF STAY						
Between 5 years to 8 years	3	1.9	60	32.8	20	10.8
Between 9 years and 12 years	80	49.4	70	38.3	55	29.7
Between 13 years to 16 years	48	29.6	13	7.1	84	45.4
Above 16 years	31	19.1	40	21.9	26	14.1
Total	**162**	**100.0**	**183**	**100.0**	**185**	**100.0**

Source: Author, (2019)   *Note: *F= Frequencies; *%= Percentages*

Table 4.3 presents the demographic profiles of Ministry of Works, Lands and Housing, Ministry of Lands and Physical Planning and Bureau for Lands in Akure, Osogbo and Ikeja. The Table revealed that all the staff selected for the study are professionally registered with their various professional bodies, graduates with either first Degrees/Higher National Diploma, or higher Degrees. In their current positions at their workplace, the staff selected for the study are all senior staff, some of whom are Directors and others Deputy Directors. The Table further revealed that 80% and 78% of the conversions done in Osogbo and Akure were done without approval from the appropriate authorities. However, due to the Lagos state land ministry's relatively good structural organisation, 58% of converted property were done legally.

Table 4.3 revealed the quality of the staff picked and used for the study. Apart from the educational and professional qualification of the respondents picked from the ministry and used for the study, they are those directly handling conversion issues in the various ministries. Hence information provided were germane and credible which has helped in the achievement of Objective One, Two and Three as well as the robustness of the study.

Table 4.3   Demographic Profile of Staff of Ministries of Lands, LASBCA and LASPPPA

LOCATIONS	OSOGBO		AKURE		IKEJA	
VARIABLES	F	%	F	%	F	%
ACADEMIC QUALIFICATION						
M.Sc / M. TECH	07	46.7	10	43.5	08	66.7
B. Sc / B. TECH / HND	08	53.3	13	56.5	04	33.3
Total	15	100.0	23	100.0	12	100.0
PROFESSIONAL BODY AFFILIATION						
Estate Surveying and Valuation	05	33.3	07	30.4	03	25.0
Urban and Regional Planning	07	46.7	16	69.6	08	66.7
Architecture	02	13.3	00	00.0	01	08.3
Quantity Surveying	01	06.7	00	00.0	00	00
Total	15	100.0	23	100.0	12	100
CURRENT POSITION						
Director	03	20.0	03	13.0	02	16.7
Assistant Director	02	13.3	04	17.4	00	00
Senior Officer Cadre	10	66.7	16	69.6	10	83.3
Total	15	100.0	23	100.0	12	100
PROFESSIONAL STATUS						
Professional / Registered	15	100.0	15	100	12	100
CONVERSIONS CONTROL UNIT						
YES	01	05.9	00	00	12	100
NO	14	94.1	23	100	00	00
Total	15	100.0	23	100	12	100

Source: Author, (2019)

4.2.0   Procedures for Achieving the Research Objectives

As quantitative research, the objectives of the study were achieved through questionnaire survey with the consciousness of the Presidential Task Force Guidelines on the coronavirus pandemic outbreak in Nigeria as at the time of the field work. The quantitative or numerical data collected were analysed using the appropriate analytical tool for quantitative research.

4.2.1   Causative factors of land use conversions in the study areas.
(Objective One of the studies)

Thus, to achieve Objective One of this study, the procedure adopted includes gathering relevant information relating to factors or drivers of land use conversions obtained from the records of the relevant

ministries and landlords or tenants in the study areas. The subsequent sub-sections further discussed the details of these factors' influences in each of the study locations. Therefore, it is essential to note that the information provided in this section provided answer to research question one and objective one of this study.

4.2.2   Land use conversions factors/drivers in Osogbo

The mean scores, standard deviation and chi-square values of each factor identified as the driver or causes of land use conversions in Osogbo were measured by subjecting the psychometric scale of the respondents to test through their cognitive and affective proficiencies on a five-point Likert type scale. The Likert type scale adopted Strongly Agreed = 5, Agreed = 4, Undecided = 3, Disagreed =2 and Strongly Disagreed = 1 for weight or value attached to the variables to enable the ranking of the factors/variables causing land use conversions using Relative Importance Index tables as presented in Tables 4.4 and 4.5. The chi-square statistics test was used to determine or measure the degree of association in the respondents' opinions on the causative factors of land use conversion in the study areas. The test results in all the locations revealed a statistically significant relationship among the respondents' opinions at a p-value less than 0.05 level of significance. According to the respondents' understanding of the identified land use conversion factors, there are no observed statistically differences in their thoughts.

Table 4. 4   Land Use Conversions Factors in Osogbo

	SA	A	U	D	SD		
	F (%)	F (%)	F (%)	F (%)	F (%)	Mean	STD
Demographic Factor	31(19.3)	91(56.5)	12(7.5)	16(9.9)	11(6.8)	3.71	1.09
Chi-Square		$\chi^2 = 142.199$,			$p = 0.05$		
Economic Factors	140(86.4	17(10.5)	0	5(3.1)	0	4.80	0.58
Chi-Square		$\chi^2 = 206.778$			$p = 0.05$		
Sociological Factors	26(16.0)	76(46.9)	26(16.0)	31(19.1)	3(1.9)	3.55	1.03
Chi-Square		$\chi^2 = 87.938$			$p = 0.05$		
Environmental Attributes	50(30.9)	70(43.2)	3(1.9)	14(8.6)	25(15.4)	3.64	1.39
Chi-Square		$\chi^2 = 92.012$			$p = 0.05$		
Institutional Factors	5(3.1)	26(16)	34(21.0)	61(37.7)	36(22.2)	2.39	1.09
Chi-Square		$\chi^2 = 50.160$			$p = 0.05$		
Infrastructural Factor	23(14.2)	53(32.7)	10(6.2)	18(11.1)	58(35.8)	2.770	1.54
Chi-Square		$\chi^2 = 57.938$			$p = 0.05$		

Note: SD = Strongly Disagree. D = Disagree, U = Undecided   SA= Strongly Agree, A = Agree, STD = Standard Deviation, F = Frequencies
Source: Author, (2019)

Table 4.4 revealed the influence of each of the factors that cause or influences land/property owners to convert the use of their property from their original usage to its current (new) use in Osogbo. Judging from the mean scores and the chi-square values run to determine the weighted mean and to test the association in the responses of the targeted respondents and the goodness of fit of the model, Table 4.4 revealed that, economic factors and demographic factors with mean scores of 4.80 and 3.71 and chi-square value of 206.78 and 142.10 respectively ranked first and second reasons or influencing factor for land use conversion in Osogbo. Institutional factors and infrastructural factors are the least influencing factors for property use conversions in Osogbo, with mean scores of 2.39 and 2.77; chi-square values of 50.16 and 57.94. Finding of the study is in line with the assertions of earlier studies of Bosikun *et al.* (2021)*;* Owoeye (2020); Ojikpong *et al.* (2016); Korah and Cobbinah (2016); Ogungbemi (2012) and Farinmade (2010), who stated that economic factors mainly motivate property owners to convert the

usage of their properties from its current use to the use(s) that promises higher and better returns or gains. However, the finding negates the submissions of Emoh *et al.* (2013) and Uju and Iyanda (2012), whose works ranked the major determinant of property values in Onitsha, Nigeria; and found that location of the property vis-à-vis ranked foremost among other factors. Further test was conducted using psychometric gauging scale on the cognitive and affective workings of the respondents' attitude towards conversion factors which provided a better understanding and reliable explanation of the ranking procedure and the discernments of the respondents as encapsulated in Likert type scale with Relative Importance Index (RII) used in the ranking as derived from the Likert type scale. The outcome of the respondents' responses on the causative factors is presented in Tables 4.5.

Table 4.5   Relative Importance Index (RII) for Land Use Conversions Factors in Osogbo

Causative factors	5	4	3	2	1	$\sum w$	RII	Ranking
Demographic Factors	31	91	12	16	11	598	0.7432	2nd
Economic Factors	140	17	0	5	0	778	0.9605	1st
Sociological Factors	26	76	26	31	3	577	0.7123	4th
Environmental Attributes	50	70	3	14	25	592	0.7309	3rd
Institutional Factors	5	26	34	61	36	389	0.4802	6th
Infrastructural Factor	23	53	10	18	58	451	0.5568	5th

Source: Author, (2019)

As depicted in Tables 4.4 and 4.5, the respondents' perceptions revealed institutional and administrative ineffectiveness and inefficiencies (ranking 6th), hence the least critical influencing factor as there are no specialized units or sections for strict monitoring of use conversions in the ministry of lands and physical planning. The level of infrastructure decay in Osogbo (ranked 5th) was alluded to be a prelude to the low rental performance compared to Ikeja; hence not a significant factor for land use conversions in Osogbo.

However, factors as economic and demographic factors ranked first and second as the most influential or critical land use conversion factors in Osogbo. Most of the property or land owners converted their property to their present use due to financial considerations as the expected rental gains, the probable fear of a likely change in the national microeconomic dynamism on income streams from the property investment, population increase and age composition in the study area.

The sampling adequacy of the data set, its reliability and validity test were further measured and explained using Kaiser-Mayer-Olkin (KMO) and Bartlett's test of sphericity as presented in Table 4.6.

Table 4.6   KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.808
Bartlett's Test of Sphericity	Approx. Chi-Square	76.738
	Df	15
	Sig.	.000

Source: Analysis of field data, (2019)

Table 4.6 present the Kaiser-Mayer-Olkin measure of sampling adequacy (KMO) and Bartlett's test of sphericity which are both used to test the validity and reliability of data set. The testing of sampling adequacy is considered necessary to analyse further and test the theory or proposition of the non-correlation matrix in the factor analysis. The KMO and Bartlett's test of sphericity was used to establish the strength of the factor analysis solution reliability and validity. It measures the sample adequacy by reducing the factors. Bartlett's test of sphericity for the significance of the correlation matrix of the variable shown by the p-value of 0.000, which is less than the 0.05 level of significance, revealed a significant correlation coefficient matrix. The KMO value of greater than 0.6 suggested an acceptable

factor analysis used for the given set of data presented in Tables 4.8 and 4.9. Table 4.7 presents the

operationalisation of the land use conversion factors used for the factor analysis.

Table 4.7: Operationalization of Variables for Principal Component Analysis

Symbols/Component	Variable Names
1	Economic Factors as a factor influencing land use conversions
2	Demographic Factors as a factor influencing land use conversions
3	Environmental Attributes as a factor influencing land use conversions
4	Institutional factor as a factor influencing land use conversions
5	Infrastructural factor as a factor influencing land use conversions
6	Sociological factor as a factor influencing land use conversions

Source: Author, 2019

Table 4.8:   Total Variance Explained for Land Use Conversion Factors in Osogbo

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.506	25.095	25.095	1.506	25.095	25.095	1.470	24.495	24.495
2	1.418	23.629	48.724	1.418	23.629	48.724	1.448	24.128	48.623
3	1.030	17.162	65.886	1.030	17.162	65.886	1.036	17.263	65.886
4	.871	14.520	80.406						
5	.651	10.852	91.258						
6	.524	8.742	100.000						

Extraction Method: Principal Component Analysis.

Table 4.8 Presents the cumulative variance of the most correlated causative factors of land use conversion

in Osogbo metropolis. The Eigenvalues show the total variance in the original variable reported by the

various components in the table. The ratio of variance accounted for each of the individual components

to the total variance of the factors. The analysis required the extraction of the three most correlated

components that induce land use conversions in the study area. The extracted components, however, explained 65.89% variability or erraticism in the original variables. Hence, the study significantly lessens the data by extracting the most emphasised factors with a 34.11% minimum loss of information.

The loading analysis of the causative factors of land use conversions in Osogbo is presented in Table 4.9. The loading result revealed that six factors were loaded, with three of the factors accounting for about 65.89% variance in the original factors inducing land use conversions activities in Osogbo. The study adopted and applied the general rule of thumb of 0.4 thresholds.

Economic factors stand out of the six causative factors as the most important impactful factor inducing land use conversions activities in Osogbo; hence explained 24.50% of the variance across the factors. It thus implied that economic factors as rental gain and other pecuniary considerations, demand and supply, taxes, income and unemployment are the most essential drivers of land use conversions activities in the parts of Osogbo metropolis selected for the study. The more the financial (rental) gains the property owner expects from his real property investment, the higher the demand for converted property in the particular area, the more the likelihood of real property investors to convert the use of their property from the less profitable use to the use that promise the highest returns.

The demographic factor, which is factor two (2) in this study, explained 24.13% variance in the variables inducing land use conversion from residential use to commercial uses. The demographic components used for the study are increase in population and urbanisation, age composition of the population, ethnicity, gender and family status. Productive and vibrant population age composition that supports commerce and city expansion propel use conversions. The third most emphasised factor in Osogbo is

160

environmental attributes in terms of property location, neighbourhood's quality, socioeconomic activities, topography and transportation. These variables explained about 17.25% variance in the factors causing land use conversion in the selected parts of Osogbo for the study. Residential property located in a prime, busy and central location, especially those fronting major roads or streets, are usually vulnerable to conversions of use from residential to commercial use. This supports the assertions of Akanbi *et al. (2019).*

Other factors as institutional factors (government policies, regulations, enforcement mechanism, implementation and penalties); infrastructural factors (condition of road, electricity supply, school, communication and water supply); and sociological factors (prestige, security, taste, culture and class distinction) are all variables that constituted variance and are causative factors at varying degrees. A robust institutional framework is a prelude to an orderly and aesthetically pleasing city that enhances property value and sustainability. The awareness of laws and order in any society, its practical implementations and adequate penalties for offenders encourages adherence to law and reduces the practice of unauthorised property use conversions (Boamah *et al.,* 2012 and Ayotamuno *et al.,* 2010).

Infrastructural factors as good road connectivity and conditions, stable power supply attract investment which invariably brings about the conversion of use from less productive use to more promising productive uses, putting the property to its highest and best use. There are shreds of evidence in the study area where property was converted for security reason or just for prestige. These sociological factors are not typical but exist and thus not usually emphasised as a critical factor.

Table 4.9: Loading Analysis of Land Use Conversion Causative Factors in Osogbo

Factors	Factor loading	Eigen value	% of variance
Factor 1: **Economic Factors**		1.51	24.50
*Rental gain & other pecuniary consideration	.502		
*Demand and Supply	.415		
*Unemployment	.095		
*Taxes	.098		
* Income	.400		
Factor 2: **Demographic Factors**		1.42	23.61
*Population Increase/urbanisation	.522		
*Composition of the Population (Age)	.501		
*Ethnicity	.051		
*Gender	.284		
*Family Status	.060		
Factor 3: **Environmental Attributes**		1.03	17.16
*Location	.412		
*Neighbourhood quality	.200		
*Socioeconomic activities	.401		
*Topography	.012		
*Transportation/Traffic congestion	.005		
Factor 4: **Institutional factor**		.87	
*Policies and regulations	.314		
*Penalties	.223		
*Enforcement mechanism	.333		
Factor 5: **Infrastructural factor**		.65	
*Electricity supply	.322		
*Road	.241		
*Water supply	.025		
*School	.037		
*Communication	.025		
Factor 6: **Sociological factor**		.53	
*Prestige	.010		
*Security	.320		
* Taste	.050		
*Culture	.070		
*Class distinction/ Social Class	.080		

Source: Analysis of field data, (2019)

4.2.3 Land use conversion factors/ drivers in Akure

Factors identified to influence or cause the conversions of property from one use to the other in Akure are presented in Table 4.10.

Table 4.10:   Land Use Conversions Factors/Drivers in Akure

	SA F (%)	A F (%)	U F (%)	D F (%)	SD F (%)	Mean	Std
Demographic Factors	30(16.4)	114(62.3)	14(7.7)	17(9.3)	8(4.4)	3.77	0.97
Chi-Square	$\chi^2 = 211.672$						*p = 0.05*
Economic Factor	154(84.2)	14(10.9)	2(1.1)	3(1.6)	0	4.199	0.53
Chi-Square			$\chi^2 = 348.257$		*p = 0.05*		
Sociological Factors	8(4.4)	57(31.1)	46(25.1)	58(31.7)	14(7.7)	2.92	1.05
Chi-Square			$\chi^2 = 62.601$		*p = 0.05*		
Environmental Attributes	28(15.3)	123(67.2)	10(5.5)	18(9.8)	4(2.2)	3.83	0.88
Chi-Square			$\chi^2 = 263.803$		*p = 0.05*		
Institutional Factors	2(1.1)	25(13.7)	52(28.4)	79(43.2)	25(13.7)	2.45	0.92
Chi-Square			$\chi^2 = 95.661$		*p = 0.05*		
Infrastructural Factors	6(3.3)	134(73.2)	2(1.1)	36(19.7)	5(2.3)	3.54	0.93
Chi-Square			$\chi^2 = 194.787$		*p = 0.05*		

Source: Analysis of field data, (2019)

Table 4.10 shows the empirical analysis of each factor's contributory influence through their mean scores, standard deviation, chi-square and their RII values as presented in Table 11

Table 4.11: Relative Importance Index (RII) for Land Use Conversions Factors in Akure

Causative factors	5	4	3	2	1	∑w	RII	Ranking
Demographic Factors	30	114	14	17	8	690	0.7541	3rd
Economic Factors	154	14	2	3	0	838	0.9158	1st
Sociological Factors	8	57	46	58	14	496	0.5421	5th
Environmental Attributes	28	123	10	18	4	702	0.7672	2nd
Institutional Factors	2	25	52	79	25	449	0.4907	6th
Infrastructural Factor	6	134	2	36	5	649	0.7093	4th

Source: Analysis of field data, (2019)

Tables 4.10 and 4.11 revealed the result of each land use conversions drivers or factors identified in the literature and tested in Akure using Likert type scale to determine each factor's relative importance indices. Like what was obtainable in Osogbo, economic factors with a mean score of 4.199 and a chi-square value of 348.257 influence the conversions of property or land more than any other factors. Environmental attributes with a mean score of 3.83 and chi-square value of 263.803, the demographic factor with a mean score of 3.77 and a chi-square value of 211.67 ranked second and third influencing factors which is a complete departure from the situation in Osogbo. The institutional factor ranked the least influential factor with a mean score of 2.45 and chi-square of 95.661, further collaborated their relative importance level. It further exposes respondents' perceptions of the ineffectiveness and inefficiency of the institutional arrangement of the Ondo State Ministry of Works, Lands and Housing.

Table 4.12 present the measure of sample adequacy and the reliability of the data set.

Table 4.12:   KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.729
Bartlett's Test of Sphericity	Approx. Chi-Square	97.233
	Df	15
	Sig.	.002

Source: Analysis of field data, (2019)

Nonetheless, the factorability of the six (6) constructs or variables were examined. The KMO measure of sampling adequacy was 0.729, which is over, and above the recommended value of 0.600, while the test of one significant correlation between two of the variables studied, Bartlett's test of sphericity, was significant at $p < 0.02$ which is also below the 0.005 threshold. The variable communality, which is the proportion of the item's variance explained by the factors extracted, are all above 0.600; thus, confirming the variables' sharing of some common variance. With these indicators, factor analysis is considered appropriate and suitable for all the items.

Table 4.13:   Total Variance Explained for Land Use Conversion Factors in Akure

Compon ent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.566	26.105	26.105	1.566	26.105	26.105	1.483	24.1909	24.1909
2	1.271	21.188	47.293	1.271	21.188	47.293	1.281	21.358	45.549
3	1.063	17.716	65.008	1.063	17.716	65.008	1.137	18.942	64.491
4	.858	14.308	79.316						
5	.752	12.533	91.849						
6	.489	8.151	100.000						

Extraction Method: Principal Component Analysis.

Table 4.13 presents the total variance explained the most correlated causative factors of land use conversion in some selected parts of the Akure metropolis. The Eigenvalues show the total variance in the original variable reported by the various components in the table. The variance ratio accounted for by each of the individual components to the total variance of the factors. The analysis required the

extraction of the three most correlated components that induce land use conversions in the study area. The three extracted components, namely economic, environmental and demographic factors, explained 24.19%, 21.36% and 18.94% of the variance. That is, the factors explained a total of 64.5% variability or erraticism in the original variables. Hence, the study significantly reduces the data by extracting the most emphasized factors with a 35.5% minimum loss of information.

The loading analysis of the causative factors of land use conversions (which is the degree to which a factor explained a variable) in Akure is presented in Table 4.14. The loading result revealed that six factors were loaded, with three of these factors accounting for about 64.5% variance in the original factors inducing land use conversions activities in the selected study locations. The study, however, adopted and applied the general rule of thumb of 0.4 thresholds.

Economic factors stand out of the six causative factors as the most important impactful factor inducing land use conversions in Akure; hence explained 24.191% of the variance across the factors. It thus implied that economic factors as rental gain, demand and supply, taxes, income level and unemployment considerations are the essential drivers of land use conversions in the part of Akure metropolis selected for the study. The more the financial return (rental gains) the property owner expect from his real property investment, the higher the demand for property for commercial, the more the likelihood of real property investors to convert their property from the riskier use to the uses that promise the highest and best return.

The second most emphasised and impactful land use conversion factor in Akure is environmental attributes as property location, neighbourhood quality, topography, transport and socioeconomic considerations. These variables explained about 21.36% variance in the factors causing land use

conversion activities in the parts of Akure selected for the study. Residential property located in a prime, busy and central location that fronting a major road is usually vulnerable to conversions from residential use to commercial use. The demographic factor, factor three (3) in this study, explained 18.94% variance in the variables inducing land use conversion from residential use to commercial uses. The demographic components used for the study are an increase in population and urbanisation, age composition of the population that is vibrant population age that support commerce, population increase and city expansion often support or propel use conversions.

Other factors as institutional factors (government policies, regulations, enforcement mechanism, implementation and penalties); infrastructural factors (condition of road and electricity supply); and sociological factors (prestige, security and taste) are all variables that constituted variance and are causative factors at varying degrees. A robust institutional framework is a prelude to an orderly and aesthetically pleasing city that enhances property value and sustainability. The awareness of laws and order in any society, its practical implementations and adequate penalties for offenders encourages adherence to law and reduces the practice of unauthorised land use conversions.

Infrastructural factors as good road connectivity and conditions, stable power supply attract investment which invariably brings about the conversion of use from less productive use to more promising productive uses, that its highest and best use. There is evidence in the study area where properties were converted for security reason or just for prestige. These sociological factors are not typical and thus not usually emphasised as a severe factor.

Table 4.14: Loading Analysis of Land Use Conversion Causative Factors in Akure

Factors	Factor loading	Eigen value	% of variance
Factor 1: **Economic Factors**		1.57	24.191
*Rental gain & other pecuniary consideration	.526		
*Demand and Supply	.428		
*Unemployment	.411		
*Taxes	.005		
*Income	.200		
Factor 3: **Environmental Attributes**		1.06	21.358
*Location	.409		
*Neighbourhood quality	.205		
*Socioeconomic activities	.400		
*Topography	.011		
*Transportation/Traffic congestion	.035		
Factor 2: **Demographic Factors**		1.27	18.942
*Population Increase	.450		
*Composition of the Population (Age)	.420		
*Ethnicity	.203		
*Gender	.042		
*Family Status	.155		
Factor 4: **Institutional factor**		.86	
*Policies and regulations	.314		
*Penalties	.311		
*Enforcement mechanism	.235		
Factor 5: **Infrastructural factor**		.75	
*Electricity supply	.035		
*Road	.400		
*Water supply	.000		
*School	.000		
*Communication	.000		
Factor 6: **Sociological factor**		.49	
*Prestige	.400		
*Security	.090		
* Taste	.000		
*Culture	.000		
*Class distinction/ Social Class	.000		

Source: Analysis of field data, (2019)

4.2.4 Land use conversions factors/ drivers in Ikeja

Factors identified as drivers of land use conversions in literature were tested in Ikeja rental market, with the extracts from their Likert type scale analysis showing their chi-square, mean scores, standard deviation and relative importance index presented in Tables 4.15 and 4.16.

Table 4.15 Land Use Conversions Factors/Drivers in Ikeja

	SA	A	U	D	SD		
	F (%)	F (%)	F (%)	F (%)	F (%)	Mean	STD
Demographic Factors	145(78.4)	33(17.8)	3(1.6)	4(2.2)	0	4.1924	0.518
Chi-Square			$\chi^2 = 293.681$		$p = 0.05$		
Economic Factors	132(71.4)	50(27.0)	2(1.1)	1(0.5)	0	4.691.	.0 603
Chi-Square			$\chi^2 = 245.897$		$p = 0.05$		
Sociological Factors	7(3.8)	85(45.9)	50(27.0)	35(18.9)	8(4.3)	3.259	0.954
Chi-Square			$\chi^2 = 114.000$		$p = 0.05$		
Environmental Attributes	82(44.3)	51(27.6)	32(17.3)	19(10.3)	1(0.5)	4.048	1.038
Chi-Square			$\chi^2 = 104.486$		$p = 0.05$		
Institutional Factors	28(15.1)	98(53.0)	29(15.7)	24(13.0)	6(3.2)	3.637	0.996
Chi-Square			$\chi^2 = 135.027$		$p = 0.05$		
Infrastructural Factor	69(37.3)	54(29.2)	5(2.7)	8(4.3)	49(26.5)	3.464	1.63
Chi-Square			$\chi^2 = 89.784$		$p = 0.05$		

Source: Field survey data (2019)

Table 4.16:   Relative Importance Index (RII) for Land Use Conversions Factors in Ikeja

Causative factors	5	4	3	2	1	∑w	RII	Ranking
Demographic Factors	145	33	3	4	0	874	0.9449	1st
Economic Factors	132	50	2	1	0	868	0.9384	2nd
Sociological Factors	7	85	50	35	8	603	0.6519	6th
Environmental Attributes	82	51	32	19	1	749	0.8097	3rd
Institutional Factors	28	98	29	24	6	673	0.7276	4th
Infrastructural Factor	69	54	5	8	49	641	0.6930	5th

Source: Field survey data (2019)

Tables 4.15 and 4.16 indicated that demographic, economic factors and environmental attributes with mean scores of 4.192; 4.69 and 4.05 and chi-square values of 293.68; 245.90 and 104.49, respectively ranked first, second and third causes of land use conversions in Ikeja. It is entirely different from the cases in Akure and Osogbo but supported the assertions of Degualem (2018) who studied the impact of urban land use changes on residential property values: the case of Bole Sub City, Addis Ababa and found that demographic factors ranked first as the most impactful factor. Another unique but positive contributory factor is the institutional factor with a mean score of 3.64 and a chi-square value of 135.03, which ranked high and above the performances of institutional factors in any of the other two states put together. It further explains the effectiveness and the efficient institutional and administrative framework and performance of the Bureau for Lands in Lagos state.

The Bureau's operational structure involves creating specialized units for special operations as Land Use Charge Unit, Building Control Agency, Physical Planning Permit Authority which are effectively and timeously active in their business of land use control and management. The units are charged with the

collection and remittance to Lagos state Government fees on land uses within the state, controlling building constructions/development and conversions of uses and the granting (approval) or otherwise of the permit for projects, respectively. It is important to note that, Lagos state is the first and only state in the whole of South West Nigeria to have this kind of structure in her Ministry of Lands. The structure contributed to the effectiveness and efficiency of her institutional framework.

However, the factorability of the conversion variables used for the study were presented in Table 4.17.

Table 4. 17   KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.736
Bartlett's Test of Sphericity	Approx. Chi-Square	85.294
	Df	15
	Sig.	.000

Source: Analysis of field data, (2019)

The factorability of the six (6) constructs or variables were examined. The KMO measure of sampling adequacy was 0.736 which is over and above the recommended value of 0.600 while the test of one significant correlation between two of the variables studied, the Bartlett's test of sphericity was significant at 0.000 which is less than $P < 0.05$. The variable communality which is the proportion of the item's variance explained by the factors extracted are all above 0.600; thus, confirming the variables' sharing of some common variance. With these indicators, factor analysis is considered appropriate and suitable for all the items.

Table 4.18:   Total Variance Explained for Land Use Conversion Factors in Ikeja

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative e %
1	1.885	31.417	31.417	1.885	31.417	31.417	1.794	29.896	29.896
2	1.160	19.334	50.751	1.160	19.334	50.751	1.251	20.855	50.751
3	.940	15.666	66.418						
4	.777	12.944	79.361						
5	.714	11.905	91.266						
6	.524	8.734	100.000						

Extraction Method: Principal Component Analysis.

Table 4.18 presents the cumulative variance of the most correlated causative factors of land use conversion in some selected parts of the Ikeja metropolis. The Eigenvalues show the total variance in the original variable reported by the various components in the table. The ratio of variance accounted for by each of the individual components to the total variance of the factors. The analysis required the extraction of the three most correlated components that induce land use conversions in the study area. The two most emphasized factors extracted, namely demography and economic factors, explained 29.90% and 20.86% of the variance, respectively. That is, the factors explained a total of 50.75% variability or erraticism in the original variables. Hence, the study significantly lessens the data by extracting the most emphasized factors with a 49.25% minimum loss of information.

The loading analysis of the causative factors of land use conversions (which is the degree to which a factor explained a variable) in Ikeja is presented in table 4.19. The loading result revealed that six factors were loaded, with two of these factors accounting for about 50.75% variance in the original factors inducing land use conversions in the selected study locations. The study adopted and applied the general rule of thumb of 0.4 thresholds.

The demographic factor, factor one (2) in this study, explained a 29.90% variance in the variables inducing land use conversion from residential use to commercial uses. The demographic components used for the study are an increase in population and urbanisation, the age composition of the population. Productive and vibrant population age that support commerce, population increase and city expansion often support or propel use conversions. It is particularly so because Lagos is the country's commercial nerve centre and the nations' industrial hub, with Ikeja the study area been the capital and a vibrant city in Lagos state. Economic factors are another causative factor with a strong impact that induces land use conversions activities in Ikeja; it explained 20.85% of the variance across the factors. It thus implied that economic factors as rental gain, demand and supply factors, unemployment, taxes and income level are essential drivers of land use conversions in the part of Ikeja metropolis selected for the study. The more the financial return (rental gains) the property owner expect from his real property investment, the higher the demand for property for commercial uses, the more the likelihood of real property investors to convert their property from the riskier use to the uses that promise the highest return.

Institutional factors (government policies, regulations, enforcement mechanism, implementation and penalties) is also another factor. In Lagos state, most of the conversions were done with government consent. The study also discovered that Lagos state has a more organised and well-structured ministry of lands (Bureau for Lands) with various effective parastatals or agencies. Other factors include infrastructural factors (condition of road and electricity supply); sociological factors (prestige, security and taste) constitute variance and are causative factors at varying degrees. A robust institutional framework is a prelude to an orderly and aesthetically pleasing city that enhances property value and sustainability. The awareness of laws and order in any society, its practical implementations and adequate penalties for offenders encourages adherence to law and reduces the practice of unauthorised land use

conversions. More so, environmental attributes in terms of property location and the neighbourhood's quality play a significant role in influencing land use conversions in Ikeja. Residential property located in a prime, busy and central location that abuts a major road are usually vulnerable to conversions from residential use to commercial use.

Table 4.19: Loading Analysis of Land Use Conversion Causative Factors in Ikeja

Factors	Factor loading	Eigen value	% of variance
Factor 2: **Demographic Factors**		1.77	29.90
*Population Increase	.450		
*Composition of the Population (Age)	.420		
*Ethnicity	.000		
*Gender	.000		
*Family Status	.900		
Factor 1: **Economic Factors**		1.69	20.85
*Rental gain & other pecuniary consideration	.526		
*Demand and Supply	.428		
*Unemployment	.411		
*Taxes	.025		
*Income	.300		
Factor 3: **Environmental Attributes**		.94	
*Location	.409		
*Neighbourhood quality	.100		
*Socioeconomic activities	.400		
*Topography	.025		
*Transportation/Traffic congestion	.025		
Factor 4: **Institutional factor**		.78	
*Policies and regulations	.400		
*Penalties	.300		
*Enforcement mechanism	.080		
Factor 5: **Infrastructural factor**		.75	
*Electricity supply	.350		
*Road	.400		
*Water supply	.000		
*School	.000		
*Communication	.000		
Factor 6: **Sociological factor**		.49	
*Prestige	.400		
*Security	.090		
* Taste	.000		
*Culture	.000		
*Class distinction/ Social Class	.000		

Source: Analysis of field data, (2019)

4.2.5   Summary of independent analysis for achieving objective one.

Tables 4.20, 4.21 and 4.22 presents the combined summaries of the independent analysis done in each of the study area to achieve Objective One.

Table 4.20 presents the relative important index structure for land use conversion factors across the study locations.

Table 4.20:   Summary Table for RII of Conversion Factors in the study Areas

	AKURE			OSOGBO			IKEJA		
Variables	$\sum W$	RII	RANK	$\sum W$	RII	RANK	$\sum W$	RII	RANK
DEMO	690	0.754	3rd	602	0.743	2nd	874	0.945	1st
ECO	838	0.916	1st	778	0.961	1st	868	0.938	2nd
SOCIO	496	0.542	5th	577	0.712	4th	603	0.652	6th
ENVI	702	0.767	2nd	592	0.731	3rd	729	0.788	3rd
INSTI	449	0.401	6th	389	0.480	6th	673	0.728	4th
INFRAS	649	0.709	4th	451	0.557	5th	641	0.693	5th

Source: computed from Tables 4.5, 4.10 and 4.15

Table 4.20 shows that economic consideration is a major factor for land use conversion activity in Akure and Osogbo. It ranked first among the other factors; hence the most critical factor that property owners considered before converting the use of their land. On the other hand, the most influencing factors for land use conversion activities in Ikeja is demographic factor and thus ranked first. Population increase is a major pull factor for land use conversion activities in Ikeja, while pecuniary consideration is the major pull factor for land use conversions activities in Akure and Osogbo.

The least critical factor for land use conversions in Akure and Osogbo is the institutional factor, ranking the 6th influencing factor. The level of unauthorised use conversions in the states exposes their weak institutional framework. Ikeja have fewer cases of unauthorised use conversions, that is conversions from residential to commercial use without the appropriate authorisation from the concern ministry or agencies. This, however reflects the institutional effectiveness due to the better structure and conduct of the state's Bureau for Lands. Institutional factor ranked the 4th influencing factor for land use conversion activity in Ikeja with sociological consideration ranking the least critical influencing factor in Ikeja.

Conclusively, it could be inferred from Table 4.20 that economic, demographic, and environmental factors are the most dominant land use conversions variables in the study areas. Hence by extension can be generalised to cover the whole South West, Nigeria.

Table 4.21 further shows the evaluation of all the land use conversion data collected from each of the study area. The KMO which measures the sampling adequacy of the data to be used for factor analysis for each of the locations were all over and above the threshold significant Bartlett's test of sphericity across the study locations.

Table 4.21   Summary Table for KMO and Bartlett's Test in the Study Areas

		IKEJA	OSOGBO	AKURE
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.736	.808	.729
Bartlett's Test of Sphericity	Approx. Chi-Square	85.294	76.738	97.233
	Df	15	15	15
	Sig.	.000	.000	.002

Source: Analysis of field data, (2019)

Table 4.22:   Total Variance Explained for Land Use Conversion Factors in the Study Areas

Compone nt	Rotation Sums of Squared Loadings **IKEJA**			Rotation Sums of Squared Loadings **OSOGBO**			Rotation Sums of Squared Loadings **AKURE**		
	Total	% of Varianc e	Cumulativ e %	Total	% of Varianc e	Cumulativ e %	Total	% of Variance	Cumulative %
DEMO	1.794	29.896	29.896	1.448	24.128	48.623	1.137	18.942	65.008
ECO	1.251	20.855	50.751	1.470	24.495	24.495	1.483	24.191	24.191
ENVI				1.036	17.263	65.886	1.281	21.358	46.066
SOCIO									
INFRAS									
INSTI									

Extraction Method: Principal Component Analysis

Table 4.22 presents the cumulative variance of the most correlated causative factors of land use conversion across the study locations. The Eigenvalues show the total variance in the original variable reported by the various components in the tables. The ratio of variance accounted for by each of the individual components to the total variance of the factors in each of the locations studied. The analysis required the extraction of the three most correlated components that induce land use conversions in the study areas.

4.3.0   Annual Rental Index of Properties in the Study Areas (The Study's Objective Two).

The average annual rental performances of two bedrooms, three bedrooms and tenement buildings in Osogbo, Akure and Ikeja from 2004 to 2019 were calculated from the collected historical and current rent passing on the property types under study to arrive at the aggregate rent. The calculated aggregate annual rental was transformed into aggregate annual rental index from where trend analysis for the property types were done as presented in Tables 4.23, 4.24 and 4.25. The tables show the trend in the annual rental index, that is, rental index performances of after use conversion and before use conversions for each of the years (rental performances) for the property types selected for the study. Furthermore, the

study specifically assessed the rental performances of the selected property types from 2004 to 2019 due to the period's uniqueness. The year 2004, for instance, marks the end of the second civil rule transition and the beginning of the third civil or democratic dispensation/calendar in Nigeria (Oduola, 2018). Between 2004 and 2019, Nigeria had four democratic transitions; the national economy entered into recession four times or witnessed depression, recessionary trend, recovery and stability in her global and national economic performances. There were many political tensions and business anxieties, especially within the years preceding and succeeding every general (presidential) election. The national economic dipping performance was said to have negatively affected investment across all sectors of the economy for which the real property market subsector is a significant player.

As an evidence-based independent study, it becomes imperative for the study to analyse the property rental performances within each study location to find the ground upon which to base its recommendations. Objective Two of the study was achieved by gathering relevant information on the annual rental values of all the property types from Estate Surveyors and Valuers. After that, the aggregated annual rental values were calculated, transformed in annual rental index and presented in tabular format with trend lines generated through the trend line graph (trend model). Table 4.23 present the mean scores, standard deviation and the annual rental index of before and after use conversions for two, three and tenement property in Osogbo.

Table 4.23: Rental Index for Two, Three and Tenement Buildings in Osogbo

YEAR	Rental Index for Converted Two Bedrooms (₦)		Rental Index for Converted Three Bedrooms (₦)		Rental Index for Converted Tenement Bedrooms (₦)	
	Before (%)	**After (%)**	**Before (%)**	**After (%)**	**Before (%)**	**After (%)**
2004	100	100	100	100	100	100
2005	100	100	100	100	100	100
2006	121	118	107	127	140	100
2007	128	136	110	127	160	138
2008	147	136	140	165	200	138
2009	160	181	147	165	200	138
2010	202	235	147	165	200	234
2011	202	235	181	241	220	244
2012	289	267	181	241	260	315
2013	334	380	191	241	260	315
2014	334	380	225	297	280	315
2015	369	425	245	310	300	351
2016	414	483	289	310	300	401
2017	462	510	313	358	340	510
2018	481	537	361	367	360	510
2019	481	569	378	367	360	510
Mean	**270**	**300**	**201**	**230**	**236**	**276**
STD	**142**	**168**	**92**	**96**	**85**	**151**

Source: Field survey data (2019).   *Calculated from aggregate average annual rent in Osogbo*

Table 4.23 presents the before and after use conversion rental index for two-bedroom, three-bedroom and tenement buildings with appreciative increase in their rental performances despite the national economic crisis. However, despite the unstable performance of transactions in the property rental market, one can infer from Table 4.23 that there was generally a steady rise in Osogbo property rental market. The earlier part of the study period witnesses poor rental performances in the converted properties rental market. Nevertheless, despite the city's rental volatility, the overall rental market experienced an upward trend. Further critical evaluation of the converted properties rental market was done by calculating the property weighted mean scores and standard deviation.

Furthermore t- test was conducted to determine if there exist any significant differences in the mean of the rental index of before and after use conversions of the various property types studied. The result of the analysis for Osogbo is presented in Table 4.24a and b. It was done to provide necessary thorough information on the study areas' rental performances within the study period. The evaluation of rental performances further helped provide relevant answers to Research Question Two and, invariably, the achievement of Objective Two of the study, as presented in Tables 4.23 and 4.24.

Table 4.24a: Paired Samples T-Test Statistics for Osogbo

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BEFORE2BEDOSOG	270.2500	16	141.80668	35.45167
	AFTER2BEDOSOG	299.5000	16	168.35597	42.08899
Pair 2	BEFORE3BEDOSOG	200.9375	16	92.26807	23.06702
	AFTER3BEDOSOG	230.0625	16	96.35592	24.08898
Pair 3	BEFORETENOSOG	236.2500	16	85.23497	21.30874
	AFTERTENOSOG	276.1875	16	151.20151	37.80038

Source: Analysis of field data, (2019)

Table 4.24b: Paired Samples T- Test for Osogbo

		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
Pair 1	BEFORE2BEDOSOG AFTER2BEDOSOG	-29.25000	31.53939	7.88485	-46.05616	-12.44384	-3.710	15	.002
Pair 2	BEFORE3BEDOSOG AFTER3BEDOSOG	-29.12500	25.97659	6.49415	-42.96695	-15.28305	-4.485	15	.000
Pair 3	BEFORETENOSOG AFTERTENOSOG	-39.93750	73.01184	18.25296	-78.84276	-1.03224	-2.188	15	.045

Source: Analysis of field data, (2019)

A Paired Sample t-test was conducted to compare the after and before use rental index of converted residential two-bedroom, three bedroom and tenement building in Ikeja, Osogbo and Akure caused by the influence of land use conversion activities. The result of the test revealed that:

There was a significant difference in the score for Two-bedroom in Osogbo for Before Use Conversion and After Use Conversion (M = -29.25, SD = 31.54) condition; t (15) = -3.71 and P = .002.

There was a significant difference in the score for Three-bedroom in Osogbo for Before Use Conversion and After Use Conversion (M = -29.13, SD = 25.98) condition; t (15) = -4.49 and P = .000.

There was a significant difference in the score for Tenement building in Osogbo for Before Use Conversion and After Use Conversion (M = -39.94, SD = 73.01) condition; t (15) = -2.19 and P – value = .045.

Conclusively, the result of the analysis revealed that, the rental index for the After-use conversions for all the property types studied in Osogbo performed better than the before use conversions; hence a better investment option.

Tables 4.25 and 4.26a and b present the mean scores, standard deviation, annual rental indexation and the paired t-test statistics for before and after use of converted two, three and tenement property in Akure.

Table 4.25: Annual Rental Index of Two, Three and Tenement Buildings in Akure

YEAR	Rental Index for Converted Two Bedrooms (₦)		Rental Index for Converted Three Bedrooms (₦)		Rental Index for Converted Tenement Bedrooms (₦)	
	Before (%)	**After (%)**	**Before (%)**	**After (%)**	**Before (%)**	**After (%)**
2004	100	100	100	100	100	100
2005	106	100	100	100	100	100
2006	125	158	107	116	114	100
2007	135	158	110	116	143	124
2008	163	191	140	176	157	124
2009	176	208	147	176	186	124
2010	176	208	147	176	186	218
2011	233	365	181	228	200	227
2012	233	365	181	232	214	292
2013	252	404	191	232	214	292
2014	290	474	225	307	242	292
2015	290	474	245	307	256	391
2016	322	497	289	314	256	447
2017	398	583	313	373	299	555
2018	398	583	361	373	327	562
2019	398	583	378	373	327	569
Mean	237	341	201	231	208	282
STD	104	179	92.3	100	74	174

Source: Field survey data (2019)   *Calculated from aggregate average annual rent in Akure*

Table 4.25 revealed that all the property types experienced progressive growth in their rental index with a slightly volatile trend in the previous years. However, the general rental performances as shown in the index of converted property in the study area can be useful as indicated in their rental values mean scores and the calculated standard deviation, which revealed a positive significant rental value appreciation. Tables 4.26a and b compare the level of differences in before and after use conversion rental values.

Table 4.26a: Paired Samples T-Test Statistics for Akure

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BEFORE2BEDAKUR	237.1875	16	104.13403	26.03351
	AFTER2BEDAKUR	340.6875	16	179.17281	44.79320
Pair 2	BEFORE3BEDAKUR	200.9375	16	92.26807	23.06702
	AFTER3BEDAKUR	231.1875	16	99.59600	24.89900
Pair 3	BEFORETENAKUR	207.5625	16	74.14308	18.53577
	AFTERTENAKUR	282.3125	16	174.37267	43.59317

Source: Analysis of field data, (2019)

Table 4. 26b: Paired Samples T-Test for Akure

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	BEFORE2BEDAKUR AFTER2BEDAKUR	-103.5000	78.3386	19.5847	-145.24368	-61.75632	-5.285	15	.000
Pair 2	BEFORE3BEDAKUR AFTER3BEDAKUR	-30.25000	25.6996	6.42489	-43.94432	-16.55568	-4.708	15	.000
Pair 3	BEFORETENAKUR AFTERTENAKUR	-74.75000	105.370	26.3424	-130.89745	-18.60255	-2.838	15	.012

Source: Analysis of field data, (2019)

Tables 4.26a and b revealed a significant difference in the rental index of before and after use conversions in the study area. Thus, it can be inferred from the Tables that investment in land use conversions will continue if nothing is done to avert it. Details of the rental outlook for both after and before use conversions are presented in Tables 4.25, 4.26a and b.

The outcome of the test revealed significant difference in the score for Two-bedroom in Akure for Before Use Conversion and After Use Conversion with (M = -103.50, SD = 78.34) condition; t (15) = -5.29 and P – value = .000.

There was a significant difference in the score for Three-bedroom in Akure for Before Use Conversion and After Use Conversion (M = -30.25, SD = 25.70) condition; t (15) = -4.71 and P – value = .000.

There was a significant difference in the score for Tenement building in Akure for Before Use Conversion and After Use Conversion (M = -74.75, SD = 105.37) condition; t (15) = -2.84 and P – value = .012.

Conclusively, the result of the analysis revealed that, the rental index for the After-use conversions for all the property types studied in Akure performed better than the before use conversions; hence a better investment option.

Tables 4.27 and 4.28a and b present the calculated mean scores, standard deviation, annual rental index and paired sample t-test for before and after use conversions for converted two, three bedrooms and tenement property in Ikeja. Annual rental index for each of the property types shows the average annual rental index performances for the property types in the study area. The tables revealed consistent increase in the rental indexation of the various property types and significant difference in the rental indexations in Ikeja.

Table 4.27.: Annual Rental Index of Two and Three bedroom and Tenement Buildings in Ikeja

YEAR	Rental Index for Converted Two Bedrooms (₦)		Rental Index for Converted Three Bedrooms (₦)		Rental Index for Converted Tenement Bedrooms (₦)	
	Before (%)	After (%)	Before (%)	After (%)	Before (%)	After (%)
2004	100	100	100	100	100	100
2005	100	100	100	100	100	100
2006	123	127	100	100	100	100
2007	146	191	155	137	116	125
2008	201	225	155	137	121	141
2009	201	238	120	167	182	212
2010	247	301	145	215	215	243
2011	265	318	210	315	327	423
2012	302	377	235	353	453	541
2013	334	415	255	372	504	596
2014	421	508	288	434	737	910
2015	448	525	308	491	830	1028
2016	471	559	358	558	942	1177
2017	549	635	421	615	1455	1726
2018	677	737	546	787	1632	1883
2019	714	796	571	835	1632	1883
Mean	331	**385**	**254**	**357**	**590**	**699**
STD	**198**	**223**	**153**	**245**	**559**	**659**

Source: Field survey data (2019)   *Calculated from aggregate average annual rent in Ikeja*

Table 4.28a: Paired Samples T-Test Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BEFORE2BEDIKEJ	331.1875	16	197.58381	49.39595
	AFTER2BEDIKEJ	384.5000	16	223.11342	55.77836
Pair 2	BEFORE3BEDIKEJ	254.1875	16	153.06087	38.26522
	AFTER3BEDIKEJ	357.2500	16	244.60158	61.15040
Pair 3	BEFORETENIKEJ	590.3750	16	559.17938	139.79485
	AFTERTENIKEJ	699.2500	16	658.97815	164.74454

Source: Analysis of field data, (2019)

Table 4.28b: Paired Samples T- Test

		Paired Differences							Sig. (2-tailed)
			Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
		Mean			Lower	Upper	t	df	
Pair 1	BEFORE2BEDIKEJ AFTER2BEDIKEJ	-53.313	32.024	8.006	-70.377	-36.248	-6.659	15	.000
Pair 2	BEFORE3BEDIKEJ AFTER3BEDIKEJ	-103.063	95.451	23.863	-153.925	-52.200	-4.319	15	.001
Pair 3	BEFORETENIKEJ AFTERTENIKEJ	-108.875	103.836	25.959	-164.206	-53.545	-4.194	15	.001

Source: Analysis of field data, (2019)

There was a significant difference in the score for Two-bedroom in Ikeja for Before Use Conversion and After Use Conversion with (M = -53.31, SD = 32.02) condition; t (15) = -6.66 and P = .000.

There was a significant difference in the score for Three-bedroom in Ikeja for Before Use Conversion and After Use Conversion with (M = -103.06, SD = 95.45) condition; t (15) = -4.32 and P = .001.

There was a significant difference in the score for Tenement building in Ikeja for Before Use Conversion and After Use Conversion with (M = -108.88, SD = 103.84) condition; t (15) = -4.19 and P = .001.

Conclusively, the result of the analysis revealed that, the rental index for the After-use conversions for all the property types studied in Ikeja performed better than the before use conversions; hence a better investment option.

4.3.1: Annual Rental Index Trend of Converted Properties

Further distinct analysis of both the calculated weighted mean and standard deviation for before and after use rental values of converted property was done and presented in a graphical format. It further provided an answer to objective two of the study. It is as depicted in the figures below.

However, the use of trend line graphs to explain converted property rental behaviour in the study areas becomes necessary as the annual rental index table alone may not give a detailed picture of the rental trend of the property types in the areas. Again, the trend lines helped smoothen the fluctuations in the data set hence a more detailed and more evident trend pattern. The R^2 values generated were used to determine the accuracy and reliability of the predictions or forecast, while the least square linear regression equation generated is used for rental value predictions.

Figure 4.1 below presents the annual rental trend of three-bedroom property (before use conversions) in Ikeja, Osogbo and Akure.
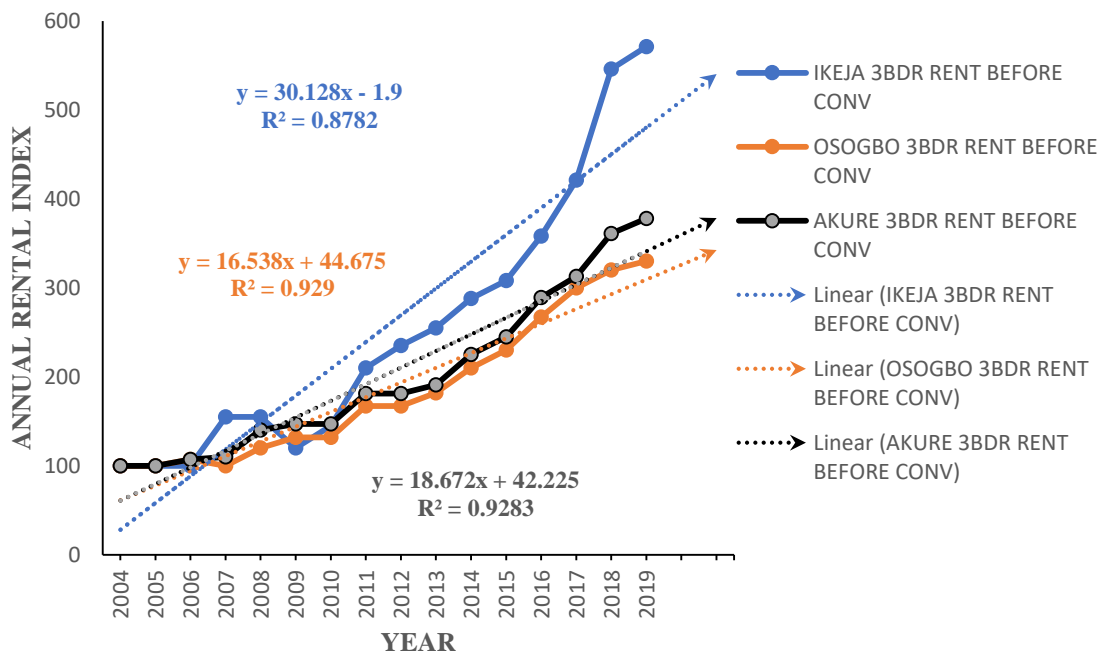
Figure 4.1: Annual Rental Index Trend of Three-Bedroom Before Conversions in Ikeja, Osogbo and Akure.

Figure 4.1 revealed that all the selected locations had shown rental values volatility as indicated by their respective predictive trend lines, with Ikeja displaying the highest volatility level compared to the other two locations (Akure and Osogbo). Similarly, the smoothed trend lines for Akure and Osogbo maintained a consistent and steady rise in their rental values from 2004 to 2019. Future forecast for three additional years from 2020 was made concerning three-bedroom property' rental values in the study areas. The analysis revealed a continuous but steady increase for all the locations (Ikeja, Osogbo and Akure).

The coefficient of determination/explanatory power, which is the R^2 value, was used to test the trend of reliability and the accuracy of the forecast of rental values in the three locations. The model fit from the analysis accounted for 87.82%, 92.9%, and 92.83% of the variable growth in the rent of before-use conversions for Ikeja, Osogbo and Akure, respectively.

Therefore, inferences can be made from the analysis that the rental values of three-bedroom property in Ikeja have a volatile but consistent rise over the study period, which is likely to be maintained over the subsequent three years as predicated by the predictive trend lines. However, the rent increase is not as high as what was recorded for after use conversion. For Osogbo and Akure with similar predictive trend lines, the analysis revealed a relatively conservative increase in the rental growth of three-bedroom property which is likely to be sustained for the next three consecutive years as indicated by the predictive trend lines compared to the situation in Ikeja.

Figure 4.2 presents an annual rental index trend for the study locations. The three study locations' trend lines revealed a steady increase in rental growth of after use conversions, which is higher than that of the before use conversion with a reasonable rental gap between the Ikeja rental index trend line and the other two locations from 2017.
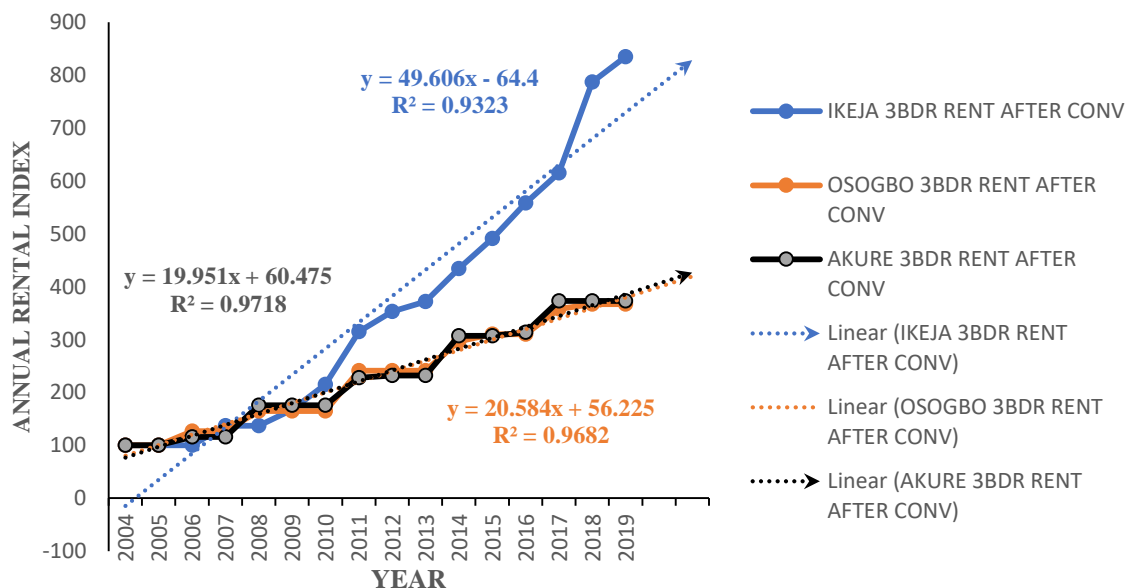
Figure 4.2 Annual Rental Index Trend for Three Bedroom After Use Conversions in Ikeja Akure and Osogbo

Figure 4.2 revealed the existence of few significant variations or differences between Akure three-bedroom rental behaviour and that of Osogbo. Though both locations' trend lines indicated a gradual upward rise in rent with positive rental growth. However, it is essential to note that after use conversions rent for Ikeja, Osogbo and Akure maintained volatile but a relatively consistent rental growth within the study period, as indicated by the predictive trend lines.

To test the reliability of the trends, the accuracy of its rental value forecast in all the three locations, the coefficient of determination which is the R^2 value, was generated and used. The model fit from the analysis accounted for 93.23%, 96.82%, and 97.18% of the variable growth in the rent of after use conversions for Ikeja, Osogbo and Akure, respectively. Inferences can therefore be made from the analysis that investment in after use conversions of three-bedroom properties in Ikeja will continue at a higher and drastic rate due to the volatile but consistent rise in rent compare to rise in the rent of before use conversion, which is likely to be maintained over the subsequent three years as predicated by the predictive trend lines. For Osogbo and Akure with similar predictive trend lines, the analysis revealed a relatively conservative increase in the rental growth of three-bedroom property which is likely to be sustained for the next three consecutive years as indicated by the predictive trend lines compared to the situation in Ikeja.

Figure 4.3 presents the before use conversion annual rental index trend of two bedrooms for the study locations. The three study locations' trend lines revealed a volatile but steady rise in rental trend lines of before use conversions with Ikeja rental values exhibiting a more aggressive rise compared with other locations.
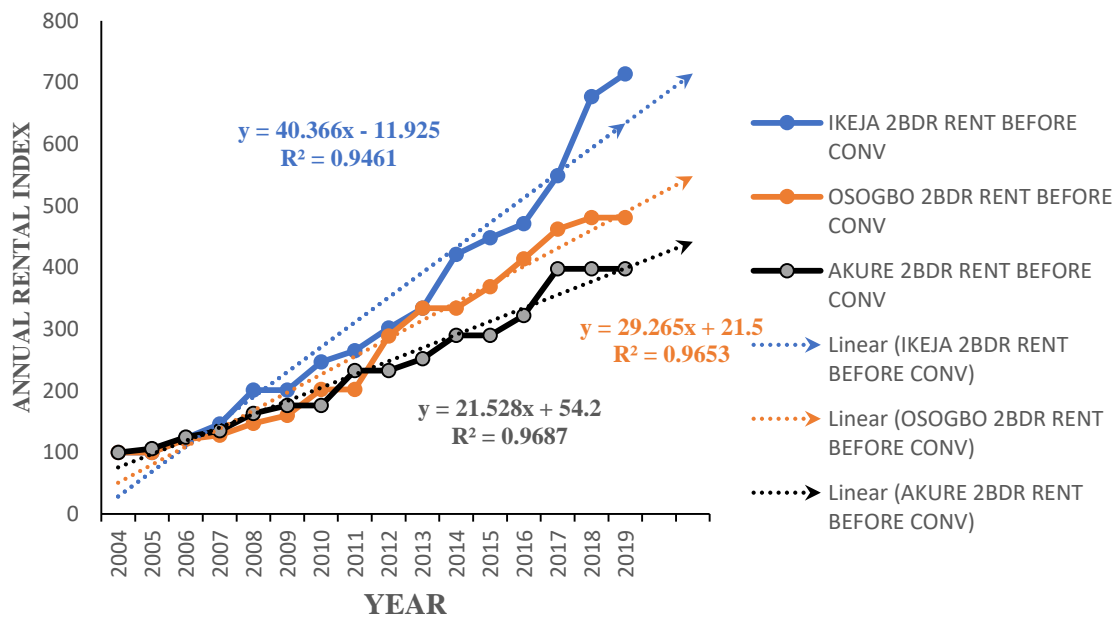
Figure 4.3 Annual Rental Index Trend for Two Bedroom Before Use Conversions in Ikeja Akure and Osogbo

Figure 4.3 further revealed that, there were no significant differences between Akure two-bedroom before use conversions rental index performance and Osogbo until 2012 when rent in Osogbo crisscrossed and overlapped Akure rental. Though both locations' trend lines indicated a relatively weak but upward (rise) movement in rent with positive rental growth. Akure and Osogbo rent maintained a relatively stable rental growth from 2004 to 2019, while Ikeja rental market experienced instability but a continuous increase within the study period as indicated by the predictive trend lines.

To test the reliability of the trends and the accuracy of the rental value forecast for all three locations, the generated coefficient of determination is the R^2 value. The analysis shows that the model fit accounted for 94.61%, 96.53%, and 96.87% of the variable growth in the rental of before use conversions for Ikeja, Osogbo and Akure, respectively. Inferences can therefore

be made from the analysis that investment in before use conversions of two-bedroom property in Ikeja will though continue, but at a relatively slow rate as an investment, fund recoupment look a bit slow due to the rent differential when compared to the after-use conversion rent in the same area. For Osogbo and Akure with similar predictive trend lines, the analysis revealed a relatively conservative increase in the rental index growth of two-bedroom property, which is likely to be sustained for the next three consecutive years as indicated by the predictive trend lines the situation in Ikeja.

Figure 4.4 shows trend of the after use average annual rental values index for two-bedroom properties in the study locations. Ikeja rental market displayed a unique rental index trend compared to Akure and Osogbo rent market that are similar and conservative in interaction and movement as indicated by the predictive trend lines.
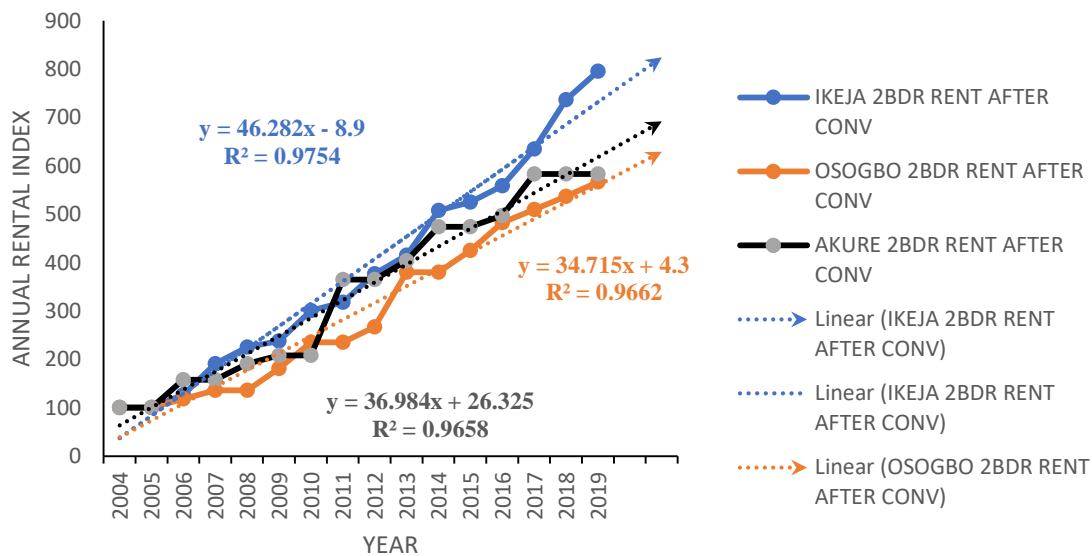
Figure 4.4 Annual Rental Index Trend for Two Bedroom After Use Conversions in Ikeja Akure and Osogbo

Figures 4.5 and 4.6 presented the rental index performances of both before and after use conversions of tenement buildings in the three study areas.
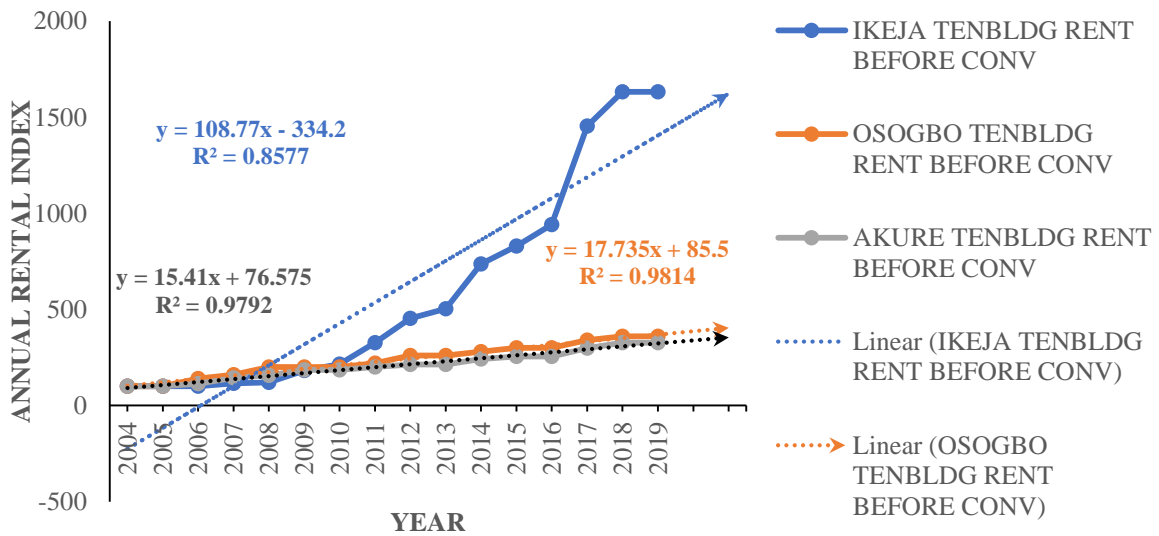
Figure 4.5 Annual Rental Index Trend for Tenement building Before Use Conversions in Ikeja, Akure and Osogbo
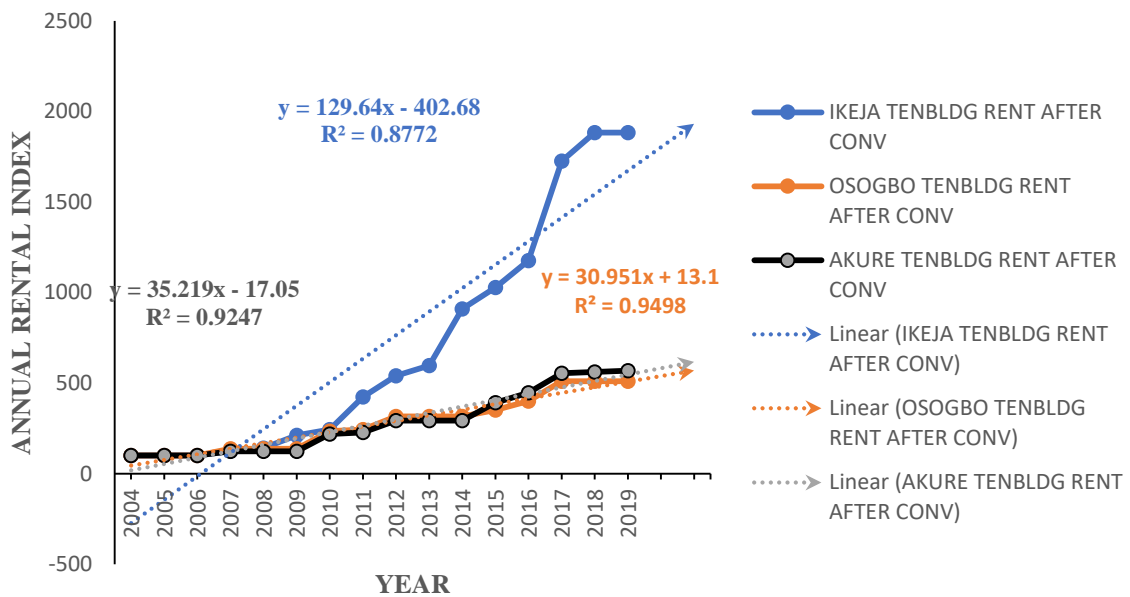
Figure 4.6 Annual Rental Index Trend for Tenement Building After Use Conversions in Ikeja, Akure and Osogbo

Figures 4.5 and 4.6 trend lines for both uses indicated an upward movement for all the uses, with Ikeja rental performance having a distinctive trend. Akure and Osogbo rentals for both uses intertwined with a relative volatile but conservative trend compares with Ikeja rental index trend. The sudden change in Akure property rental was attributed to demographic, economic and improved environmental attributes.

194

From the above analysis, it has become more apparent that Ikeja rental performance is higher than that of Akure and Osogbo. It may not be unconnected to the Lagos property market maturity, the effect of population explosion and urbanisation, neighbourhood attributes, socio-economic factors and political reasons. Akure and Osogbo share a lot of common characteristics in their property market outlook. This factor and other factors contributed to the similarities shared in their rental performances, as shown by the trend lines for all the property classes studied.

The rental property high demand in the study areas has led to stiff competition among commercial property users and residential property users. As observed in the property markets studied, conversions of use that were done are majorly from residential use to such commercial uses as pharmaceutical stores, boutiques and textile shops, small business offices and eateries, as in plate I

Plate I: converted two and three-bedroom bungalows to pharmaceutical store, boutique and eateries in Ikeja

Plate II: A three-bedroom storey building converted to offices and business centres in Ikeja.

Property partially affected by previous road expansion exercise are renovated, converted and put to use. Most of these conversions are done with complete disregard for the existing planning laws. Parking spaces and other similar facilities were not provided, and setbacks from the road were not observed (see plate III).

Plate III: Converted property in Osogbo with inadequate setback and parking spaces due to road expansion.

The conversions rate and the number of properties converted tend to be higher than those supplied to the property market. Since the supply for both uses cannot meet demand, prices continue to soar or move upward. Hence the rent for both after use and before use conversions are on the increase. Before use conversions, rental increases due to the depletion in the available residential housing stock (conversions from residential use to commercial uses). After use conversions, rental increases due to demand pressure resulting from the available stock's inability to meet the demand for its use. The study further observed that numerous conversion works were ongoing when collecting data (see plate IV).

Plate IV: On-going alteration/ conversion exercise in Ikeja

Therefore, it is evident from the performances of rent in all the study areas that there are consistent changes in the use of buildings (invariably land use) within the period under consideration. As evident in Plates I to IV, the use transitions of property exhibited in the study areas are basically in the form of the conversions of purpose-built residential apartments to offices, warehouses, shops and stores or the alteration/renovations and at the extreme the reconstruction of existing residential premises for commercial uses. However, mixed-use development is currently being advocated for in several cities of the developed world. Where this is done within the ambit of the law, the advantages are always enormous. In Nigeria, the growing phenomenon is the humungous rate of illegal conversions of land uses with significant negative consequences on city aesthetics. Plates V below shows a typical Nigerian example where front flats are used for commercial, the back flat for residence with cars parked on the road.

Plate V: Mixed-use Property in Osogbo without setback

4.4   Detail Analysis of Locational Average Annual Rental Performances

Detail average rental analysis of property in each of the various locations studied was done to determine property rentals' variation in the study areas. The determination of rental variations in the study areas provided answers to the Research Questions Three and Four, and Objectives Three and Four.

4.4.1   Osogbo locational rental analysis (Fagbewesa Area)

Table 4.29 presents the average annual rental values, calculated mean scores, standard deviation and average annual rental growth differentials for before and after use conversions for two, three and tenement property in Fagbewesa, Osogbo. Annual rental growth for two bedrooms was highest in 2019 (₦ 40,000), three bedrooms in 2018 and 2019 at ₦ 50,000, while that of tenement building was from 2017 to 2019 at ₦ 6,000 each year. From the table, 2015 and 2016 proved to be a relatively bad rental year for three-bedroom and tenement

200

property types in Fagbewesa; however, the country's economic turndown is a reason for the volatile rental performances.

Table 4.29: **Average Annual Rental growth of Two, Three and Tenement Buildings in Fagbewesa, Osogbo**

| Year | Converted two-bedroom Rental values | | | Converted Three-bedroom Rental values | | | Converted Tenement Building Rental values | | |
	After Conv	Before Conv	Diff	After Conv	Before Conv	Diff	After Conv	Before Conv	Diff
2004	25000	20000	5,000	35000	25000	10,000	5400	4200	1,200
2005	25000	20000	5,000	35000	25000	10,000	5400	4200	1,200
2006	25000	20000	5,000	35000	25000	10,000	5400	4200	1,200
2007	45000	30000	15,000	65000	35000	30,000	5400	4200	1,200
2008	45000	30000	15,000	65000	35000	30,000	5400	4200	1,200
2009	65000	50000	15,000	30000	25000	5,000	4200	3500	700
2010	65000	50000	15,000	30000	25000	5,000	4200	3500	700
2011	65000	50000	15,000	75000	65000	10,000	7200	5400	1,800
2012	65000	50000	15,000	75000	65000	10,000	14400	9600	4,800
2013	80000	70000	10,000	100000	75000	25,000	14400	9600	4,800
2014	80000	70000	10,000	100000	75000	25,000	14400	9600	4,800
2015	80000	70000	10,000	80000	75000	5,000	9500	9000	500
2016	100000	85000	15,000	80000	75000	5,000	9500	9000	500
2017	100000	85000	15,000	150000	120000	30,000	36000	30000	6,000
2018	100000	85000	15,000	200000	150000	50,000	36000	30000	6,000
2019	160000	120000	40,000	200000	150000	50,000	36000	30000	6,000
Mean	**70313**	**56563**	**13,750**	**84688**	**65313**	**19,375**	**13,300**	**10,638**	**2,662**
STD	**35141**	**28967**	**6,174**	**55211**	**42952**	**12,259**	**11,813**	**9,899**	**1,914**

Note: * Conv = conversion *Diff = Differences, *STD = Standard Deviation
Source: Field survey data (2019)

The trend line was used to explain the rental trend movement of both the after and before use conversions of converted two- and three-bedrooms property types and tenement buildings in the study area. The trend line is considered a necessary model as it helped in the graphical

display of the rental performance of both uses and the effect of the independent variable on the dependent variable.
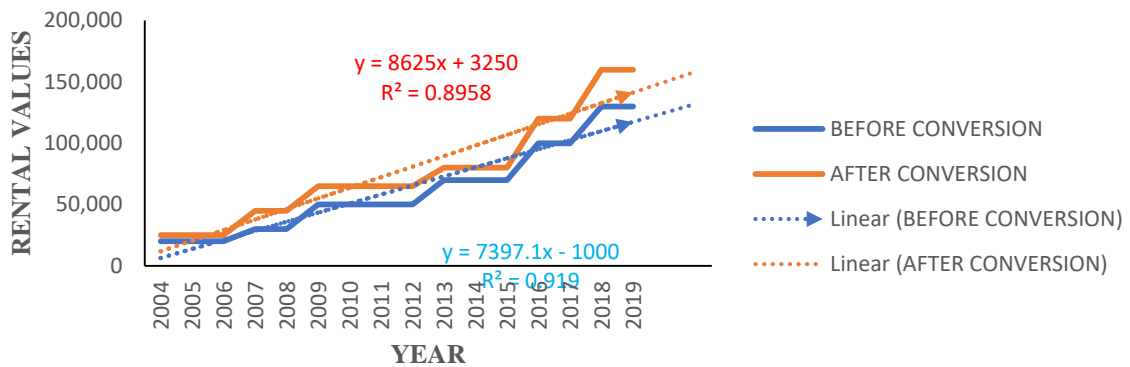
Figure 4.7: Trend Analysis of Two Bedroom Rental Values at Fagbewesa, Osogbo

Figure 4.7 shows an upward increase in the rental values of two-bedroom property both before and after use conversions, as indicated by the trend line. 2004 and 2006 witnesses a steady rental trend with five years dipping (2010 to 2014). However, the market rent began to enjoy an unsteady rise from 2015 and maintained to 2019 as predicated by the predictive trend lines for both use conversions. Furthermore, the predictive model fit measured by explanatory power (R^2) accounted for 89.58% and 91.90% of the variable growth in the rent of both before and after use conversions in the study area.

Figure 4.8 revealed a consistent and steady upward increase in the rental values of converted three-bedroom for both before and after use conversions between 2004 and 2005 before using conversions commanding relatively higher rent. 2006 and 2008 show a rise in both uses' rental values overlapping after use conversions topping the rental market in Fagbewesa. The market witnesses another dip between 2009 and 2011, which was not unconnected to its unstable economic condition. However, the market recovered in 2012 and maintained the volatile movement to 2019, as indicated by the predictive trend lines. Furthermore, the

predictive model fit measured by explanatory power (R^2) accounted for 86.04% and 83.94% of the variable growth in the rent of both before and after use conversions in the study area.

Figure 4.9 revealed an unsteady upward increase in a tenement building's rental values for both Before and After Use conversions, as indicated by the trend lines. They exist no statistically significant variations in the rent of converted tenement building and those used purely as residential between 2004 to 2006 and 2009 to 2010. However, by 2010, volatile rent differential became evident, which continued until 2019 as indicated by the predictive trend lines before and after use conversions. Explanatory power (R^2) accounted for 87.71% and 88.53% of the variable growth in the rent for both use conversions in the study area (measured by predictive model fit).
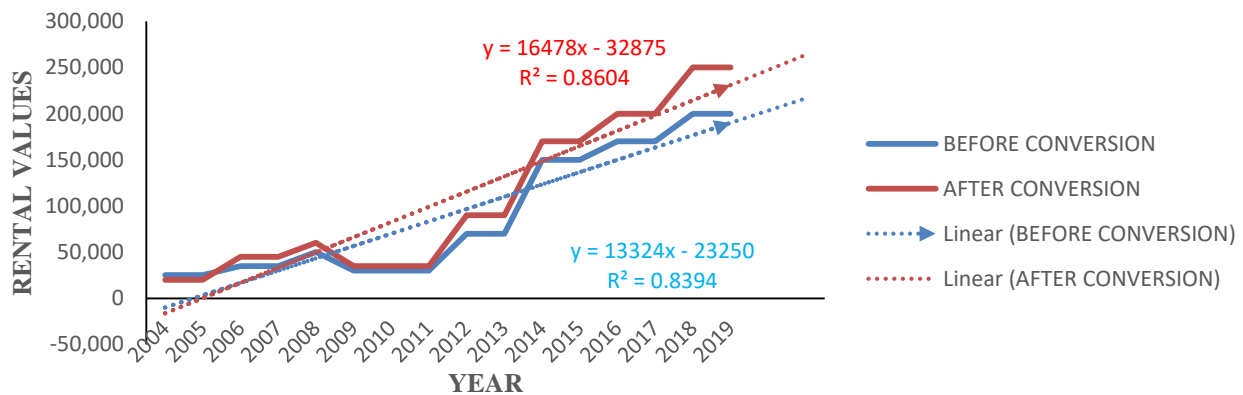
Figure 4.8: Trend Analysis of Three-Bedroom Rental Values at Fagbewesa, Osogbo
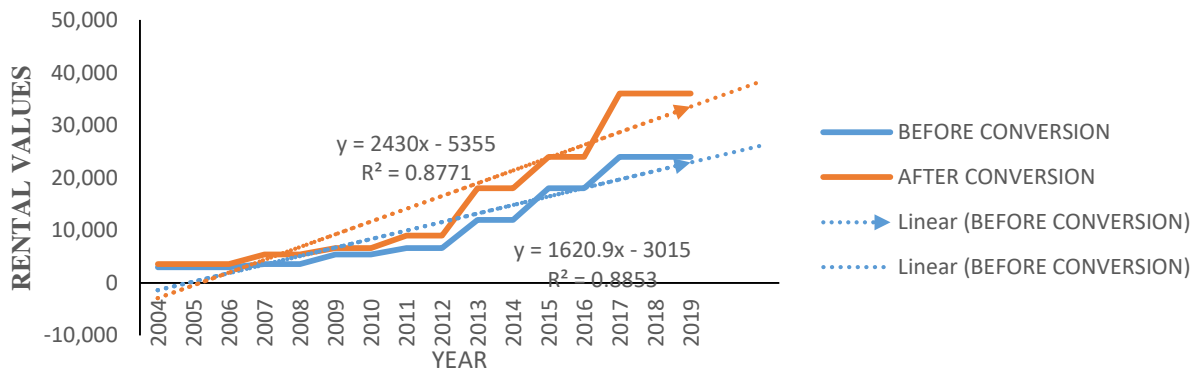
Figure 4. 9: Trend Analysis of Tenement Building Rental Values at Fagbewesa, Osogbo

203

4.4.2 Alekwuodo, area Osogbo locational rental analysis

Table 4.30 revealed both the mean score and the calculated standard deviation of the rental performance of converted two and three-bedroom property and tenement buildings in the Alekwuodo area of Osogbo, the Osun state capital.

Table 4.30: **Average Annual Rental growth of Two, Three and Tenement Buildings in Alekwuodo**

Year	Converted Two Bedroom Rental Values			Converted Three Bedroom Rental values			Converted Tenement Building Rental Values		
	After Conv	Before Conv	Diff	After Conv	Before Conv	Diff	After Conv	Before Conv	Diff
2004	30000	20000	10,000	45000	35000	10,000	14000	10000	4,000
2005	30000	20000	10,000	45000	35000	10,000	14000	10000	4,000
2006	30000	20000	10,000	45000	35000	10,000	14000	10000	4,000
2007	40000	30000	10,000	60000	45000	15,000	24000	16000	8,000
2008	40000	30000	10,000	60000	45000	15,000	24000	16000	8,000
2009	40000	30000	10,000	45000	35000	10,000	24000	16000	8,000
2010	65000	50000	15,000	45000	35000	10,000	32000	24000	8,000
2011	65000	50000	15,000	100000	75000	25,000	32000	24000	8,000
2012	65000	50000	15,000	100000	75000	25,000	32000	24000	8,000
2013	80000	65000	15,000	100000	75000	25,000	32000	24000	8,000
2014	80000	65000	15,000	120000	100000	20,000	32000	24000	8,000
2015	80000	65000	15,000	120000	100000	20,000	32000	28000	4,000
2016	80000	65000	15,000	150000	120000	30,000	32000	28000	4,000
2017	120000	80000	40,000	150000	120000	30,000	35000	28000	7,000
2018	120000	80000	40,000	200000	150000	50,000	35000	30000	5,000
2019	120000	80000	40,000	200000	150000	50,000	45000	32000	13,000
Mean	**67813**	**50000**	17,813	**99063**	**76875**	22,188	**28313**	**21500**	6,813
STD	**32040**	**22361**	9,679	**54228**	**41868**	12,360	**8693**	**7430**	1,263

Note: * conv = conversion *Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)

Table 4.30 shows a relatively better mean score of After Use conversions and better property rental appreciations in 2017, 2018 and 2019 for converted two bedrooms, three-bedroom and tenement property. The study further illustrated rental trends for after and before use rental performances of each property classes studied, as shown in figures 4.10; 4.11 and 4.12.
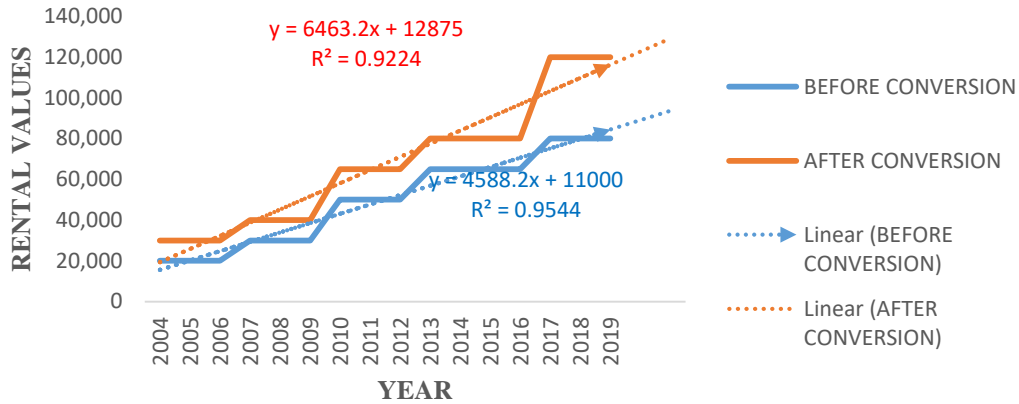
Figure 4.10: **Trend Analysis of Two Bedroom Rental Values in Alekwuodo (Osogbo)**
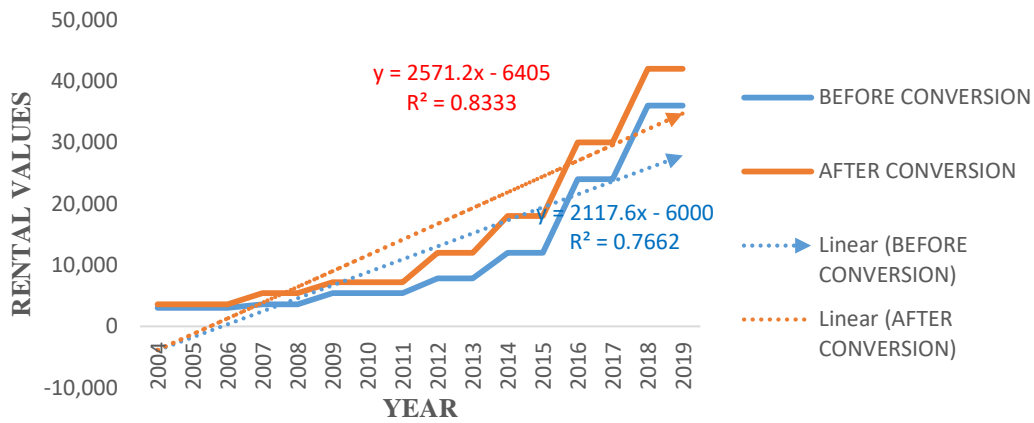
Figure 4.11: **Trend Analysis of Three-bedroom Rental Values in Alekwuodo (Osogbo)**
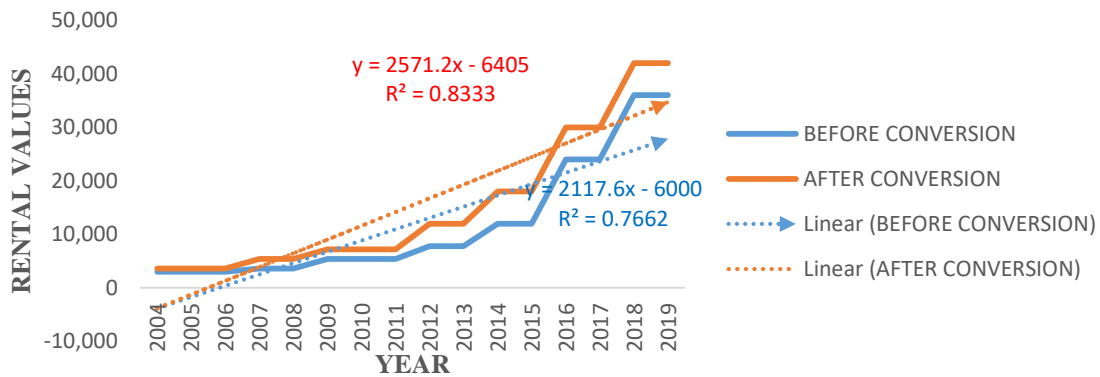
Figure 4.12: **Trend Analysis of Tenement building Rental Values in Alekwuodo (Osogbo)**

The trend line analysis of two-bedroom rental values for both before and after use conversions in Alekwuodo, Osogbo between 2004 and 2019 indicated a steady and consistent upward growth all through the years. However, after use conversions, the rental trends indicated a batter rental differential or growth rate with a sharp increase and a wider growth margin noticeable and maintained from 2016. Hence an indication that investment in conversions of use from residential to commercial use could be a wise and better option than allowing the property to be used for residential purposes in Alekwuodo. The influence of Isiaka Adeleke Freeway, the proximity of Alekwuodo to Olaiya Junction and Okefia could be the reasons for the high demand for commercial property and rental growth in the area. A further test of a future forecast for the next three years in respect of rental performance in the study area from 2020 to 2023 was made; the outcome revealed a continuous and steady upward growth of property (two bedrooms) rentals values in Alekwuodo with after use conversions exhibiting a superior growth rate throughout prediction.

The explanatory variable and the coefficient of determination values further explained the reliability level of the trend and the forecast accuracy of both use conversions in the study area. The forecast's reliability and accuracy as determined by the explanatory power (R^2) is 95.44% and 92.22%. Therefore, it implies that the model accounted for 95% and 92% of the variable growth in rents. Thus, it can be inferred from the above trend analysis that two-bedroom rental values performance for before and after use conversions in the study area had steady and consistent growth over the period, which is likely to be maintained over the next three years predicated by the predictive trend lines.

Figure 4.11 revealed a steady rental growth from 2004 to 2019 with a slight rental dip between 2014 and 2015 for three-bedroom. Other rental growth forecast covering three years from 2020 revealed a positive rental growth for both uses but with the after-use conversions presenting a more meaningful growth rate within the study period. The explanatory power (R^2) revealed the level of reliability and the accuracy of the model. The model accounted for 72.77% and 76.61% of the variable growth in rent before and after use conversions. The above trend analysis, therefore, proved the prospect of the financial return (rent) of use conversions from residential to commercial use as predicated by the predictive trend lines

Figure 4.12 revealed a positive relationship between time and rental values of tenement buildings before and after use conversions in Alekwuodo, as indicated by the trend lines. Rent passing on this property type before and after use conversions maintain steady and consistent growth with little or no significant differentials between 2004 and 2009. The property rental values experience a dipping reaction to the market forces of demand and supply between 2009 and 2015. However, a sudden upward trend was observed between 2015 to 2019, with a relatively broader margin in the rents between the two uses. The outcome of the model fit / explanatory power (R^2) accounted for 76.62% and 83.33% of the variable growth in the rentals of both use conversions.

4.4.3 Egbetedo area, Osogbo locational rental analysis

Table 4.31 shows the average annual rent, annual rental differentials, mean score and standard deviation of two bedrooms, three-bedroom and tenement property in Egbetedo areas of Osogbo.

Table 4.31:   Average Annual Rental growth for Before and After Use (Conversion) Property

EGBETEDO

Property Type	Rent for converted two-bedroom Bungalow/flat [N]			Rent for converted three-bedroom Bungalow/flat [N]			Rent for converted tenement Building [N]		
Year	After conv	Before conv	Difference	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	25000	20000	15,000	35000	25000	10,000	4200	3500	700
2005	25000	20000	15,000	35000	25000	10,000	4200	3500	700
2006	25000	20000	15,000	35000	25000	10,000	4200	3500	700
2007	25000	20000	15,000	50000	35000	15,000	4200	3500	700
2008	35000	25000	10,000	50000	35000	15,000	4200	3500	700
2009	35000	25000	10,000	30000	25000	5,000	4200	3500	700
2010	35000	25000	10,000	30000	25000	5,000	4200	3500	700
2011	35000	25000	10,000	60000	50000	10,000	4800	4200	600
2012	40000	35000	5,000	60000	50000	10,000	12000	9000	3,000
2013	40000	35000	5,000	75000	60000	15,000	12000	9000	3,000
2014	40000	35000	5,000	75000	60000	15,000	12000	9000	3,000
2015	45000	35000	10,000	65000	60000	5,000	12000	9000	3,000
2016	45000	35000	10,000	65000	60000	5,000	12000	9000	3,000
2017	55000	40000	15,000	120000	75000	45,000	21600	18000	3,600
2018	55000	40000	15,000	120000	75000	45,000	21600	18000	3,600
2019	80000	50000	30,000	120000	75000	45,000	21600	18000	3,600
Mean	40000	33438	6,562	64063	47500	16,563	9938	7981	1,957
STD	17029	15782	1,247	31529	19579	11,950	6763	5545	1,218

Note: * conv = conversion *Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)

Table 4.31 revealed that the rental growth for converted two bedrooms was at its peak in 2019. Converted three-bedroom and tenement property experienced a substantial increase in rent from 2017 to 2019. However, 2009/2010 and 2015/2016 seems not to be good years for three bedrooms rental values due to the dip experienced. Figures 4.13,4.14 and 4.15 shows the trend lines for the rental performances.
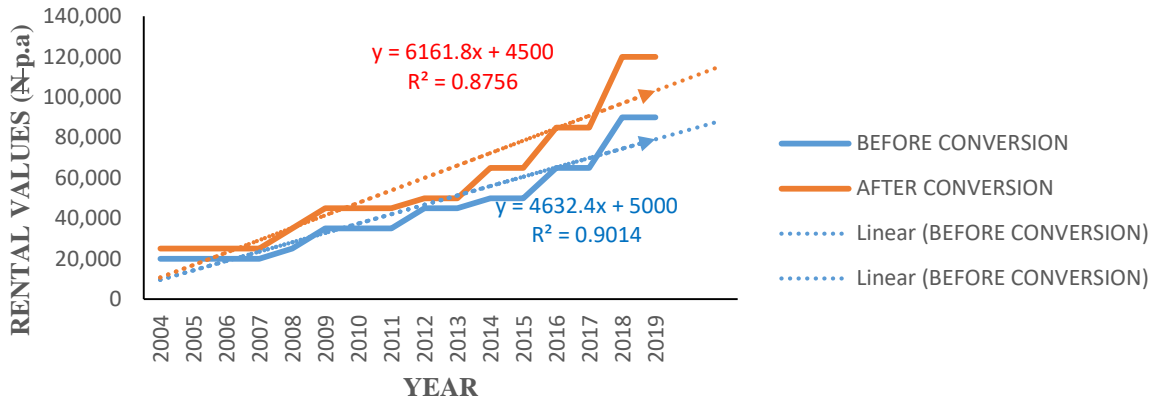
Figure 4:13: **Trend Analysis of Two Bedroom Rental Values in Egbetedo (Osogbo)**
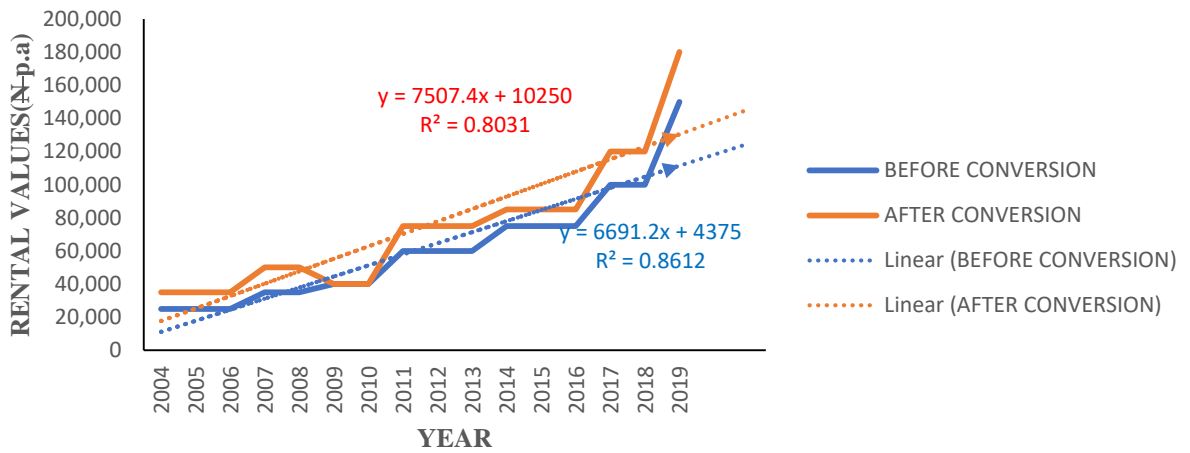
Figure 4.14: **Trend Analysis of Three-Bedroom Rental Values in Egbetedo (Osogbo)**
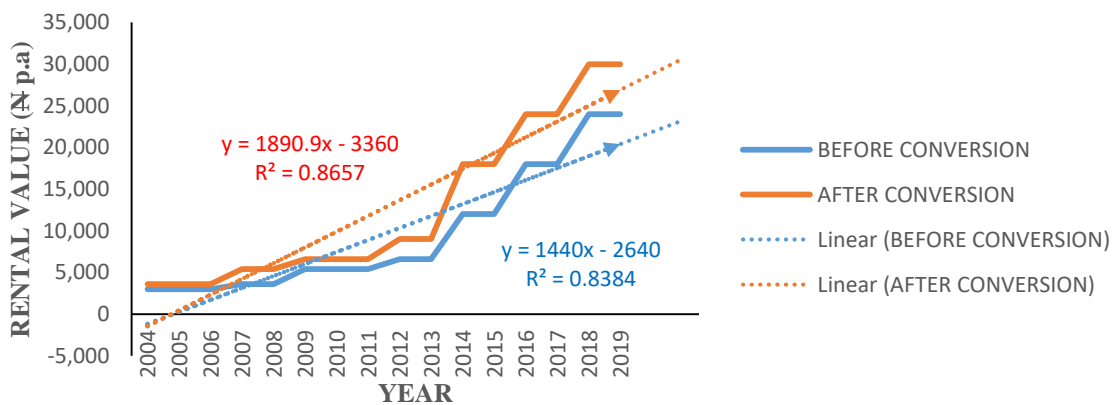
Figure 4.15: **Trend Analysis of Tenement Building Rental Values in Egbetedo**

Figure 4.13 is the trend model, which revealed a positive upward rental trend for both before and after use conversions of the two-bedroom building in the Egbetedo area of Osogbo, the Osun state capital. They exist a gradual but consistent widening gap between before use conversions rent and after use conversions rent which is maintained to 2017 as indicated by the trend lines. Explanatory power (R^2) was used to determine the model fit, thus accounted for 90.14% and 87.56% of the variable growth in the rent of before and after use converted two-bedroom buildings in Egbetedo. It implies a prospect of continuous rise in the price of two-bedroom buildings in the study area but with after use conversions having better growth prospects as indicated by the predictive trend line.

Figure 4.14 revealed an upward rental trend line for both use conversions (before and after) with a severe slump or crash between 2009 and 2010. The three-bedroom prices started rising from 2011 but dipped in 2015/2016 and maintained a steady rise till 2019. Explanatory power (R^2) revealed that the model accounted for 86.12% and 80.31% in the rental growth of both before and after use conversions variables of three-bedroom property in Egbetedo. It implies that three bedrooms' conversions (after use conversions) from residential to commercial use in Egbetedo are more attractive and in high demand.

Figure 4.15 revealed a consistent upward increase in tenement building's rental values both before and after use conversions, as indicated by the trend line. The trend line revealed an insignificant variance in the rent of converted tenement building and those used purely for a residence between 2004 and 2006. However, by 2007 volatile rental differential became evident, which continued till 2019 as indicated by the predictive trend lines for both before and after use conversions. Furthermore, the predictive model fit measured by the explanatory

power (R^2) accounted for 83.84% and 86.57% of the variable growth in the rent of both use conversions in the study area.

4.4.4 Gbongon road area, Osogbo locational rental analysis

Table 4.32 is an average annual rental value table that shows the mean score, standard deviation and average annual rental growth of two, three bedrooms and tenement buildings along Gbongon Road, Osogbo.

Table 4.32: **Average Annual Rental growth for Before and After Use (Conversion) Property**

| LOCATION	**Gbongon Road, Osogbo**								
	Rent for Converted Two Bedroom Bungalow/flat [N]			Rent for Converted Three Bedroom Bungalow/flat [N]			Rent for Converted Tenement Building [N]		
Year	After conv	Before conv	Difference	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	30000	25000	5,000	40000	30000	10,000	6,000	4,800	1,200
2005	30000	25000	5,000	40000	30000	10,000	6,000	4,800	1,200
2006	45000	35000	10,000	40000	30000	10,000	6,000	4,800	1,200
2007	45000	35000	10,000	60000	40000	20,000	6,000	4,800	1,200
2008	50000	45000	5,000	60000	40000	20,000	6,000	4,800	1,200
2009	50000	45000	5,000	60000	40000	20,000	7,200	5,400	1,800
2010	50000	65000	-15,000	85000	60000	25,000	7,200	5,400	1,800
2011	50000	65000	-15,000	85000	60000	25,000	7,200	5,400	1,800
2012	130000	75000	55,000	85000	60000	25,000	18,000	14,400	3,600
2013	170000	130000	40,000	85000	60000	25,000	18,000	14,400	3,600
2014	170000	130000	40,000	130000	100000	30,000	18,000	14,400	3,600
2015	180000	150000	30,000	130000	100000	30,000	18,000	14,400	3,600
2016	180000	150000	30,000	200000	150000	50,000	36,000	30,000	6,000
2017	200000	160000	40,000	200000	150000	50,000	36,000	30,000	6,000
2018	200000	160000	40,000	250000	200000	50,000	36,000	30,000	6,000
2019	200000	160000	40,000	300000	250000	50,000	36,000	30,000	6,000
Mean	**111250**	**90938**	**20,312**	**115625**	**87500**	28,125	**16,725**	**13,613**	3,112
STD	**71798**	**54840**	**16,950**	**80372**	**66783.**	13,589	**12,490**	**10,543**	1,947

Note: * conv = conversion *Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)

Table 4.32 revealed rental growth differentials between rent for both After and Before Use of converted two- and three-bedrooms property and tenement buildings. Converted two-bedroom had an unstable rental growth with negative rental growth in 2010 and 2011.
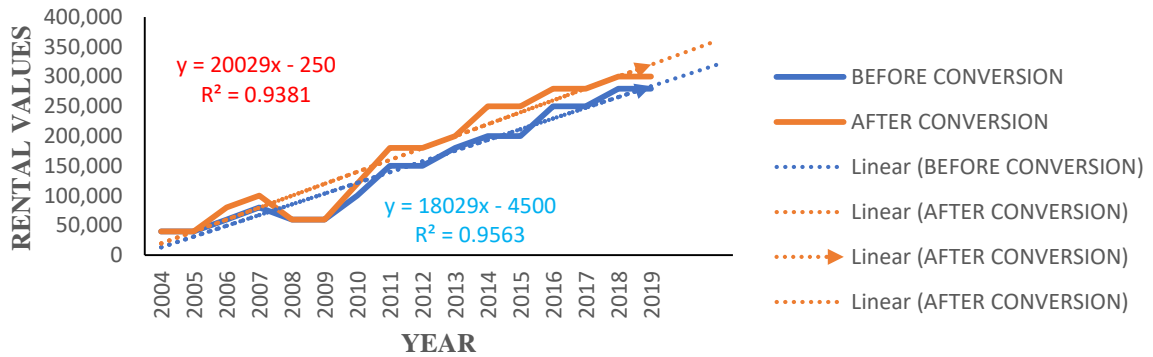
Figure 4.16: Trend Analysis of Two Bedroom Rental Values at Gbongon Road, Osogbo
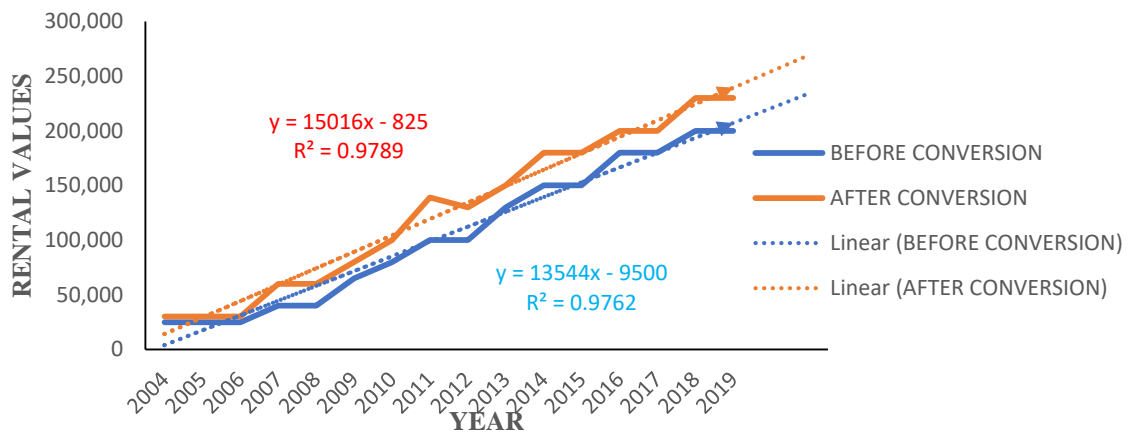
Figure 4.17: Trend Analysis of Three-Bedroom Rental Values at Gbongon Road, Osogbo
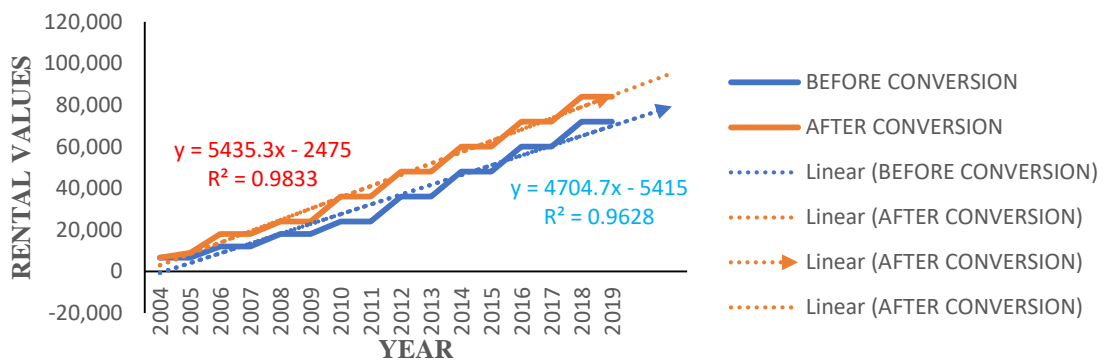
Figure 4.18: Trend Analysis of Tenement Building Rental Values at Gbongon Road, Osogbo

Figure 4.16 revealed earnest dip rental performances before and after use conversions between 2008 and 2009 with a negative rental performance in 2010 and 2011. The increased rental values for two-bedroom property for both use conversions from 2012 and maintained to 2019 as indicated by the trend line before and after use conversions. Furthermore, the predictive model fit measured by the explanatory power (R^2) accounted for 93.81% and 95.63% of the variable growth in the rent of both use conversions in the study area. It thus revealed the suitability of the predicting model for the research.

Figure 4.17 below shows an upward increase in the rental values of three-bedroom property both before and after use conversions, as indicated by the trend lines. 2004 and 2006 witnesses a steady rise in the rental trend. However, a reasonable rental decline was observed from 2008 with negative performances in 2010 and 2011. As indicated by the predictive trend lines for both before and after use conversions, the unstable rental upward recovery started and continues till 2019. Furthermore, the predictive model fit measured by the explanatory power (R^2) explains the accuracy and reliability of the model used for the predictions accounted for 97.89% and 89.62% of the variable growth in the rent for both use conversions.

Figure 4.18 revealed a consistent upward rental movement for both before and after use conversions of tenement buildings as indicated by the trend line. 2004 and 2005 witnesses gradual but steady rental trend but started to maintain a reasonable gap in rent from 2006, which was sustained to 2019 as indicated by the predictive trend lines for both use conversions. Furthermore, the predictive model fit measured by the explanatory power (R^2) accounted for 98.33% and 96.28% of the variable growth in the rent of both use conversions. It further explained the model's level of reliability and accuracy as a test kit for the research.

4.4.5 Obafemi Awolowo way, Osogbo locational rental analysis

Table 4.33 revealed the mean score, standard deviation, rental growth and average annual

rent of two and three bedrooms and tenement buildings on Obafemi Awolowo way in

Osogbo. The After Use mean scores and calculated standard deviation are higher than that of

the Before Use. It further depicted in graphical rental trend lines.

Table 4.33:   Average Annual Rental growth for Before and After Use (Conversion) Property

LOCATION	Obafemi Awolowo, Osogbo								
	Rent for converted two-bedroom Bungalow/flat [N]			Rent for converted three-bedroom Bungalow/flat [N]			Rent for converted tenement building [N]		
Year	After conv	Before conv	Difference	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	30000	25000	5,000	45000	35000	10,000	6000	5400	600
2005	30000	25000	5,000	45000	35000	10,000	6000	5400	600
2006	45000	35000	10,000	45000	35000	10,000	6000	5400	600
2007	45000	35000	10,000	75000	50000	25,000	9600	6000	3,600
2008	60000	50000	10,000	75000	50000	25,000	9600	6000	3,600
2009	60000	50000	10,000	75000	50000	25,000	9600	6000	3,600
2010	100000	70000	30,000	100000	80000	20,000	36000	24000	12,000
2011	100000	70000	30,000	100000	80000	20,000	36000	24000	12,000
2012	150000	85000	65,000	150000	120000	30,000	36000	24000	12,000
2013	150000	120000	30,000	150000	120000	30,000	36000	24000	12,000
2014	150000	120000	30,000	150000	120000	30,000	36000	24000	12,000
2015	200000	150000	50,000	220000	180000	40,000	54000	48000	6,000
2016	250000	200000	50,000	220000	180000	40,000	54000	48000	6,000
2017	250000	200000	50,000	220000	180000	40,000	54000	48000	6,000
2018	250000	200000	50,000	320000	250000	70,000	54000	48000	6,000
2019	250000	200000	50,000	320000	250000	70,000	54000	48000	6,000
Mean	132500	102188	30,312	144375	113438	30,937	31050	24638	6,412
STD	85499	68288	17,211	91994	74603	17,391	20031	18043	1,988

Note: * conv = conversion *Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)
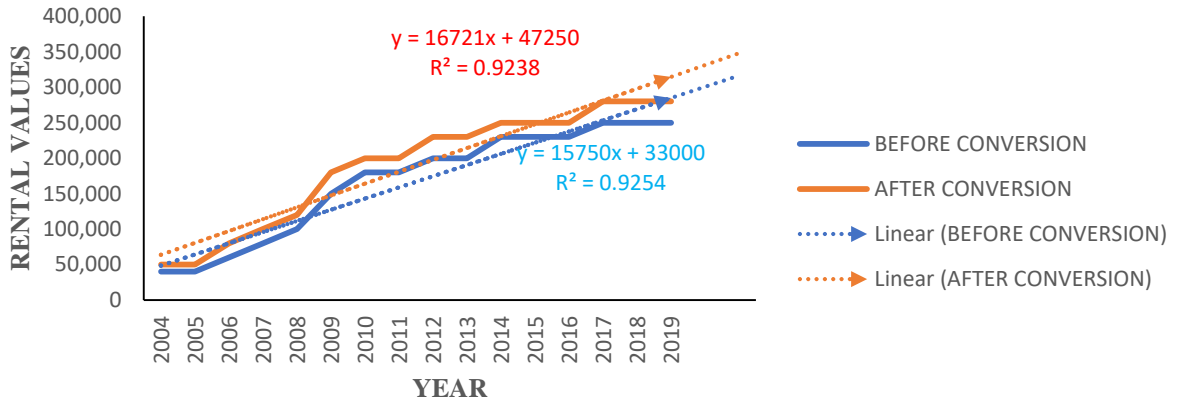
Figure 4.19: **Trend Analysis of Two Bedroom Rental Values at Obafemi Awolowo Way, Osogbo**
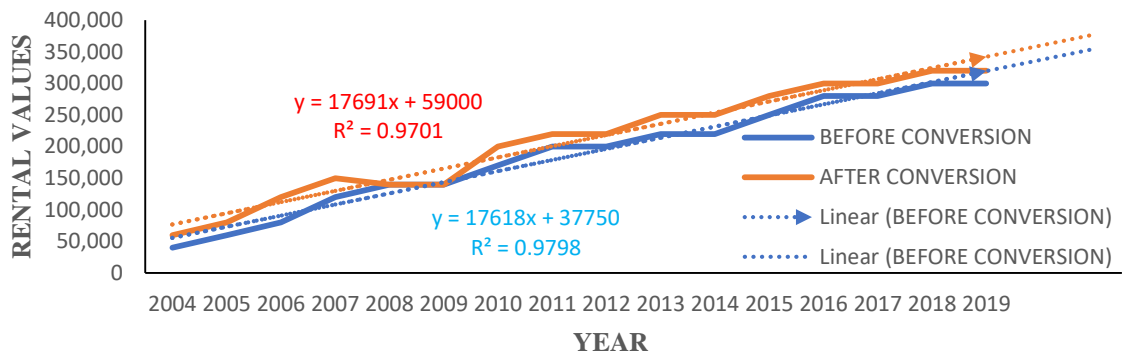
Figure 4.20: **Trend Analysis of Three-Bedroom Rental Values at Obafemi Awolowo Way, Osogbo**
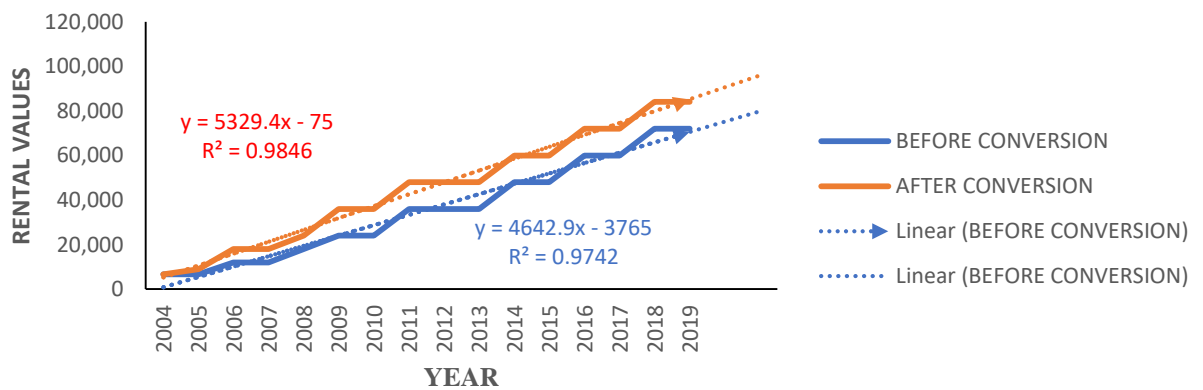
Figure 4.21: **Trend Analysis of Tenement Building Rental Values at Obafemi Awolowo Way, Osogbo**

Figure 4.19 below depicted the trend line analysis of both before and after use conversions of two bedrooms along Obafemi Awolowo way, Osogbo. The trend lines revealed a sudden increase in rental values from 2008, which is a dipping year for most property in all other locations and was sustained to 2019, as indicated by the trend lines. The explanatory power (R^2) was used to measure the model fit's reliability and accuracy. The coefficient of determination accounted for 92.38% and 92.54% of the variable growth in the rent of both uses in the location. It explains the suitability of the model for this research. A further predicting test for additional three years from 2019 was conducted for the rental growth of both uses, and the test revealed an upward movement in rent that is likely to be sustained for the next three years. It could be inferred from the result of the R^2 that they exist no substantial variation between the rent of after use and before use conversions of two-bedroom property along Obafemi Awolowo way Osogbo.

Figure 4.20 depicted the trend line analysis of both before and after use conversions of three bedrooms along Obafemi Awolowo way, Osogbo. The trend lines revealed a sudden dip in rental values from 2008 and 2010, alluded to its economic instability. However, the market picked in 2011with rental volatility sustained to 2019 as indicated by the trend lines. The coefficient of determination, also known as the explanatory power (R^2), was used to measure the model fit's reliability and accuracy. The coefficient of determination accounted for 97.01% and 97.98% of the variable growth in rent of both uses in the location. This explains the suitability of the model for this research. A further predicting test for three years from 2019 was conducted for both uses' rental growth; the test revealed an upward movement in rent likely to be sustained for the next three years.

Figure 4.21 shows the rental performance of before use and after use conversions of tenement building along Obafemi Awolowo way Osogbo, Osun state. The figure revealed that after use-value started increasing high and before use conversions from 2006. The gap continued till 2019, as indicated by the predictive trend lines. The R^2 measured the level of reliability and accuracy of the model fit. The coefficient of determination accounted for 98.46% and 97.42% of the variable growth in rent

4.4.6   Oke Aro quarters, Akure locational rental analysis

Table 4.34 revealed the mean score, standard deviation, rental growth and average annual rent of two and three bedrooms and tenement buildings along Oke Aro Quarters. The After Use mean scores and calculated standard deviation are higher than that of the Before Use. Though both uses exhibit significant positive growth in rent. Thus, further depicted in graphical rental trend lines below

Table 4.34:   Average Annual Rental growth for Before and After Use (Conversion) Property

LOCATION	Oke Aro Quarters, Akure								
	Rent for converted two-bedroom tenement Bungalow/flat [N]			**Rent for converted three-bedroom Bungalow/flat [N]**			**Rent for converted Building [N]**		
Year	After conv	Before conv	Difference	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	20,000	15,000	5,000	80,000	20,000	60,000	1,500	1,500	-
2005	20,000	15,000	5,000	80,000	20,000	60,000	1,500	1,500	-
2006	20,000	15,000	5,000	80,000	20,000	60,000	1,500	1,500	-
2007	20,000	15,000	5,000	80,000	30,000	50,000	2,400	1,800	600
2008	20,000	15,000	5,000	45,000	30,000	15,000	2,400	1,800	600
2009	35,000	25,000	10,000	45,000	50,000	-5,000	4,200	3,000	1,200
2010	35,000	25,000	10,000	70,000	50,000	20,000	7,200	6,000	1,200
2011	35,000	25,000	10,000	70,000	50,000	20,000	18,000	12,000	6,000
2012	70,000	50,000	20,000	100,000	80,000	20,000	18,000	12,000	6,000
2013	70,000	50,000	20,000	100,000	80,000	20,000	18,000	12,000	6,000
2014	120,000	90,000	30,000	120,000	115,000	5,000	42,000	24,000	18,000
2015	120,000	90,000	30,000	120,000	115,000	5,000	42,000	24,000	18,000
2016	120,000	90,000	30,000	200,000	170,000	30,000	42,000	24,000	18,000
2017	150,000	120,000	30,000	200,000	160,000	40,000	60,000	42,000	18,000
2018	150,000	120,000	30,000	280,000	230,000	50,000	60,000	42,000	18,000
2019	180,000	150,000	30,000	280,000	230,000	50,000	60,000	42,000	18,000
Mean	1185000	910000	275,000	1950000	1450000	500,000	380700	251100	129,600
STD	56752	46075	11250	76330	72408	21718	23229	15426	7977

Note: * conv = conversion *Diff = Differences, *STD = Standard Deviation
Source: Field survey data (2019)
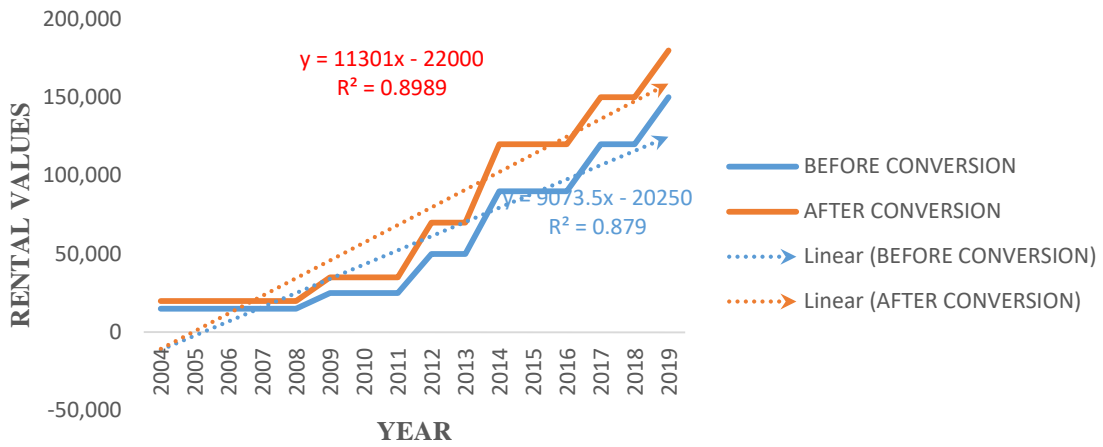
Figure 4.22: Trend Analysis of Two-Bedroom Rental Values at Oke Aro Quarters, Akure
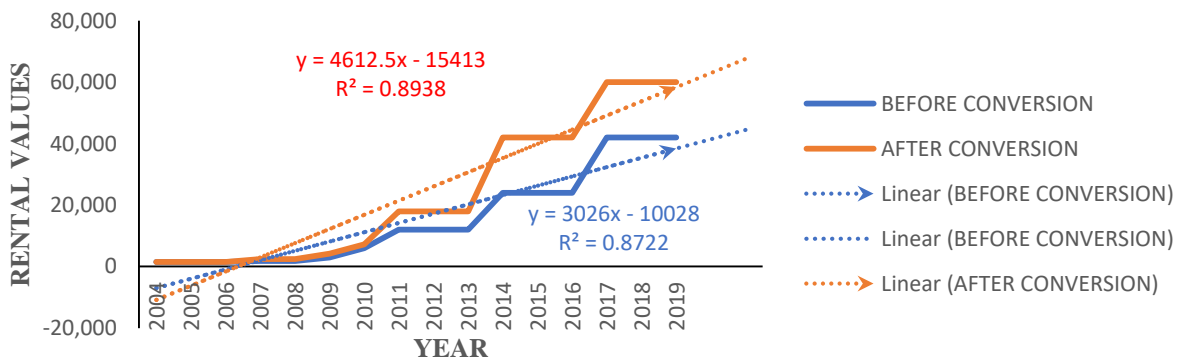
Figure 4.23: Trend Analysis of Three-Bedroom Rental Values at Oke Aro Quarters,
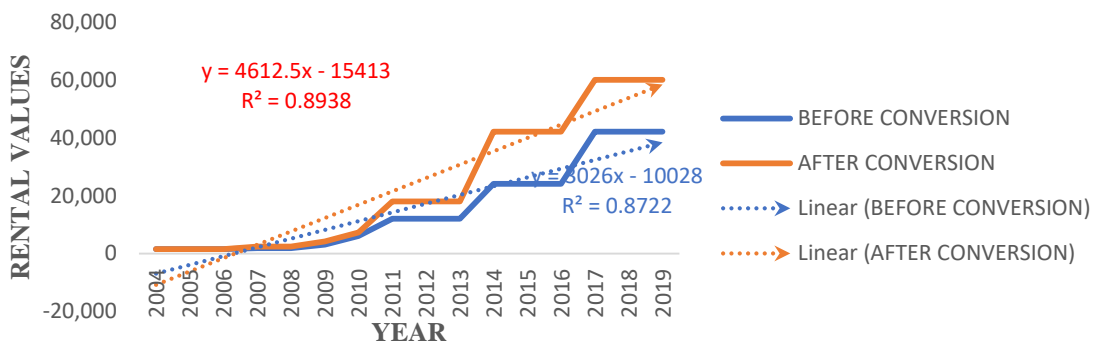
Figure 4.24: Average Annual Rental Trend of Tenement Property at Oke Aro, Akure

Figure 4.22 shows that both uses have gradual and steady rental movement from 2004 to 2008 with sudden volatility, especially in the rent of After use of converted two-bedroom. Both After and Before use rental of converted two-bedroom in Oke Aro indicated a rising movement rental trend as shown by their respective trend lines, with the Before use rent displaying the least level of volatility when compared with the rental trend of After use of converted two bedrooms. Hence, the smoothed trend lines indicated a consistent but volatile increase in rental growth from 2011 to 2019. The study further forecasts the rental performances of converted two bedrooms (After and Before use) in the areas understudy for additional three years; from 2020, the study's outcome revealed a consistent growth in rent of the property types. The accuracy of the forecast and its reliability level determined by the R^2 value for both use conversions of two bedrooms property returns were 89.89% and 87.9%, respectively. The least-square regression equation used for the analysis to predict rental performance indicated a steady rental growth for both use types, which is likely to be maintained over the next three years, as displayed by the predictive trend lines.

Figure 4.23 revealed the gradual but steady upward rental movement of both After and Before uses with no significant differences in the rental performances of both uses in the first two years, that is, 2004 to 2006. From 2007 both uses began to experience an increase with the rent for converted three-bedrooms performing better than before use rent. In Oke Aro, the rental trend indicated the forecast accuracy and its reliability level for the trend as determined by R^2 value to be 91.46% and 88.86%. The least-square regression equation used for the analysis to predict rental performance indicated a steady rental growth for both use types, which is likely to be maintained over the next three years, as displayed by the predictive trend lines.

Figure 4.24 shows that both uses have gradual and steady rental movement from 2004 to 2010 with sudden volatility, especially in the rent of After use of converted tenement buildings. Both After and Before use rental of converted tenement buildings in Oke Aro indicated an upward volatile rental trend with a wide gap from 2013 to 2016 as shown by their respective trend lines, with the Before use rent displaying the least level of volatility when compared with the rental trend of After use of converted tenement buildings. Hence, the smoothed trend lines indicated a consistent but volatile increase in rental growth from 2011 to 2019. The study further forecasts the rental performances of converted tenement buildings (After and Before use) in the areas understudy for additional three years; from 2020, the study's outcome revealed a consistent growth in rent of the property types. The prediction accuracy and its reliability level for the trend as determined by R^2 value for both uses of converted tenement buildings were 89.38% and 87.22%. The least-square regression equation used for the analysis to predict rental performance indicated a steady rental growth for both use types, which is likely to be maintained over the next three years, as displayed by the predictive trend lines.

4.4.7 Araromi quarters, Akure locational rental analysis

Table 4.35 revealed the fluctuating average annual rental growth for all the property classes in the Araromi area. A crucial fact worthy of note is that all the rental growth for the various property classes exhibit a positive growth rate. Therefore, it suggested that investment in any property classes provided positive average annual growth within the study period.

Table 4.35: **Average Annual Rental growth for Before and After Use (Conversion) Property**

LOCATION	**Araromi, Akure**								
Property Type	Rent for converted two-bedroom Bungalow/flat [N]			Rent for converted three-bedroom Bungalow/flat [N]			Rent for converted tenement Building [N]		
Year	After conv	Before conv	Difference	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	25,000	20,000	5,000	55,000	40,000	15,000	3,600	2,400	1,200
2005	25,000	20,000	5,000	55,000	40,000	15,000	3,600	2,400	1,200
2006	25,000	20,000	5,000	55,000	40,000	15,000	3,600	2,400	1,200
2007	45,000	35,000	10,000	55,000	40,000	15,000	3,600	2,400	1,200
2008	45,000	35,000	10,000	80,000	60,000	20,000	6,000	3,600	2,400
2009	45,000	35,000	10,000	80,000	60,000	20,000	6,000	3,600	2,400
2010	75,000	50,000	25,000	80,000	60,000	20,000	6,000	3,600	2,400
2011	75,000	50,000	25,000	120,000	90,000	30,000	12,000	6,000	6,000
2012	75,000	50,000	25,000	120,000	90,000	30,000	12,000	6,000	6,000
2013	100,000	75,000	25,000	150,000	120,000	30,000	12,000	6,000	6,000
2014	100,000	75,000	25,000	150,000	120,000	30,000	24,000	12,000	12,000
2015	100,000	75,000	25,000	240,000	180,000	60,000	24,000	12,000	12,000
2016	140,000	100,000	40,000	240,000	180,000	60,000	42,000	24,000	18,000
2017	140,000	100,000	40,000	300,000	250,000	50,000	42,000	24,000	18,000
2018	180,000	150,000	30,000	300,000	250,000	50,000	60,000	42,000	18,000
2019	180,000	150,000	30,000	300,000	250,000	50,000	60,000	42,000	18,000
Mean	1375000	1040000	335,000	2380000	1870000	510,000	320400	194400	126,000
STD	52065	42151	11863	95315	79977	16621	20093	13604	6942

Note: * conv = conversion *Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)
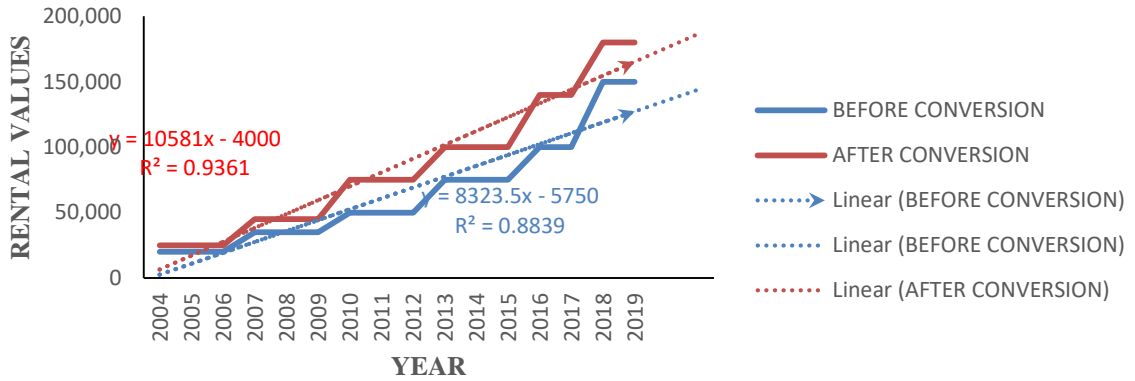
Figure 4.25: Trend Analysis of Two Bedroom Rental Values at Araromi Area, Akure
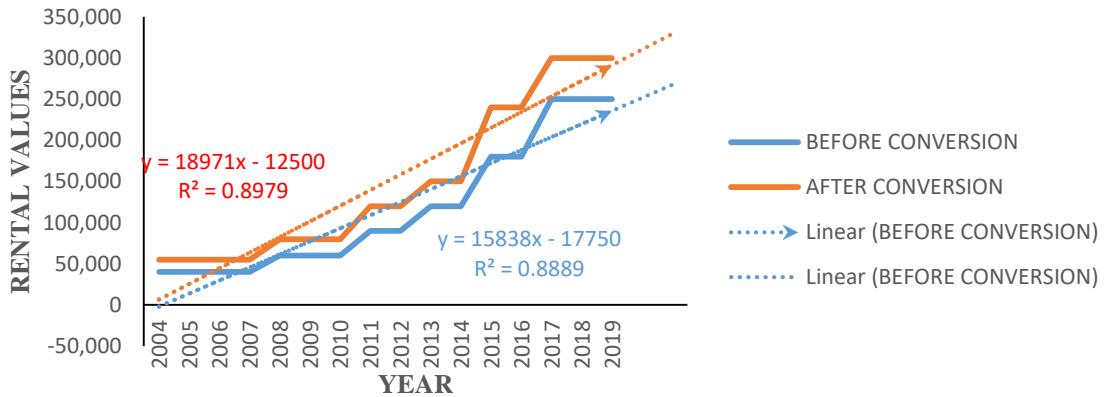
Figure 4.26: Trend Analysis of Three-Bedroom Rental Values at Araromi Area,
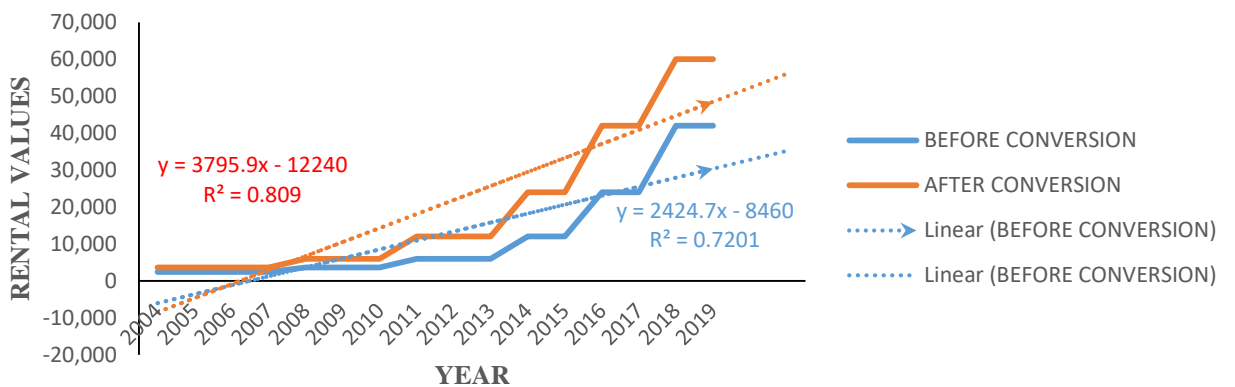
Akure

Figure 4.27: Trend Analysis of Tenement building Rental Values at Araromi Area, Akure

Figure 4.25 shows no significant differences between After and Before use rentals growth of converted two-bedroom property at Araromi settlement, Akure, between 2004 and 2007. The figure revealed some noticeable levels of gradual but consistent rental volatility from 2008, which was maintained till 2019 as shown by their respective trend lines, with the After-use rentals, however, showing the highest level of volatility when compared with the Before use rental performance of converted two-bedroom in the locality. Furthermore, the smoothed trend lines for all the rental values revealed a steady upward movement from 2004 to 2019 but with a drastic increase between 2009 and 2019. The study carried out an additional three-year forecast (2020) regarding the rental performances of both uses in the study area. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 93.63% and 83.39%. The adopted least square regression equation for the analysis indicated a consistent increase over the study period, which is likely to be sustained over the next three years, as shown by the predictive trend lines.

Figure 4.26 reveals the gradual rental growth of both uses of converted three bedrooms between 2004 and 2019. The smoothed trend lines show an upward rental movement with the After-use rentals, showing the highest volatility level than the Before use rental performance of converted two bedrooms in the locality. The study further carried out an additional three-year forecast from 2020 regarding both uses' rental performances in the study area. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 89.79% and 88.89%. The adopted least square regression equation for the analysis indicated a consistent increase over the study period, which is likely to be sustained over the next three years, as shown by the predictive trend lines.

Figure 4.27 shows that both uses' rent performance maintained almost the same growth level between 2004 and 2010. Rental disparity begins to manifest from 2010 with high-level volatility, especially in the After use rent as indicated by their trend lines. Furthermore, the smoothed trend lines for all the rental values revealed a steady upward movement from 2004 to 2019 but with a drastic increase between 2009 and 2019. The study carried out an additional three-year forecast from 2020 regarding the rental performances of both uses in the study area. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 80.9% and 82.01%. The adopted least square regression equation for the analysis indicated a consistent increase over the study period, which is likely to be sustained over the next three years, as shown by the predictive trend lines.

4.4.8   Arakale area, Akure locational rental analysis

Table 4.36 revealed the fluctuating average annual rental growth for all the property classes in the Arakale area of Akure. The highest rental growth recorded was in 2011 for converted tenement building, 2014 for converted three bedrooms and 2012 for converted two bedrooms, respectively. An essential factor worthy of note is that all the rental growth for the various property classes exhibit a positive growth rate except in 2012 for three bedrooms. Therefore, it suggested that investment in any property classes provided positive average annual growth within the study period.

Table 4.36: **Average Annual Rental growth for Before and After Use (Conversion) Property**

LOCATION	**Arakale, Akure**								
	Rent for converted two-bedroom tenement Bungalow/flat [N]			**Rent for converted three-bedroom Bungalow/flat [N]**			**Rent for converted Building [N]**		
Year	After conv	Before conv	Difference	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	25,000	20,000	5,000	95,000	75,000	20,000	2,400	2,400	-
2005	25,000	20,000	5,000	95,000	75,000	20,000	2,400	2,400	-
2006	25,000	20,000	5,000	100,000	85,000	15,000	2,400	2,400	-
2007	40,000	30,000	10,000	100,000	85,000	15,000	4,800	3,600	1,200
2008	40,000	30,000	10,000	125,000	110,000	15,000	4,800	3,600	1,200
2009	40,000	30,000	10,000	125,000	110,000	15,000	7,200	6,000	1,200
2010	45,000	35,000	10,000	125,000	110,000	15,000	7,200	6,000	1,200
2011	45,000	35,000	10,000	140,000	130,000	10,000	18,000	12,000	6,000
2012	80,000	50,000	30,000	120,000	100,000	20,000	18,000	12,000	6,000
2013	80,000	50,000	30,000	120,000	100,000	20,000	24,000	18,000	6,000
2014	120,000	85,000	35,000	170,000	150,000	20,000	24,000	18,000	6,000
2015	120,000	85,000	35,000	170,000	150,000	20,000	42,000	30,000	12,000
2016	120,000	85,000	35,000	200,000	180,000	20,000	42,000	30,000	12,000
2017	140,000	100,000	40,000	200,000	180,000	20,000	60,000	42,000	18,000
2018	180,000	150,000	30,000	250,000	200,000	50,000	60,000	42,000	18,000
2019	200,000	160,000	40,000	300,000	250,000	50,000	60,000	42,000	18,000
Mean	**1325000**	**985000**	**340,000**	**2435000**	**2090000**	**345,000**	**379200**	**272400**	**106,800**

Note: * conv = conversion *Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)

Figure 4.28 shows both the After and Before use rentals of converted two-bedroom property at the Arakale area in Akure. The figure revealed some noticeable rental volatility levels as shown by their respective trend lines, with the After-use rentals show the highest level of volatility compared with the Before use rental performance of converted two bedrooms in the same locality. Furthermore, the smoothed trend lines for all the rental values revealed a slow but steady upward movement from 2004 to 2019 but with a drastic increase from 2011.

The study carried out an additional three-year forecast (2020) regarding the rental performances of both uses in the study area. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 89.55% and 83.53%.

Figure 4.29 displays the general rental behaviour of both the uses of converted three-bedroom property at Arakale area in Akure. The figure revealed a noticeable dip in rentals of both uses between 2012 and 2014, as shown by their respective trend lines. Furthermore, the smoothed trend lines for all the rental values revealed a slow but steady upward movement from 2004 to 2019 but with a drastic increase from 2014. The study carried out an additional three-year forecast (2020) regarding the rental performances of both uses in the study area. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 79.95% and 83.1%, respectively.

Figure 4.30 shows both the After and Before use rentals of converted tenement buildings at the Arakale area of Akure. The figure revealed no significant differences in the rental performances of both uses between 2004 and 2010. However, a volatile upward movement became noticeable from 2011. It was sustained to 2019 as shown by their respective trend lines, with the After-use rentals showing the highest level of volatility when compared with the Before use rental performance of converted tenement buildings in the same locality. The study carried out an additional three-year forecast (2020) regarding the rental performances of both uses in the study area. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 89.11% and 89.25%.
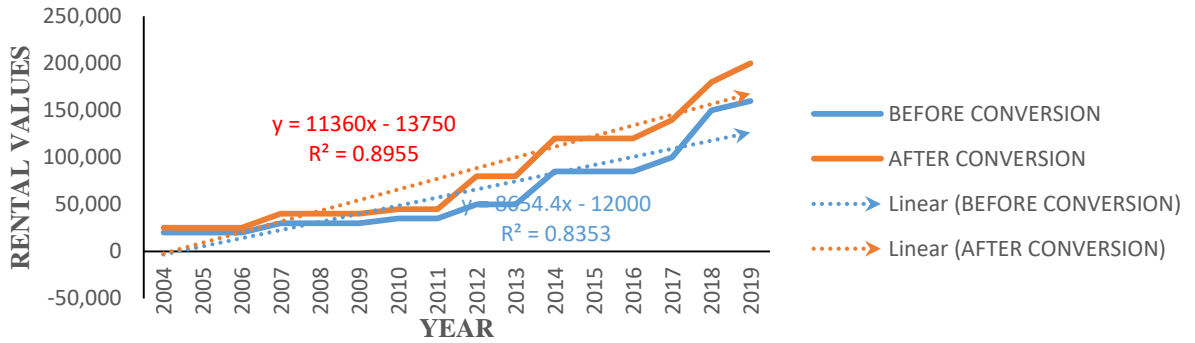
Figure 4.28: Trend Analysis of Two Bedroom Rental Values at Arakale Area, Akure
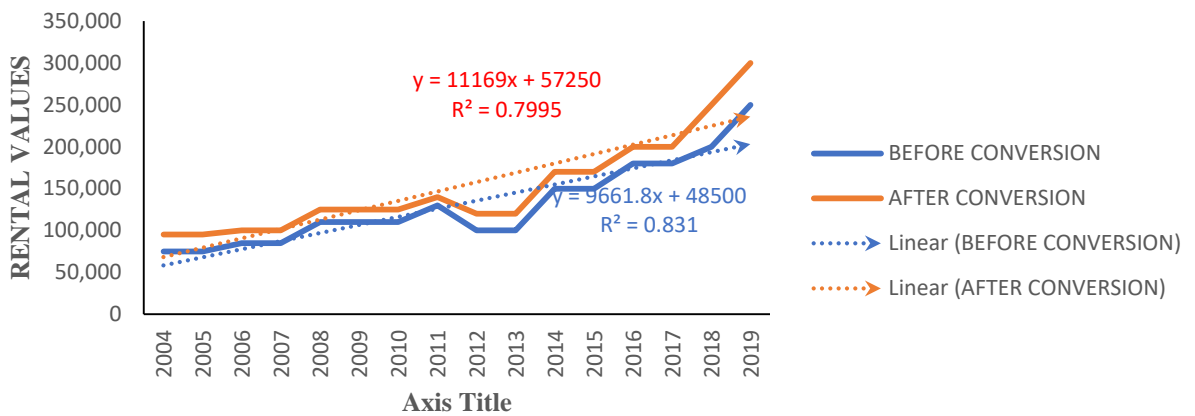
Figure 4.29: Trend Analysis of Three-Bedroom Rental Values at Arakale Area, Akure
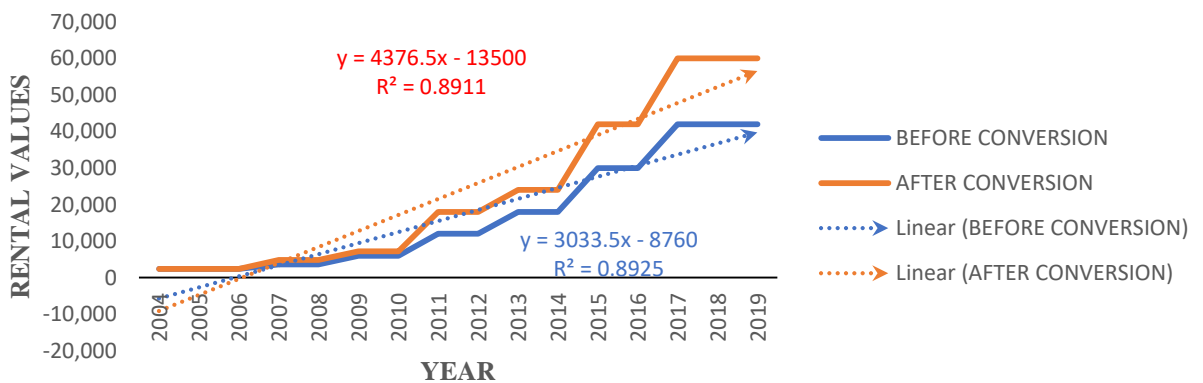
Figure 4.30: Trend Analysis of Tenement Building Rental Values at Arakale Area, Akure

4.4.9   Oyemekun road, Akure locational rental analysis

Table 4.37 revealed the fluctuating average annual rental growth for all the property classes in Oyemekun Road, Akure. The fluctuation, as observed, falls majorly between 2012 and 2019. The highest rental growth recorded in 2012, 2007 and 2006 for converted tenement building, converted three bedrooms and converted two bedrooms in 2006 respectively. It is as presented in the table 4.37.

Table 4.37:   Average Annual Rental growth of Two- and Three-Bedroom Property,

LOCATION   Oyemekun Road, Akure

Year	Rent for Converted Two Bedroom Bungalow/flat [N]			Rent for Converted Three Bedroom Bungalow/flat [N]			Rent for Converted Tenement Building [N]		
	After conv	Before conv	Difference	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	35,000	25,000	10,000	60,000	80,000	-20,000	3,600	3,000	600
2005	35,000	25,000	10,000	60,000	80,000	-20,000	3,600	3,000	600
2006	55000	30,000	25,000	60,000	80,000	-20,000	3,600	3,000	600
2007	55,000	30,000	25,000	100,000	80,000	20,000	5,400	3,600	1,800
2008	75,000	60,000	15,000	120,000	100,000	20,000	5,400	3,600	1,800
2009	75,000	60,000	15,000	120,000	100,000	20,000	12,000	7,800	4,200
2010	100,000	80,000	20,000	120,000	100,000	20,000	20,000	7,800	12,200
2011	100,000	80,000	20,000	140,000	130,000	10,000	20,000	7,800	12,200
2012	100,000	80,000	20,000	140,000	130,000	10,000	30,000	24,000	6,000
2013	120,000	90,000	30,000	160,000	130,000	30,000	30,000	24,000	6,000
2014	120,000	90,000	30,000	170,000	140,000	30,000	42,000	36,000	6,000
2015	140,000	120,000	20,000	170,000	140,000	30,000	42,000	36,000	6,000
2016	140,000	120,000	20,000	200,000	180,000	20,000	42,000	36,000	6,000
2017	160,000	140,000	20,000	200,000	180,000	20,000	90,000	72,000	18,000
2018	180,000	160,000	20,000	250,000	200,000	50,000	90,000	72,000	18,000
2019	200,000	160,000	40,000	250,000	200,000	50,000	90,000	72,000	18,000
Mean	**105625**	**84375**	21250	**145000**	**128125**	16875	**33100**	**25725**	7375
STD	**49829**	**45712**	7638	**60663**	**42929**	21515	**31521**	**26127**	6349

Note: * conv = conversion **Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)
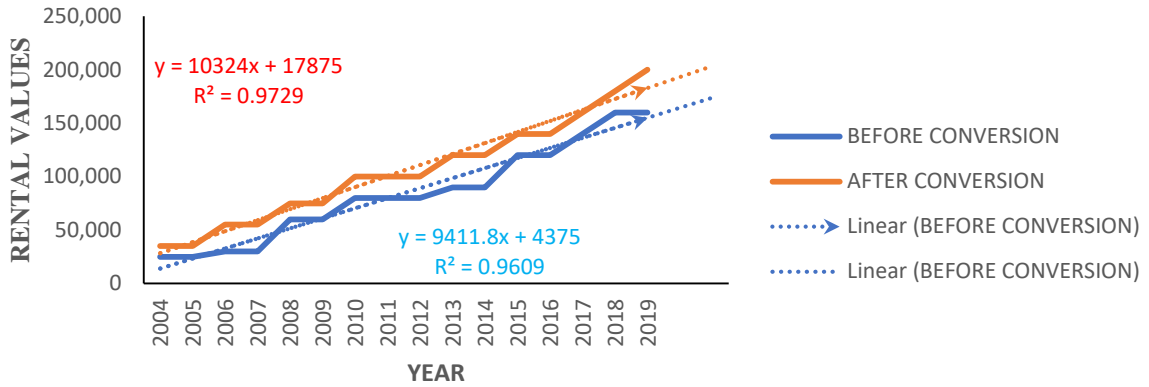
Figure 4.31: Trend Analysis of Two Bedroom Rental Values at Oyemekun Road, Akure
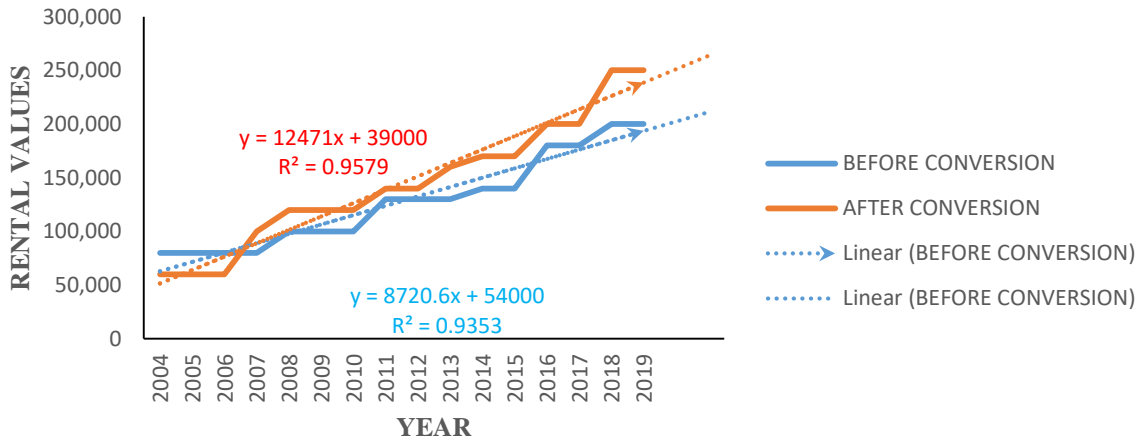
Figure 4.32: Trend Analysis of Three-Bedroom Rental Values at Oyemekun Road, Akure
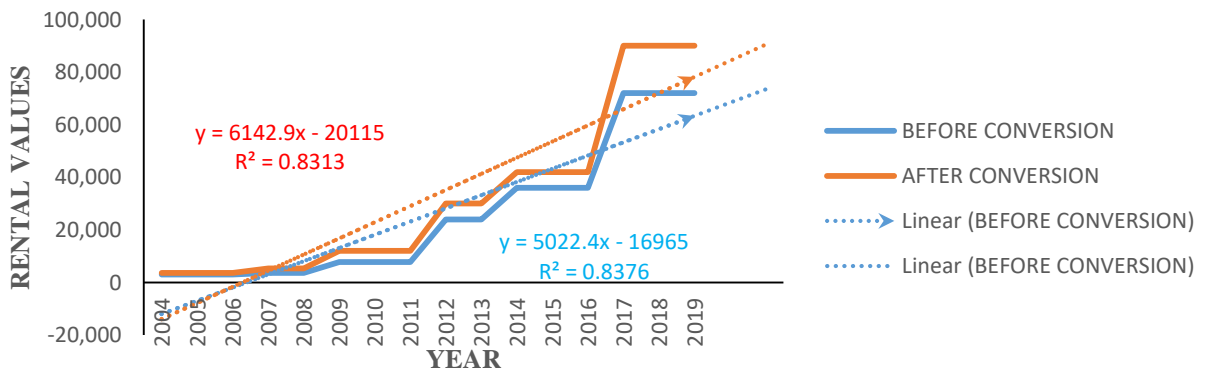
Figure 4.33: Trend Analysis of Tenement Building Rental Values at Oyemekun Road, Akure

230

Figure 4.31 shows both the After and Before use rentals of converted two-bedroom at Oyemekun Road, Akure. The figure revealed slight differences in the rental growth of both uses between 2004 and 2019 with erratic upward movement as shown by their respective trend lines. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 97.29% and 96.09%.

Figure 4.32 shows an overlapping rental trend (After and Before use rentals) of converted three bedrooms along Oyemekun Road, Akure. The figure further indicated a relatively stable but sluggish upward rental growth between 2004 and 2007 with a higher Before use rent. However, in 2006, the After use rental trend overlapped the Before use rent displaying a higher volatility level. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 95.79% and 93.53%.

Figure 4.33 shows a relatively stable rental growth for both uses of converted tenement buildings at Oyemekun Road Akure between 2004 and 2008. From 2009 a gradual but volatile upward movement became noticeable, which became more evident from 2011 and was sustained to 2019 as revealed by their respective trend lines, with the After-use rentals showing the highest level of volatility when compared with the Before use rental performance of converted tenement buildings in the same locality. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 83.13% and 83.76%.

4.4.10 Fanibi quarters, Akure locational rental analysis

Table 4.38 revealed the fluctuating average annual rental growth for all the property classes in Fanibi Quarters, Akure. An essential fact worthy of note is that all the growth in rent for the various property classes exhibit a positive growth rate except in 2007 that tenement building rent dipped for both uses. Further rental details are presented in Table 4.38:

Table 4.38:   Average Annual Rental growth of Two- and Three-Bedroom Property,

LOCATION   Fanibi Quarters/Champion, Akure

Year	Rent for converted two bedroom Bungalow/flat [N]			Rent for Converted Three bedroom Bungalow/flat [N]			Rent for Converted Tenement Building [N]		
	After conv	Before conv	Difference	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	45,000	30,000	15,000	95,000	75,000	20,000	4,200	3,600	600
2005	45,000	30,000	15,000	95,000	75,000	20,000	4,200	3,600	600
2006	65,000	50000	15,000	100,000	85,000	15,000	4,200	3,600	600
2007	65,000	50,000	15,000	80,000	85,000	-5,000	3,000	3,000	-
2008	85,000	80,000	5,000	100,000	110,000	-10,000	3,000	3,000	-
2009	85,000	80,000	5,000	100,000	110,000	-10,000	3,000	4,200	-1,200
2010	100,000	80,000	20,000	125,000	110,000	15,000	4,800	4,200	600
2011	120,000	100,000	20,000	140,000	130,000	10,000	4,800	4,200	600
2012	120,000	100,000	20,000	150,000	130,000	20,000	4,800	4,800	-
2013	120,000	100,000	20,000	150,000	130,000	20,000	7,200	4,800	-2,400
2014	140,000	120,000	20,000	170,000	130,000	40,000	7,200	4,800	-2,400
2015	140,000	120,000	20,000	170,000	130,000	40,000	12,000	7,200	4800
2016	140,000	120,000	20,000	180,000	150,000	30,000	12,000	7,200	4,800
2017	160,000	140,000	20,000	180,000	150,000	30,000	12,000	7,200	4,800
2018	180,000	160,000	20,000	220,000	180,000	40,000	18,000	12,000	6,000
2019	180,000	180,000	-	220,000	180,000	40,000	18,000	12,000	6,000
Mean	1790000	1540000	250,000	2275000	1960000	315,000	122400	89400	33,000
STD	44041	43646	5233	45165	32863	17075	5140	2863	3079

Note: * conv = conversion *Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)
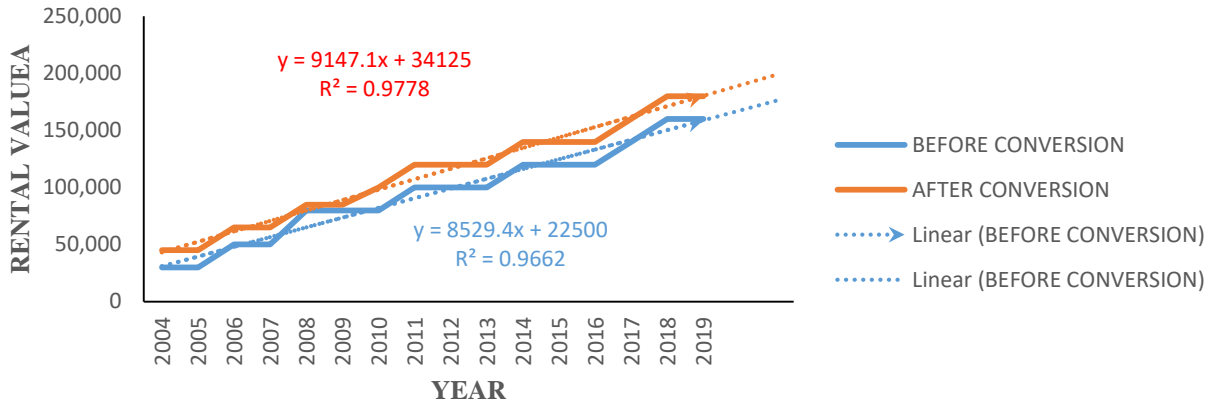
Figure 4.34: Trend Analysis of Two-Bedroom Rental Values at Fanibi Quarters/ Champion, Akure
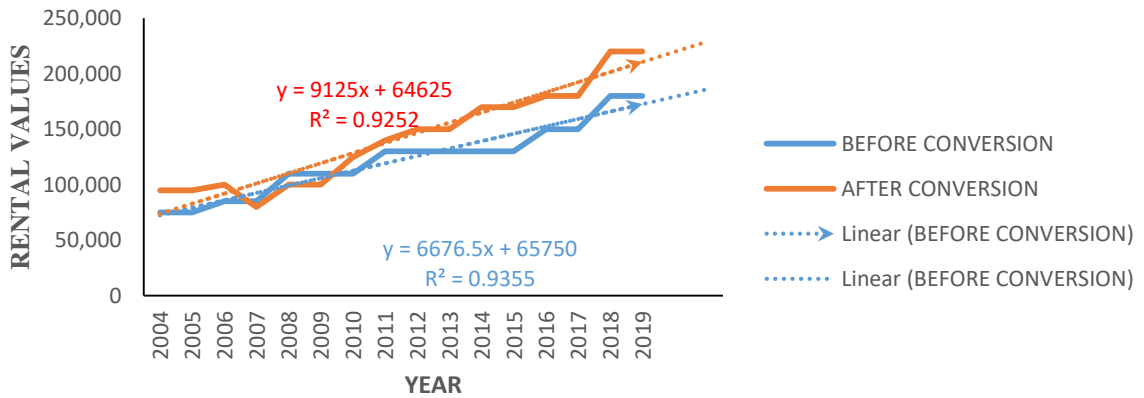
Figure 4.35: Trend Analysis of Three-Bedroom Rental Values at Fanibi Quarters Akure
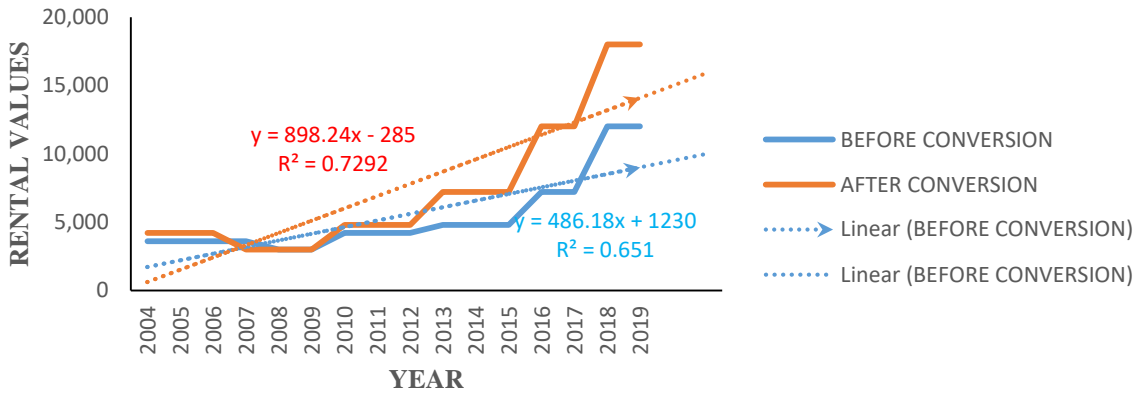
Figure 4.36: Trend Analysis of Tenement Building Rental Values at Fanibi Quarters/ Champion, Akure

233

Figure 4.34 shows both the After and Before use rentals of converted two-bedroom property at Fanibi Quarters, Akure. The figure revealed some noticeable rental volatility levels as shown by their respective trend lines, with the After-use rentals show the highest level of volatility compared with the Before use rental performance of converted two bedrooms in the same locality. Furthermore, the smoothed trend lines for all the rental values revealed a steady upward movement from 2004 to 2019 but with a drastic increase between 2007 and 2010. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 97.78% and 96.62%.

Figure 4.35 shows an unstable trend line for the rental values of converted three-bedroom property at Fanibi Quarters Akure. The figure revealed some noticeable rental volatility levels as shown by the trend lines, with the After-use rentals show the highest level of volatility compared with the Before use rental performance of converted tenement building in the same locality. Furthermore, the smoothed trend lines for all the rental values revealed a steady upward movement from 2004 to 2019 but with a drastic increase from 2012. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 92.52% and 93.55%.

Figure 4.36 shows an unstable trend line for the rental values of converted tenement property at Fanibi Quarters Akure. The figure revealed some noticeable rental volatility levels, as shown by their respective trend lines. The after-use rentals show the highest level of volatility from 2012 compared with the Before use rental performance of converted tenement buildings in the same locality. The trend lines, however, exhibited a rental dip for both uses between 2007 and 2009. The study carried out an additional three-year forecast (2020) regarding the

rental performances of both uses in the study area. The reliability and accuracy of both trend line and forecast as determined by R^2 value for both uses were 72.92% and 65.1%, respectively.

From the above critical analysis of the property rental market, rental values for each of the property types were isolated, and their various performances analysed through predictive trend lines. It was observed that both before and after use conversions experienced appreciable volatile upward movement in the rental values for all the locations studied but with the After-use conversions exhibiting higher rental growth levels, which will be sustained as indicated by the predictive trend lines.

4.4.11   Toyin street, Ikeja locational rental analysis

Table 4.39 below revealed the annual rental value mean scores of 462,500 and 381,250 as mean score for converted two bedrooms after and before use rental values and 188,414 and 141,274 as after and before use standard deviation, respectively. The annual rental growth for the After use for converted two bedrooms along Toyin Street, Ikeja was at its peak in 2006 while that of before use conversions were in 2008. Annual rental growth of converted three-bedroom property was in 2007 for after use conversions in 2008 for before use conversions. The table further revealed that 565,625 and 493,750 are the rental value mean score for three bedrooms after and before use conversions, respectively, while the standard deviation for both user types is 238,550; 192,246. Therefore, it suggested a significant positive performance in the rental values of After Use conversions of both converted two and three-bedroom property along Toyin Street, Ikeja. The graphical presentation is as shown in the table below

Table 4.39: **Average Annual Rental growth of Two- and Three-Bedroom Property**

Location	Toyin Street Ikeja					
Property Types	Rent for Converted Two-bedroom Bungalow/flat [N]			Rent for Converted Three-bedroom Bungalow/flat [N]		
Year	After Conv	Before Conv	Difference	After Conv	Before Conv	Difference
2004	150,000	150,000	-	250,000	250,000	-
2005	200,000	200,000	-	250,000	250,000	-
2006	300,000	250,000	50,000	250,000	250,000	-
2007	300,000	250,000	50,000	350,000	250,000	100,000
2008	350,000	300,000	50,000	450,000	450,000	-
2009	350,000	300,000	50,000	450,000	450,000	-
2010	350,000	300,000	50,000	450,000	450,000	-
2011	500,000	400,000	100,000	500,000	450,000	50,000
2012	500,000	400,000	100,000	600,000	500,000	100,000
2013	500,000	400,000	100,000	600,000	500,000	100,000
2014	550,000	450,000	100,000	600,000	550,000	50,000
2015	550,000	450,000	100,000	800,000	550,000	250,000
2016	550,000	450,000	100,000	800,000	650,000	150,000
2017	750,000	600,000	150,000	800,000	650,000	150,000
2018	750,000	600,000	150,000	950,000	850,000	100,000
2019	750,000	600,000	150,000	950,000	850,000	100,000
Mean	462,500	381,250	81,250	**565,625**	**493,750**	71,875
STD	188414	141274	141,274	**238550**	**192246**	46,304

Note: * conv = conversion **Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)

Figure 4.37 depicted the trend model analysis of both Before and After Use conversions of converted two-bedroom property along Toyin street, Ikeja. Both uses' trend lines revealed a steady rise between 2004 and 2006 with a slightly higher increase in After use conversions rent observed in 2005. However, 2009 and 2010 portray a negative year as the property market experienced a slight dip. In 2011, the property market exhibited a sudden increase in

rental values sustained to 2019, as indicated by the trend lines. However, the coefficient of determination (R2) was used to measure the model fit's reliability and accuracy. However, the determination coefficient accounted for 94.199% and 95.32% of the variable growth in rent for both uses. It thus explains the suitability of the model for this research. It is inferred from the result of the R^2 that they exist substantial variation between the rent of after use and before use conversions of two-bedroom property along Toyin Street, Ikeja.
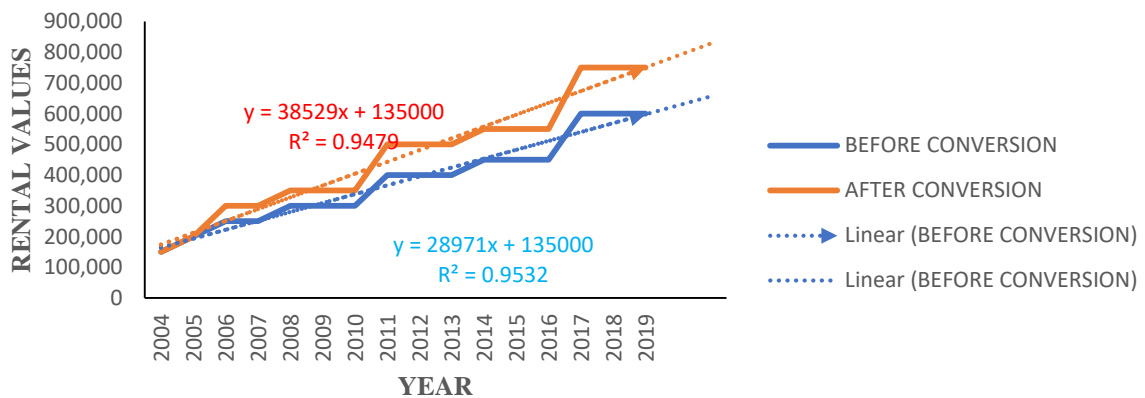
Figure 4.37   Trend Analysis of Two-bedroom Rental Values at Toyin Street, Ikeja

Before use conversions compare to the After use rent noticeable in the study area, the poor rental performance could be traceable to the market forces of demand and supply. High demand for converted property without corresponding supply of the same tends to increase market prices, which is the property rental values and vice-versa when the demands are low. Figure 4.38 below presents the trend analysis of three bedrooms along Toyin Street, Ikeja. It shows that there was a high level of volatility in the rent performances of both uses as indicated by their respective trend lines, with the After Use conversions rents showing the highest level of volatility when compared with the rent of Before Use conversions of converted three bedrooms in the study area. Similarly, the smoothed trend lines for After Use conversions indicated a consistent increase in its rental values from 2006, while rent for

237

Before Use conversions though indicated a steady increase but at a relatively low pace within the study period. The level of the trend line reliability and forecast accuracy determined by the R^2 value for both uses were 96.38% for After Use conversions and 91.05% for Before Use rent. The trend line indicated a slower consistent growth for the Before uses rent over the study period, which is likely to be maintained over the next three years, as seen from the predictive trend lines.
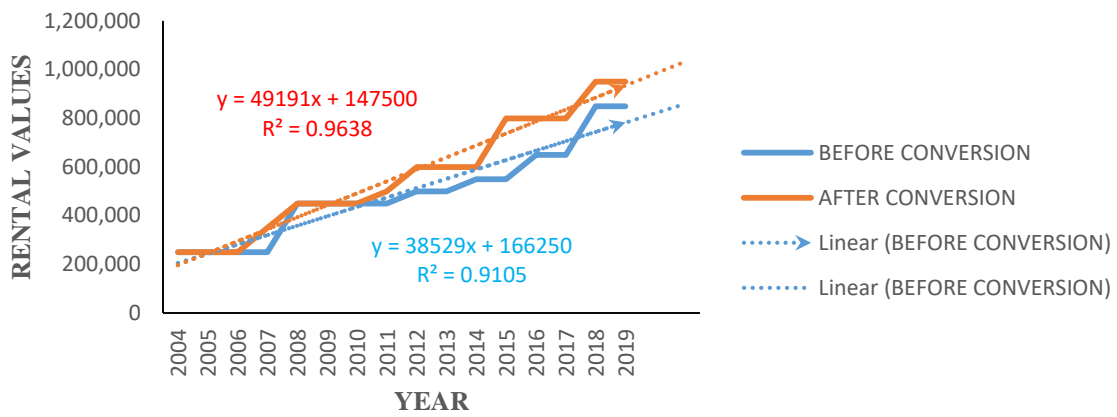
Figure 4.38   Trend Analysis of Three bedrooms Rental Values at Toyin Street, Ikeja

4.4.12   Adeniyi Jones avenue, Ikeja locational rental analysis

Table 4.40 shows both the mean scores and calculated standard deviation of both Before and After Use values of converted two and three bedrooms and tenement buildings in the study area. The table revealed a consistent upward increase in rentals at Adeniyi Jones Avenue, Ikeja.

Table 4.40:   Average Annual Rental growth of Two- and Three-Bedroom Property

Location	Adeniyi Jones Avenue, Ikeja					
Property Types	Rent for Converted Two Bedroom Bungalow/flat [N]			Rent for Converted Two Bedroom Bungalow/flat [N]		
Year	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	250,000	200,000	50,000	500,000	350,000	150,000
2005	250,000	200,000	50,000	500,000	350,000	150,000
2006	350,000	250,000	100,000	750,000	500,000	250,000
2007	350,000	250,000	100,000	750,000	500,000	250,000
2008	350,000	250,000	100,000	1,000,000	800,000	200,000
2009	500,000	350,000	150,000s	1,000,000	800,000	200,000
2010	500,000	350,000	150,000	1,000,000	800,000	200,000
2011	650,000	500,000	150,000	1,300,000	1,100,000	200,000
2012	650,000	500,000	150,000	1,300,000	1,100,000	200,000
2013	650,000	500,000	150,000	1,300,000	1,100,000	200,000
2014	800,000	650,000	150,000	1,600,000	1,400,000	200,000
2015	800,000	650,000	150,000	1,600,000	1,400,000	200,000
2016	800,000	650,000	150,000	1,600,000	1,400,000	200,000
2017	1,000,000	800,000	200,000	1,900,000	1,700,000	200,000
2018	1,000,000	800,000	200,000	1,900,000	1,700,000	200,000
2019	1,000,000	800,000	200,000	1,900,000	1,700,000	200,000
Mean	618,750	481,250	137,500	1,243,750	1,043,750	200,000
STD	265126	222767	42,369	479887	477101	2,786

Note: * conv = conversion **Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)

Figure 4.39 shows an upward movement in the rental performance of both After use and

Before Use conversions as indicated by their respective trend lines, with the Before Use

conversions rental showing the least level of volatility when compared with rent for After

Use conversions. Similarly, the smoothed trend lines indicated a consistent but volatile

average annual rental values appreciation from 2006 to 2019. The reliability level of the trend

and the forecast accuracy as determined by the R^2 value for After Use rent and Before Use rent for converted two bedrooms in the study area is 97.03% and 96.16%, respectively.

Figure 4.40 indicated an upward movement in the rental performance of both After use and Before Use conversions as revealed by their respective trend lines, with the Before Use conversions rental showing the least level of volatility when compared with rent for After Use conversions. Similarly, the smoothed trend lines indicated a consistent but volatile average annual rental values appreciation from 2005 to 2019. Additional three years rental growth forecast from 2020 revealed a continuous steady growth but with the growth of After Use rent having the upper hand.

The reliability level of the trend and the forecast accuracy as determined by the R^2 value for After Use rent and Before Use rent for converted two bedrooms in the study area is 97.27% and 97.25%, respectively. The study adopted the least square regression equation in the analysis of data for predictions. The analysis revealed an upward movement trend in the rent of both uses, with the After Use rent taking a more drastic and volatile upward movement than the Before Use conversions rent of two bedrooms in the study area over the study period. This rent increase is likely to be sustained over the next three years, as shown by the predictive trend lines.
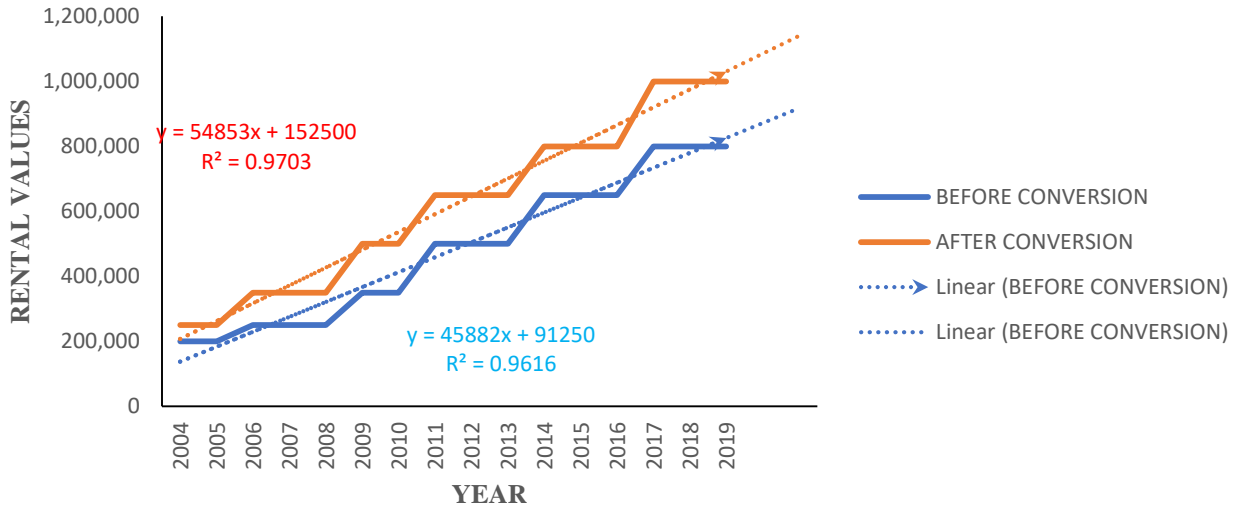
Figure 4.39   Trend Analysis of Two-bedroom Rental Values at Adeniyi Jones, Ikeja
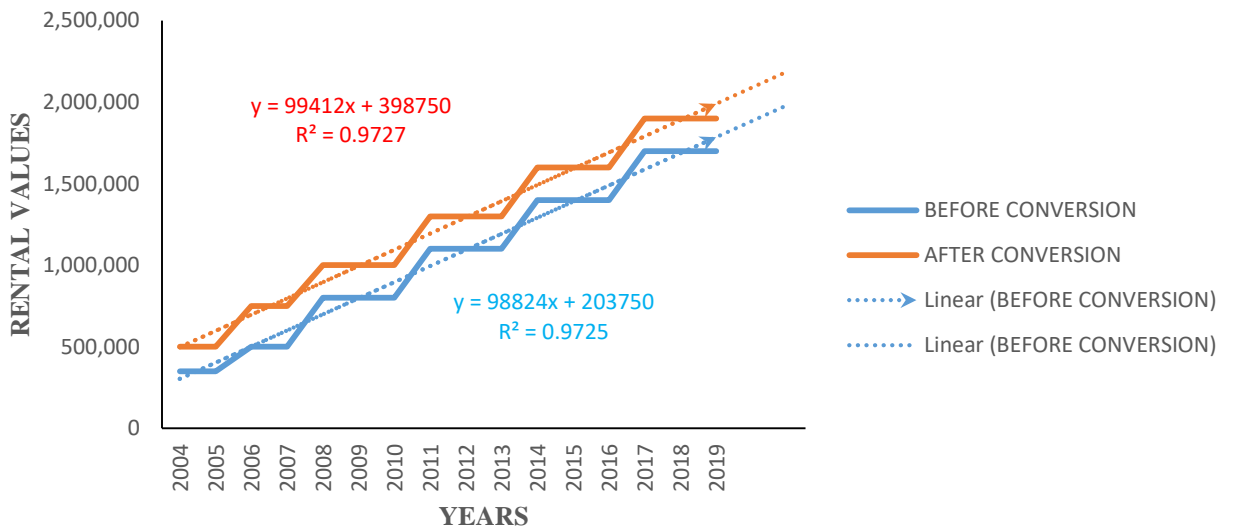
Figure 4.40: Trend Analysis of Three bedrooms Rental Values at Adeniyi Jones, Ikeja

4.4.13   Allen avenue, Ikeja locational rental analysis

Table 4.41 below shows that the highest average annual rental growth was recorded in 2008 and 2011 for After and Before Use conversions rental growth of converted two bedrooms and 'Before use' rental growth for three-bedroom. It was observed that the average annual rental for each year has a positive rental appreciation. Therefore, it indicated a consistent use

demand for the converted two and three-bedroom property with unmatched replacement in terms of supply, thereby leading to shortages of the available three-bedroom housing stock in the study area, indicating significant rental problem housing shortages.

Table 4.41:   Average Annual Rental growth of Two- and Three-Bedroom Property

Location	Allen Avenue, Ikeja					
Property Types	Rent for Converted Two Bedroom Bungalow/flat [N]			Rent for Converted Three Bedroom Bungalow/flat [N]		
Year	After conv	Before conv	Difference	After conv	Before conv	Difference
2004	130,000	100,000	30,000	480,000	350,000	130,000
2005	130,000	100,000	30,000	480,000	350,000	130,000
2006	130,000	100,000	30,000	480,000	350,000	130,000
2007	180,000	150,000	30,000	480,000	350,000	130,000
2008	350,000	250,000	100,000	600,000	550,000	50,000
2009	350,000	250,000	100,000	600,000	550,000	50,000
2010	350,000	250,000	100,000	600,000	550,000	50,000
2011	500,000	350,000	150,000	1,300,000	850,000	450,000
2012	500,000	350,000	150,000	1,300,000	850,000	450,000
2013	750,000	500,000	250,000	1,300,000	850,000	450,000
2014	750,000	500,000	250,000	1,600,000	1,300,000	300,000
2015	750,000	500,000	250,000	1,600,000	1,300,000	300,000
2016	900,000	750,000	250,000	1,600,000	1,300,000	300,000
2017	900,000	750,000	250,000	1,850,000	1,600,000	250,000
2018	900,000	750,000	250,000	1,850,000	1,600,000	250,000
2019	900,000	750,000	250,000	1,850,000	1,600,000	250,000
Mean	529,375	400,000	129,375	1,123,125	812,581	310,544
STD	304882	248328	56,554	567835	485412	82,423

Note: * conv = conversion **Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)

Figures 4.41 to 4.45 shows the rental performance of After use and Before Use of both two and three-bedroom property at Allen Avenue, Ikeja. The figures revealed some volatility levels in their respective rental as shown by their respective trend lines, with the After Use rental values displaying the highest volatility level compared with the rental values of Before Use in both property types. Two-bedroom rentals for both uses have upward movement from 2006 but became evident between 2013 to 2016 while that of three-bedroom had a slight dip between 2009 and 2010 but a sudden volatile upward movement especially for the rent of After Use conversions between 2011 and 2013.

However, the smoothed trend lines for both two and three bedrooms indicated a steady increase from 2004 to 2019. The future forecast that was made regarding the rentals of the property types understudy for three additional years, from 2020, indicated a continuous steady increase of rentals of both uses in Allen Avenue. Testing the rental trend reliability and forecasting accuracy as determined by R^2 value for all rents are 95.3% and 94.61% for two bedrooms and 91.51% and 93.95% for three bedrooms. Similarly, the least square regression equation adopted in the analysis indicated a consistent increase in the rentals over the study period, which is likely to be maintained over the next three years, as shown by the predictive trend lines.
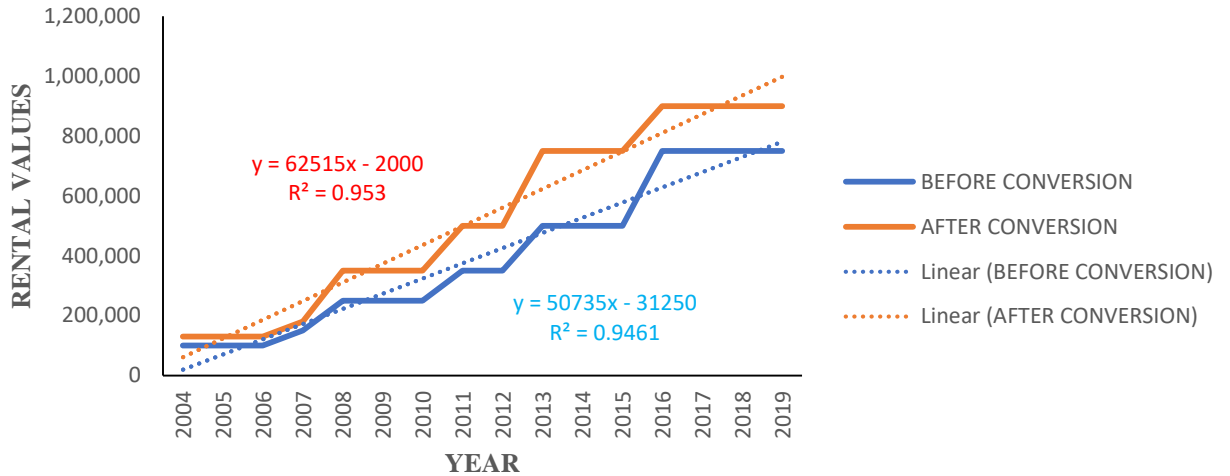
Figure 4.41: Trend Analysis of Two Bedroom Rental Values at Allen Avenue, Ikeja
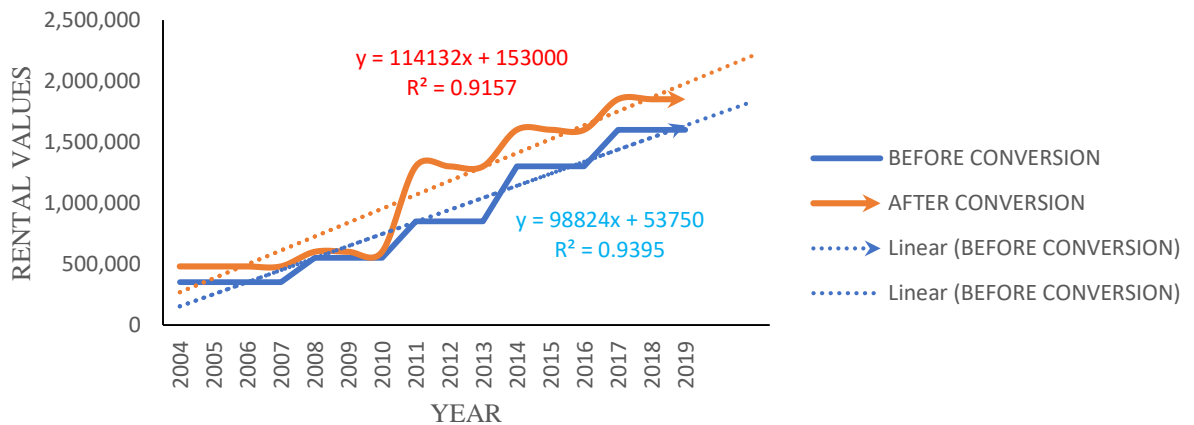
Figure 4.42: Trend Analysis of Three-Bedroom Rental Values at Allen Avenue, Ikeja

4.4.14   Makinde Street, Ikeja Locational Rental Analysis

From Table 4.42 below, the highest average annual rental growth was recorded in 2007 to 2010 for converted two bedrooms, 2006; 2007; 2011 to 2013 for converted three bedrooms and 2009 to 2011 and 2018 to 2019 for converted tenement buildings, while no significant differences were observed in the rent of before and after use due to the stiff competitions between the various users of spaces demanding for converted two bedrooms and tenement

244

buildings between 2004 to 2006. Converted three-bedroom experienced similar situation between 2008 to 2010 and 2017 to 2019.

However, the study observed that the average annual rental for each year has a positive rental appreciation, which further indicated a consistent use demand for converted property with unmatched replacement in terms of supply, thereby leading to shortages in housing stock, creating a major urban housing problem the study area. The explicit rental behaviour of two, three and tenement buildings in the last sixteen years is as presented in Table 4.42

Table 4.42:   Average Annual Rental growth of Two- and Three-Bedroom Property

LOCATION   MAKINDE STREET, IKEJA

Year	Rent for Converted Two Bedroom Bungalow/flat [N]			Rent for Converted Three Bedroom Bungalow/flat [N]			Rent for Converted Tenement Building [N]		
	After	Before	Difference	After	Before	Difference	After	Before	Difference
2004	150,000	150,000	-	150,000	180,000	30,000	24,000	24,000	-
2005	150,000	150,000	-	150,000	180,000	30,000	24,000	24,000	-
2006	150,000	150,000	-	250,000	200,000	50,000	24,000	24,000	-
2007	280,000	180,000	100,000	250,000	200,000	50,000	48,000	36,000	12,000
2008	280,000	180,000	100,000	280,000	280,000	-	48,000	36,000	12,000
2009	280,000	180,000	100,000	280,000	280,000	-	72,000	48,000	24,000
2010	280,000	180,000	100,000	280,000	280,000	-	72,000	48,000	24,000
2011	300,000	250,000	50,000	350,000	300,000	50,000	72,000	48,000	24,000
2012	300,000	250,000	50,000	350,000	300,000	50,000	84,000	72,000	12,000
2013	300,000	250,000	50,000	350,000	300,000	50,000	84,000	72,000	12,000
2014	380,000	300,000	80,000	420,000	400,000	20,000	84,000	72,000	12,000
2015	380,000	300,000	80,000	420,000	400,000	20,000	96,000	84,000	12,000
2016	380,000	300,000	80,000	420,000	400,000	20,000	96,000	84,000	12,000
2017	450,000	400,000	50,000	500,000	500,000	-	96,000	84,000	12,000
2018	450,000	400,000	50,000	500,000	500,000	-	120,000	96,000	24,000
2019	450,000	400,000	50,000	500,000	500,000	-	120,000	96,000	24,000
Mean	310,000	251,250	**58,750**	340,625	325,000	15,625	72,750	59,250	13,500
STD	101390	91132	**10,258**	114162	112546	1,616	31436	26096	5,340

Note: * conv = conversion **Diff = Differences in Rent, *STD = Standard Deviation
Source: Field survey data (2019)
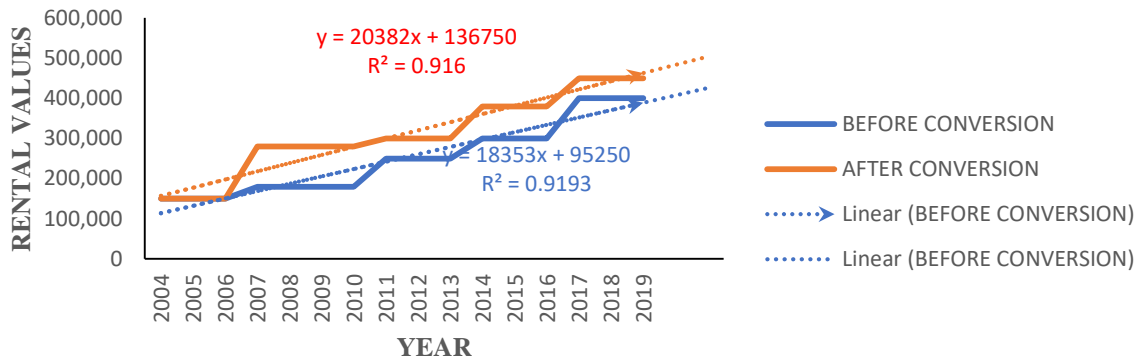
Figure 4.43: Trend Analysis of Two Bedroom Rental Values at Makinde Street, Ikeja
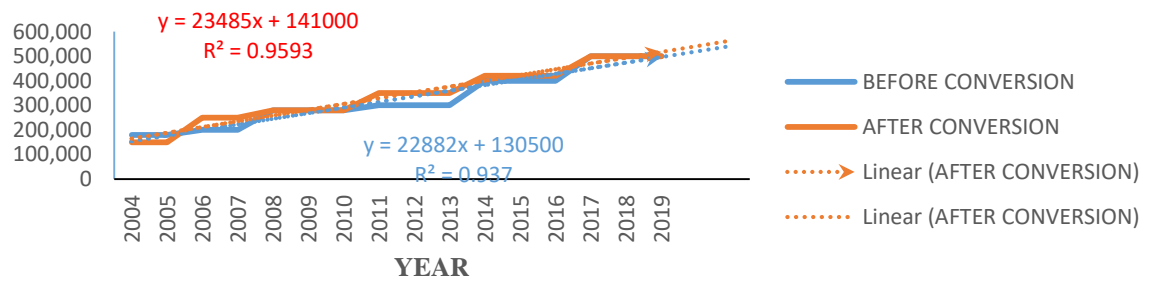
Figure 4.44: Trend Analysis of Three-Bedroom Rental Values at Makinde Street, Ikeja
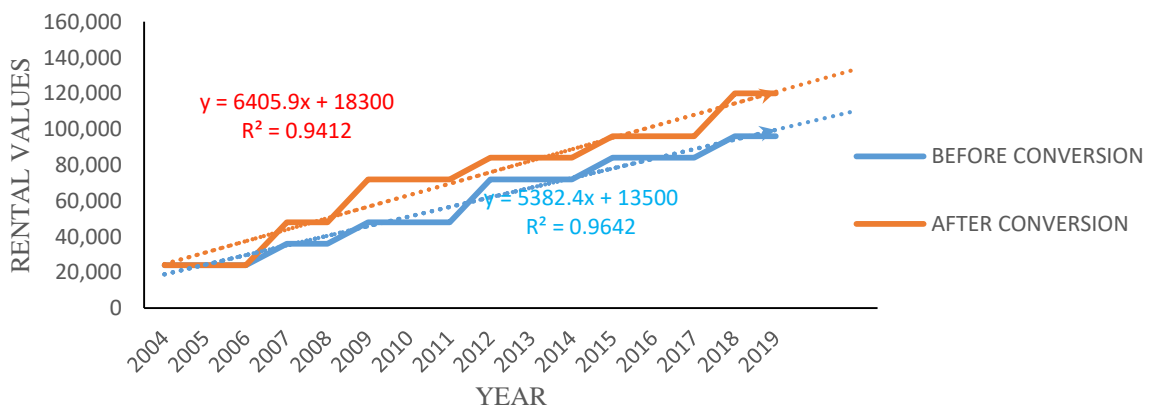
**Figure 4.45: Trend Analysis of Tenement Buildings Rental Values at Makinde Street, Ikeja**

Figure 4.43 shows an upward movement in the rental performance of both After use and Before Use conversions as revealed by their respective trend lines, with the After Use conversions rental showing the highest level of volatility when compared with rent for Before Use conversions. Similarly, the smoothed trend lines indicated a consistent but volatile average annual rental values appreciation from 2005 to 2019. Additional three years rental growth forecast from 2020 revealed a continuous steady growth but with the growth of After Use rent having the upper hand.

The reliability level of the trend and the forecast accuracy as determined by the R^2 value for After Use rent and Before Use rent for converted two bedrooms in the study area is 91.3% and 91.96%, respectively. The study adopted the least square regression equation in the analysis of data for predictions. The analysis revealed an upward movement trend in the rent of both uses, with the After Use rent taking a more drastic and volatile upward movement than the Before Use conversions rent of two bedrooms in the study area over the study period. This rent increase is likely to be sustained over the next three years, as shown by the predictive trend lines.

Figure 4.44 revealed the performances in the rental values of both uses for Three-bedroom property in the study areas. The smoothed trend lines indicated an upward movement in the rental performance of both uses. However, the observable differences in the rental performances of both uses between 2008 and 2010, 2014 and 2017 seem not to be significant. Similarly, both uses' smoothed trend lines indicated a consistent but volatile average annual rental values appreciation from 2005 to 2019. Additional three years rental growth forecast

from 2020 revealed a continuous steady growth but with the growth of After Use rent having the upper hand.

The reliability level of the trend and the forecast accuracy as determined by the R^2 value for After Use rent and Before Use rent for converted two bedrooms in the study area is 95.93% and 93.7%, respectively. The study adopted the least square regression equation in the analysis of data for predictions. The analysis revealed an upward movement trend in the rent of both uses, with the After Use rent taking a more drastic and volatile upward movement than the Before Use conversions rent of three bedrooms in the study area over the study period. This rent increase is likely to be sustained over the next three years, as shown by the predictive trend lines.

Figure 4.45 revealed the rental performances of both After and Before use conversions of tenement buildings in the study area, with both rentals having an upward trend movement. Between 2004 and 2006, there are no significant differences between the After and Before use rental values of tenement property along Makinde Street, Ikeja. However, the differences in rent with consistent rise became apparent from 2008, and it continued to 2019, After use rent taking the upper lead.

4.4.15 Afolabi Aina street, Ikeja locational rental analysis

Table 4.43 shows the rental performance of two and three-bedroom property and tenement buildings along Afolabi Aina Street, Ikeja. From the analysis of rent, as shown in the table, both the calculated mean score and the standard deviation for After use conversions indicated higher values than the Before use conversions values. The years 2006, 2014, 2015 and 2017

were hit years for both use conversions as both exhibits significant positive movement for all

the property types under study. It is as shown in the table below:

Table 4.43:   Average Annual Rental growth of Two- and Three-Bedroom Property

LOCATION	AFOLABI AINA STREET, IKEJA								
Property Type	Rent for converted two-bedroom Bungalow/flat [N]			Rent for converted Three bedroom Bungalow/flat [N]			Rent for converted tenement building [N]		
Year	After	Before	Difference	After	Before	Difference	After	Before	Difference
2004	200,000	200,000	-	250,000	250,000	-	60,000	36,000	24,000
2005	200,000	200,000	-	250,000	250,000	-	60,000	36,000	24,000
2006	280,000	250,000	30,000	350,000	300,000	50,000	72,000	60,000	12,000
2007	280,000	250,000	30,000	350,000	300,000	50,000	72,000	60,000	12,000
2008	350,000	320,000	30,000	380,000	350,000	30,000	84,000	72,000	12,000
2009	350,000	320,000	30,000	380,000	350,000	30,000	84,000	72,000	12,000
2010	350,000	320,000	30,000	380,000	350,000	30,000	84,000	72,000	12,000
2011	380,000	350,000	30,000	500,000	450,000	50,000	96,000	84,000	12,000
2012	380,000	350,000	30,000	500,000	450,000	50,000	96,000	84,000	12,000
2013	380,000	350,000	30,000	500,000	450,000	50,000	96,000	84,000	12,000
2014	550,000	400,000	150,000	650,000	580,000	70,000	120,000	96,000	24,000
2015	550,000	400,000	150,000	650,000	580,000	70,000	120,000	96,000	24,000
2016	550,000	400,000	150,000	650,000	580,000	70,000	120,000	96,000	24,000
2017	630,000	600,000	30,000	800,000	700,000	100.000	156,000	120,000	36,000
2018	630,000	600,000	30,000	800,000	700,000	100.000	156,000	120,000	36,000
2019	630,000	600,000	30,000	800,000	700,000	100.000	156,000	120,000	36,000
Mean	6690000	5910000	780,000	8190000	7340000	850,000	1632000	1308000	324,000
STD	150210	130816	51098	191214	161653	25221	32790	26370	95187

Note: * conv = conversion **Diff = Differences, *STD = Standard Deviation
Source: Field survey data (2019)

Figure 4.46 shows the trend lines of two bedrooms After and Before use conversions trend

with both uses experiences relatively stable rental growth between 2008 to 2012 and a sudden

upward surge in After use rental from 2013 to 2017. The rent for before use had a slight dip

within the same period but picked from 2016.

The explanatory power (R^2) was used to measure the model fit's reliability and accuracy. The coefficient of determination accounted for 94.08% and 87.22% of the variable growth in the rent of both uses. It thus explains the suitability of the model for this research.

Figure 4.47 revealed the trend lines of rental performances three-bedroom After and Before use conversions along Afolabi Aina Street, Ikeja. Both uses experienced rental volatility within the period under study. However, the upward trend that started in 2005 continued to 2019. The two uses' rental growth differences were not as vast as the high competition for both uses. The residential users were ready to offer as high as the commercial user are willing and ready to pay for space due to the proximity of the area to Allen and Obafemi Awolowo way. The explanatory power (R^2) was used to measure the model fit's reliability and accuracy. The coefficient of determination accounted for 95.22% and 95.64% of the variable growth in rent of both uses in the location. It explains the suitability of the model for this research.

Figure 4.48 revealed the trend lines of rental performances tenement building After and Before use conversions along Afolabi Aina Street, Ikeja. Both uses experienced rental volatility within the period under study. However, the upward trend that started in 2006 continued to 2019. The two uses' rental growth differences were not as vast as the high competition for both uses. The residential users were ready to offer as high as the commercial user are willing and ready to pay for space due to the proximity of the area to Allen and Obafemi Awolowo.

The explanatory power (R^2) was used to measure the model fit's reliability and accuracy. The coefficient of determination accounted for 92.82% and 94.43% of the variable growth in rent of both uses in the location. It explains the suitability of the model for this research.
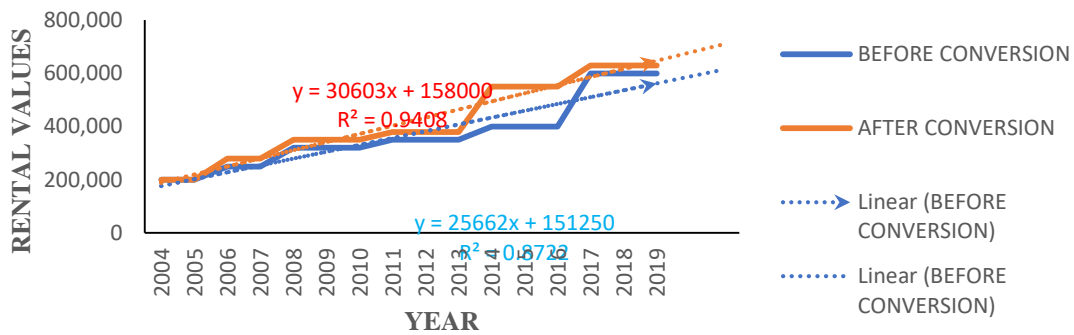
Figure 4.46: Trend Analysis of Two Bedroom Rental Values at Afolabi Aina Street, Ikeja
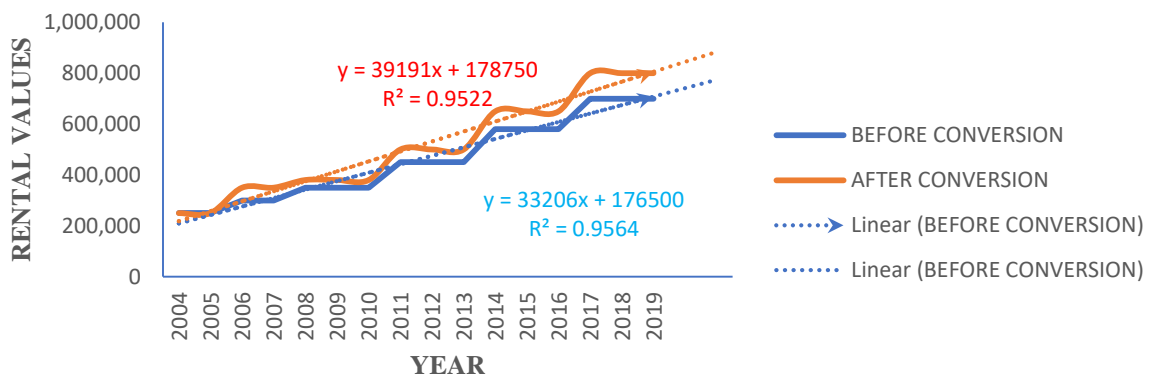
Figure 4.47: Trend Analysis of Three-Bedroom Rental Values at Afolabi Aina Street, Ikeja
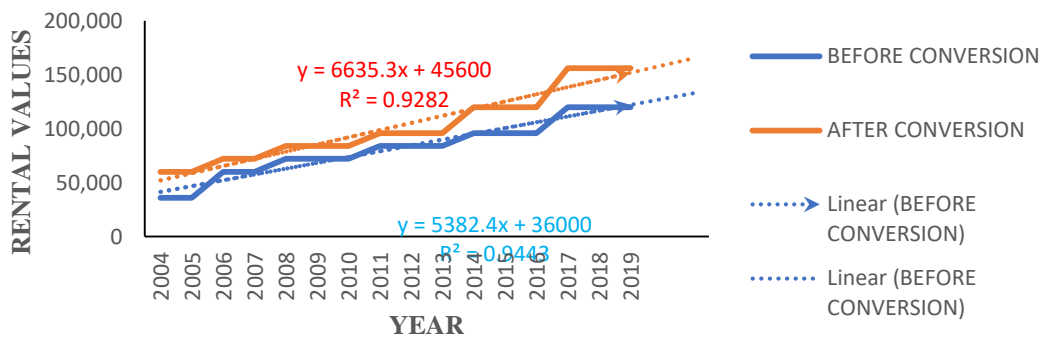
Figure 4.48: Trend Analysis of Tenement Building Rental Values at Afolabi Aina Street, Ikeja

4.5: **The Influence of Land Use Conversions on Rental Values in Akure, Osogbo and Ikeja (The Study's Objective Three).**

The procedure adopted to achieve Objective Three of the study (to determine, using predictive model, the influence of conversions factors on property rental values in the study area), is the analysis of the influence of land use conversion activities in Ikeja, Osogbo and Akure on converted residential property rental through SEM. Since relationships that exist between the variables within a SEM can be very complex, path diagrams are usually required to illuminate such relationships as shown in the AMOS graphics used for the study.

In the AMOS graphics, the latent and measure variables are represented by the ovals and rectangular shape figures, while the arrows connecting the variables represents the causal flow of relations. The one-headed arrows denote the regression relationships and the arrow directions signifies the direction of variable influence in this case, the influence of land use conversion factors on converted residential property rental values. The double-headed arrows on the other hand, indicate the covariance or inter-correlation between variables. The initial model showing the relationships between the independent (conversion factors) and dependent (rental values) variables is shown in Figures 4.49, 4.51 and 4.53 for Akure, Osogbo and Ikeja.

Two step approach was adopted in the analysis of data through the use of structural equation modelling (SEM) using AMOS 21.0 as a pre-condition (Awang, 2015). The initial step necessary for the model measurement preparation is estimated as confirmatory factor analysis (CFA). It was used to check the model fitness and rationality. The recommended principles for goodness of fit were observed. Findings presented in Figures 4.49, 4.51 and 4.53 revealed the need for model debugging for the study locations. The procedure for the assessment of

the overall Model Fit in SEM is usually considered issues of critical importance. Hence, the study adopted the cut-off/benchmark range for model fitness indexes as compiled by Parry (2017) and of total effect size as postulated by Adams and Lawrence (2015). The interpretations of the total effect size are shown in Table 4.44 and the adoption of the SEM-AMOS model further supports the study's conceptual framework.

Table 4.44: Total Effect Size Benchmark

Effect size range	Interpretation
0.0 - 0.04	Weak
0.05- 0.10	Moderate
Above 0.10	Strong

Source: Adopted from Adams and Lawrence (2015)

Table 4.45:   Fit Indices Cut-off for CFA and SEM

Measure	Name	Cut-off /Threshold
χ^2	Model Chi-Square	P-value < 0.05
(A)GFI	(Adjusted) Goodness of Fit Index	GFI ≥ 0.95; AGFI ≥ 0.90
(N) NFI; TLI	(Non) Normed-Fit Index; Tucker Lewis Index	NFI ≥ 0.95; NNFI ≥ 0.95
CFI	Comparative Fit Index	CFI $\geq .90$
RMSEA	Root Mean Square Error of Approximation	RMSEA < 0.08

Source: Parry, (2017).

4.5.1   The influence of land use conversions on converted property rental values in Akure

A predictive model was developed (SEM) and used to test the relationships among the variables to determine the level of influence(s) of the independent variable on the dependent variable in Akure. The analysis of survey results using Structural Equation Model (SEM) to predict the influence of land use conversion factors on residential property rental values was explored to achieve Objective Three of the study. According to Jingfeng *et al.* (2017), SEM is an approach that can be adopted to unveil the relationships that exist among variables as it is an effective technique for establishing structural relationships between the latent variables,

as well as for testing the theoretical model. Both Lewicki and Hill (2006) and Grace (2006) argued that, the use of SEM as an extension of multivariate regression and factor analysis techniques is necessary, as its applicability is required to developed a predictive model that explained the relationships between the variables, determines the strength of the relationships and predicts the level of influence of the variables on each other.

Awang (2015), Carrasco and Jover (2003) opined that SEM-AMOS software allows the investigator to have total control and possibly a further understanding of the analyses. The graphical interface of the software enhances ingenuity and helps in rapid model debugging. It also provides an opportunity to compare mean, regression coefficients and variances simultaneously; it further permits the rapid overall test of model fit with individual parameter estimate test, while errors could be probably purged off through measurement and confirmatory factor analysis. Structural Equation Model has been adopted in the study of land use conversions and Property value determination (Gwamna & Yusoff, 2016). Measurement model that is required in SEM shows the latent and the observed variables relationships (land use conversion factors and rental values) and the structural model demonstrates the relationships between the latent variables (land use conversion factors); hence the two theoretical models are require in SEM development (Boomsma, 2005).

The model for this study was analysed using the procedure adopted by Jinfeng *et al.* (2017) through data collected from the field and the Structural Equation Model using Analysis of Moment Structures (SEM-AMOS 21.0) through the principal data analysis and covariance structure analysis that facilitate model investigation by means of latent variables with

multiple indicators. AMOS 21.0 was used to appraise whether the constructs are measured with satisfactory accuracy and to test and analyse the theorized relationships (influence of land use conversions on rental values). Fiedler (2011) further observed that the combinations of two statistical analytical tools by SEM to validate indicators related to the theoretical construct (Confirmatory Factor Analysis) and the analysis of the influence or relationship between variables that assist in the provision of support for a specific theory or framework and conclusions that help in the improvement of the outcome (Multivariate Analysis) makes SEM a better analytical tool for a study of this nature. Based on those mentioned earlier, the modelling and analysis of the influences or relationships existing between the study's identified constructs were done using the Analysis of Moment Structures (AMOS) Graphic.

AMOS Graphic as used by Jingfeng *et al.* (2017); Gwamna and Yusoff (2016) and Hair *et al.* (2011) was adopted to virtually, accurately and efficiently analyse the inter-relationship between and among the latent constructs in Ikeja, Osogbo and Akure and to present the models graphically. The procedure involved the conduct of a pre-test which shows the paths for the Confirmatory Factor Analysis revealed the need for further model debugging as all the conditions for a good model were not met (Figure 4.49).
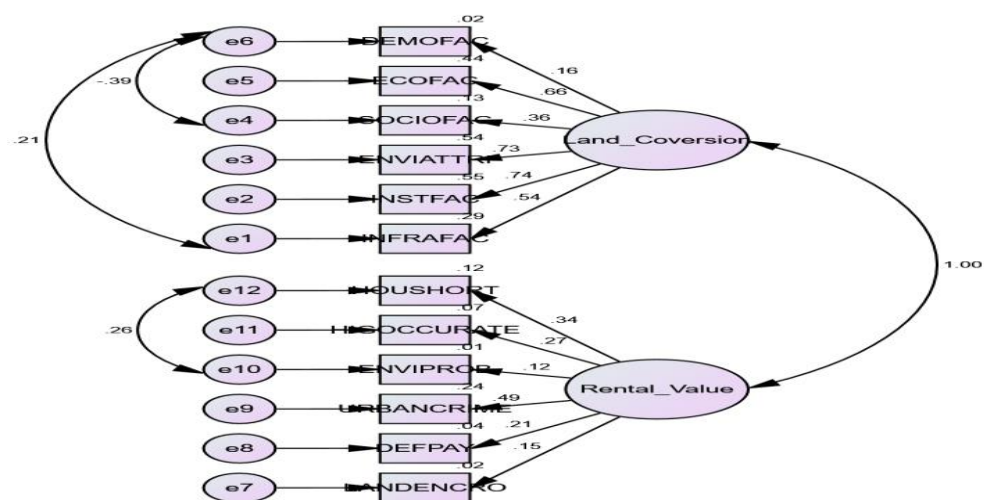
Figure 4.49: The CFA Measurement Model Fit for Akure

Table 4.46:   The Model Fit Measure

Measure	Estimate	Threshold	Interpretation
CMIN	95.974	--	--
DF	50.000	--	--
Chi-square	1023.800	--	--
CFI	0.850	>0.90	Not Achieved
GFI	0.076	> 0.95	Not Achieved
TLI	0.077	>0.90	Not Achieved
RMSEA	0.970	< 0.08	Not Achieved
P Close	0.069	< 0.05	Not Achieved

Source: Analysis of Survey Data, (2019)

The model therefore suggested the removal of some variables. These variables have no direct link with land use conversions activities in the study area. After the refinement of the model, the debugged model that achieved the required fit for Akure is as presented in Figure 4.50
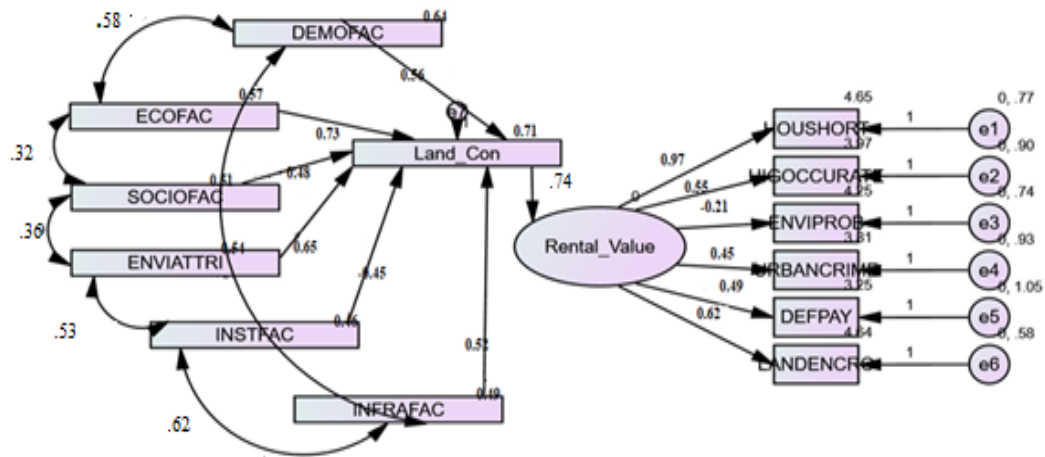
Figure 4.50: Structural Model for Akure

The above Structural Model fit revealed that the identified Land Use Conversions variables impact rental values performances of converted property in the study area. The Square Multiple Correlations (SMC) of the model depicted that about 0.71, which is 71% of the Land Use Conversions activities in Akure, can be measured or explained by the fusion of the six exogenous constructs identified for the study into the model with 0.74, that is 74% impact on the rental value performances in the study area. The observed Square Multiple Correlations for the entire model are considered strong evidence and a reasonable estimate of the dependent variable (rental values) with the pleasing influence captured by including the model's independent variables. The double-headed arrow lines are the covariance line that shows the relationships between the constructs.

Table 4.47 presents the fitness indices for Akure structural model fit. All the factors loaded or achieved the required levels/ benchmark fixed for the study, and all the correlation values between the variables are within the acceptable range. However, the recommended factor

loading levels for absolute and incremental finesses as set by Parry (2017) and Awang (2014) are: Root Mean Square Error of Approximation (RMSEA) < 0.08; Goodness of Fit Index (GFI) ≥ 0.95, Incremental Fit, that is, [Comparative Fit Index (CFI) > 0.90; Tucker Lewis Index (TLI) > 0.90; Normed Fit Index (NFI) ≥ 0.95 and parsimonious fit (Chi sq /SL < 0.05) are the benchmark adopted for the study. Though Shi *et al*. (2019) observed that an excellent fit could be achieved when RMSEA is ≤ .01, that is closer to 0.00, while the poor fit is achieved when RMSEA is ≥ .10. The Fitness Indexes of the Structural Model Fit, as depicted in Table 4.47, shows the standings of the Fitness Indexes achieved for Akure.

Table 4.47: Fitness Indexes for Akure Structural Model Fit Statistics

Fit Statistics	Obtained	
Index Name	Index Value	Comments
Root means Square Error of Approximation (RMSEA)	0.014	Required level achieved
The Goodness of Fit Index (GFI)	0.970	Required level achieved
Tucker Lewis Index (TLI)	0.986	Required level achieved
Normed Fit Index (NFI)	0.960	Required level achieved
Relative Fit Index (RFI)	0.974	Required level achieved
Degrees of freedom	60	
Chi-square	198.176	
Chi-square Significance level	0.000	Required level achieved
CMIN/DF	3.303	
CFI	0.961	Required level achieved
PCLOSE	0.045	Required level achieved

Source: Analysis of Survey Data, (2019)

The analysis conducted revealed that the model fit categories obtained were absolute fit. RMSEA is 0.014, which is below the recommended limit of 0.08 (< 0.08). The Goodness of Fit Index (GFI) obtained was 0.970, which is higher than the 0.95 benchmarks minimum set (≥ 0.95). The Normed Fit Index (NFI); Relative Fit Index (RFI); Comparative Fit Index

(CFI); Tucker Lewis Index (TLI) are 0.960; 0.974; 0.961 and 0.986 respectively were all above the expected level of above ≥ 0.90 with a p-value of 0.045. It implies a robust model with an overall acceptable fit. The work is in line with the postulations of Awang (2015), Hair *et al*. (2011) and Babin *et al.* (1994). In all, Table empirically revealed that the identified land use conversions factors significantly influenced the rental values' performances of converted property in Akure with a P-value of 0.045 and RMSEA of 0.014, which indicated a robust structural model with excellent fit to the data at hand; hence yielded a corroborative value for the excellent model fit. The Structural Model Fit construct validity required for all the various categories of Fitness Indexes were therefore achieved.

Nevertheless, the regression weights showing the beta coefficient estimates (β) that measure all the exogenous constructs' influence on the endogenous constructs is further presented in Table 4.48. In the Table, the one-way arrows represent structural regression coefficients and thus indicated the impact of one variable on the other. The unidirectional arrows pointing toward the exogenous construct land use conversions (LanConv), implies that a unit change in the identified drivers of the exogenous factors as Demographic Factors [DEMOFAC] (Population increase, age composition of the population) leads to about .008 change in land use conversions; a unit change in Economic Factors [ECOFAC] (Rental gain and other pecuniary consideration) brings about .198 land use conversion activities in the study area; Sociological Reasons [SOCIOFAC] as (Prestige and taste and Security); Environmental Attributes [ENVIATTRI] as (Location and neighbourhood quality); Institutional Factors [INSTFAC] as (Policies and regulations, Enforcement mechanism and Penalties) and Infrastructural Factors [INFRAFAC] as (Condition of roads and Electricity supply) are the

causes of Land Use Conversions. The one-way arrows pointing from the enclosed error terms (e1 –e6) indicate the impact of measurement errors on the observed variables.

Table 4.48: The Standardized Regression weight and its significance for the Model Path

Construct	Path	Drivers	Estimate	S.E.	C.R.	P	Label
LanConv	<---	ECOFAC	.198	0.080	2.497	0.032	***
LanConv	<---	DEMOFAC	.008	0.004	2.029	0.002	***
LanConv	<---	INFRAFAC	-.091	0.034	-2.651	-.013	***
LanConv	<---	ENVIATTRI	.044	0.019	2.377	0.008	***
LanConv	<---	INSTFAC	.159	0.099	1.614	0.061	
LanConv	<---	SOCIOFAC	-.172	0.078	-2.211	-.035	***
LanConv	<---	Rental Value	.085	0.040	2.14	0.020	***
Rent Value	<---	HOUSHORT	1.000	0.215	4.65	0.046	***
Rent Value	<---	HIGOCCUR	.500	0.126	3.97	0.032	***
Rent Value	<---	ENVIPROB	9.192	2.927	3.14	0.932	
Rent Value	<---	URBANCRI	9.721	2.412	4.03	0.006	***
Rent Value	<---	DEFPAY	-.502	8.367	-0.06	0.007	***
Rent Value	<---	LANDENCR	0.096	1.185	4.14	0.023	***

Note: ***$p < 0.05$ (indicate significant level), *LanConv = Land use conversion
Source: Analysis of Survey Data, (2019)

Table 4.47 presents the individual and total effect sizes for land use conversion factors on Akure's property rental values.

Table 4.49: Total Effect of Land Use Conversion on Rental Values in Akure

Variables	Estimate	Const.	Effect
ECOFAC	.198	.085	0.283
DEMOFAC	.008	.085	0.093
SOCIOFAC	-.091	.085	-0.006
ENVIATTRI	.044	.085	0.129
INSTFAC	.159	.085	0.244
INFRAFAC	-.172	.085	-0.087
LANCONV	.085	-	0.085
Total Effect			**0.741**

Source: Computed from table 4.40

The estimated path coefficient as presented in Table 4.49 further revealed that, the influence of Economic factors on Land Use Conversions is 0.198. The value revealed that the influence of economic factors would contribute a 0.198 unit increase to Land Use Conversions activities for every one-unit increase in economic composition in the study area. Thus, the influence of economic factors on Land Use Conversions is positively significant. An increase in the study area's demographic composition by one unit would increase Land Use Conversions exercise by 0.008 unit. It indicated that demographic activities contribute 0.008 unit to Land Use Conversions. More so, an upward movement in environmental attributes influences Land Use Conversions by 0.044. A unit drop in sociological and infrastructural factors negatively contributed to Land Use Conversions by -0.091 and -0.172. That means that one unit drop in sociological factor and infrastructural development bring about a drop in land use conversion activities by 0.091 and 0.172 units, respectively. In the same vein, every one-unit increase in occupancy rate influences property rental values in the study location by a 0.500-unit increase. The scenario supported the observation of Owoeye (2020), who opined that urban area attract the influx of men and, thus, the epicentres of life that frequently resulted in cities unprecedented growth and rental volatility. Similarly, a unit increase in rent default brings about -0.502 decrease in property rental values in the study area. As shown in the table, the implication of the above results revealed that the theorised causal effect relationships between the various variables are significant, with economic factors having the most influence on Land Use Conversions in the study area.

It could be attributed to the current influx of business activities into the city due to the favourable business environment. More so, the rate of expansion in Akure's metropolitan city, the areas and property that were hitherto considered purely residential areas and the

property used for residential purposes are now being converted to other uses, thereby gradually redefining the structure of urban land use in Akure the study area. The submission of the study supported submissions of Adeoye (2016) and Iroham (2014).

The regression weights and significance value shown in Table 4.49 further supported or revealed that all the constructs are significant except for institutional and environmental problems, which were not significant and thus not supported in the model. The study's postulations have been supported, as shown by the significance of the theorised causal effect relationships between the variables. The study objective has been achieved, as the nature of the interplay of the variables has been established.

4.5.2: **The influence of land use conversions on converted property rental values in Osogbo.**

To achieve the required result for the influence of land use conversion factors on the rental values of converted residential property in Osogbo, pre-test of the Confirmatory Factor Analysis Path was done. The Confirmatory Factor Analysis (CFA) shows the path relationship among the variables and their indicators. The CFA for Osogbo is presented in Figure 4.51
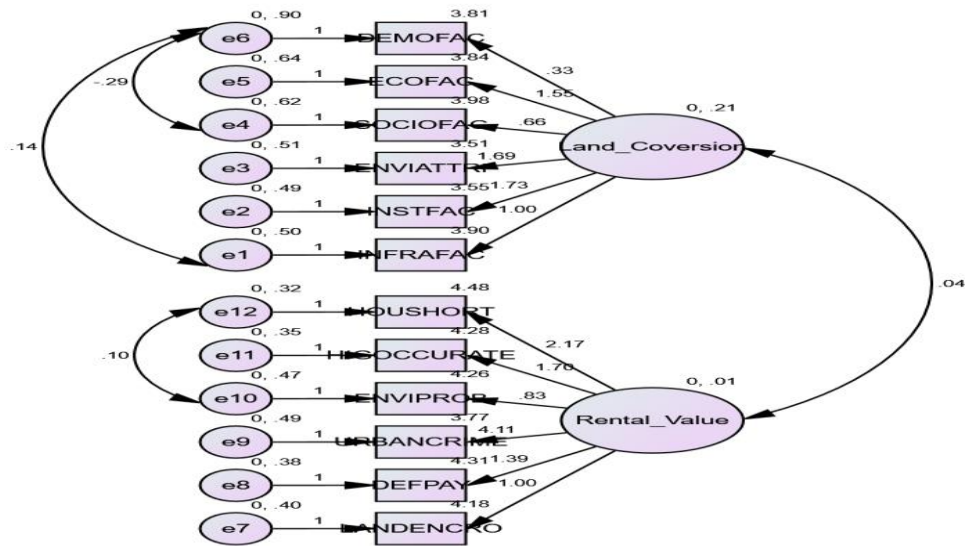
Figure 4.51:   The CFA Measurement Model Fit for Osogbo

Table 4.50:   The Model Fit Measure for Osogbo

Measure	Estimate	Threshold	Interpretation
CMIN	76.857	--	--
DF	50.000	--	--
Chi-square	1023.800	--	--
CFI	0.850	>0.90	Not Achieved
GFI	0.088	> 0.95	Not Achieved
TLI	0.087	>0.90	Not Achieved
RMSEA	0.870	< 0.08	Not Achieved
P Close	0.057	< 0.05	Not Achieved

Source: Analysis of Survey Data, (2019)

Figure 4.51 shows that the model needs to be purge of errors to achieve the acceptable fit for the study. The model therefore suggested the removal of variables considered not to have direct relationships with model. Figure 4.52 is the debugged model that have achieved the require fit set as threshold for a study of this nature.

Figure 4.52 show the Structural Model fit for Osogbo. The AMOS graphic further revealed that Osogbo annual rental value performances could be predicted using the identified Land Use Conversions variables. From the graphics, about 0.67, that is 67% of Land Use Conversions activities in Osogbo can be measured or explained through the fusion of the six identified exogenous drivers of land use conversions (which are demographic factors, economic factors, environmental attributes, sociological factors, infrastructural factors and institutional factors) for the study into the model with 25% impact rate on rental value performances. The observed Square Multiple correlations (SMC) for the entire model, which is 67%, is considered to have a good influence as a reasonable estimate of the dependent variable (rental values) could be captured by including the variables in the model. The postulation is in line with Adams and Lawrence (2015). Hence, the structural equation model reported an overall suitable model fit as the theorised model fits well with the observed data as presented in the AMOS graphic below
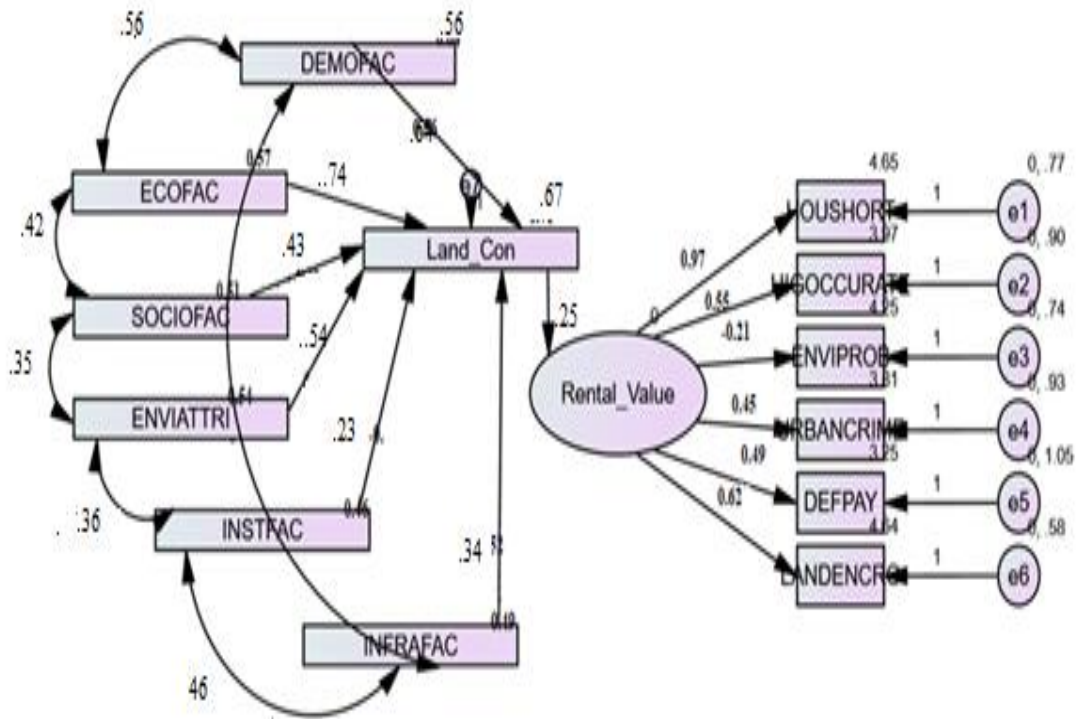
Figure 4.52: Structural Model Fit for Osogbo

Table 4.51 shows the summary of model fit estimates for Osogbo. The indexes presented include a chi-square value of 303.290 with a degree of freedom of 59 and a P-close of 0.040. The study obtained a Goodness of Fit index (GFI) of 0.987, which is reasonably more significant than the ≥ 0.95 minimum benchmarks set for a study of this nature. The Normed fit Index (NFI), Relative Fit index (RFI), Tucker Lewis Index (TLI) are 0.955, 0.995, 0.954, respectively, which are slightly above the minimum required benchmark or expected level of not below 0.95. Conversely, the RMSEA is 0.038, which is well below the recommended limit of ≥ 0.10. Therefore, the model shows an overall acceptable fit. Table 4.51 presented the values for all the fitness indexes.

Table 4.51: Fitness indexes for the Structural Model

Fit Statistics	Obtained	
Index Name	Index Value	Comments
Root means Square Error of Approximation (RMSEA)	0.038	Required level achieved
The goodness of Fit Index (GFI)	0.987	Required level achieved
Tucker Lewis Index (TLI)	0.954	Required level achieved
Normed Fit Index (NFI)	0.955	Required level achieved
Relative Fit Index (RFI)	0.995	Required level achieved
Degrees of freedom	59	
Chi-square	303.290	
Chi-square / Significance level	0.000	Required level achieved
CMIN/DF	2.438	
PCLOSE	0.040	Required level achieved

Source: Analysis of Survey Data, 2019

Table 4.51 revealed the rationality of the index suitability for the Structural Model of the construct used. From the table, the constructs achieved all the required levels for the various categories of fitness. The effect or influence that the exogenous construct has on the endogenous construct were further measured through the beta coefficient estimates, which is presented in the regression weights table 4.52.

Table 4.52: The Standardised Regression weight and its significance for the Model Path

Construct	Path	Construct	Estimate	S. E	C.R	P	Label
LANCONV	<---	DEMOFAC	.089	.022	4.045	.005	***
LANCONV	<---	ECOFAC	.361	.111	3.252	.034	***
LANCONV	<---	SOCIOFAC	-.004	.002	-2.000	.001	***
LANCONV	<---	ENVIATTRI	.032	.007	4.571	.002	***
LANCONV	<---	INSTFAC	-0.528	.607	-0.870	-.698	
LANCONV	<---	INFRAFAC	.100	.045	2.222	.021	***
Rent value	<---	LANCONV	.028	.013	2.153	.006	***
Rent value	<---	HOUSHORT	1.000				

Note: ***$p < 0.05$ (indicate significant level), *LanConv = Land use conversion
Source: Analysis of Survey Data, (2019)

Table 4.53: Total Effect of Land Use Conversion on Rental Values in Osogbo

Variables	Estimate	Const.	Effect
DEMOFAC	.089	.028	0.117
ECOFAC	.361	.028	0.389
SOCIOFAC	-.004	.028	0.024
ENVIATTRI	.032	.028	0.060
INSTFAC	-.528	.028	-0.500
INFRAFAC	.100	.028	0.128
LANCONV	.028	-	0.028
Total Effect			**0.246**

Source: Computed from table 4.47

Tables 4.52 and 4.53 revealed the land use conversion factors' path coefficient, both their individual and total effect size on converted property rental values in the study area. The value of the path coefficient of demographic factor to Land Use Conversions, which is 0.089,

indicates that a single unit increase in demographic variable contributes to a 0.089 unit increase to Land Use Conversions in the study area has a significant positive influence on Land Use Conversions. This is in line with the submission of Makinde and Makinde (2020) who asserted that increase in rental value has resulted in Land Use Succession with about 57.8% increase in commercial land use (infiltration into residential land areas) between 2002 and 2016, capable of enhancing property investment decision in Ile Ife

An increase in Economic activities by a single unit brings about a 0.361 unit increase in Land Use Conversions. It translates to an increase in one unit's economic activities that could contribute to a 0.361 unit change to Land Use Conversions in the study area. An increase in Sociological factors by a single unit contributes to a -0.004 unit drop in Land Use Conversions. An upward movement of Environmental Attributes by one unit contributes to a 0.032 unit increase in Land Use Conversions. It means that environmental attributes contribute to land use conversions by 0.032 unit with a single unit increase. A unit increase in institutional factors brings about a -0.528 unit decrease in land use conversions. An increase in infrastructural development brings about a .100 unit increase in land Use Conversions. Therefore, the study is congruent with Ayo-Odifiri *et al. (*2017), which asserted that the land use trend in Auchi responded to the prevailing economic activities. Table 4.52 also revealed that when Land Use Conversions increases by a single unit, Residential and Commercial Property Rental Values increases.

However, high occupancy rate and default in rent payment have little or no significant effects on property rental adjustments in the study area. Judging from table 4.54 it is clear that the

variables have a significant positive total effect size on rental values at 0.246, which falls within the substantial effect size range.

4.5.3: The influence of land use conversions on converted property rental values in Ikeja

Model debugging was done to convert the traditional Structural Model (SM) to Expanded Structural Equation Model (ESEM). The ESEM consist of Structural Model (SM), Measurement Model (MM) and Observation Model (OM). Model debugging and model testing brings out the Expanded Structural Equation Model with good fit and data obtained. Hence the result of the first model or pre-test is presented below.
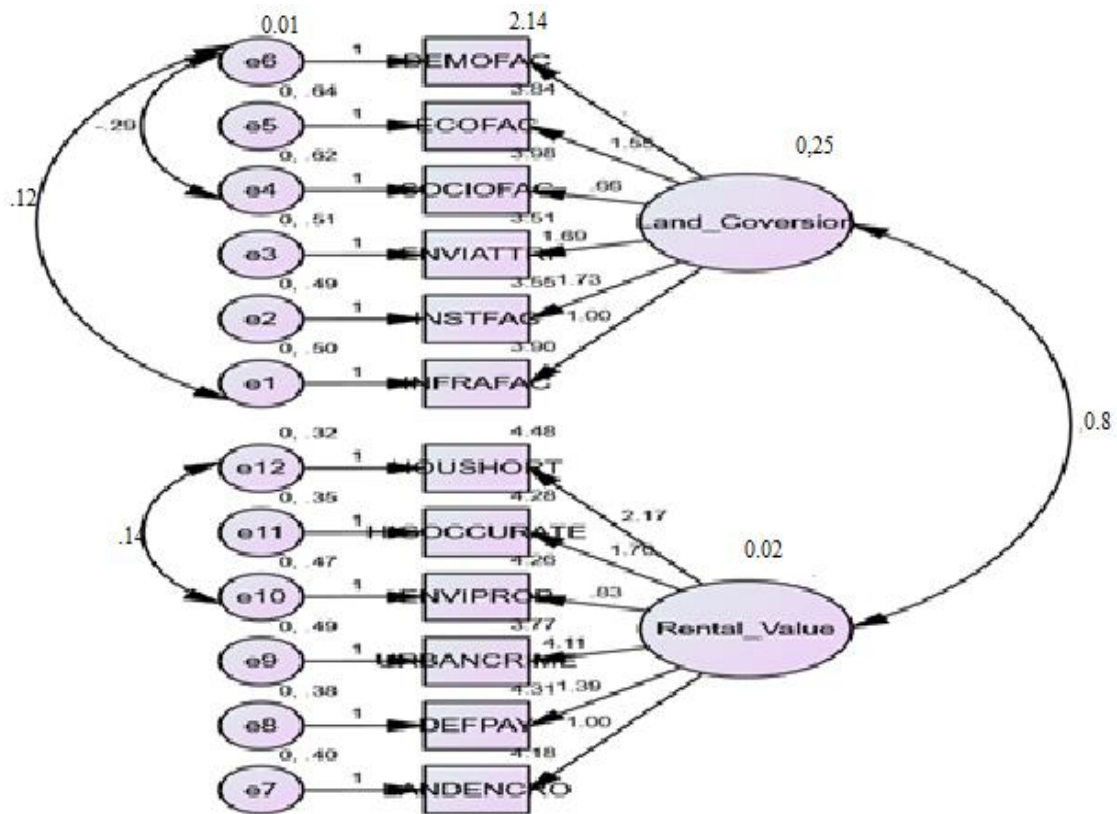
Figure 4.53:   The CFA Measurement Model Fit for Ikeja

Table 4.54:   The Model Fit Measure for Ikeja

Measure	Estimate	Threshold	Interpretation
CMIN	86.750	--	--
DF	50.000	--	--
Chi-square	1054.100	--	--
CFI	0.760	>0.90	Not Achieved
GFI	0.788	> 0.95	Not Achieved
TLI	0.067	>0.90	Not Achieved
RMSEA	0.972	< 0.08	Not Achieved
P Close	0.059	< 0.05	Not Achieved

Source: Analysis of Survey Data, (2019)

The model as reveal by Table 4.54 did not achieve any of the require goodness of fit for a model of this nature, hence the need for model debugging. Figure 4.54 presents a debugged model where all the require goodness of fit indexes were achieved.
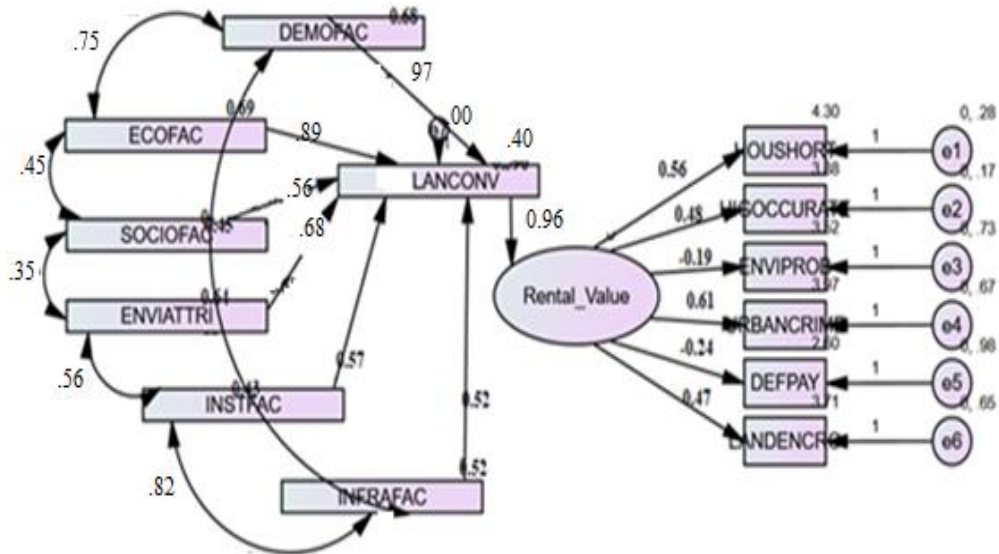
Figure 4.54: Structural Model Fit for Ikeja

Figure 4.54 above is the Structural Model fit for land use conversion drivers' influence on Ikeja rental value performances. It revealed that residential and commercial property rental

271

values could be predicted using the identified Land Use Conversions variables or drivers. It further indicated a Square Multiple Correlation (SMC) of 0.396, which denote that about 39.6% effect size of Land Use Conversions activities in the study area could be measured by the fusion of the six exogenous constructs (demographic factors, economic factors, environmental attributes, sociological, infrastructural factors and institutional factors) identified for the study into the model. Hence, the observed SMC values for the entire model are considered adequate and fit well into the model. The model further shows that the fusion of the land use conversion variables has a 96% (0.96) total influence on rental value performance in the study area. It, therefore, implies that land use conversion variables identified and used for the study have a substantial direct influence on property rental values and can thus reasonably estimate the dependent variable's performances (rental values) which could be captured through some independent variables into the model. It is in line with the postulation of Adams and Lawrence (2015).

Table 4.55 shows the Maximum Likelihood Estimates, that is, the summary of model fit estimates for Ikeja. The indexes presented include a chi-square value of 307.230 with the degree of freedom of 60 and a p-close of 0.050. The study obtained a comparative Fit index (CFI) of 0.912; Normed fit Index (NFI) of 0.938, Relative Fit index (RFI) 0.920 and Tucker Lewis Index (TLI) of 0.954, which are reasonably greater than 0.90 benchmarks set for the study. RMSEA is 0.040, which is well below the recommended limit of 0.08. Therefore, the model shows an overall suitable and acceptable fit. The structural equation model reported an overall model fit, and hence, the theorised model fits well with the observed data.

Table 4.55: The Standardised Regression weight and its significance for the Model Path

Fit Statistics	Obtained	
Index Name	Index Value	Comments
Root means Square Error of Approximation (RMSEA)	0.040	Required level achieved
Comparative Fit Index (CFI)	0.912	Required level achieved
Tucker Lewis Index (TLI)	0.954	Required level achieved
Normed Fit Index (NFI)	0.938	Required level achieved
Relative Fit Index (RFI)	0.920	Required level achieved
Degrees of freedom (DF)	60	
Chi-square	307.230	
Chi-square Significance level	0.000	Required level achieved
CMIN/DF	3.453	Required level achieved
PCLOSE	0.040	Required level achieved

Source: Analysis of Survey Data, 2019

Table 4.56 revealed the validity of the index's fitness for the construct's Structural Model. The constructs achieved all the required levels for Fitness's various categories (absolute and incremental) from the table. The effect or influence that the exogenous construct has on the endogenous construct were further measured through the beta coefficient estimates, which is presented in the Maximum Likelihood Estimates or regression weights table 4.56 below.

Table 4.56: Maximum Likelihood Estimates / Regression Weights Table

			Estimate	S.E.	C.R.	P	Label
LANCONV	<---	DEMOFAC	0.148	0.063	2.364	0.027	***
LANCONV	<---	ECOFAC	0.076	0.027	2.803	0.010	***
LANCONV	<---	SOCIOFAC	-0.147	0.067	-2.186	-0.031	***
LANCONV	<---	ENVIATTRI	0.040	0.015	2.641	0.006	***
LANCONV	<---	INSTFAC	-0.010	0.005	-2.16	-0.002	***
LANCONV	<---	INFRAFAC	0.176	0.041	4.265	0.010	***
Rental Value	<---	LANCONV	0.097	0.046	2.131	0.021	***
Rental Value	<---	HOUSHORT	1				

Note: ***$p < 0.05$ (indicate significant level), *LanConv = Land use conversion
Source: Analysis of Survey Data, 2019

The value of the path coefficient of demographic factor to Land Use Conversions which is 0.148, indicates that the influence of a single unit increase in demographic variable contributes 0.148 unit increase to Land Use Conversions in the study area. Hence it has a significant positive influence on rental values performances in the study area.

An increase in Economic factors by a single unit brings about a 0.076 unit increase in Land Use Conversions. It thus translates to an increase in a unit of an economic factor that could contribute 0.076 unit change to Land Use Conversions in the study area. An increase in Sociological factors by a single unit contributes to a 0.147 unit drop in Land Use Conversions. An upward movement of Environmental Attributes by one unit contributes to a 0.040 unit increase in Land Use Conversions. It means that environmental attributes contribute to land use conversions increase by 0.040 unit with a single unit increase. A unit

increase in institutional factor brings about a -0.010 unit decrease in land use conversions. A

single unit increase in infrastructural development brings about a 0.176 unit increase in land

Use Conversions. The table further revealed that when Land Use Conversions increases by a

single unit, Residential and Commercial Property Rental Values increase by 0.097 unit with

the consequences of high occupancy rate, urban crime, land encroachment, among others. A

unit increase in rental values brings about 0.023 unit increase in high occupancy rate, 1.036

increase in environmental problems, 0.071 increase in urban crime, 1.447 increase in default

in rent payment and 0.422 increase in land encroachment or land use infiltration.

Table 4.57: Total Effect of Land Use Conversion on Rental Values in Ikeja

Variables	Estimate	Const.	Effect
DEMOFAC	0.148	0.097	0.245
ECOFAC	0.076	0.097	0.173
SOCIOFAC	-0.147	0.097	-0.05
ENVIATTRI	0.040	0.097	0.137
INSTFAC	-0.010	0.097	0.087
INFRAFAC	0.176	0.097	0.273
LANCONV	0.097	-	0.097
Total Effect			0.962

Source: Computed from table 4.56

Table 4.58 shows the individual and total effects of the land use conversion variables on

property rental values in Ikeja. The variables effect calculated, with their total effect size

derived. The degree of influence of the six fused variables influencing Land Use Conversions

in the study area on the rental values of converted residential and commercial property in the

study, which invariably affected rental values, is 96.2%. Hence according to Adams and

Lawrence (2015), this can be seen to have a substantial effect size. The implication is that

the six land use conversions variables that considerably affect residential and commercial

property rental values could also have the consequences of depleting residential housing supply resulting in high rentals.

4.5.4: Summary of square multiple correlation (SMC) and rental values effect

For an easy understanding of the model SMC performance and total effect ratio of the conversion exercise on rental performances in the study areas, the summary of Square Multiple Correlation (SMC) showing the measurement of the fusion of the conversion variables into the conversion models for each of the locations and their influence on rental values is graphically presented in Table 4.58

Table 4.58:   Summary of Square Multiple Correlation and Rental Values Effect

LOCATIONS	Square Multiple Correlation	Effect on Rental Values
IKEJA	0.396	0.96
OSOGBO	0.67	0.25
AKURE	0.71	0.74

Source: Computed from Figures 4.50, 4.52 and 4.54

4.6 .0: Analysis of Location Variation in Rental Values Caused by the Pattern of Land Use Conversions.   (The Study's Objective Four)

This section aimed to achieve the fourth objective of the study, which is to analyse the location variation in the rental values of residential and commercial property caused by land use conversions. The procedure adopted for achieving this objective includes the comprehensive analysis of the variation in the rental components of converted property in the various locations, unlike previous studies that focused on the influence of land use conversions on rental values of a single property type. Hence, the rental variations examined

in the study encompasses not just the average rents for the study areas but include the individual average rentals for each location at micro and macro levels.

It was, however, arrived at through the conduct of Analysis of Variance (ANOVA), which reported the result of the means difference between rental values (dependent variable) and land conversions (independent variable) across the different sampled locations. The three property types studied are Converted Three Bedroom; Two Bedroom, and Tenement Buildings. ANOVA result for each of the locations, which are Akure, Osogbo and Ikeja, are as presented below:

4.6.1   Analysis of location variation in rental values caused by the pattern of land use conversions in Akure.

The Analysis of Variance was used to achieve Objective Four of the study, and the result is as presented in table 4.59:

Table 4.59: ANOVA FOR AKURE

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Rental Val Ten	Between Groups	3.972	4	0.993	11.448	0.000
	Within Groups	15.439	178	0.086		
	Total	**19.411**	**182**			
Rental Val 2BDRM	Between Groups	1.392	4	0.348	8.956	0.000
	Within Groups	6.916	178	0.038		
	Total	**8.308**	**182**			
Rental Val 3BDRM	Between Groups	4.503	4	1.125	17.016	0.000
	Within Groups	11.776	178	0.066		
	Total	**16.279**	**182**			

Source: Analysis of Survey Data, 2019

The analysis conducted shows rental differentiation across all the Akure locations for all the property types under study. Tenement building reported a significant means difference of F-value of $[(4,178) = 11.448, p = 0.000]$, while Two bedroom reported a positive significant mean difference with F-value of $[(4,178) = 8.956, p = 0.000]$ and Three bedroom reported a mean difference with F-value of $[(4,178) = 17.016, p = 0.000]$. The result shows that the overall model is statistically significant and that they existed location variation in the rental values of all the property types caused by the pattern of land use conversions. That implies that the rental values of residential and commercial property in the parts of Akure metropolis studied varies according to their locations.

Having established the levels of significant differences in rental values of the property based on their locations, it becomes imperative to determine the actual location(s) that exhibit a significant difference in rental values. Hence, a post hoc test was further conducted after obtaining the ANOVA result. The result of the Post-Hoc Test is as presented in Table 4.60.

Table 4.60   Post Hoc Test for Tenement Buildings in Akure

Dependent Variable	(I) ADDRESS OF PROPERTY	(J) ADDRESS OF PROPERTY	Mean Difference (I-J)	Sig.
Rental Val Ten	FANIBI DISTRICT	OYEMEKUN	-.19779	.019
		ARAKELE	-.18750	.021
		ARAROMI	-.01278	.893
		OKE ARO	-.00983	.917
	OYEMEKUN	FANIBI DISTRICT	.19779	.019
		ARAKELE	.04029	.606
		ARAROM	.16057	.046
		OKE ARO	.15762	.050
	ARAKELE	FANIBI DISTRICT	.18750	.021
		OYEMEKUN	-.04029	.606
		ARAROMI	.17028	.027
		OKE ARO	.16733	.037
	ARAROMI	FANIBI DISTRICT	.01278	.893
		OYEMEKUN	-.16057	.046
		ARAKELE	-.17028	.027
		OKE ARO	-.00295	.971
	OKE ARO	FANIBI DISTRICT	.00983	.917
		OYEMEKUN	-.15762	.050
		ARAKALE	-.16733	.037
		ARAROMI	-.00295	.971

* Significant level at 0.05
Source: Analysis of Survey Data, (2019)

The test shows that the tenement building's rental values along Oyemekun road and Arakale
are significantly higher than the rental value of the tenement building at Champion (Fanibi
District) (-0.19779, Sig = 0.19) and (-.18750, Sig = .021) respectively. It implies that
converted property (tenement buildings) along Oyemekun and Arakale attract higher rental
value than those at Fanibi District. The Post Hoc test outcome revealed no significant
difference between tenement buildings' rental values at Fanibi district and Oke Aro Quarters.
However, a significant difference was observed between rentals of converted tenement
buildings along Oyemekun and Oke Aro Quarters and Araromi. Similarly, the rental value
of converted tenement building along Oyemekun road is significantly higher than the rental

values of converted buildings along Araromi Street, while converted tenement buildings along Oyemekun and Arakale area show no significant rental difference. The reason for the non-exposition of the rental differential between Oyemekun and Arakale may not be unconnected with the current trend of commercial activities boom in these areas.

Table 4. 61:   Post-Hoc Test (Two Bedroom) in Akure

Dependent Variable	(I) ADDRESS OF PROPERTY	(J) ADDRESS OF PROPERTY	Mean Difference (I-J)	Sig.
Rental Val 2BDRM	FANIBI DISTRICT	OYEMEKUN	-.17126	.000
		ARAKELE	-.16754	.000
		ARAROMI	-.15328	.002
		OKE ARO	-.15148	.004
	OYEMEKUN	FANIBI DISTRICT	.15126	.000
		ARAKELE	.11628	.017
		ARAROMI	.10202	.021
		OKE ARO	.10022	.025
	ARAKELE	FANIBI DISTRICT	.16754	.000
		OYEMEKUN	-.11628	.017
		ARAROMI	.11426	.004
		OKE ARO	.18394	.000
	ARAROMI	FANIBI DISTRICT	.15328	.002
		OYEMEKUN	-.10202	.021
		ARAKELE	-.11426	.004
		OKE ARO	.09819	.129
	OKE ARO	FANIBI DISTRICT	-.15148	.004
		OYEMEKUN	-.10022	.025
		ARAKELE	-.18394	.000
		ARAROMI	-.09819	.129

*Significant level at 0.05
Source: Analysis of Survey Data (2019)

Table 4.61 revealed that rental values of two bedrooms in Oke Aro, Araromi, Arakele and Oyemekun are significantly higher than the rental value of two-bedroom at Fanibi District (with all the locations having a significant level or P values of < 0.05). It implies that converted two-bedroom in Oke Aro, Arakele, Oyemekun and the few available ones in Araromi attract higher rental value than those at Fanibi District. The rapid rental growth in Oke Aro and Araromi areas could be attributed to their proximity to Arakale, Alakure which

are the emerging electronic and car spare parts markets in Akure metropolis; Oyemekun, which is the central commercial hub of Akure, as well as the fewness of this property types in the market around Araromi area. The Post Hoc test outcome further revealed significant difference between the rental values of converted two-bedroom at Oyemekun exhibit a significant difference in rent or higher rental values than the rent of similar property in the other locations. However, it was observed that Araromi has very few converted two-bedroom, and the expansion of economic activities from Oyemekun is putting much pressure on property rentals along Araromi. Similarly, Oke Aro Quarters is currently going through the same situation due to Arakale and Alakure as emerging commercial hub of Akure.

Table 4. 62:   Post-Hoc Test (Three Bedroom) in Akure

Dependent Variable	(I) ADDRESS OF PROPERTY	(J) ADDRESS OF PROPERTY	Mean Difference (I-J)	Sig.
Rental Val 3BDRM	FANIBI DISTRICT	OYEMEKUN	-.14287	.002
		ARAKELE	-.13746	.008
		ARAROMI	.11245	.131
		OKE ARO	.03960	.594
	OYEMEKUN	FANIBI DISTRICT	.14287	.002
		ARAKELE	.18033	.000
		ARAROMI	.15532	.004
		OKE ARO	.18247	.000
	ARAKELE	FANIBI DISTRICT	.13746	.008
		OYEMEKUN	-.18033	.000
		ARAROMI	.17499	.000
		OKE ARO	.15214	.005
	ARAROMI	FANIBI DISTRICT	-.11245	.131
		OYEMEKUN	-.15532	.004
		ARAKELE	-.17499	.000
		OKE ARO	-.07285	.249
	OKE ARO	FANIBI DISTRICT	-.03960	.594
		OYEMEKUN	-.18247	.000
		ARAKELE	-.15214	.005
		ARAROMI	.07285	.249

* Significant level at 0.05
Source: Analysis of Survey Data, (2019)

The post hoc test results in table 4.62 indicated that the rental values of three bedrooms in Oyemekun and Arakele are significantly higher than the rental value of three-bedroom at Fanibi with P values $p < 0.05$. It implies that converted three-bedroom in Oyemekun and Arakele attract higher rental values than similar property types at Fanibi. The high rental could be attributed to the contestation between residential users and commercial users of the few available property and the increasing economic activities trend. This however affirmed the assertion of Owoeye (2020) that astronomical increase in property rentals and land prices in Akure has been noticed due to the awkward population expansion. The Post Hoc test outcome revealed no significant difference between the rental values of converted three bedrooms at Fanibi, Araromi and Oke Aro Quarters.

4.6.2   Analysis of location variation in rental values caused by the pattern of land use conversions in Osogbo.

Table 4.63:   ANOVA Table for Osogbo

		Sum of Squares	df	Mean Square	F	Sig.
Rental Val Ten	Between Groups	0.805	4	0.201	2.784	0.028
	Within Groups	11.347	157	0.072		
	Total	12.152	161			
Rental Val 2BDRM	Between Groups	0.336	4	0.084	3.464	0.009
	Within Groups	3.807	157	0.024		
	Total	3.843	161			
Rental Val 3BDRM	Between Groups	0.733	4	0.183	3.162	0.015
	Within Groups	9.096	157	0.057		
	Total	9.329	161			

Source: Analysis of Survey Data, (2019)

Table 4.63 above presents the Analysis of Variance for two-bedroom, three bedrooms and tenement buildings in Osogbo, the Osun state's capital. The outcome of the test shows that, there exist a statistically significant difference as determined in the Analysis of Variance with F and P values of [4,157=2.784, p = 0.028] for tenement building, [4,157 = 3.464, p = 0.009] for two-bedroom and [4,157 = 3.162, p = 0.015] for three-bedroom.

Table 4.64:   Post Hoc Test (Tenement Building)

Dependent Variable	(I) ADDRESS OF PROPERTY	(J) ADDRESS OF PROPERTY	Mean Difference (I-J)	Sig.
Rental Val Ten	OBAFEMI AWOLOWO WAY	ALEKUWODO	.15111	.014
		FAGBEWESA	.13196	.021
		GBONGON ROAD	.19838	.000
		EGBETEDO	.18393	.000
	ALEKUWODO	OBAFEMI AWOLOWO WAY	-.15111	.014
		FAGBEWESA	.13189	.022
		GBONGON ROAD	-.16949	.013
		EGBETEDO	.13722	.019
	FAGBEWESA	OBAFEMI AWOLOWO WAY	-.13196	.021
		ALEKUWODO	-.13189	.022
		GBONGON ROAD	-.14149	.003
		EGBETEDO	.16911	.013
	GBONGON ROAD	OBAFEMI AWOLOWO WAY	-.19838	.000
		ALEKUWODO	.16949	.013
		FAGBEWESA	.14149	.003
		EGBETEDO	.11869	.037
	EGBETEDO	OBAFEMI AWOLOWO WAY	-.18393	.000
		ALEKUWODO	-.13722	.019
		FAGBEWESA	-.16911	.013
		GBONGON ROAD	-.11869	.037

* Significant level at 0.05
Source: Analysis of Survey Data, (2019)

Since the Analysis of Variance were statistically significant for all the property types, a post hoc test was conducted to determine the means that are not equal or show those locations that exhibit an element of variance in their rental values. As presented in Table 4.64, the test showed that the rental values of tenement buildings along Obafemi Awolowo way and Gbongon road exhibit higher rental values than those at Fagbewesa, Egbetedo and Alekwuodo areas of the metropolis. The test reported variance in the rent of converted tenement across all the locations.

Table 4.65   Post Hoc Test (Two bedrooms) Osogbo

Dependent Variable	(I) ADDRESS OF PROPERTY	(J) ADDRESS OF PROPERTY	Mean Difference (I-J)	Sig.
Rental Val 2BDRM	OBAFEMI AWOLOWO WAY	ALEKUWODO	.20354	.000
		FAGBEWESA	.21878	.000
		GBONGON ROAD	.22149	.000
		EGBETEDO	.22608	.000
	ALEKUWODO	OBAFEMI AWOLOWO WAY	-.20354	.000
		FAGBEWESA	.22233	.000
		GBONGON ROAD	.21795	.000
		EGBETEDO	.32254	.000
	FAGBEWESA	OBAFEMI AWOLOWO WAY	-.21878	.000
		ALEKUWODO	-.22233	.000
		GBONGON ROAD	-.16027	.031
		EGBETEDO	.14487	.038
	GBONGON ROAD	OBAFEMI AWOLOWO WA	-.22149	.000
		ALEKUWODO	-.21795	.000
		FAGBEWESA	.16027	.031
		EGBETEDO	.21459	.000
	EGBETEDO	OBAFEMI AWOLOWO WAY	-.22608	.000
		ALEKUWODO	-.32254	.000
		FAGBEWESA	-.14487	.038
		GBONGON ROAD	-.21459	.000

* Significant level at 0.05
Source: Analysis of Survey Data, (2019)

Table 4.65 present the post hoc test for two-bedroom property in Osogbo. The Post Hoc Test showed that rent for two bedrooms in the study locations displayed a high level of variance between and across all the locations. It was observed from the field that rent for the two-bedroom apartment was arbitrary fixed by property owners due to its high demand in the Osogbo metropolis.

Table 4.66: Post Hoc Test (Three bedrooms) Osogbo

Dependent Variable	(I) ADDRESS OF PROPERTY	(J) ADDRESS OF PROPERTY	Mean Difference (I-J)	Sig.
Rental Val 3BDRM	OBAFEMI AWOLOWO WAY	ALEKUWODO	.23142	.000
		FAGBEWESA	.23040	.000
		GBONGON ROAD	.15408	.005
		EGBETEDO	.33435	.000
	ALEKUWODO	OBAFEMI AWOLOWO W	-.23142	.000
		FAGBEWESA	-.09826	.134
		GBONGON ROAD	-.28358	.000
		EGBETEDO	.21327	.000
	FAGBEWESA	OBAFEMI AWOLOWO WAY	-.23040	.000
		ALEKUWODO	.09826	.134
		GBONGON ROAD	-.27469	.000
		EGBETEDO	.21327	.000
	GBONGON ROAD	OBAFEMI AWOLOWO WAY	-.23142	.000
		ALEKUWODO	.28358	.000
		FAGBEWESA	.27469	.000
		EGBETEDO	.28469	.000
	EGBETEDO	OBAFEMI AWOLOWO WAY	-33435	.000
		ALEKUWODO	-.21327	.000
		FAGBEWESA	-.21327	.000
		GBONGON ROAD	-.28469	.000

Source: Analysis of Survey Data, (2019)

Table 4.66 present the Post Hoc Test for three-bedroom property in Osogbo. The Post Hoc Test result, just like the other two property types above, showed a statistically significant difference between the three-bedroom property' rent in all the study locations. Three bedrooms property rentals along Obafemi Awolowo and Gbongon road maintained a distinct trend from other rentals in the metropolis.

Table 4.67:   ANOVA (Ikeja)

		Sum of Squares	df	Mean Square	F	Sig.
Rental Val Ten	Between Groups	2.429	4	0.607	8.703	0.000
	Within Groups	12.559	180	0.069		
	Total	14.988	184			
Rental Val 2BDRM	Between Groups	0.418	4	0.104	7.464	0.000
	Within Groups	2.52	180	0.014		
	Total	2.538	184			
Rental Val 3BDRM	Between Groups	0.953	4	0.238	3.961	0.004
	Within Groups	10.826	180	0.060		
	Total	10.979	184			

Source: Analysis of Survey Data, (2019)

The Analysis of Variance conducted shows rental differentiation across all the Ikeja locations for all the property types under study. Tenement building reported a significant means difference of F-value of $[(4,180) = 8.703$, and P-value $= 0.000]$, while Two bedroom had significant mean difference of F-value $[(4,180) = 7.464$, and P-value $= 0.000]$ and Three bedroom reported a mean difference with F-value $[(4,180) = 3.961$ and P-value $= 0.004]$. The

result shows that the overall model is statistically significant and that they exist locational variation in the rental values of all the property types caused by the pattern of land use conversions.

Table 4.68:   Post Hoc Tests (Tenement Building) Ikeja

Dependent Variable	(I) ADDRESS OF PROPERTY	(J) ADDRESS OF PROPERTY	Mean Difference (I-J)	Sig.
Rental Val Ten	AFOLABI AINA STREET	MAKINDE STREET	-.11379	.069
	MAKINDE STREET	AFOLABI AINA STREET	-.11379	.069

Source: Analysis of Survey Data, (2019)

The Analysis of Variance for the property types understudy were run to determine their levels of significance. However, the Analysis of Variance revealed statistically significant rental variations; hence the need for a post hoc test to determine the mean that is not equal or show those locations that exhibit an element of variance in their rental values. As presented in Table 4.68, the test showed no statistically significant difference in tenement buildings' rent in Afolabi Aina and Makinde Street.

Table 4:69   Post Hoc Test (Two Bedroom) Ikeja

Dependent Variable	(I) ADDRESS OF PROPERTY	(J) ADDRESS OF PROPERTY	Mean Difference (I-J)	Sig.
Rental Val **2BDRM**	ALLEN AVENUE	AFOLABI AINA STR	.13194	.020
		TOYIN STREET	.02064	.436
		ADENIYI JONES	.01461	.610
		MAKINDE STREET	.21654	.000
	AFOLABI AINA STR	ALLEN AVENUE	-.13194	.020
		TOYIN STREET	-.11870	.038
		ADENIYI JONES	-.11267	.040
		MAKINDE STREET	.00848	.761
	TOYIN STREET	ALLEN AVENUE	-.02064	.436
		AFOLABI AINA STR	.11870	.038
		ADENIYI JONES	-.00603	.833
		MAKINDE STREET	.33435	.000
	ADENIYI JONES	ALLEN AVENUE	-.01461	.610
		AFOLABI AINA STR	.11267	.040
		TOYIN STREET	.00603	.833
		MAKINDE STREET	.27469	.000
	MAKINDE STREET	ALLEN AVENUE	-.21654	.000
		AFOLABI AINA STR	-.00848	.761
		TOYIN STREET	-33435	.000
		ADENIYI JONES	-.27469	.000

Source: Analysis of Survey Data, (2019)

Table 4.70   Post Hoc Test (Three Bedroom) Ikeja

Dependent Variable	(I) ADDRESS OF PROPERTY	(J) ADDRESS OF PROPERTY	Mean Difference (I-J)	Sig.
Rental Val 3BDRM	ALLEN AVENUE	AFOLABI AINA STR	.31060	.000
		TOYIN STREET	.06634	.228
		ADENIYI JONES	.01145	.847
		MAKINDE STREET	.30296	.000
	AFOLABI AINA STREET	ALLEN AVENUE	-.31060	.000
		TOYIN STREET	-.37694	.000
		ADENIYI JONES	-.22205	.003
		MAKINDE STREET	.00764	.895
	TOYIN STREET	ALLEN AVENUE	-.06634	.228
		AFOLABI AINA STR	.37694	.000
		ADENIYI JONES	-.05490	.355
		MAKINDE STREET	.36930	.000
	ADENIYI JONES	ALLEN AVENUE	-.01145	.847
		AFOLABI AINA STR	.22205	.003
		TOYIN STREET	.05490	.355
		MAKINDE STREET	.31440	.000
	MAKINDE STREET	ALLEN AVENUE	-.30296	.000
		AFOLABI AINA ST	-.00764	.895
		TOYIN STREET	-.36930	.000
		ADENIYI JONES	-.31440	.000

Source: Analysis of Survey Data, (2019)

Table 4.69 and 4.70 present the post hoc test for two and three-bedroom property in Ikeja. The Post Hoc Test showed that rent for two and three bedrooms within Allen, Adeniyi Jones, and Toyin Street command higher rental values than those at Afolabi Aina and Makinde Street. However, no statistically significant differences were observed in the rent paid in

Afolabi Aina and Makinde areas. The study found that rentals for two and three bedrooms at Allen, Toyin and Adeniyi Jones show no significant variations as property owners charged arbitrary rent for their property as a result of the high demand for property use which could be attributed to demographic pressure, economic factors among other factors. Thus, further confirmed the findings of Iroham *et al.* (2014); Oni (2009); Jeong and Kim (2009) but refuted the assertions of Njiru (2016) and Ding (2004), who purely sees land value variations from the perspective of agricultural land use and distance from the city centre.

The study therefore argues that the accelerated cases of urban land conversions (from residential use to commercial use) in Nigeria has amplified the issues of segregated rental behaviour in our cities. However, the supply of urban residential housing has not kept pace with the alarming rate of urban housing demand; hence the current conversion trend could pose sustainable development threat, impede residential housing provision agenda of the various state governments and enhances distortions of city master plans (Bamigboye & Segun, 2005; Ankeli *et al., 2015* and Bankole & Bakare 2011).

4.7.0   Summary of Result of Findings and Discussions

4.7.1   Objective One

Objective One of this study is to examine the causes of land use conversions in the study areas between 2004 and 2019. This objective provided an answer to the first research question. Findings from the study revealed that the causes of land use conversions in the three study areas are the same, but with minor variations in term of magnitude.

1. Osogbo's major driving factors for land use conversions are economic and demographic factors with mean scores of 4.80 and 3.71 and chi-square value of 206.78 and 142.10, respectively ranking first and second most critical factors for the conversion of residential land use to commercial purposes.

2. In Akure, for instance, economic factors with a mean score of 4.199 and a chi-square value of 348.257 influence land use conversions more than any other factors.

3. While environmental attributes with a mean score of 3.83 and chi-square value of 263.803 ranked second. Demographic, Economic and environmental factors with mean scores of 4.192, 4.69 and 4.05 and chi-square values of 293.68, 245.90 and 104.49 respectively ranked first, second and third causes of land use conversions in Ikeja.

4. It is important to note that economic factors stand out as a significant land use conversions driver in all the study locations. Thus, it indicates the level of intricacies in the interactions of the market forces of demand and supply, the imperfections of the real property market and its levels of influence on land use in the study areas.

5. The study also found that institutional factors are the least critical land use conversion factors in Osogbo and Akure, while sociological factor is the least critical factor in Ikeja. This is a complete departure from what is obtainable in developed countries of the world (Europe and America). These countries have well developed

institutional framework, infrastructural amenities and a perfectly competitive market. Hence institutional factor is a significant determinant of land use.

6. Furthermore, the KMO for Osogbo, Akure and Ikeja are .808, .729 and .736, which are over and above the recommended minimum threshold value of 0.600. Bartlett's test of sphericity for the study areas are .000, .002 and .000, thus significant at $p < 0.05$. The proportion of the items' variance explained by the factors extracted (variable communality) were all above the recommended threshold; hence confirming the variables' sharing of some common variance with each other.

7. From the collected, collated and analysed data, it was clear that property in all the study locations experienced conversions of uses from residential to commercial uses at varying degree due to the conversion variables earlier identified in the literature reviewed. It further revealed the need for organizational restructuring for effective institutional mechanism in Osun (Osogbo) and Ondo (Akure), while Lagos state to develop strategy for checking the influx of people to Ikeja.

4.7.2   Objective Two

The second objective of the study (to assess the rental trend of before and After use conversions in the study areas) further answered the second research question. The findings revealed rental volatility across the study locations.

1. Osogbo, after use rental growth rates for two and three bedrooms were highest in 2012 and 2007 with 30% and 35% rental differentials respectively, while that of

converted tenement building was in 2010 with 41% rental differentials. However, the worst year for converted three-bedroom rental performances was in 2009 when both the after use and before use rents dipped at -29% and -14%, respectively. The dipping rental performances in 2009 could be attributed to economic depression due to global financial instability. Thus, it was consistent with Wu and Sharma (2012) findings but partially negated Marquard and Von-Eije (2006) position that investment decision making is based on assumptions, expectations, and the likely predictions of the future.

2. Akure property market experienced its highest annual rental growth for two bedrooms before and after use conversions in 2006, 2008 and 2010 with 38% and 27% rental differentials. That of converted three bedrooms was in 2008 at 24% and 28% for both after and before use. In contrast, tenement building experienced their highest growth in 2011 and 2017 at 74% and 54%.

3. Ikeja rental market exhibits impressive annual rental growth in the rent of before and after use conversions of two and three bedrooms. Converted two bedrooms rental growth was highest in 2011 and 2014 with 27% and 15% rental differentials, while converted three bedrooms experienced rental growth of 13% and 19% in 2017.

4. Findings from the analysed data result further revealed various rental volatility levels for the three study areas, as indicated by their respective predictive trend lines. Ikeja displayed the highest volatility level compared to the other two locations (Akure and Osogbo). Similarly, the smoothed trend lines for Akure and Osogbo maintained a consistent and steady rise in their rental values from 2004 to 2019. Thus, it can be

inferred from the analysis that investment in both use conversions of the property types studied in Ikeja will continue due to the volatile but consistent upward rise in their rent. It is likely to be maintained over the subsequent three years as predicated by the predictive trend lines. For Osogbo and Akure with similar predictive trend lines, the analysis revealed a relatively conservative increase in rental values.

5. Conclusively, the study observed that conversions of use were done in all the study areas, resulting in the depletion of the available residential housing stock, pushing housing prices upward for both before and after uses. The study further revealed that the study areas' skyrocketing rental trends were due to institutional ineffectiveness, thereby resulting in the unauthorised conversion of use.

4.7.3   Objective Three

The analysis on the third objective of the study, which is to determine, using predictive model, the influence of land use conversions on property rental values in the study areas, provided answer to the third research question.

1. The study's findings revealed that 71%, 67% and 39.6% of land use conversions in the study areas could be measured by fusing the exogenous variables into the land use models for each of the three locations.

2. The Absolute and Incremental fitness loaded within the acceptable benchmark; hence, it shows the model's robustness with the overall acceptable fit. Therefore, it implies that all the requirements for the various categories of the Fitness Indexes were met,

thus indicating a significant influence of the exogenous (independent) variables on the endogenous (dependent) variables.

3. The study observed that the degree of the total effects of the six fused variables influencing land use conversions activities on the rental values of converted property in the study areas are 0.74, 0.25 and 0.96 for Akure, Osogbo and Ikeja, respectively. It also explained the level of property market maturity and vibrancy in the study areas.

4. However, the extraction of the most correlated components that induce land use conversions in the study areas has the following total variance explained: 65.01% for Akure, 65.89% for Osogbo and 50.75% for Ikeja.

5. It was discovered from the results of the analysed data that the theorized causal - effect - relationships between the various variables are all significant, with economic factors being the most influential factor or causes of land use conversions in Akure and Osogbo. The study's finding is congruent with previous literatures as Gwamna and Yusoff (2016), Fiedler *et al.* (2012), Akakandelwa (2012) and Agukoronye *et al.* (2002).

6. However, the Ikeja property market has a slightly different outlook and interpretation as the most influencing factor is the demographic factor, thus, substantiating the submissions of previous scholars as Babatola and Oni (2017); Ajibola *et al.* (2012); Babawale *et al.* (2012) and Ajibuah (2010). Though economic factors may not, in all

cases, be the most influential factor, it is a common influencing factor in all the locations.

4.7.4   Objective Four

The study's fourth objective is to analyze the location variation in rental values caused by the pattern of land use conversions. The analysis of this objective answered the fourth research question of the study. The study findings revealed significant rental differentiation across all the locations studied, as indicated by the Analysis of Variance (ANOVA) result. It implies that the rental values of residential and commercial property in Akure, Osogbo and Ikeja vary across all the locations studied.

1. From the ANOVA test conducted in Akure, Osogbo and Ikeja converted tenement buildings, two and three-bedroom property reported a significant difference. The result shows that the overall models are statistically significant, and exist locational variations in the rental values of all the property types studied caused by the pattern of land use conversions due to urban growth. The implication of this trend in the property market subsector is the likelihood of uncontrollable and segregated skyrocketing rental values.

2. The study conducted a Post Hoc test to determine the actual location(s) that exhibit significant rental values differences. Findings from the Post Hoc test for Akure indicated that converted property along Oyemekun Road and Arakele area in Akure attracted the highest rental values. The finding may not be unconnected with the high-level flourishing economic activities in these locations. The study further discovered that rentals in Araromi and Oke Aro Quarters tend to be higher than rent in Fanibi

Quarters. Araromi and Oke Aro enjoy the influence of Oyemekun and Arakele/Alakure respectively.

3. For Osogbo, converted property along Obafemi Awolowo way and Gbongon road exhibit higher rental values than those along Fagbewesa, Egbetedo and Alekwuodo. In Ikeja, tenement buildings along Afolabi Aina Street's rental values exhibit higher values than those along Makinde streets. It may not be unconnected with the unhealthy competitions among space users, and other 'shadow businesses' such properties are put.

4. In the same vein, two and three bedrooms along Allen, Toyin and Adeniyi Jones areas command higher rental values than those along Afolabi Aina and Makinde streets due to their strategic positions and the high demand for their use. All the property studied exhibit rental variation due to use conversion across all the locations at varying degrees.

More so, the general findings during field survey and the series of relevant literatures reviewed, revealed the existence of similarities in the structure, conduct and operations of the real property market in cities in South West Nigeria. The shared similarities make these cities to be prone to land use conversion activities and rental variability. The current study survey and analysed influence of land use conversion activities on property rental values in three out of the six states that constituted the South-West geographical zone of Nigeria. The states and cities selected from the region for the study are those with vibrant real property market participants and transactions; hence findings from the market could form strong bases for

generalisation in the region especially on issues concerning land use conversion activities and property rental values performances.

Conclusively, the study observed that, the prevalence of urban land use conversions activities especially from residential to commercial uses which sharply contrasted with the relatively low residential housing supply, have created a potentially volatile rental housing price regime across the region. This if not urgently addressed could cause slum/shanty town formations, insecurity and political upheaval.

CHAPTER FIVE

5.0   CONCLUSION AND RECOMMENDATIONS

5.1   Conclusion

Therefore, the study concluded that the consistent unabated rise in land use conversions activities in Akure and Osogbo, South West Nigeria, was traced to economic factors (financial inducement), demographic factors (influx of people into cities) and environmental attributes (locational advantage and other neighbourhood characteristics). Although deficiencies in institutional framework of the two States' Ministries of Lands in part contributed to the unguided illegal use conversions in the states. Lagos state has more structured institutional framework. The sectionalization of her Bureau for Lands reduces the rate of illegal use conversion in the state. However, demographic factor (population growth) is a major land use conversion determiner in Ikeja. These and other similar factors have negatively impacted the rental performances in the real estate subsectors. Economic factor stands out as a major land use conversion determiner influencing land use conversions activities across the study locations with compelling negative consequences that need urgent, immediate attention.

However, the study adopted a predictive model for the determination of the influence of land use conversion activities on rental value performances in the study areas. The fusions of the land use conversion factors into the conversion models exhibited relevant positive influences on rental value of properties. It implies that, the research work is current and relevant; hence the fusions of the current effort with the previous efforts could provide the necessary platform for solving contemporary practical urban problems as the influence of land use conversions on rental values in the region.

5.2   Recommendations

The research work has uncovered necessary evidences on the influence of land use conversions on property rental values that are relevant and could be of benefit to investors, policymakers, researchers and other stakeholders. Evidences from the study will serve as baseline information for sound and guided decision-making concerning rental property investment decisions relating to land use conversions in Ikeja, Osogbo and Akure and by extension South West Nigeria. The researcher therefore suggests the following recommendations.

5.2.1   Causes of land use conversions: Findings of the study have exposed the primary causes of land use conversions in the study areas. The study thus suggested the encouragement or implementation of the following:

1. In Akure and Osogbo**,** there is the need for the states government to take drastic measures that can strengthen their institutional framework for the formulations of policies/regulations that are proactive, protective and competitive. It will encourage and facilitate the adherence to law and order and move the states towards being perfect liveable and sustainable cities like those in other climes as America, Europe and some cities in Asia. As revealed in the study's findings, a significant factor that encourages illegal land use conversions across the study areas is the absence or non-effectiveness of the institutional or legal framework. The Ministries of Lands in the two states need to be restructured to be able to capture current trends in urban land use and management. The restructuring of the ministry will improve staff performance, enhance city orderliness, aesthetic and liveability that will curtail unauthorised land use conversion and invariably enhance property values. More so,

developers/investors, city planners, land managers and other stakeholders have the task of ensuring that land are used for the purpose for which such land are allocated.

2. For Ikeja, the unguided population growth and its attendant impact on Ikeja property rental market, the study recommends the need for the decongestion of the city using administrative and political means. The relocation of some factories and other business ventures from Ikeja to other parts of the state could bring the city of Ikeja back to what it was meant to be (residential area). This could help in reducing the population of Ikeja which have been identified as a major determinant of land use conversions in the study area.

3. Property owners, developers / investors and other stakeholders should place the orderliness and serenity of the neighbourhood above and over economic gain or consideration. This could be achieved through observance or adherence to planning and other land use related laws in the state.

5.2.2 **The rental trend of before and after use conversions:** the before and after use conversions rental trends in the study areas within the period under study revealed volatile rental performances. The rental market's volatility could bring about unhealthy competitions among the market participants, leading to economic and social problems. To solve rental volatility problems, the study recommends:

1. Akure and Osogbo, the study recommends the encouragement of mixed-use development in the states. The developed property, either by private owners/investors or the government after meeting all the planning/legal, socio-cultural and economic

standards, can later be disposed or lease to interested individuals. Such development could be in form of high-rise or bungalow and should be strictly used for its purpose. That is, the section for commercial activities should be used for commercial activities. Residential area should be strictly used for residence but having all in the same neighbourhood or building. In the central business districts of more developed cities as Vienna, Berlin, Budapest, Bratislava, and other advanced nations, similar mixed-use development plans were advocated and implemented. The ground and first floors of multiple floors buildings are used for commercial purposes, with the upper floors consisting of condominiums for residence.

2. The confused state of Ikeja is worrisome. A single building in Ikeja can be put into more than four uses – residential, commercial, industrial, leisure and tourism. Which is not supposed to be as the services provided may not be complimentary, thereby creating more harm than the good intended. Strict adherence to planning and other related land use laws by stakeholders and more effective monitoring by the concerned agencies is therefore recommended.

3. Again, the involvement of more private real estate developers in housing provision to augment government efforts could help in increasing urban housing supply which can invariably help in the reduction of urban rentals, unnecessary rivalry among property users and other real property market participants, promote healthier and more relaxed rental market.

5.2.3 **Influence of land use conversion:** Findings of the study revealed significant levels of land use conversion activities' influences on rental values across the study area. The implication is, if nothing is urgently done to neutralise the adverse effects of land use conversions on rental values, it could lead to more distortions of the city master plan and other socio-economic variables at the Akure and Osogbo local real property rental market.

1. Hence, it is recommended that all the relevant stakeholders in the states should see to the effective enforcement of all applicable laws relating to land use in their respective domain or states.

2. Similarly, the professional bodies especially, those in the built environment and other stakeholders should intensify efforts in public enlightenment campaigns and educate developer/investors and other stakeholders on the consequences of unauthorised land use conversions. It will make the stakeholders and the general public more proactive and aware of the likely pains illegal land use conversions can inflict on the local and national economy. While government at all levels should intensify efforts in the effective implementation of relevant land use related laws, the adherence to the laws and regulations is the duty of the citizenry.

3. In Ikeja, the study recommends immediate action by the government targeted at reviewing the existing rent control law or the re-introduction of a more effective and implementable rent control laws. The law should take into consideration the current economic realities of the country.

4. The use of theories as nudge, regret and loss aversions by the state governments could go a long way in engendering natural compliance to law and orders on land use conversions.

5.2.4   Location variation in rental values: ANOVA conducted showed that the overall models are statistically significant. Location variations exist in the rental values of all the property types selected for the study within the locations. The study, therefore, recommends that:

1. Ondo state and Osun state governments should intensify efforts in the introduction and implementation of a more effective mechanism for land use conversions management. This could be through the provision of enabling environment for urban housing users and developers, provision of more infrastructure spread across the city that could enhance equal development and promulgation of a more effective and implementable rent control edict.

2. The enactment of a more practical and implementable rent control laws in all the states, and the observance/compliance with the contents of the law by stakeholders could solve land use conversion problems.

5.4   Area for Further Research

The study is not an all-inclusive study due to the numerous limiting factors it encountered. The Covid-19 pandemic, the associated Presidential Task Force Orders and the dearth of data on property use conversions and rental values are limiting factors. Hence, there exist other important areas of opportunity for further research in this all-important field of study.

Therefore, future research works could replicate the current study in other regions of the country, which could be north, northcentral, east or southern part of Nigeria. This will further expose the influence of land use conversions on properties rental values performances across the country.

5.4   Contributions to Knowledge

The study evaluated the influence of land use conversions on property rental values, that is, conversions from residential to commercial uses in Ikeja, Osogbo and Akure, South West Nigeria. The study being the first bold step in this direction (to analyze the influence of land use conversions on property rental values in multiple cities) has open up a new knowledge vista. It exposes the causes of land use activities in the study area and the consequential (negative) influences of land use conversion factors on rental values; before and after use conversions rental trends and location rental variations in the study area. The critical analysis of the identified land use conversion variables in previous literatures and assessment of the performances of before and after use conversion rental trends in multiple cities has extended knowledge frontier in real property development and investment related field of study.

More so, the fusion of the identified land use conversions variables into the land use conversion model helped in the accurate predictions of the influence of land use conversion activities on property rental values, that will benefit real estate investors, professionals and researchers in real estate development and investment related areas. Location variation in rent due to the pattern of land use conversion activities that is key to real estate investment decision making was established by the study. Hence, the documented findings and recommendations of the study if implemented will help in solving the problems of

unapproved land use conversions, rental volatility, restoration of aesthetically pleasing and sustainable neighbourhood among other contemporary issues that could affect property rental values. The study has helped in extending the frontier of knowledge from the mono-city stance of earlier scholars to multiple city studies on influence of land use conversion on property rental values.

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APPENDIX A

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
DEPARTMENT OF ESTATE MANAGEMENT AND VALUATION

Dear Sir/Ma,

I am a Postgraduate Student of the Department of Estate Management and Valuation, Federal University of Technology, Minna, conducting Ph.D Thesis on the topic: **Influence of Land Use Conversions on Property Rental Values in South West, Nigeria.**

This questionnaire, as part of an on-going Ph.D research work, is designed to collect information on the above topic in order to assess the influence of the current trend in urban land use conversions on property rental values in some selected state capitals (Ikeja, Osogbo and Akure) in South West, Nigeria.

All information provided in this questionnaire is strictly for academic purposes and will therefore be treated as confidential, and no information will be divulged to any third party.

Thanks.

ANKELI, Ikpeme Anthony
(PhD Research Candidate)
08033543341, 07019760835, 08095821901
thonyankeli@gmail.com

Questionnaire for Tenant or Landlords

SECTION A: PERSONAL INFORMATION OF THE RESPONDENT
❖ *Please tick [√] where applicable*

1. Property address/location………………………………………………………….

2. Highest academic qualification   (a) PhD [   ]   (b) M.Sc/M.Tech [   ] (c) B.Sc /
   B.Tech/ HND [   ] (d) ND and below [   ]

3. Are you a tenant or Landlord? (a) Tenant [   ] (b) Landlord [   ]

4. If tenant, what is the length of your stay in this neighbourhood? (a) Between 5 to
   8years [ ] (b) Between 9 to 12years [   ] (c) Between 13 to16 years [   ] (d)
   Above 16 years [   ]

**SECTION B: INFORMATION ON LAND USE CONVERSIONS AND PROPERTY RENTAL
VALUES**

8 What is the type of property you own/occupy? (a) Two bedroom bungalow [   ] (b)
   three-bedroom bungalow [   ] (c) Tenement building- Face Me I Face You [   ] (d)
   None of the above [   ]

9 What is this neighbourhood zoned for? (a) Residential [   ] (b) Commercial [   ]
   (c) Industrial [   ] (d) Mixed Used [   ]

10 What was the previous use of this property? (a) Commercial [   ] (b) Residential [
    ] (c) Mixed Used [   ] (d) Industrial [   ]

11 What is the current use of the property? (a) Residential [   ] (b) Commercial [   ]
    (c) Industrial   [   ] (d) Mixed Used [   ]

12 Are you aware of land use conversions (converting from residential to commercial
    use) in this area? Yes [   ] No [   ]

13 Has this property undergone any form of use conversions? YES [   ] / NO [   ]

14 Is the approved use for the property different from its current use? Yes [   ]   No [   ]

15   How often did you notice conversions activities in this area? (a) Very Frequent [
     ]   (b) Frequent [   ] (c) Somewhat Frequent [   ] (d) Not Frequent [   ]

16 When did you start noticing these conversions trend? (a) Between 2004 and 2008 [
    ]   (b) between 2009 and 2013 [   ] (c) Between 2014 and 2019 [   ] (d) None of the
    above [ ]

17 Please, kindly rank how much you agree or disagree with each of the following variables as the causative factor of land use conversions in the area

Drivers/Factors	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree (1)
Demographic Factors (Population increase or decrease)					
Economic Factors [Pecuniary consideration and other financial options]					
Sociological Reasons [Prestige, taste and Security]					
Environmental Attributes [Location and the neighbourhood Charateristics]					
Institutional Factors [Government policies and regulations]					
Infrastructural Factors [Road and Electricity supply]					

18 Do you think that land/property use conversions (from residential to commercial) have any significant influence on property rental values in this area? Yes [   ]   No [   ]

19 Rank the following effects of land/property use conversions on rental values in the study area.

Effects	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)
Housing shortages leading to high property rental value					
Overcrowding / high occupancy ratio					
Environmental problems as noise and waste pollutions leading to void or loss in rent					
Urban crime as stealing and kidnapping leading to a low property rental					
Default in the payment of rent					
Land use encroachment leading to conflict					

21   Please input the rental values of these property classes **before** and **after** use conversions from residential to commercial uses.

PROPERTY TYPES	RENT FOR 2BED ROOM BUNGALOW / FLAT [₦]		RENT FOR 3BED ROOM BUNGALOW / FLAT [₦]		RENT FOR TENAMENT BUILDING [₦]	
YEAR	Before	After	Before	After	Before	After
2004						
2005						
2006						
2007						
2008						
2009						
2010						
2011						
2012						
2013						
2014						
2015						
2016						
2017						
2018						
2019						

22   Do you notice any variation in the rent paid in this neighbourhood? Yes [   ] No [   ]

23   If yes, what, in your opinion, is the reason for location variation in rent of property in this area? (a) Social Factors [   ] (b) Competition for space due to Economic Factors [   ] (c) Demographic factors [   ] (d) Environmental Attributes [   ]

24   Why did you decide to convert your property or locate and operate your business here knowing that the area is for residential land use only?   (a) Proximity to customers and good locational factors [   ] (b) Presence of adequate infrastructure [   ] (c) Closeness to the source of supply [   ] (d) cheap rent due to age of building [   ]

Thank you for participating in this Research. Please return the completed questionnaire

APPENDIX B

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
DEPARTMENT OF ESTATE MANAGEMENT AND VALUATION

Dear Sir/Ma,

I am a Postgraduate Student of the Department of Estate Management and Valuation, Federal University of Technology, Minna, conducting my Ph.D Thesis on the topic: **Influence of Land Use Conversions on Property Rental Values in South West, Nigeria.**

This questionnaire, as part of an on-going Ph.D research work, is designed to collect information on the above topic in order to assess the influence of the current trend in urban land use conversions on property rental values in some selected state capitals (Ikeja, Osogbo and Akure) in South West, Nigeria.

All information provided in this questionnaire is strictly for academic purposes and will therefore be treated as confidential, and no information will be divulged to any third party.

Thanks.

ANKELI, Ikpeme Anthony
(PhD Research Candidate)
08033543341, 07019760835, 08095821901
thonyankeli@gmail.com

Questionnaire for practicing Estate Surveyors and Valuers

SECTION A: PERSONAL INFORMATION OF THE RESPONDENT

❖ *Please tick [√] where applicable*

1. Address of respondent (optional)…………………………………………………..
2. Highest academic qualification   (a) PhD [   ]   (b) M.Sc/M.Tech [   ]   (c) B.Sc / B.Tech/ HND [   ] (d) ND and below [   ]
3. Professional status   (a) FNIVS [   ] (b) ANIVS + RSV [   ] (c) RSV+MRICS [   ]   (d) ANIVS [   ]
4. What is your current position in the firm? (a) Principal Partner [   ] (b) Managing Partner [   ] (c) Senior Estate Surveyor [   ] (d) Estate Surveyor [   ]
5. How old are you in the profession with regards to your experience in real estate practice? (a) Less than 5years [   ] (b) Between 6 to 10years [   ] (c) Between 11 to15years [   ]   (d) Above 16 years [   ]

SECTION B: INFORMATION ON LAND USE CONVERSIONS AND PROPERTY RENTAL VALUES

7   Do you manage property in any of these locations?   (a) Ikeja [   ] (b) Osogbo [   ] (c) Akure [   ] (d) All of the above [   ]

8   If yes, then for how long have you been managing the property? (a) Less than 5years [   ] (b) Between 6 to 10years [   ] (c) Between 11 to15years [   ] (d) Above 16 years [   ]

9   Are you aware of cases of land use conversions (conversions from residential to commercial uses) taking place in the area? (a) Yes [   ] (b) No [   ]

10 Have been involved in any conversions process in this area? Yes [   ] No [   ]

11 If yes, how long did the conversions processes take? (a) less than 6months [   ] (b) between 7months and 12 months [   ] (c) between 13 months and 18 months [   ] (d) above 19 months [   ]

12 Property/ land use conversions are from what land use to what land use? (a) Residential Land Use to Commercial Land Use [   ] (b) Commercial Land Use to Residential land use [   ] (c) Mixed Use to Commercial [   ] (d) Residential Land Use to Mixed Use [   ]

13 What is the nature of property conversions in the area? (a) Horizontal Conversions [   ]   (b) New Structure on an Existing Land [   ] (c) Modification/Alterations of the Existing Design [   ] (d) Lateral Conversions [   ].

14   When did you start noticing these conversions? a) Between 2004 and 2008 [   ] (b) between 2009 and 2013 [   ] (c) Between 2014 and 2019 [   ] (d) None of the above [   ]

15 Do you think that land/property use conversions (from residential to commercial) have any significant influence on property rental values? Yes [   ]   No [   ]

16 Please kindly rank the annual trend in land use conversions in this area as observed by you. Please indicate the actual number(s) for each year

YEAR	VARIABLES		
	*HIGH [3]	*MODERATE [2]	*LOW [1]
2004			
2005			
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			
2018			
2019			

*Note: High: more than 7 conversions per annum. **Moderate:** between 4 and 6 conversions per annum. **Low:** 3 and 4 conversions per annum **Very Low** below 2

17 Please, kindly rank how much you agree or disagree with each of the following variables as the causative factor of land use conversions in the area

Drivers/Factors	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree (1)
Demography Factors (Population increase or decrease)					
Economic Factors [Pecuniary consideration and other financial options]					
Sociological Reasons [Prestige, taste and Security]					
Environmental Attributes [Location and quality of the neighbourhood]					

Institutional Factors as [Government policies and regulations]					
Infrastructural Factors [Road and Electricity supply]					

18   Rank the following effects of land/property use conversions on rental values in this area.

Effects	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)
Housing shortages leading to high property rental value					
Overcrowding / high occupancy ratio					
Environmental problems as noise and waste pollutions leading to void or loss in rent					
Urban crime as stealing and kidnapping leading to a low property rental					
Default in the payment of rent					
Land use encroachment leading to conflict					

19   Please input the rental values of these property classes **before** and **after** use conversions of the property from residential to commercial uses.

PROPERTY TYPES	2BED ROOM RENT BUNGALOW [₦]		3BED ROOM RENT BUNGALOW [₦]		TENAMENT BUILDING [₦]	
YEAR	Before	After	Before	After	Before	After
2004						
2005						
2006						
2007						
2008						
2009						
2010						
2011						
2012						
2013						
2014						
2015						
2016						

2017						
2018						
2019						

20. Is there any variation in the rent paid for similar property (three bedrooms or two-bedroom) in this neighbourhood?   Yes [   ] No [   ]

21   If yes, what are the causes? (a) Property Characteristics (b) Economic Reason (c) Demographic Factor (d) Neighbourhood and Locational Characteristics

22. Are there any differences between the rent paid for commercial property (shops and offices) and building use purely for residence? Yes [   ] No [   ]

23. If yes, what did you think is the reason for the location variation in the rent of similar property in these areas? (a) Social factors [   ] (b) Competition for Space due to Economic Reasons [   ] (c) Demographic Factors [   ] (d) Environmental Attributes

Thank you for participating in this Research. Please return the completed questionnaire

APPENDIX C

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
DEPARTMENT OF ESTATE MANAGEMENT AND VALUATION

Dear Sir/Ma,

I am a Postgraduate Student of the Department of Estate Management and Valuation, Federal University of Technology, Minna, conducting my Ph.D Thesis on the topic: **Influence of Land Use Conversions on Property Rental Values in South West, Nigeria.**

This questionnaire, as part of my on-going Ph.D research work, is designed to collect information on the above topic in order to assess the influence of the current trend in urban land use conversions on property rental values in some selected state capitals (Ikeja, Osogbo and Akure) in South-West, Nigeria.

All information provided in this questionnaire is strictly for academic purposes and will therefore be treated as confidential, and no information will be divulged to any third party. Thanks.

ANKELI, Ikpeme Anthony
(PhD Research Candidate)
08033543341, 07019760835, 08095821901
thonyankeli@gmail.com

Questionnaire for the staff of State Ministries of Lands
SECTION A: PERSONAL INFORMATION OF THE RESPONDENT
❖ *Please tick [√] where applicable*

1. Address of respondent (optional)………………………………………
2. Highest academic qualification   (a) PhD [   ]   (b) M.Sc/M.Tech [   ]   (c) B.Sc / B.Tech /HND [   ] (d) ND and below [   ]
3. What Professional body do you belong? (a) Estate Surveying and Valuation [   ] (b) Urban and Regional Planning [   ] (c) Architecture [   ] (d) Quantity Surveying [   ]
4. Professional status   (a) Professional/Registered [   ] (b) Probationer/Graduate [   ]
5. What is your current position in the Ministry? (a) Director [   ] (b) Deputy Director [   ] (c) Assistant Director [   ] (d) Senior Officer Cadre [   ]
6. How long have you been working with the Ministry? (a) Less than 5years [   ] (b) Between 6 to 10years [   ] (c) Between 11 to15years [   ] (d) Above 16 years [   ]

SECTION B: INFORMATION ON LAND USE CONVERSIONS
7. Is there any unit or agency charged with building conversions control in the ministry? Yes [   ] No [   ]

8. Are you aware of incidences of land use conversions (conversions from residential to commercial land use) in the state capital? Yes [   ] No [   ]

9. If yes what is the nature of land/property use conversions in this area? (a) Horizontal conversions [   ] (b) New Structure on an Existing Land [   ] (c) Internal Modification/Alterations [} (d) Lateral Conversions

10. When did you start noticing these conversions? (a) Between 2004 and 2008 [   ] (b) between 2009 and 2013 [   ] (c) Between 2014 and 2019 [   ] (d) None of the above   [   ]

11. Is there any evidence or record of approval sought and granted from the relevant authority before the land use conversions exercise? Yes [   ] No [   ]

12. If yes, how many of such applications do your office approve per month (a) no specific number [   ] (b) less than 10 applications [   ] (c) between 11 and 20 applications [   ] (d) above 21 applications [   ]

13. How long does it take to get approval after meeting all the conditions? (a) Immediately (b) Less than 10 working days (c) Between 11 and 21 working days (d) More than one Month

14. Which form of use conversions is the most sought for in this area? (a) Residential to Commercial [   ] (b) Commercial to Residential [   ] (c) Residential to Industrial [   ]   (d) Industrial to Residential [   ]

15. Did the Ministry have data repository unit for land use conversions? Yes [ ] No [ ]

16. Please kindly rank the annual trend in land use conversions in the area according to their number of occurrences.

YEAR	VARIABLES		
	HIGH [3]	MODERATE [2]	LOW [1]
2004			
2005			
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			
2018			
2019			

*Note: High: more than 10 conversions per annum. Moderate: between 6 and 9 conversions per annum.   Low: below 5 conversions per annum
** Please indicate the actual number for each year

17. Did land use conversions (from residential to commercial) significantly affect rental values of property in the neighbourhood? Yes [   ]   No [   ]

18. Rank the following effects/influence of land use conversions on rental values in the study area.

Effects	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)
Housing shortages leading to high property rental value					
Overcrowding / high occupancy ratio					
Environmental problems as noise and waste pollutions leading					

to void or loss in rent					
Urban crime as stealing and kidnapping leading to a low property rental					
Default in the payment of rent					
Land use encroachment leading to conflict					

20 What are the measures put in place to control land use conversions problem in the neighbourhood? (a) stop work notice./ demolition [   ] (b) Creation of special unit or agency [   ] (c) legal action [   ] (d) public enlightenment campaign [   ]

21 Please, kindly rank how much you agree or disagree with each of the following variables as the causative factor of land use conversions in the area

Drivers/Factors	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree (1)
Demography Factors (Population increase or decrease)					
Economic Factors [Pecuniary consideration and other financial options]					
Sociological Reasons [Prestige, taste and Security]					
Environmental Attributes [Location and quality of the neighbourhood]					
Institutional Factors as [Government policies and regulations]					
Infrastructural Factors [Road and Electricity supply]					

APPENDIX D
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
DEPARTMENT OF ESTATE MANAGEMENT AND VALUATION

Dear Sir/Ma,

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University of Technology, Minna, conducting my Ph.D Thesis on the topic: **Influence of**

Land Use Conversions on Property Rental Values in South West, Nigeria.

This questionnaire, as part of an on-going Ph.D research work, is designed to collect

information on the above topic in order to assess the influence of the current trend in urban

land use conversions on property rental values in some selected state capitals (Ikeja, Osogbo

and Akure) in South-West, Nigeria.

All information provided in this questionnaire is strictly for academic purposes and will

therefore be treated as confidential, and no information will be divulged to any third party.

Thanks.

ANKELI, Ikpeme Anthony
(PhD Research Candidate)
08033543341, 07019760835, 08095821901
thonyankeli@gmail.com

Questionnaire for the staff of Lagos State Bureau for Lands
SECTION A: PERSONAL INFORMATION OF THE RESPONDENT
❖ *Please tick [√] where applicable*

1   Address of respondent (optional)………………………………………
2   Highest academic qualification   (a) PhD [   ]   (b) M.Sc/M.Tech [   ]   (c) B.Sc /
     B.Tech /HND [   ] (d) ND and below [   ]
3   Which Professional body do you belong? (a) Estate Surveying and Valuation [   ]
     (b) Urban and Regional Planning [   ] (c) Architecture [   ] (d) Quantity Surveying [
     ]
4   Professional status   (a) Professional/Registered [   ] (b) Probationer/Graduate [
     ]
5   What is your current position in the Ministry? (a) Director [   ] (b) Deputy
     Director [   ] (c) Assistant Director [   ] (d) Senior Officer Cadre [   ]
6   How long have you been working with the Ministry? (a) Less than 5years [   ]
     (b) Between 6 to 10years [   ] (c) Between 11 to15years [   ] (d) Above 16 years
     [   ]

SECTION B: INFORMATION ON LAND USE CONVERSIONS IN IKEJA
7   Is there any unit or agency charged with building conversions control in the ministry?
     Yes [   ] No [   ]
8   Are you aware of incidences of land use conversions (conversions from residential
     to commercial land use) taking place in the state capital? Yes [   ] No [   ]

9   If yes what is the nature of land use conversions in this area? (a) Horizontal
     conversions   [   ] (b) New Structure on an Existing Land [   ] (c) Internal
     Modification/Alterations   [} (d) Lateral Conversions

10 When did you start noticing these conversions? (a) Between 2004 and 2008 [   ]
     (b) between 2009 and 2013 [   ] (c) Between 2014 and 2019 [   ] (d) None of the
     above [   ]

11 Is there any evidence or record of approval sought and granted from the relevant
     authority before the conversions exercise? Yes [   ] No [   ]

12 If yes, how many of such applications do your office approve per month (a) no
     specific number [   ] (b) less than 10 applications [   ] (c) between 11 and 20
     applications [   ] (d) above 21 applications [   ]

13 How long does it take to get approval after meeting all the conditions? (a)
     Immediately (b) Less than 10 working days (c) Between 11 and 21 working days (d)
     More than one Month

14 Which form of use conversions is the most sought for in this area? (a) Residential
     to Commercial [   ] (b) Commercial to Residential [   ] (c) Residential to Industrial
     [   ]   (d) Industrial to Residential [   ]

15 Did the Ministry have data repository unit for land use conversions? Yes [ ] No [ ]

16 Please kindly rank the annual trend in land use conversions in the area according to their number of occurrences.

YEAR	VARIABLES		
	HIGH [3]	MODERATE [2]	LOW [1]
2004			
2005			
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			
2018			
2019			

*Note: High: more than 10 conversions per annum. **Moderate:** between 6 and 9 conversions per annum.   **Low:** below 5 conversions per annum
** Please indicate the actual number for each year

17 Did land use conversions (from residential to commercial) significantly affect rental values of property in the neighbourhood? Yes [   ]   No [   ]

18 Rank the following effects/influence of land use conversions on rental values in the study area.

Effects	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)
Housing shortages leading to high property rental value					
Overcrowding / high occupancy ratio					
Environmental problems leading to void or loss in rent					
Urban crime leading to a low property rental					
Default in the payment of rent					
Land use encroachment leading to conflict					

19 Please, kindly rank how much you agree or disagree with each of the following variables as the causative factor of land use conversions in the area

Drivers/Factors	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree (1)
Demography Factors (Population increase or decrease)					
Economic Factors [Pecuniary consideration and other financial options]					
Sociological Reasons [Prestige, taste and Security]					
Environmental Attributes [Location and quality of the neighbourhood]					
Institutional Factors as [Government policies and regulations]					
Infrastructural Factors [Road and Electricity supply]					

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
DEPARTMENT OF ESTATE MANAGEMENT AND VALUATION

Dear Sir/Ma,

I am a Postgraduate Student of the Department of Estate Management and Valuation, Federal University of Technology, Minna, conducting my Ph.D Thesis on the topic: **Influence of Land Use Conversions on Property Rental Values in South West, Nigeria.**

This questionnaire, as part of an on-going Ph.D research work, is designed to collect information on the above topic in order to assess the influence of the current trend in urban land use conversions on property rental values in some selected state capitals (Ikeja, Osogbo and Akure) in South-West, Nigeria.

All information provided in this questionnaire is strictly for academic purposes and will therefore be treated as confidential, and no information will be divulged to any third party.

Thanks

ANKELI, Ikpeme Anthony
(PhD Research Candidate)
08033543341, 07019760835, 08095821901
thonyankeli@gmail.com

Questionnaire for the staff of Lagos State Building Control Agency
SECTION A: PERSONAL INFORMATION OF THE RESPONDENT
❖ *Please tick [√] where applicable*

1   Address of respondent (optional)…………………………………………
2   Highest academic qualification   (a) PhD [   ]   (b) M.Sc/M.Tech [   ]   (c) B.Sc / B.Tech /HND [   ] (d) ND and below [   ]
3   Which Professional body do you belong? (a) Estate Surveying and Valuation [   ] (b) Urban and Regional Planning [   ] (c) Architecture [   ] (d) Quantity Surveying [ ]
4   Professional status   (a) Professional/Registered [   ] (b) Probationer/Graduate [ ]
5   What is your current position in the Agency? (a) Director [   ] (b) Deputy Director [   ] (c) Assistant Director [   ] (d) Senior Officer Cadre [   ]
6   How long have you been working with the Ministry/Agency? (a) Less than 5years [   ]   (b) Between 6 to 10years [   ] (c) Between 11 to15years [   ] (d) Above 16 years [   ]

SECTION B: INFORMATION ON LAND USE CONVERSIONS IN IKEJA
7   Is your agency charged with building conversions control function? Yes [   ] No [   ]
8   Are you aware of incidences of land use conversions (conversions from residential to commercial land use) taking place in Ikeja neighbourhood? Yes [   ] No [   ]

9   If yes what is the nature of land use conversions in this area? (a) Horizontal conversions   [   ] (b) New Structure on an Existing Land [   ] (c) Internal Modification/Alterations   [} (d) Lateral Conversions

10 When did you start noticing these conversions activities in this neighbourhood? (a) Between 2004 and 2008 [   ]   (b) between 2009 and 2013 [   ] (c) Between 2014 and 2019 [   ] (d) None of the above [   ]

11 Is there any evidence or record of approval sought and granted from the relevant authority before the conversions exercise? Yes [   ] No [   ]

12 Are there people that convert their property without a permit? (a) Yes [   ] (b) No [ ]

13 How many of such offenders do you arrest or stop their work on-site per month? (a) less than 10 applications [   ] (b) between 11 and 20 applications [   ] (c) above 21 applications [   ] (d) no specific number [   ]

14 Which form of use conversions are the most embarked on in this neighbourhood in the last ten years? (a) Residential to Commercial [   ] (b) Commercial to Residential [   ] (c) Residential to Industrial [   ]   (d) Industrial to Residential [ ]

15 Did the Ministry/Agency have data repository unit for land use conversions? Yes [ ] No [ ]

16 Please kindly rank the annual trend in land use conversions in the area according to their number of occurrences.

YEAR	VARIABLES		
	HIGH [3]	MODERATE [2]	LOW [1]
2004			
2005			
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			
2018			
2019			

*Note: High: more than 10 conversions per annum.　　**Moderate:** between 6 and 9 conversions per annum.　　**Low:** below 5 conversions per annum
** Please indicate the actual number for each year

17 Did land use conversions (from residential to commercial) significantly affect rental values of property in the neighbourhood? Yes [　]　No [　]

18 Rank the following effects/influence of land use conversions on rental values in Ikeja neighbourhood.

Effects	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)
Housing shortages leading to high property rental value					
Overcrowding / high occupancy ratio					
Environmental problems as noise and waste pollutions leading					

to void or loss in rent					
Urban crime as stealing and kidnapping leading to a low property rental					
Default in the payment of rent					
Land use encroachment leading to conflict					

19 Please, kindly rank how much you agree or disagree with each of the following variables as the causative factor of land use conversions in Ikeja.

Drivers/Factors	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree (1)
Demography Factors (Population increase or decrease)					
Economic Factors [Pecuniary consideration and other financial options]					
Sociological Reasons [Prestige, taste and Security]					
Environmental Attributes [Location and quality of the neighbourhood]					
Institutional Factors as [Government policies and regulations]					
Infrastructural Factors [Road and Electricity supply]					

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DEPARTMENT OF ESTATE MANAGEMENT AND VALUATION

Dear Sir/Ma,

I am a Postgraduate Student of the Department of Estate Management and Valuation, Federal University of Technology, Minna, conducting my Ph.D Thesis on the topic: **Influence of Land Use Conversions on Property Rental Values in South West, Nigeria.**

This questionnaire, as part of an on-going Ph.D research work, is designed to collect information on the above topic in order to assess the influence of the current trend in urban land use conversions on property rental values in some selected state capitals (Ikeja, Osogbo and Akure) in South-West, Nigeria.

All information provided in this questionnaire is strictly for academic purposes and will therefore be treated as confidential, and no information will be divulged to any third party. Thank you

ANKELI, Ikpeme Anthony

(PhD Research Candidate)

08033543341, 07019760835, 08095821901

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Questionnaire for the staff of Lagos State Physical Planning Permit Authority
SECTION A: PERSONAL INFORMATION OF THE RESPONDENT
❖ *Please tick [√] where applicable*

1 Address of respondent (optional)…………………………………………
2 Highest academic qualification   (a) PhD [   ]   (b) M.Sc/M.Tech [   ]   (c) B.Sc /
   B.Tech /HND [   ] (d) ND and below [   ]
3 Which Professional body do you belong? (a) Estate Surveying and Valuation [   ]
   (b) Urban and Regional Planning [   ] (c) Architecture [   ] (d) Quantity Surveying [
4 Professional status   (a) Professional/Registered [   ] (b) Probationer/Graduate [
   ]
5 What is your current position in the Ministry? (a) Director [   ] (b) Deputy
   Director [   ] (c) Assistant Director [   ] (d) Senior Officer Cadre [   ]
6 How long have you been working with the Ministry/Agency? (a) Less than 5years
   [   ]   (b) Between 6 to 10years [   ] (c) Between 11 to15years [   ] (d)
   Above 16 years [   ]

SECTION B: INFORMATION ON LAND USE CONVERSIONS IN IKEJA
7 Is your agency charged with the issuance of building permit? Yes [   ] No [   ]
8 Are you aware of incidences of land use conversions (conversions from residential to
   commercial land use) taking place with Ikeja neighbourhood? Yes [   ] No [   ]
9   If yes what is the nature of land use conversions in this area? (a) Horizontal
   conversions   [   ] (b) New Structure on an Existing Land [   ] (c) Internal
   Modification/Alterations   [} (d) Lateral Conversions

10 When did you start noticing this land use conversions exercise? (a) Between 2004
   and 2008 [   ] (b) between 2009 and 2013 [   ] (c) Between 2014 and 2019 [   ] (d)
   None of the above [   ]

11 Is there any evidence or record of approval/permit sought and granted from your
   agency before the conversions exercise? Yes [   ] No [   ]

12 If yes, how many of such applications do your office approve per month (a) no
   specific number [   ] (b) less than 10 applications [   ] (c) between 11 and 20
   applications [   ] (d) above 21 applications [   ]

13 How long does it take to get approval after meeting all the conditions? (a)
   Immediately (b) Less than 10 working days (c) Between 11 and 21 working days (d)
   More than one Month

14 Which form of use conversions is the most sought for in Ikeja neighbourhood?
   (a) Residential to Commercial [ ] (b) Commercial to Residential [   ] (c) Residential
   to Industrial [   ]   (d) Industrial to Residential [   ]

15 Did the Ministry/Agency have data repository unit for land use conversions? Yes [ ]
   No [ ]

16 Please kindly rank the annual trend in land use conversions in the area according to their number of occurrences.

YEAR	VARIABLES		
	HIGH [3]	MODERATE [2]	LOW [1]
2004			
2005			
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017			
2018			
2019			

*Note: **High:** more than 10 conversions per annum. **Moderate:** between 6 and 9 conversions per annum.   **Low:** below 5 conversions per annum
** Please indicate the actual number for each year

17 Did land use conversions (from residential to commercial) significantly affect rental values of property in the neighbourhood? Yes [   ]   No [   ]

18 Rank the following effects/influence of land use conversions on rental values in the study area.

Effects	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly Disagree (1)
Housing shortages leading to high property rental value					
Overcrowding / high occupancy ratio					
Environmental problems as noise and waste pollutions leading to void or loss in rent					

Urban crime as stealing and kidnapping leading to a low property rental					
Default in the payment of rent					
Land use encroachment leading to conflict					

19 Please, kindly rank how much you agree or disagree with each of the following variables as the causative factor of land use conversions in the area

Drivers/Factors	Strongly agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Strongly disagree (1)
Demography Factors (Population increase or decrease)					
Economic Factors [Pecuniary consideration and other financial options]					
Sociological Reasons [Prestige, taste and Security]					
Environmental Attributes [Location and quality of the neighbourhood]					
Institutional Factors as [Government policies and regulations]					
Infrastructural Factors [Road and Electricity supply]					

APPENDIX G

Summary of Literature Review on Land Use Conversions

AUTHOR/YEAR/ COUNTRY	ISSUES	ANALYTICAL TOOL USED	FINDINGS	REMARK
Kelly 1998 (Philippines)	The Politics of Urban-Rural Relations: Land Use Conversions	Descriptive statistical tools	The political groups easily circumvent law and regulations guiding land use.	Focused on agricultural land use
Braimoh 2006 (Nigeria)	Spatial Change of Residential Land Use in Lagos	Logistic Regression	new residential land use conversions in the high population density district occurred in areas not too close to major roads	The study did not cover the effect of land use conversions on capital or rental values of property
Nuhu 2008 (Nigeria)	Public Land Policy, New Trends: Challenges in Nigerian Institutional Frameworks for State and Public Sector Land Management	Theoretical/ Descriptive analysis	land policy in use in the country is outdated and needs to be replaced as it is a clog in the wheel of urban mass housing production and delivery	The use of inferential statistic would have exposed the salient facts that are not in this work
Asamoah 2010 (Ghana)	Urbanisation and Changing Pattern of Urban Land Use in Ghana: policy and planning implications for residential land use in Kumasi	Descriptive and Inferential statistical tools	severe demand pressure on land due to enhanced economic activities, many residential land uses converted to commercial uses	The study did not compare the market behaviour of rental property types
Baffour et al. 2011 (Ghana)	Urban land use planning in Ghana	critique of relevant literature and insights on the human action theory	causes of Ghana land use planning include lack of planning knowledge, cost compliance and economic factors,	The study did not link urban land use planning to other land use abuses
Effiong 2011 (Nigeria)	Changing Trends in Land Use in the Calabar River Area	Topographic maps and satellite imagery	Varying degree of changes in land uses	Focused more on agricultural land use to the neglect of other land use types.

Wenliang *et al*. 2012 (China)	Modelling Urban Land Use Conversions of Daqing City, China: A Comparative Analysis of "Top-Down" and "Bottom-Up" Approaches	SD-CLUES and SD-CA	the SD-CA model is a better option as the stochastic factor in the model impacts significantly on the accuracy of modelling	Sophisticated models were used hence challenging to apply in most countries in Africa.
Museleku (2013) (Nairobi)	The causes and effects of agricultural land use conversions in the urban fringes; a case study of Nairobi-Kiambu interface	Descriptive and Inferential statistical tools	The existence of several institutional and legal frameworks, causes and effects on a household level	The study did not explicitly mention mitigating measures to be taken by the concerned authorities
Morenikeji *et al*. 2015 (Nigeria)	Applied Remote Sensing and Geographic Information System in the Monitoring of the Dynamics of Land Use in Minna	Landsat TM satellite images and Landsat ETM+ images	Varying degree of changes in land uses	Focused more on agricultural land use to the neglect of the other land use types
Owoeye *et al*. 2015 (Nigeria)	Urban Development and Land Use Changes around Ekiti State University (EKSU)	Survey Research Design (SRD)	development influences the spatial heterogeneity in the area of variation in the change	The use of a more advanced scientific approach would have empirically brought out other specific salient factors that impact land use.
Adegunle *et al*. 2016 (Nigeria)	Determinants and Effects of Change in the Use of landed Property and its Implications on Rental Values of Property	Descriptive and Inferential Statistical tools	conversions of residential land use to commercial land use resulting in structural modifications, vertical among others	The Study did not bring out the specific effects of the use conversions on either of the property types
Ukor *et al*. 2016 (Nigeria)	Analysis of Land Use Cover Change in Ikeja	Landsat TM satellite images, Landsat ETM+,		Focused more on agricultural land use

		images Google Earth Pro Satellite Imagery and questionnaire	Varying degree of changes in land uses	to the neglect of the other land use types
Gwamna *and* Yusoff. 2016 (Nigeria)	Impact of Urban Land Use Changes on the Rental Values of Residential Property in Kaduna Metropolis	Structural Equation Modelling (SEM)	Land use planning is the most significant that causes land use conversions.	The study did not discuss the effect of land use conversions on property values

Source: Author, *(2019)*

APPENDIX H

Summary of Literature Review on Drivers of Residential Property Rental Values

AUTHOR/ YEAR/ COUNTRY	ISSUES	ANALYTICAL TOOL USED	FINDINGS	REMARK
Sermons *et al.* 2001 **(USA)**	Traveller Responsiveness to Land and Location-Based Accessibility	Multi-Nominal Logit (MNL) Model	Reduction in location cost may have a marginal impact on the availability of the vehicle and household trip making	Potency or variability within each cluster is ignored.
Baum-Snow 2006 **(USA)**	Suburbanization and Transport in the Mono-centric Model	Inferential statistics	28% reduction in the urban population, which confirmed the assertion of previous researchers.	The adoption of a single variable (highway) and a mono-centric model is a knowledge gap.
Davis *et al.* 2006 **(USA)**	The Price of Residential Land in Large United States of American Cities	Inferential and Descriptive statistics	values of residential land started to increase in most of the cities from the mid -the 1980s	Only property variable was considered; hence there exists a reliability and validity gap
Gu 2007 **(China)**	The Impacts of Rail Transit on Property Values	Hedonic Price Modelling	Batong Line has positive impacts on the values of residential property in the suburbs	The study was limited to the impact of rail transit on property values
Kryvobokov *et al.* 2007 **(Ukraine)**	Analysing Location Attributes with a Hedonic Model for Apartment Prices in Donetsk.	Hedonic Price Modelling	Donetsk is a mono-centric city	Only location factors were considered. Other factors were neglected; hence there is a knowledge gap.

Davis *et al.* 2008 **(USA)**	The Prices of Residential Land in Large U.S. Cities	Inferential Statistics	The residue for the cost of all variables is the actual cost of the house	No statistical prove to validate this assertion
Ajibuah 2010 **(Nigeria)**	Urban Crises and Rental Value Differential in Kaduna Metropolis	Both descriptive and inferential statistics	The unbalanced development (land use) is due to the urban crisis	The study did not show the level of the effects on property values
Rauterkus *et al.* 2011 **(USA)**	Residential Land Values and Walkability	Ordinary Likert type scale Regressions Model	Residential land value increases with walkability	Findings cannot be generalised due to the small coverage area
Ajibola *et al.* 2012 **(Nigeria)**	Effect of Land Use Planning on the Values of Residential Property in Agege	Adopted both descriptive and inferential statistical tools	The significant level of disparities in the values of residential property within the planned and unplanned residential areas	Did not examine other factors that could as well affect the values of residential property
Uju *et al.* 2012 **(Nigeria)**	The Determinants of Residential Land Values in Onitsha	Questionnaire administration and Stepwise Regression Analysis	Non-location factors contribute immensely to the variation in residential land values	This study did not consider other non-locational factors that can impact rental values
Oloke *et al.* 2013 **(Nigeria)**	Property Market and the Impact of Economic and Environmental Characteristics in Magodo	Questionnaire administration and tables	Distance travelled, and property cost does not affect property values as proximity to a major highway	contrary to the assumption of early rent theorist
Emoh *et al.* 2013 **(Nigeria)**	Determinants of Residential land Values variations in Onitsha	Factor Analysis and Principal Component Analysis	Thirteen Major Factors shaping Land Values in the Study Area	Much emphasis was on Neighbourhood and Location characteristics to neglect property

			and institutional factors that could impact values.

Ong (2013) (**Malaysia**)	Factors Affecting the Prices of Housing in Malaysia	Multiple Regression	GDP, population, government policy and property's capital gains tax are the critical determinants of house prices	paid less attention to environmental and institutional characteristics, which are also important determinants of property values
Kemiki *et al.* 2014 (**Nigeria**)	Impact of Factory Noise and Dust on the Rental Values of a Residential Settlement in Nigeria	Hedonic Price Modelling	Externalities of dust and noise diminish the amount of rent that prospective tenant is willing to pay	Several other factors besides noise and dust that impact rental values that need to be tested
Adegoke (2014) (**Nigeria**)	Factors that determine the rental values of residential property in Ibadan Metropolis	Hedonic Price Model	The numbers of living room, availability of burglar alarm and number of bathrooms were the most influential factors determining residential property rental values in the study area.	The study focused on property attributes but neglected other attributes that can impact rental values of residential property.
Verougstraete *et al.*, 2014 (**Hong Kong**)	Land Value Capture Mechanism: The Case of the Hong Kong Mass Transit Railway	Secondary Data	Enhanced accessibility to attractive and efficient transportation systems increases residential land values	the opinion was based on perception and lacked empirical data to back up the assertions made

| Iroham *et al.* 2014 (Nigeria) | Comparative Study of Rental Values of Two Gated Estates in Lekki Peninsula | Descriptive and Inferential Statistical tools | Location impacts significantly on residents' choice. | Non- locational factors were not considered |
| Sani *et al.* 2015 **(Nigeria)** | Nature and Factors Influencing Private Rental Housing Market in Kaduna Metropolis | Descriptive Statistical Tool | There exist different patterns of rent payment with a high degree of default in the payment | Other areas of residential property rental values were not given much attention |

Source: Author, (2019)

APPENDIX I
Summary of Literature Review on Commercial Property Rental Values

AUTHOR/ YEAR/ COUNTRY	ISSUES	ANALYTICAL TOOL USED	FINDINGS	REMARK
Oni, 2009 (**Nigeria**)	Land Value Determinants and Variability in Commercial Property Value	Multiple Regression Modelling	the significant relationship between the variables (road network and property value determinants)	The focus of the study was on the arterial road network, hence neglected other value determinant variables
Nicolas *et al*. 2010 (**USA**)	Commercial and Residential Land Price Across the United States	Hedonic Regressions Model	Dramatic appreciation in the values of both lands uses.	Can be localised to developed economies due to high-level data requirement
Batista-e Silva *et al.* 2014 (**Europe)**	Estimation of Demand for Industrial and Commercial Land.	Base Model against the Null Model	The proposed approaches outclassed the null model.	Too technical to be applied in the study areas
Aliyu *et al.* 2015 (Nigeria)	Impact of Traffic Congestion on Commercial Property Rental Values in Bauchi Metropolis	Micro Soft Excel, Tables and Charts	Traffic congestion impacts significantly on rental values of commercial property	There is no evidence of rent payment in the study.
Cheah *et al.* 2015 (**Malaysia**)	Factors Affecting Office Rent in Kuala Lumpur (KL)	Regression Analysis	Low rental, the inclusion of MSC and GC attract more tenants and a foreign firm.	There is a need for a comparative study to validate the findings

| Bello *et al.* 2018 **(Nigeria)** | Comparative Analysis of Investment Attributes of Hotel and Commercial Property in South-Western Nigeria | Descriptive and Inferential Statistical tools | Both property types are similar in four and dissimilar in eight of the variables used. There exist no significant differences in the occupancy rate of both property types | The term hotels and commercial property were generously used. The use of the specific term as five-star hotels or departmental store would have explicitly enhanced the validity of the work |

Source: Author, (2019)