EFFECT OF URBAN LAND USE PLANNING REGULATIONS ON RESIDENTIAL PROPERTY INVESTMENT RETURNS IN NORTHWEST, NIGERIA

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ABSTRACT

Residential property investment is among the primary ascribed investment globally and its ab-initio affected by varying level of planning risk. However, identifying and disentangling this risk- return attributes most especially as it relates to urban land use planning regulations have been an unresolved challenge. This problem has therefore, made investment in residential property to be shrouded with uncertainty, thereby undermining the potentials in investing in residential property, particularly with the general dwindling of global economy. In this context, this research examined the effect of urban land use planning regulations on residential property investment returns. The research developed a predictive model to solve the problem of voids in residential property attributed to non-compliance to ULUPRs that dampen RPIRs in Northwest, Nigeria. Subsequently, a set of closed-end questionnaires were administered to 389 estate surveying and valuation firms and town planners. The study employed a cross sectional/longitudinal approach to collect quantitative data. The data collected were analysed with the aid of quantitative method of data analysis which include descriptive statistics (percentages, weighted means, standard deviation, coefficient of variation, trend analysis/graph) and inferential statistics (regression, correlation “SEM AMOS” ANOVA). The findings showed that total returns from residential properties ranged from 7.93% to 12.68 % and the risk-return ratio ranging from 25.06% to 54.94% in Kaduna metropolis property market while in Kano metropolis property market, total return ranged from 6.99% to 14.44% with risk-return ratio ranging from 24.99% to 51.54%. The predictive model revealed that urban land use planning regulations explained 32% of residential property investment returns. The study thus, recommended that for risk averse investor in Kano metropolis Badawa property market is the best location while for Kaduna metropolis Malali property market is the ultimate location. It is also recommending that in order to have a more practical significance the Nigeria institution of estate surveyors and valuers should encourage it members to always carry out performance evaluation of residential property in their portfolio through total return-risk assessment and utilise this residential investment returns model capturing ULUPRs so developed, in assessing RPIRs for both local and international investors. Identifying specific clientele housing requirement and improving on it provision will have positive implication on the clientele willingness to pay for the housing as a whole product. This could be achieved by enlightening the government on the benefit of providing the user specific amenities that are its core responsibilities and monitoring development control in line with research findings while residential investors also need to adhere strictly on discovery of it user specific requirement in the RPIRs model and ULUPRs manual.

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LIST OF ABBREVIATION

AGFI	Adjusted Goodness of Fit
AMOS	Analysis of Moment Structures
ATR	Aggregate Total Returns
AVE	Average Variant Extract
BMS	Basic Minimum Standard
CMV	Common Method Variance
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
Chisq	Discrepancy Chi Square
Chisq/df	Chi Square/Degrees of Freedom
CR	Capital Return
CV	Capital Value
CVRPI	Cause of Variation in Residential Property Investment Return
CR	Composite Reliability
EFA	Exploratory Factor Analysis
ESV	Estate Surveyors and Valuers
ESVARBON	Estate Surveyor and Valuers Registration Board of Nigeria
GFI	Goodness of Fit Index
GRA	Government Reserved Area
HND	Higher National Diploma
IR	Income Return
LRA	Location Regulations Attributes
MLE	Maximum Likelihood Estimator
NECO	National Examination Council
NFI	Normed Fit Index
NRA	Neighbourhood's Regulations Attributes
NI	Net Income
NIESV	Nigeria Institution of Estate Surveyor and Valuers
NITP	Nigeria Institution of Town Planners
OLS	Ordinary Least Square
ODK	Open Data Tool Kits
PITR	Public Interest Theory on Regulations
RMSEA	Root Mean Square of Error Approximation
RPIRs	Residential Property Investment Returns

SEM	Structural Equation Modeling
SPSS	Statistical Program for Social Sciences
SRA	Structural Regulations Attributes
TLI	Tucker-Lewis Index
TRs	Total Returns
TRI	Total Return Index
ULUPRs	Urban Land Use Planning Regulations

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Land is seen by investors as a limited resource, especially in many urban areas, where about two-third are currently used for housing, infrastructure and commerce at varying levels of the developmental process (Kolowe, 2014; Erb, 2015). Rapid population growth has increased the demand for land in towns and cities around the world for different purposes particularly, housing (Kolowe, 2014).

Urban residential land use is determined by different decisions made by key players (Harvey & Jowsey, 2004). Decision to use land hinges on economic and non-economic factors (Amenyah & Fletcher, 2013), the price for land use is known as rent, and in principle each plot of land use goes to the higher bidder. Land use comes with different type of structural alteration in terms of population, geographical expansion, economic and social constituent which in most instances contravene Urban Land Use Planning Regulations (ULUPRs) occasioning externalities (Sayce *et al.*, 2006; Olayinka *et al.*, 2013; Olugbenga & Adekeni, 2014) because the development process to a large extend is guided by the interest of the investor/developer.

Governments globally, have introduced contextual ULUPRs to moderate the effect of the free market economy on allocation and use of land resources to curtail negative externalities occasion by land use. In reality, the moderation is an interference with the operation of the property market by the government (Jones, 2014), hence institutional, economic and physical factors affect allocation and use of land (Barlowe, 1978). Interference in the allocation of land to different uses by the government in the form of institutional urban planning has a multiplier effect on the residential property performance trends in the property market because residential property is embedded with varying levels of planning risk (Udobi *et al*., 2018). ULUPRs can facilitate tangible property attributes that satisfy clients and attract investors (Baum *et al*., 2011). To buttress this, Steinke (2011) posit that property attributes affect risk-returns expectation in real estate investment. Therefore, as population increases urban centres require appropriate planning and control to guarantee efficiency in the development of land use investment decision (Orekan & Atinuke, 2014).

Findings, globally showed that every region has divergent ULUPRs (Daams *et al*., 2016; Lee, 2017; Wen *et al*., 2017b; Lovkovich *et al*., 2018). These variances affect local amenities which influence household location decision. Since the mid-20th Century, investors, urban economist, estate surveyors and valuers and town planners that are concerned with housing investment, development and management have been struggling to identify ULUPRs factors that influence rental/capital value trend in the global property market (Michael & Palmquist, 2010; Zou, 2015) without consensus. Owing to dynamic nature of real estate that continue to necessitate a need for further analysis of real estate investment performance (Benjamin *et al*, 2001; Kohlscheen *et al*., 2018). Real estate market is crucial to every economy, it guarantees the activities of institutions essential for livelihood, growth or decline in the real estate sector affects the overall economy of a country (National Urban Development Policy (NUDP), 2012; Gaspareniene *et al.*, 2014; Kohlscheen *et al*., 2018) Nigeria inclusive.

Nigeria population is estimated to have 2.5% growth rate as buttressed by (Odey & Akpanke, 2020). Regrettably, urbanisation in Nigeria is characterised by an unpleasant environment, this is evident in Kaduna and Kano the study areas (NUDP, 2012; Ibrahim, 2019) with debilitating effects on residential property investment returns. Rational investors seek to invest in properties that have reliable degree of certainty and continuous flow of income (Dabara, 2014), Planning risk affect housing (Baum & Crosby, 1988; Udobi *et al*., 2018), this can greatly impact an asset risk-return profile. Residential Property Investment Returns (RPIRs) is an indicator in assessing the viability and value of real estate asset for example, RPIR of a type of property in a neighbourhood may differ significantly from similar property in the same neighbourhood. Also, RPIR within a neighbourhood also differ with others perhaps owing to property intrinsic and extrinsic attributes which shapes the rental and capital value during price formation (Steinke, 2011; Ajibola *et al*., 2012).

Urbanisation has exacerbated non-compliance to urban residential land use regulatory and physical development control measures. This engender insufficiencies or at some instances absence of public services like: water supply, road network, electricity, basic sanitation due to poor waste management system, flooding due to absence of drainages and traffic congestion, overcrowding in Kano and Kaduna metropolis (Vivan *et al*., 2013; Ibrahim, 2019). To a large extant, all these lead to changes in household location decision across residential neighbourhoods by households to better housing location with greatest comparative advantage creating voids in real estate occupancy across and within areas. To this end, this study examines the effect ULUPRs on RPIR with a view to developing a predictive model that can guide residential property investors in Northwest, Nigeria.

1.2 Statement of the Research Problem

Growth or decline of real estate market substantially affect the growth or decline of a country's economy because of it multifaceted effect on the overall economy (Golob *et al*., 2012; Kohlscheen *et al.,* 2018). ULUPRs shape residential property attributes which influences housing price and rental value formation (Ajibola *et al*., 2012; Rahadi *et al*., 2013). Lack of compliance to ULUPRs by investors in Northwest, Nigeria is to a large extent ascribed to void in residential occupancy because of not satisfy the clientele housing requirement. void in residential occupancy is accelerated by contravening ULUPRs (Ibrahim, 2019).

Deficiency in knowledge on residential investment performance capturing the role of ULUPRs in the region have resulted in speculative investment decision making by investors in different neighbourhoods, this naturally exacerbate long time void in residential occupancy due to obnoxious land use that affect clients' quality of life. The problem of long time voids led to declining residential property returns, increase financial burden, mortgage default and volatility in rental and capital income to the investors and inadequate exploitation of property tax to government coffers from the property market (Fonseca *et al.*,2018).

Previous models on RPIRs (rental and capital) capturing ULUPRs only focused on isolated ULUPRs for example (Wen *et al*, 2014; Bello & Yacim, 2014; Wen *et al*., 2017) neighbourhood regulations attributes, (Boamah, 2013; Wen *et al*., 2014; Sun *et al.*, 2014; Ze, 2016) structural regulations attributesand (Daam *et al*., 2016; Ze, 2016; Lima & Neto, 2017) location regulations attributes. These models have been unable to solve the problem of voids in residential property in the study areas. Consequently, the need to develop an inclusive RPIRs model capturing ULUPRs. By developing a predictive model of RPIRs (total return) which is a critical dimension to residential investment performance and adjudged as the best yardstick in measuring real estate investment performance (Dabara, 2014; Umeh & Oluwasore, 2015), the model will provide the Estate Surveyor and Valuers (ESVs) with a template to isolate variables based on contextual adherence to ULUPRs and predict total returns of various categories of residential property.

Deficiency in examining the extent which adherence or otherwise of ULUPRs causes RPIRs to diverge from free market outcome will surge proliferation of development control defiant residential investment by investors resulting to obnoxious land use in nook and cranny of Northwest, Nigeria, which will affect quality of life. This will excercebate unoccupied residential property and as a result increase volatility of real estate returns trend in residential location (Olukolajo *et al*. 2018) hence increase loss in housing sector. Most of the earlier studies/models are foreign and the research were conducted under political, economic, socio-cultural structures and data sources different from that of Northwest, Nigeria. Subsequently, their effect on real estate investment will be felt differently. Contextualising the peculiarity of Nigeria situation that is bedevilled with decades of ineffective urban land use planning and management strategy is germane. It is in this context, that this study seeks to examine the effect of ULUPRs on RPIRs with a view to develop a predictive model that can guide residential property investors in Northwest, Nigeria.

1.3 Research Questions

i. What are the factors responsible for variation in residential property investment returns in the study areas?
ii. What is the extent of variation in residential property investment returns across residential neighbourhoods in the study areas?
iii. What is the extent of compliance with urban land use planning and physical development measures of residential property in the study areas?
iv. What is the effect of urban land use planning regulations on residential property investment returns in the study areas?
v. What is the nature of residential property investment returns model capturing ULUPRs for the study areas?

1.4 Aim of the Study

The aim of this research is to examine the effect of urban land use planning regulations on residential property investment returns with a view to develop a predictive model that can guide residential property investors in Northwest, Nigeria.

1.4.1 Objectives of the Study

The objectives of this study are to:

i. examine the factors that are responsible for variation in residential property investment return in the study areas;
ii. determine the extent of variation in residential property investment returns across residential neighbourhood in the study areas.
iii. assess the extent of compliance with urban land use planning and physical development control measures of residential property in the study areas.
iv. examine the effect of urban land use planning regulations on residential property investment returns in the study areas; and
v. develop a predictive model of residential property investment returns capturing ULUPRs for the study areas.

1.5 Justification for the Study

In this era of dwindling global economy, the real estate is an essential constituent of a nation's income and wealth (Garay, 2016). It constitutes nearly one-half of wealth globally, in term of value when compared to shares and bonds and among the most significant investment class (Corgel *et al.,* 2000; Amidu *et al*., 2008). Thus, residential properties constitute a vital component of the real estate investment portfolio of investors globally. They are associated with the human lifestyle which includes economic, social and educational needs, and critical in the choice of housing by households (Peppercorn & Taffin, 2019).

Globally, various regions are having diverse ULUPRs (Michael & Palmquist, 2010; Jaeger *et al*., 2012; Qin *et al*., 2014; Gyourko & Molloy, 2014; Wen *et al*., 2017a; Brueckner *et al*., 2017; Lovkovich *et al*., 2018). Direct application of ULUPRs used in America, Australia, Europe and Asia in the analysis of rental growth and capital appreciation in Nigeria context will produce spurious result due to variation in key ULUPRs.

Preponderance of findings from contemporary empirical studies conducted in Nigeria were largely in Southwest region (Ukabam, 2008; Adebayo & Oni, 2011; Ajibola *et al*., 2012) and Northwast region (Bello & Yacim, 2014), anchoring their research on contextual ULUPRs variable on rental or capital value of residential properties overlooking total return that have been adjudged to fundamentally be in best position to weigh up performance of real estate (Dabara, 2014; Umeh & Oluwasore, 2015). The result from such empirical studies cannot be generalised. This makes a case for individual isolation of research from diverse geographical regions to accommodate local context.

There is the need to identify leading ULUPRs which are representative of peculiarity in Kaduna and Kano and the RPIRs on a micro scale which past research efforts did not capture. Therefore, this research will aid in achieving the policy implementation of government (NUDP, 2012). Equity investors, lenders, estate surveyors and valuers, land economists, urban planners and others who have vested interest in better understanding of the dynamics of residential properties indices, particularly residential properties market and factor that influence them will find this study useful because trends analysis of residential property investment returns determines the growth and decline of the property market (Utpal & Vupru, 2017) and the general economy (Golob *et al*., 2012).

Residential property investment returns trend monitoring will offer a dependable measure of residential returns movement over time and facilitate monitoring of its key determinants. In Nigeria, this study will provide a better understanding of the characteristics of investment returns fluctuation, it will serve as yardstick for making inter-area and international property investment returns comparison. Also, this study will serve as a guide for decision making on investment in residential property by both local and international property developers. Residential property investment returns are key property benchmark because they include capital and income component, a major cost to the tenant/ client and a supporting source of perpectual income to the landlord/investors; investment returns is regularly used as an indicator by the property market stakeholder but not limited to investors and developers to assess the viability of their real estate development project.

Policy makers involved with matters regarding real estate are highly interested in the various factors that influence urban land values and trends (Emoh *et al.*, 2013). This study will assist policy makers to adequately plan residential environment, enforce sustainable adherence of planning regulations that will attract higher RPIR, enhance higher property tax through enhance value from property assessment. And also, review urban planning policy to accommodate the diverse perception of residential property investors in line with National Urban Development Policy 2012 and stimulate economic growth in the housing sector of the region by developing a predictive model for making more informed decisions on residential investment which can be contextualised globally.

1.6 Scope of the Study

The study is limited to residential investment properties in Rijiyar- zaki, Hotoro, Badawa and Naibawa/Yar-Akwa neighbourhoods in Kano metropolis and Barnawa, Sabon-tasha, Unguwan-rimi and Malali residential neighbourhoods in Kaduna metropolis because there are situated at prime location and the dorminant residential property market. Three -bedroom bungalow, two-bedroom bungalow and a one-bedroom bungalow residential investment properties across low, medium and high density neighbourhoods were chosen from other classes of properties in the metropolis for data collection for the study because they are commonly found in the metropolis and data on these properties are readily available in the coffers of professional firms. Though, a reliable database has not been established for various categories of transaction in the Nigeria property market, Oduwole and Eze (2013); Olowofeso *et al.* (2013) noted that estate firms are accessible with reliable database on sales and rental values and will provide physical accessibility to the property for physical surveying in Kano and Kaduna metropolitan areas.

These properties constitute a class of dominant residential properties type which rent and outright sales are made to occupy them and as such rent or sales of these properties undergo periodic changes relating to its rental growth and capital re-adjustment. In addition, total return was considered appropriate for the study because residential property investment returns have a rental and capital component of the property and as such the best measure of investment performance (shows the growth or shrink of the investment) (Dabara, 2014; Umeh & Oluwasore, 2015).

Information and data on ULUPRs (maps and state domicile planning edit) of residential areas at the micro level of the neighbourhoods under study were collected from Kaduna State Urban and Physical Development Agency (KASUPDA) and Kano State Urban

Planning and Development Authority (KNUPDA) in the study areas. This aided in identifying the ULUPRs that have been in used over time in Kano and Kaduna metropolis the study area. Also, in observing compliance with residential ULUPRs over a period, survey data from the study area were utilised. This study adopts 2009-2019 based on the availability of data though real estate investment returns trend changes with the political and economic situation of a country, the timeframe basically highlights the level of growth and changes in residential property investment over the years.

Kano and Kaduna metropolitan areas are found appropriate for studying due to their increasing population, political, economic and robustness in real estate market within the Northern region and also the drive to understand the pattern and nature of residential total return trends by the researcher alongside location decision of households, as a vital element in evaluating the macroeconomic situation of Nigeria. Housing void has always been a fundamental contributing factor to the global financial crisis (Olowofeso *et al*., 2013) especially as it relates to the bursting of the housing bubble across Europe and America in 2007, selection and evaluation of urban residential land use structure in cities of a geographical region is crucial for real estate investment decision making (Han, 2004) because of heterogenic nature.

1.7 The Study Area

The study areas designated for this research are Kano and Kaduna metropolis. The designated neighbourhoods in these cities include Rijiyar- zaki, Hotoro, Badawa and Naibawa/ Yar Akwa neighbourhoods in Kano metropolis and Barnawa, Sabo-tasha, Unguwan-rimi and Malali residential neighbourhoods in Kaduna metropolis. Kaduna is the designated administrative capital of Kaduna State while Kano is the capital of Kano state. Kaduna and Kano metropolitan areas are preferred owning to their political, economic and robust real estate market. The designated cities are consequently described below:

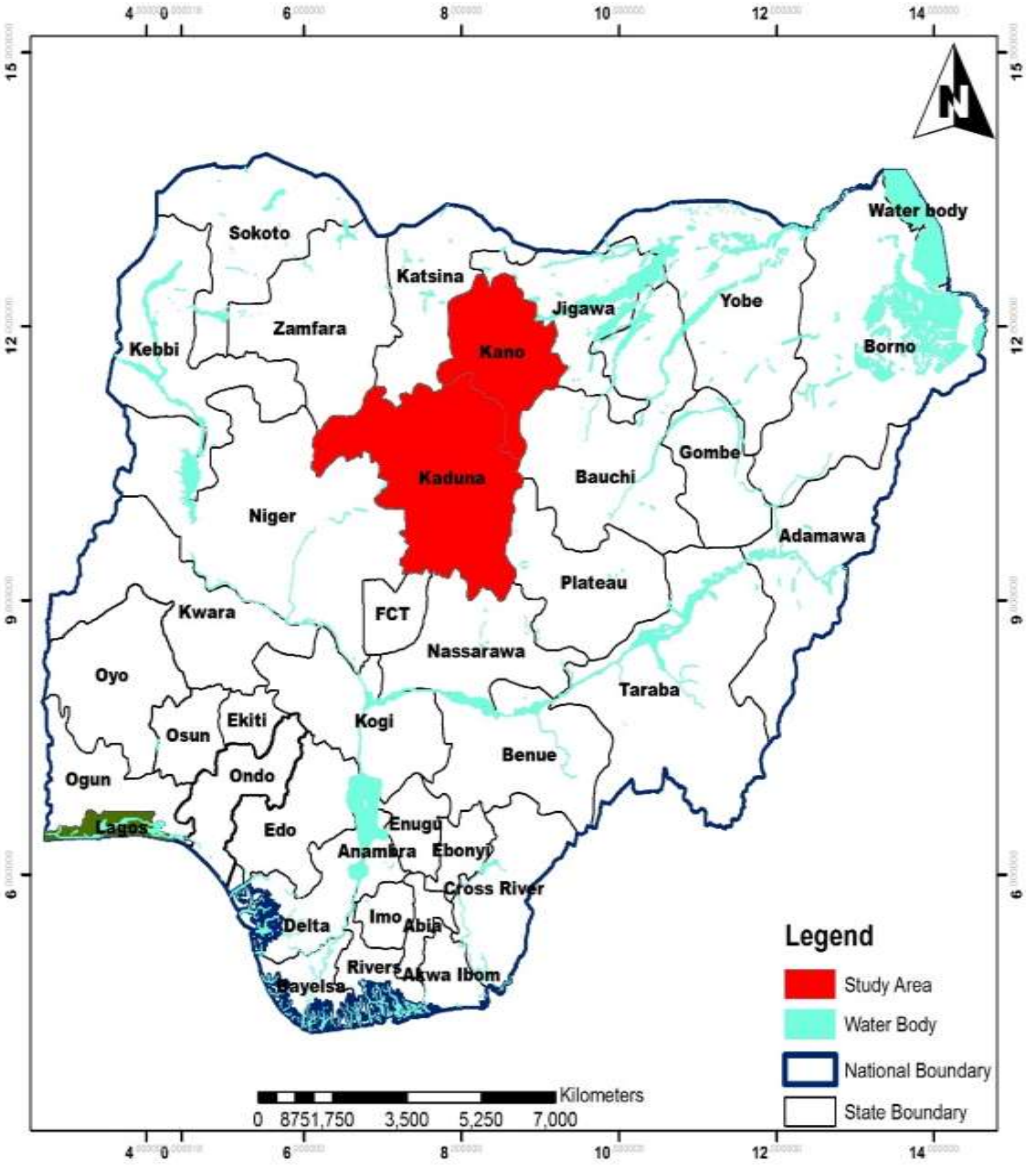

Figure 1.0 Nigeria showing Kaduna and Kano State
(Tanko *et al*., 2012)

1.7.1 Description of Kaduna

1.7.1.1 *Population*

Kaduna, metropolis is the designated capital cities of Kaduna State located Northwest Nigeria. The population of Kaduna metropolis has increased significantly since its inception in 1917, by late 1967 it had reached 150,000 and it was predicted in a 1967 study that the population strength may reach 1 million by 1990. Figures from the 2006 national population census were mounted at 1.5 million, but it was later established to be within the range of 1 million by a far-reaching field survey (Max Lock Consultancy Nigeria, 2011).

1.7.1.2 *Location*

Kaduna State is located at longitude 74403 (726’25.008” E), latitude 105231 (1031’23.160” N) within the framework of the Federal Republic of Nigeria. It has an entire land mass of 343,612.97 hectares and is located about 200 kilometres north of Abuja. This metropolitan area is a combination of (4) four municpality namely; Kaduna South, Igabi, Chikun and Kaduna North respectively. For the purpose of this research, Kaduna metropolitan region is defined within a 30km radius from the city centre as enshrind in KASUPDA 2017. Kaduna metropolis is the Administrative headquarters of the state (KASUPDA, 2017).

Kaduna urban is the fifth largest urban centre in Nigeria (Max Lock Consultancy, 2011) with an aggregate population estimated to be about 1.4 million people in 2014. The metropolis is transacted by River Kaduna and is a major hub for trade, transportation, and commerce in North-West, Nigeria.

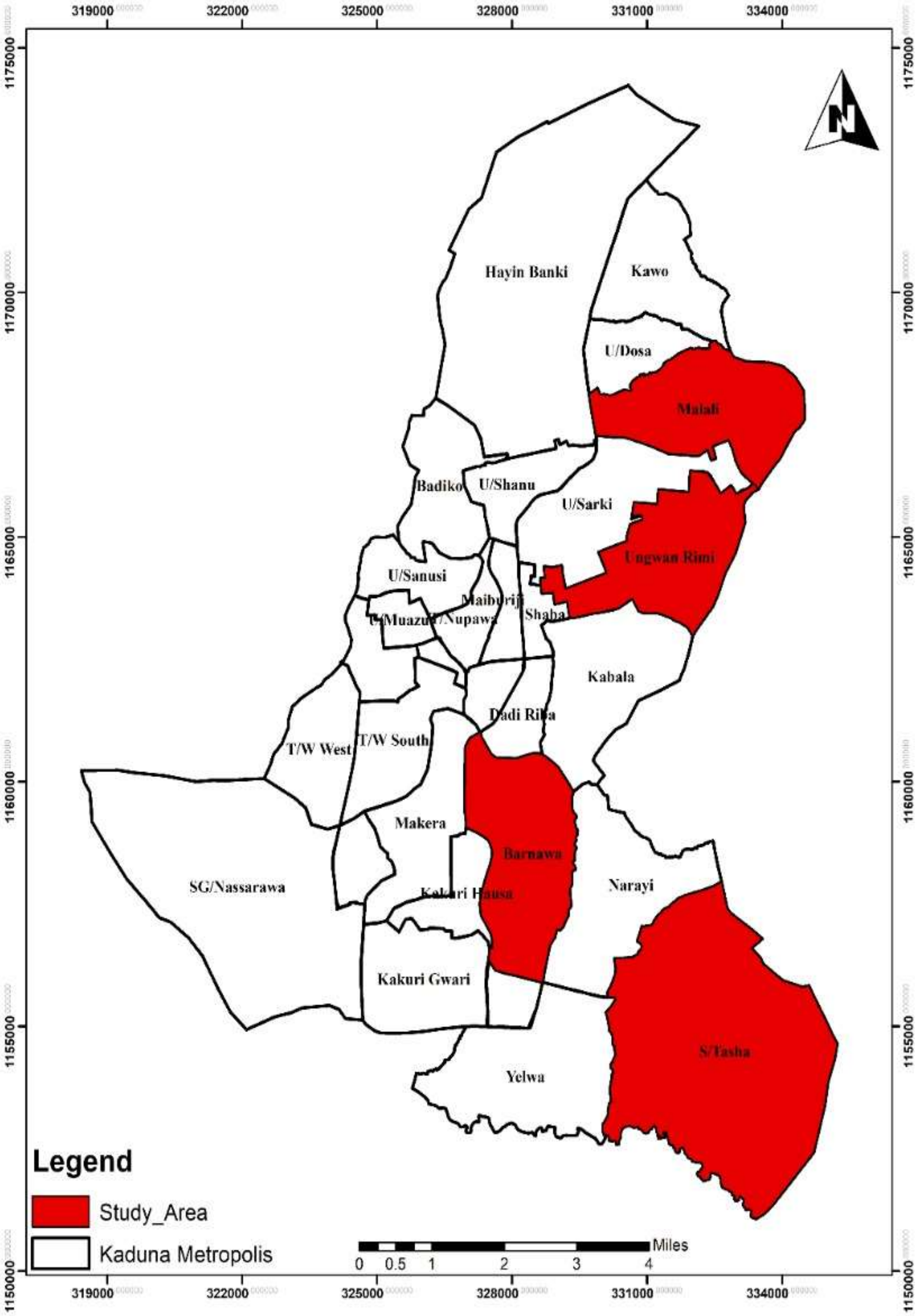

Figure 1.1 Kaduna metropolis depicting study areas
(Source: KASUPDA, 2017)

1.7.1.3 *Climate*

The zone is characterised by dry season conditions from November to February when the 'Harmattan' wind blows from the east-northeast; and rainy season characterized by warm, humid conditions with southwest winds from March-October annually. Kaduna metropolis witnesses 1,200 mm average rainfall annually. The rainfall pattern has habitually been view as mono-modal over the year with peak rainfall in July and August (Max Lock Consultancy Nigeria, 2011). The zone has a varience in temperature of about 26°C and 34°C maximally experience arising in Februay to April and a minimal cold temperatures (Harmattan) extending usually from November to January.

1.7.1.4 *Landform and drainage*

The drainage system in Kaduna is, in geological divergence to the natural hilltops of the South-Western Jos plateau. Valuable, mobile alluvium passes from the highlands replace sand extracted by inhabitants. The beautifully drainage outline is seasonally controlled natural by the Kaduna River with flood like conditions and virtually dry bare river beds. The natural tributaries make available advantageous refill farms *'fadama'* . The bed of the Kaduna River encompasses coarse sand alluvium, replenished annually (Max Lock Consultancy Nigeria, 2011).

1.7.1.5 *Spatial land development in Kaduna metropolis*

Industrial growth in the study area attracted large numbers of emigrants originally, this propels the growth of the metropolis south of the River Kaduna. Afterward, much of the growth has been guided by indigenous demographic factors, coupled with an urban population constantly rising owing to high birth rates (Max Lock Consultancy Nigeria, 2011).

Growth has taken place along the major roads out of the city to the North and South-East to be specific. Hectares of lands in the outskirts of the urban area are designated for expansionary tendency along the South-East.

1.7.1.6 *Urbanisation and population density*

The initial layout of Kaduna was conceptualized in 1913 by Lord Lugard and put down construction in 1917. Initially, serve a dual purpose of as a military and administrative capital of of the North. The population of Kaduna state has increased significantly since its inception in 1917, by late 1967 it had reached 150,000 and it was predicted in a 1967 study that the population strength may reach 1 million by 1990. Figures from the 2006 national population census were mounted at 1.5 million, but it was later established to be within the range of 1 million by a far-reaching field survey (Max Lock Consultancy Nigeria, 2011).

Kaduna metropolitan centres comprise of Kaduna South and Kaduna North Local Government Areas while outer areas consist of Chikun and Igabi Local Government Areas. The inner city core areas are more built-up with high land use intensity as there is very limited land in the inner city that is not developed or allocated for development purpose. The outer expanses are more towards the urban fringes of the metropolis and they are closer to agrarian land uses. The land mass coverage is more than the inner city core but the population level and density in the inner areas are a multitude.

1.7.1.7 *Allocated land and informal urban development*

The Ministry of Lands, Surveys and Country Planning have allocated land for new development in and around Kaduna metropolis over the years, through formal Town Planning Order (TPO) and Land Plan procedures. However, land developments have been characterized by informal settlement in severe disregard for town planning guidelines.

Informal developments in areas such as Badarawa and Nassarawa in the northern and of course some southern part of the metropolis started to develop and were observed to be progressing down this route in the master plan. Then they were called ‘illegal’ as indeed they were, but no efforts were made to halt the action. These and many other places have now developed to the full magnitude of their physical and topographical boundaries and as such have become established urban settlement even to the extent of individuals applying for and being granted a Certificate of Occupancy (C of O) and title deeds over developed plots. What was once illegal has over the years become accepted. This is our basic principle of land law in most parts of the world. Unchallenged occupancy after a given number of years gives the occupier a legitimate right to occupy and even ownership. Figure 1.1 shows the layout of urban land in Kaduna metropolis from the perspective of developed and undeveloped lands.

1.7.2 Description of Kano

1.7.2.1 *Location*

Kano is a leading centre in commerce, agriculture and other economic activities in Northern Nigeria, it is the administrative capital of Kano state. With an impressive urban land mass of 137km^2 and 499km^2 and it draws it strength from the six third tier local councils namely Fagge, Nasarawa council, Dala council, Taruani council, Gwale council, Municipal council and port of Kumbotso council, Tofa council and Ungogo council. The urban centre is situated within latitude 12°00′N to 12.000°N and longitude 8°31′E to 8.517°E (12°00′N 8°31′E12.000°N 8.517°E). it forecast to have a female-male ratio of 1.32 to 1. It a resource full population of around 10 million with 70% involve in agriculture activites. It can booast of around 43 active market-places and more than 400 private manufacturing ventures (Maigari, 2016).

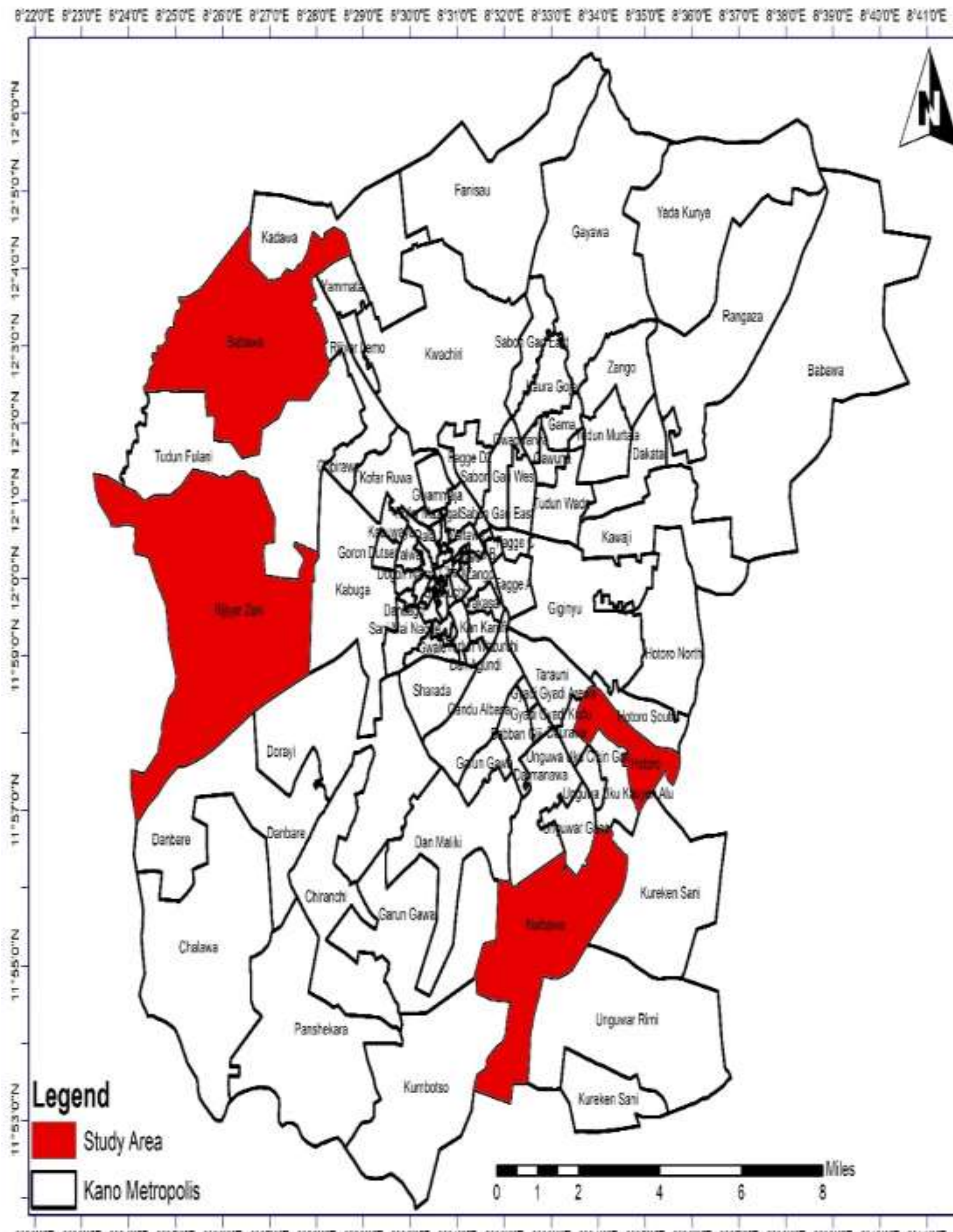

Figure 1.2 Kano metropolis depicting study areas
(Source: KNUPDA, 2017)

1.7.2.2 *Climate*

Kano is almost 1580 feet heigher than the sea level. Infact the climatic evenronment is semi arid type and hot through the year from September to February though obvious cold, the rainfall can be said to about 690 mm on average annual scale from primarly June to

September. Infact, the night-time is said top be cold with temperature lowering average ranging from 11°-14 °C. Challawa and Kano rivers are primarly water bodie that drain the savannah vegetation state.

1.7.2.3 *Infrastructure development*

i. Education

A city with a population of 5,630,040 inhabitants (NPC, 2006), as at 1999 the state had a summation of student's enrolment of 1,304,127 in 2,270 primary institutions (Falola, 2000). The state had a mojarly boys' schools with sixty females, 2 co-educational schools out of a total 247 secondary schools. The only 6 science secondary schools have a total enrolment of 3260, and 15 vocational schools amouting to 1950 students and an impressive 150 registered Islamiya schools by the government with an impressive 162,698 students (Falola, 2000). On the other hand, State boast of its Bayero University (Fedreal University), Kano State University of Science and Technology among other states Polytechnic, Colleges of education, 7 state – run health personnel training institutions among others. The state had 4 para-military and military institutions to boost security both external and internal: A Flying Training school managed by Nigeria Air Force, Immigration Training School, Nigerian Police Academy and Customs Training School. it also hosts the first state's Agency for Mass Education (AME) Nigeria and two-time winner of UNESCO Award (international literacy).

ii. Health Facilities

Kano state host a large number of health infrastructure and service as compared to other Northwest state. Kano metropolis had 43% of the 28 government hospital probabilly owing to it share size of population. 38% of the 21 primary health care and 89% of the medical doctors are situated in the metropolis., 73% of the 1,350 midwives and nurse are situated in the Kano metropolis while and 91% of the private hospitals and clinics 188 are also in the metropolis (Falola, 2000). The Federal and state governments and also Islamic and Christain missions and private proprietors are also stakeholders in health care facility providence. While on the other hand, the local governments substitute by making avialiable low order services in the health sector.

iii. Transport and communication

The accessibility of Kano metropolis by road was in 1906, by rail in 1911 and by air in the late 1940s (Falola, 2000). The state has direct road transport services to several state centrals and Abuja and to all Headquarters of third tier government in the state. Kano has major rail outstations with an extension to Nguru. The Middle East and Europe can be access through Kano. While there are direct and connecting flight on the domestic route to several Nigerian state metropolises. Also, in respects to postal and telecommunication structure in the state, there are 23 post services and ten postal agencies as it where, though the internet is posing a challenge hence the sudden diversification in service provision. Kano metropolis also have digital telephone and telex services, which are believed to be in obsolete condition given way to the internet world. Kano metropolis is served with about,13000 lines while ten other municipalities have 500 (Falola, 2000) but there is need for further study on the state of it functionality. There are several dispatches businesses and courier agencies in the state within the private sub sector.

iv. Water and electricity supply

urban designated centres in Kano metropolis are supply with pipe borne water with the aid of the State Water Board and Water Resources and Engineering Construction Agency (WRECA). Nearly all the urban centres in the state are connected to the National Grid and the state local Rural Electrification Board (REB) for the energy needs of the hinderland of the state.

v. Energy

Falola, (2000) in his study on behalf of the Tokyo based United Nations University shows that utilization of fire in Kano metropolis is unsustainable. Though it is a stable source of energy for the hinderland and the metropolitan areas, it is to the chagrin of the environmental stability of highly densely population mega city like Kano. However, mechanisation and electrification of services and industries has made Kano to out source alternative energy (petroleum products) which comes from the Niger delta area. The West and North-west African pipeline will provide succur to the state regarding energy challenges from proposed gas projects. An innovation by Partnership for African Development (NEPAD) to achieve decent and reliable energy distribution to breach inequality in Africa. In addition, the state has worthy potentials for generation an alternative source of ecologically sound and clean energy (hydro-electric power (HEP) and solar energy).

However, attaining autonomy in tems of energy generation for industrial and domestic use is envisage in no distance timeframe for Kano metropolis because of the plethora of avialiable opportunity waiting for enhancement. Opportunities avail Tiga dam and Challawa because of their flexible nature to be specific in the domain of electricity generation. In fact, the waterfall and gradient in Zainabi adjacent Riruwai situated in Doguwa Kano south is an uncharted resource for HEP employing public-private-partnership as source of funding. With the tropical nature of Kano state solar energy as a trending clean and cheap energy source globally could be the new normal for domestic energy supply for the urban and rural populance.

1.8 Specific Land Market Situation in Kano and Kaduna, Nigeria

With reference to this study, the dynamic nature of the land resource market mechanism drives urban land use allocation and optimise utilisation of the scarce land resource. In developing nations there exist challenges in the land market due to imperfect nature of the property market, they include: rapid urban population and growth, insufficient resources for housing and shelter, poverty, inflexible planning techniques especially in north-west Nigeria. Many land use problems in Nigeria are intensely rooted in the land tenure system (Land Use Act of 1978). The act confiscated right to ownership of land in Nigeria and proclaim state ownership. That is, in principle the state owns all urban land and allot them to work unit. Confiscation of right to land in northwest Nigeria dated back to the pre-colonial era. Section 2 of the Lands and Native Rights Proclamation Act of 1910 and 1916 ordinance declared all land in Kano and Kaduna, Nigeria as native land.

The implication is that the law puts restrictions on utilizing land while it lasted to the present LUA of 1978 as amended. The location and allocation of land resource in the urban area after the enactment of the LUA, without the consent of the state government was considered null and void. Land located in the urban areas are to be issued Statutory Right of Occupancy. For residential property it is for a period of 99 years while other land use is less.

The Urban Planning Authority that is mandated to co-ordinate and control physical development in Kano metropolis has metamophasize over the decades from Kano Metropolitan Board in 1975 to Urban Development Board, Kano State Urban Environmental Planning and Protection Agency and currently Kano State Urban Planning and Development Authority (KNUPDA). The focus of this study in Kano metropolis is based on the supposition that residential development is more vivid due to population growth than other locations and more likely to face development challenges. Also, the basis for criteria of assessment of physical development and residential building for this study serving as a road map for development control is the Kano State Building Regulation of 1988. In part this study in Kaduna metropolis was based on the belief that residential development is extensive in the location due to rapid population growth occasion by insecurity and search for greener pasture which increase the likelihood of development control challenges. Similarly, the criteria for assessment of physical development and residential building is the Kaduna State Urban Planning and Development Agency ”KASUPDA” Manual of 2017.

The absence of a formal economic channel for the transfer of land use right and ill-defined property right not only occasioned land use deficiencies but also created social conflicts and litigation. Kano and Kaduna are experiencing rapid growth in the population at 2.5% (NPC, 2006), this has dramatically raised the demand structure of residential property in recent years. Spatial residential land value has changed very frequently as a result of the change in the demand structure of households. Do this changes cause turbulence on residential property investment returns in the study areas? If Yes? variation of residential properties investment performance across the neighbourhoods needs to be ascertained and the risk return characteristic unearth for participants in the property market, for informed decision making in locations that will increase capital appreciation, rental growth and curtail investment loss.

1.9 Study Limitations

Basically certain limitations were observed with regard to this study. These limitations primarily relate to the study used the rental and sales price preserve by the estate surveyors and valuers which were not systematically sampled and could contain some level of sample biasness (for example if the sample size is more expensive as some neighbourhoods are more desirable and demand higher premium) findings from this study cannot be generalised for other regional cities in Nigeria, because of the peculiarity of their property market dynamics, the volitality in rent and capital worth of property (residential) in Kaduna and Kano are specifics to the cities alone and same value may not be obtainable in other urban areas.

Also, the quantitative aspect is adopted in the research, that is, in regards to achieving timely response rate. This has contributed to the fact that there is challenge of insecurity in Northwest, Nigeria, it takes some respondents several attempts before the desire goal is achieved. Despites this shortcomings, it is believing that from literature this analysis is among the earliest to provide an insight into the benefit provided by ULUPRs.

1.10 Summary of Chapter One

Discussion on the background of the study and statement of the research problems were carried out in this chapter. Research questions were raised and the study aim and objectives have been stressed. Justification of the study was buttressed and the research scope was vividly defined. Also, in the aforementioned chapter, the profiles of the study areas are briefly identified. The next chapter has examined and broadly reviewed relevant theoretical and empirical studies, a gap in knowledge has been identified.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The Conceptual Clarifications of Lands

2.1.1 The concept of land

The definition of land is multi-dimensional. It depends on society and professional orientation. According to Oladehinde *et al*. (2018), land is an irreplaceable, valuable and fixed resource of limited quantity which covers economically valuable structures and natural resource. Adeniyi (2012) defines land to embrace all physical structures in the wealth of a sovereign state given by nature and improved by humans. Among the physical structures are: vegetation, minerals, air, water bodies, mountains, animals, climate encapsulating physical structures situated on the earth surface, above or below the earth surface. Hence, this clarifies the multi-facet nature of land. Adeniyi (2012) emphasized that land can be perceived as a tradable commodity in the market-place (Economist); a productive capital (Investor); a geometrically measurable space (Surveyor); an immovable object with rights embedded (Lawyer); a fixed and taxable asset (Valuer/Accountant); a functional resource (Planner); an ancestral legacy (Sociologist); an ecosystem (Environmentalist); a spatial object (Geographer).

Looking at the multi-faceted view of land from the purviews of professionals, Wyat and Subedi (2013) believe that land is the cradle of all factual wealth and a scarce resource, without which life on earth is not sustainable. As noted by the International Fund for Agricultural Development (IFAD) (2015) as cited in Oladehinde *et al*. (2018), land is more fundamental to people in the developing world. Clearly indicating that people in developing countries are poor and depend for their daily sustenance on land, Nigeria inclusive.

This suggests that land is the source of food, fuel, water, clothing and metal for man's development. Man has exploited land in his favour to produce lots of assorted goods and services, for acquiring social status, for leisure activities, for spiritual fulfilments, for artistic delights and for asserting territorial sovereignty (Briassoulis, 2000). Consequently, land is a generation good. Hence, Mpwehuka (2012) as cited in Ndjovu (2016) assert that land is essentially an irreplaceable scarce resource not limit to the socio-economic lives of an inhabitant but encompasses successive generation.

It is beyond doubt the ultimate distinction of land from other resources is fundamental for instance. It is immobile in terms of location, heterogeneity in terms of quality and features, all humans' endeavours must utilise component of land, it has spiritual attachment to the user, consumption of land is unlike other resources, for it is not an end itself but a means to an end, therefore a derived demand (Hall, 2013). The multitudinous characteristics and views on land have bequeathed on it a derived demand for various activities in the urban economy of many developed and transitional states. Securing the right to land strengthens sustainable development by making it possible and attractive to undertake long time investment in the land (Thontteh & Omirin, 2015). Ghatak (2010) sum up the concept of land to the urban dwellers that it is not only a profit generating asset to the owner but an indemnity policy that bring in perpertual profit. Therefore, land is the fulcrum of urban development hence used for multi-dimension purposes in urban setting.

2.1.2 Urban land use

Oduwaye (2013) defines land use as the noticeable manifestation of socio-economic, socio-cultural, socio-political and environmental dynamics influencing the utilisation of land situated in an area. Therefore, Turner *et al*. (2014b) view urban land use as signifying the summation of human activities and arrangement designed at harnessing services provided by the ecosystem within the urban context. In other words, any activity that takes place on a piece of urban land automatically defines the land use of that urban location. Urban land use is a critical component of a society's interaction and an identified driver of the global urban economy. While urban land use pattern is the consequence of the spatial distribution and arrangement of specific land use within a district (Evert *et al*., 2010).

Habitually, urban land is used for different socio-economic activities, typical type of land use in the urban context includes residential, commercial, industrial, recreational, and transport uses. As the city's population increases, the frequency of these economic activities increase space required, the proportional increase occasioning competition among the diverse uses. According to Adebayo (2009) factors influencing the spread of different land use in urban centres are socio-economic and government physical planning laws. Therefore, the quantum of the influence of each of the spread factors enumerated on land use is reliant on the versatility of the activity or use.

2.2 Determinants of Urban Land Use

Determinants of urban land use are succinctly categorised into two broad standpoints (Chapin, 1965). These include the economically rooted-standpoint of lands use and the socially rooted-standpoint of lands use. The economic determinant is associated with the dynamic-forces of demand and supply. This hinges on the assumption that individual use of a piece of land is logically established by the operation of the price system mechanism via the price paid and the operator's decision as to the alternative use that will yield the highest returns. Whilst the Social determinants of land use could be described in terms of their physical context and their social-organisational context. He maintained that aggregation of land use basically describes the evolution of urban communities in time and space. The fundamental localised sub-processes of aggregation as identified by Ericksen (2007) includes a) centralisation and decentralisation; b) segregation of populations into various distinctive areas, c) concentration and dispersion of services and population; d) invasion of neighbourhood by investors, resulting in succession of one group by another group, and e) dominance and the gradient of receding dominance in the successively more peri-urban community.

Earlier, Lichfield (1979) gave an in-depth categorisation of primary determinants of urban land use to encompass any of the six distinctive units. These include economic; social; cultural; environment, infrastructure, and institutions. Economic factors that influence land use to include: accessibility to location, supply and demand, nature and intensity of activities, agglomeration economies, scarcity concerns, alternative competitive uses, anticipated returns. Social factors include: taste, security, and safety, population, migration, esteem and neighbourhood attributes. While, the Cultural factors encompass ethnic origin and religion, indigenous tradition.

Component of the environmental factors affecting urban land use includes soil, climate, relief and topography, vegetation and nature of the whole environment (Rūta and Vida, 2016). Also, availability of infrastructural amenities largely induces urban land use pattern, these refer to both social and physical infrastructure, the former comprises recreational parks, market, health facilities among others whilst physical comprise of water supply, telecommunication, electricity to households, waste disposal, functional drainage network, among others are influential to determination of land use (Oduwaye, 2013; NUDP, 2012; Lichfield, 1979). Also, noticeable institutional factors swaying land use pattern is land use planning regulations through mechanism such as: zoning regulations, restrictive development, height restriction, building codes, subdivision regulations, eminent domains, land titling, planned unit development, comprehensive plans and master plans, historical aspects, native customs and traditions (Ling & Archer, 2013; Oduwaye, 2013).

Kuye (2009) identified factors such as accessibility (distance, cost and time taking to transport people, goods, and service); complementarity (utilisation of comparative advantage by households, firm, and government occasioning land use intensity) as determinant of urban land use in Nigeria.

2.3 Concept of Urban Land Use Planning

Planning of the urban environment dated back to many centuries, the neo-classical and classical era saw town and cities laid out in line with a fixed plan, although a lot of town and cities tend to develop organically (Oasis Associate, 2011). The earliest true urban settlement emerged around 3000 BC in Mesopotamia, planned towns were features of ancient Mesopotamian, Minoan and Egyptian civilisation of the third millennium BC, the first description of urban planning in literature appeared in the 'Epic of Gilgamesh" (Oasis Associate, 2011). The distinct feature of urban planning is vividly seen in the relics of cities of Dholavira, Harappa, and Mohenjo-daro of modern day Pakistan and India. According to archaeologist, some of these cities have drainage seemingly linked to the advanced ideal of urban sanitation (Oasis Associate, 2011). Although individual and cooperate organization view urban land use planning from different perspective mostly in line with their socio-economic and political inclination.

Jha *et al.* (2010) identify this domain as: "*A public policy exercise that designates and regulates the use of land in order to improve a community's physical, economic, and social efficiency and well-being"*.

Alabi (2010) asserts that urban land use planning is a technique used in tailoring the pattern, growth, and management of the urban environment to be in accord with a specific guide and policy. The aim is to harmonise all forms of development activities across various level of a geographical region. Therefore, Urban land use planning is the practice of planning the management of trend, structure and direct the growth, development and regulating the urban land areas with an understanding that all basic urban land use meets the need and aspirations of the players and their localities though guaranteeing harmony in land by fashioning, healthy, efficient, equitable and convenient environment for present and generation yet unborn (UNDP, 2012; American Planning Association, 2011). No doubt it is vital to plan so as to subdue land use challenges such as incompatible uses, shanty and squalor formation triggering flooding, access to urban land use for housing and traffic congestion affecting commercial real estate performance, because most Nigerian cities growth are without sustainable plans (NUDP, 2012).

The rational for attaining sustainable city development is the need for effective urban land use control and management, specifically at inner city core and peri-urban. Planning strives to identify the most preferred land use that will aid to stimulate local development ideals, without which the ideal of planning cannot be achieved.

2.3.1 Observed impediment to urban land use planning in Nigeria

According to UNDP (2012), most states in Nigeria are not planned, the few planned state policies are rooted in alien ideology, making them inappropriate contextually to our traditions and cultures, thus occasioning serious challenges to city planners and the host cities (UNDP, 2012). Making cities safe and healthy for the resident are privileges and also a fundamental human right (Akinbabijo, 2012). But alas, cities in Northwest Nigeria, the research area are among the not adequately planned cities thus, making them illprepared for administrative challenges, hence retard their ability to significantly contribute to the national economy (NUDP, 2012). Experts in urban planning did a detailed study on factors responsible for the downward slide of urban planning in Nigeria. Such studies include Sanusi (2006), Rivkin (1976) as cited in Aluko (2011a), Dankani (2013), Aribigbola (2013), Madu and Innocent (2013), all these gave an exhaustive justification of factors affecting urban planning to includes:

2.3.1.1*Pattern of settlement*

With rapid urban population, many informal settlements are emerging in the city core and urban periphery in Kaduna and Kano, which seem to be contrary to the formal process in public land use control mechanism (Abubakar *et al*., 2013). Informal settlement is a disregard for physical planning, occasioning disorderly spatial development in cities across Nigeria (UN-Habitant, 1976 as cited in Madu & Innocent, 2013). Consequently, making it challenging to provide basic services (road, sanitation, water, electricity) in terms of cost and personals. This pattern of unrestrained urban growth is a phenomenon in cities across the Northeast. All-inclusive bottom-top approach is desirable to enhance an active residential property investment market in the core and periphery of this cities.

2.3.1.2 *Restrictive building regulations*

The adaptation of European standard (building codes, building standard, bye-laws among others) in development of housing and neighbourhood ancillary service have not been palatable. These laws are very restrictive not recognizing Nigerian's socio-cultures and tradition in terms of construction. In contrast, Ononugho *et al*. (2010) believe European standard in our construction industry has encouraged constructions with local building materials among the low-income earner at the detriment of standard, occasioning squalor settlement and the collapse of buildings in urban fringes and cities inner-core. This do not come as a surprise because lack of total commitment in research on local building materials and improvement in construction technology have exacerbated these problems, mushroom squalor settlements in nooks and cranny of our cities forming shanty and slum-like neighbourhoods, thus posing a challenge to real estate managers are issues among others.

2.3.1.3 *Laxity in approving plan*

Prior to actual constructions, Nigeria urban and regional planning (NURP) law requires submission of proposed development for vetting. The 1992 NURP law in section 30 (2) specifies that no development shall commence for government or its agency without approval from the development control board, Section 34(4) specifies that subject to directive from the federal, state or local government, development agency may delay construction for only three (3) months. A recount of unnecessary overlong time in the process delaying construction, in many instance developers go ahead with construction without regard for the approval of building plans. This is evident in the study areas with so many buildings littered with black (stop work) or red paint (demolition), this has been attributed to complex application procedures, laxity among officials and centralized planning approval. No doubt this act may impedes planning process in real estate market in the long run.

2.3.1.4 *Lack of involvement of operational agency*

Successive governments in Nigeria specifically state governments hire consultant to develop a plan (urban plan, master plan, local plan, residential or commercial layout) depriving metropolitan planning department from contributing to the blueprint design process. Madu and Innocent (2013) observed that this occurrence is a common phenomenon of cities and towns in Nigeria. The non-involvement of planning agencies who have prior knowledge of the local tradition and culture of the inhabitant will short change the implementing process of the development plan hence poor implementation of development control- evidence with squalor and shanty settlements in the nook and cranny of our urban areas.

2.3.1.5 *Restrictive planning regulations*

Development and Planning Regulations adopted for cities in sub-Saharan Africa are viewed as ambiguous. Implementation are ad hoc and only directed at solving current challenges without predicting the future trend. These shortcomings are not unrelated to poor execution of planning in urban centres due to organizational, legal, financial complexity, ineligible personnel, rigid development control codes, static building and zoning regulation inflexible to implement. Physical planning of most urban areas are done without the preparation of the urban master plan, where there is, it is always a replica of the European model (British laws) that need contextualization to complement the local socio-cultural and economic issues in Northwest, Nigeria (NUDP, 2012). These have led to visible haphazard, uncontrolled growth and development of informal sector (proliferation of residential buildings, hawkers, vendors and kiosk at foot-bridge, front-yards, road-verge, and walk-ways for carrying out trades). Without specific vital infrastructure service, existing planning laws seem to have ignored informal sector real estate economic potential.

2.3.1.6 *Poor planning implementation*

Oyesiku (2007) posits that planning is like a preventive medicine, which is strategic to avert the outcome of obnoxious land uses whilst planners in Nigeria focus on curative medicine. In the same vein, Sanusi (2006); Aribigbola (2008) also believe effective development control should have prevented most challenges of cities in Nigeria. But Alas, delay and poor project execution, lack of inclusiveness in planning (bottom-top approach), inadequate technology and manpower, defiant of the institutional framework for development plan from Federal Government down to the Local Government levels have militated implementation of urban planning in Nigeria to the later (Olugbenga & Adekeni, 2014).

2.3.1.7 *High level of poverty*

The global population of urban cities will rise to 60% by 2025, the case in Nigeria is not different, urban poor are struggling at an unprecedented level to sustain their livelihood in substandard housing, urban land use regulations is not a priority (Owei *et al*., 2010). Holistic housing programme that takes care of the affordability problem of housing needs of the urban poor, in line with their socio-economic needs is absent in Kaduna and Kano. Urban poverty, uncontrolled development, and unemployment are global problems that every municipal government must localize and find a sustainable solution to the problem (Watson, 2009). Intuitively, a vibrant real estate market and sustain growth will increase the construction of new housing and rental transactions trend among others and alleviate urban poverty.

2.3.1.8 *Weak financial position of planning authorities*

Urban planning activities are mainly funded by the international agency, Federal, State or Local government in Nigeria (Thontteh & Omirin, 2015). It covers both existing (urban renewal) and new development (infrastructure and service). With the current global economy, the conflicting need for the fund to provide for every sector of the economy becomes a herculean task for the municipal authorities. Revenue source from registration of titling is just 13% of the total sum of the land value which at times the landowners find it unwilling to pay. According to Thontteh and Omirin (2015), it is rather uncertain if the planning system can fund itself without the government grant. A sound financial capacity of government is germane to a vibrant urban planning (Olugbenga & Adekeni, 2014). Monitoring and evaluation of cities cannot be achieved without sound financial support.

2.3.1.9 *Weak legal and institutional structure*

Urban and regional planning laws in Nigeria call for concern because they are ambiguous on matters relating to all levels of government (Federal, State and Local) occasioning conflict between the various levels of government on some critical issue (Fagbohun, 2007; Aribigbola, 2008). For example, the Urban and Regional Planning Decree no. 88 of 1992 did not explicitly define the responsibility of the various levels of government on planning activities (Aluko, 2011a). The legal framework on planning needs to be constantly reviewed to accommodate socio-economic and cultural changes in the environment, these invariably have affected the smooth execution of development control tactics. Hence, government should re-evaluate their regulatory framework to accommodate specific socio-economic and cultural situation, concerning human settlement.

2.3.1.10 *Political will and interference*

The critical component to a successful well planned city is good urban governance (Aluko, 2011a). This suggest the use of participatory and all-inclusive decision making whilst execution approaches and activities aimed at being accountable and transparency to the citizen. Regrettable according to a report by NUDP (2012) that the mechanism for good urban governance in Nigeria has not been entrenched in the political system, as a result of the fragmented nature of our urban centres into local government areas without overall coordination, coupled with lack of political will and capacity on the side of local and state government. Instability in the political terrain ensues unstable, impracticable policy, and lack of continuity in executing planning policies occasioning very low international support to physical planning. Also, Akinbabijo (2012) perceives urban planning as lacking to a great extent and requires a functional political support in Nigeria. Consequently, urban planning has been unsuccessful due to intrinsic managerial, legal and political shortcoming.

2.3.1.11 *Poor enforcement machinery*

Qualified workforce and advanced equipment used in discharging the core responsibility of development control in urban periphery and the city inner-core are fundamental for a successful land use planning. The multi-faceted component of the urban land use planning is tricky and a task thus requires all-inclusive participation. Enforcement of development control measures have not been palatable because of paucity of fund to provide basic consumable. In some instances, there is no accountability for consumables, this aids corruption in the system. The strategic area of default in building regulations (building on utility lines, zoning, setback) are very difficult if not impossible to enforce once the building has been erected (Olugbenga & Adekeni, 2014).

2.3.1.12 *Low level of awareness of the existence of development control measures*

The level of the consciousness of the citizenry and prominence of the existing laws determine to a large extent the rate of compliance and raise the level of success of urban land use plan, thereby influencing the quality of the environment. Contravention of development control is a product of an un-inclusive participatory system during formulation and implementation process (Olugbenga & Adekeni, 2014).

2.4 Review of Early Urban Planning Laws

2.4.1 Pre-colonial period of urban land use planning

Scholars in urban land economics, including Aluko (2011a) have contended that land use planning in Kano, Lagos, Kaduna, Bida, Benin among others pre-date the era of colonial imperialist. Undoubtedly suggesting planning settlement in pre-colonial Nigeria were structured in accord with local traditional values, custom, religious practice, transportation, and agricultural oddity of the economy.

Traditional heads (Emirs) and the heads of communities (Hakimi and Mai- unguwa) in the north have legal backing from the perspective of the Islamic jurisprudence of being the trustees, beneficiaries, allocators, re-allocators, and administrators of development (Aluko, 2011b). Expansion of settlement was mostly around the traditional ruler's palaces, social and physical infrastructure like the village squares, mosques, markets, and clinics were also situated close to the palace, constructed and owned communally (Aluko, 2011b).

2.4.2 Colonial period

For the drive of ensuring a harmonious environment and agenda of the British imperialist the colonial period witnessed formal enactment of laws. They encompass: -

2.4.2.1 *The 1863 town improvement ordinance*

Lagos was annexed as a British colony by the treaty of concession in 1861. That prepared the ground for the traditional settlement pattern to transform over time into the colonial approach of land use development pattern. This Town Improvement Ordinance symbolises the genesis of urban land use related legislation. The main target of the enactment was to have control over sanitation and development in Lagos. However, denforcement of the enacted ordinance rest within the hegemonies of the health department in Lagos council.

2.4.2.2 *The 1904 cantonment proclamation*

Cantonment proclamation of 1904 was the actual land use planning legislature, it was an effort to safeguard the Europeans from health hazard so prevalent at that time. By the enactment, it was a prerogative of the governor to declare an area a Government Reserved Area (GRA). The proclamation was concerned with guaranteeing ordering of urban land use, sanitation, and open- space, large market areas were divided and supervised by ward-head and chiefs. More so, latrines, incinerators, and cemeteries were mandated by the declaration to be established. Omole (2012) interprets the Act, as a support mechanism for the socio-economic advancement of the British government to sustain their Industrial development and growth at the expense of Nigeria as an emerging Nation.

2.4.2.3 *Township ordinance 1917*

This ordinance bequeathed strategies for the control of development and finance of land, these development control are still noticeable in Kano, Kaduna, Minna, Enugu, and Jos. The ordinance was targeted at instituting a standard of municipal administrative responsibility (Omole, 2012). On the contrary, Oyesiku (2007) believes it was a way of legalizing racism by segregating the European expatriate who occupied European reserve areas, whilst natives were farther separated along indigene and non-indigene, thus, established a development plan for every town. The development plan group had Lagos as a first class city, Kano, Kaduna, and Ibadan were grouped as second-class among others, whilst Bauchi, Kontagora, and about forty-seven other towns were regarded as third-class cities. The ordinance was fundamentally a giant stride in the evolution of urban planning law in Nigeria.

2.4.2.4 *Lagos town planning ordinance of 1928*

Lagos Executive Development Board operated as a Federal government planning authority, superintending over land use planning and development of Lagos. The ordinance was enacted in reaction to the bubonic plague, and made provision for land reclamation and slum clearance of Victoria Island, land use planning, and development among others. However, the ordinance lasted for a period of 18 years.

2.4.2.5 *Town and county planning ordinance of 1946*

This law received the support of the British town and county planning act of 1932, it was as a consequence of urban land use planning problem across Nigeria cities that led to its enactment. Omole (2012) asserts that urban centres in Nigeria at that particular moment were in dire need of improvement and development control. The 10 years plan of development and welfare plan of 1946 -1956 gave birth to the subsequent development plan. Interestingly, in part of it, main schemes were urban planning and village restoration among other wide range of urban land use planning activities (preparation and approval of schemes, planning schemes and planning authorities) (Aribigbola, 2013). Other legislation such as the Mineral Act of 1945, emphasized on issues such as: building regulations, pollution, and drainage, construction of roads and supplementary services.

2.4.3 Post-colonial era

By the turn of independence, the town and country planning edict was maintained and the entire region domesticated the edit. In 1959, Northern Nigeria identified it as chapter 150 Laws of Northern Nigeria. In the West it was tagged Chapter 123 of the Laws of Western Nigeria, whereas in the East it was Chapter 155 of the Laws of Eastern Nigeria. Omole (2012) believed biased legislation, ineffective administrative structure, and inapt standard dominated the post-independence development plan. These identified issues were also the problem inherent in 1946 town and country planning ordinance.

2.4.3.1 *Summary of urban land use statute and policies in Nigeria*

Planning regulations affect human livelihood than most other regulations, they are the target for the future and have multi-beneficial outcome; they apply to landed property which is a vital part of most human investment, and a fulcrum for bridging the circle of poverty (Alterman, 2011). The outcome of planning regulations affects macro and micro neighbourhoods through where we live, employment opportunities, resident planning behaviour, situation, and quality of public services and environmental sustainability.

2.4.3.2 *The Land Use Act No. 6 of 1978*

Essentially, before the enactment of the Land Use Act, there were challenges in accessing, titling and use of land coupled with varying land policies between the North and South Nigeria, among other ensuing impediments in accessing land. Currently, the National land use statute is the Lands Use Acts of 1978, subsequently known as the Land Uses Acts cap 202 law of the Federations of Nigeria, 1990. It was enacted into law with effect from 29th day of March 1978 as Nigeria land policy document which shall be called the Act. The enactment of the policy document was to harmonise land use policy throughout the Nigeria state (Nuhu, 2008). According to Udoekanem *et al.* (2014) the Land Use Act has been an all-encompassing law since its promulgation in 1978. The Act controls the acquisition, ownership, alienation, management, and administration of all land within the territory of Federal Republic of Nigeria.

Adeniyi (2012) viewed the significant provision of the Land Use Act of 1978, while Birner and Okumo (2012) opined that the Act fails to determine the land governance challenges in the federation and hence Deininger *et al.* (2012) acknowledged areas of great weakness in land governance in Nigeria. Also, Omotola (1981), Olayiwola and Adeleye (2006), Omirin (2012) critically analyse the aims of the Land Use Act which was not specifically stated in the Act. Though Oluwamotemi (2010); Umezulike (2011) commend the Act as an effort to eliminate vital hindrance to economic growth and development in southern Nigeria. The Land Use Act provided for an integrated land tenure system through-out Nigeria. It summarily vested all land within the dominion of each state under the governor, for the benefit of all Nigerians and set the processes for state and local government institution to surmount issues of land allocation, issuance of consent for the transaction on land, fixing of rent. In contrast, Umezulike (2011) believes that by authorizing local government to issue the right of occupancy, the Land Use Act has appropriate authority over landholding from community leaders and family heads in the South, consequently presenting a far-reaching radical form of departure from the status quo ante.

The Act eliminated freehold interest in land, replacing it with statutory (state) and customary (local government) right of occupancy. Even though the statutory and customary right of occupancy are termed as the same as leasehold interest on land owning to the definitive nature of interest and subjective nature of control by the governor. Umezulike (2011) contends that once freehold of interest on land is eradicated, minor interest dependent on them cannot survive. Furthermore, leasehold interest is a better secured interest than statutory rights of occupation because it is not subjective to revocation like the statutory right of occupancy. Secondly, the stance of the Land Use Actt on the allocation of 500 hectares for private investment in land. Omirin (2012) asserts that it had its root in the determination to thwart speculation and holistically encourage redistribution of land that is the second aspect here is the limitation of private landholding to 0.5 hectares which limits the scope of private large-scale investments on land although this had its roots in the effort to prevent speculation and encourage redistribution of land. Governors were given considerable powers to impose taxes on landed property transactions because of the requisite of governor's approval for each and every transaction, persistently for revenue generation. Adeniyi (2012) condemns the prerequisite of governor's consent that it increases costs of land development and services for end users; creating an undue avenue for corrupt transaction among officials in the processes and delaying land investments.

Generally, scholars in urban land use economy (Nuhu 2008; Sule 2014) have condemned the failure of the Land Use Act to provide adequate and just compensation of holders of expropriated interest in land, it inability to address various critical issue that inspire housing delivery and real estate market dynamics and issues of constraint of certificate of occupancy in accessing bank loans. The incapability of the state governors to judiciously utilise the Acts framework due to the inefficient and effective database (profiles of the land transaction) under their supervision. Hence, Omirin (2012) stresses that speculation on useable land is very high occasioning high land price, land for development of public project are still held back by community leaders. The manifestation of ineffectiveness in implementation is not peculiar to the north, according to Adeniyi (2012) specifically Lagos, Nigeria; Traditional land speculators hold investors to ransom by extorting money from potential developer recurrently- individual or corporate. It appears the state government mechanism is ineffectual in term of addressing land issues.

The state allocative efficiency process of land only recognized the formal option of accessing land for development (Jimoh, 2018). The Act makes provision of limiting private landholding in urban centres, not above 500 hectares except with the permission of the governor, for farming activities and about 1,000 hectares for grazing activities.

Adeniyi (2012) arguably posits that this might not be unrelated to the courageousness of the herdsmen who fearlessly direct their cattle occasionally to farm owned by the local farmers in North-west, North-Central and currently some part of Southern Nigeria instigating fatal skirmishes. This provision might drive a cogent point for the herder's men if really they are aware of this right in the Land Use Act. Nigerians in several quarters have called for the LUA to be expurgated completely from the Nigerian Constitution in order to expedite its amendment to surmount the issues highlighted among others. To curtail some of the challenge bedevilling the LUA they introduced the successive degree by 1992.

2.4.3.3 *The Urban and Regional Planning (Decree) now Act no. 88 of 1992/Decree No. 18 of 1999*

The Nigeria Urban and Regional Planning Law (NURPL) of 1992 came into existence on 15th December 1992, after 46 years of the 1946 town and country planning law had been annulled by the Act (Olugbenga & Adekeni, 2014),

In part I section 5 (a), (b), (c) of the document is authorizing for the instituting of commission at the Federal level, State Boards in each of the federating State including the Federal Capital Territory (FCT) Abuja; and authoried expert in each of the Local government areas and the area councils of the Federation.

Section 7 (f) of the document demands the commission to direct and monitor the implementation of national physical development plans and development control.

Section 9 (a) and (c) require the formation of State policies in urban and regional planning in line with their peculiar characteristics; control property development pattern in the state.

Section 11 (b) of the decree authorized the authority to commence development control within its jurisdiction

Section 27 (1), (3), (4), (5) of the document seek for instituting a development control department at federal, state and local government level with powers to adjudicate on land issues under their various jurisdictions.

Section 28 (1), confers on the development control department power for approval of development plan before commencement of any development;

More so section 29 of the document repeals any law exempting government agency from obtaining approval for developing land from development control department.

Section 31 of the decree vehemently states that application can be rejected if the development is capable of causing negative externalities to the environment, facilities or inhabitant of a geographical locale.

Part, I section A, subsection (2), (c) the document confers on the minister the responsibility of formulating urban and regional planning standard for Federal, State and Local government.

Some scholars are of the opinion that the Urban and Regional Planning Act of 1992 is outdated and ineffective to meet the requirement of the urban centres in Nigeria (Omole, 2012). On the contrary decree, No.88 of 1992 was an attempt to promulgate legislation that will be acceptable nationally, taking into cognisance of different culture, norms, climatic condition, topography and other factors that will meet local needs and aspirations of the people in Nigeria (FGN, 1992). Thus the Federal, State and Local Government Department and Agency were required in section 3(1) and 4 to perform their duties within the purview of the national development plan. Osuocha and Njoku (2012) observe that the implication of the policy plan includes; the dependent of the local government despite it autonomy by the 1999 constitution on the state. More so, the law established a top-bottom approach instead of an all-inclusive bottom-top approach to urban land use planning that is dependent and structured in favour of Federal Government bureaucratic bottleneck.

Due to many flaws in the decree that are not in line with the reality in urban land uses, some part of Decree 88 of 1992 were modified to account for the inadequacy, the modified decree is presently regarded as the Urban and Regional Planning (Amendment) Decree No.18 of 1999, according to Omole (2012) both laws are currently operational in Nigeria. Verifiable, out of the 92 sections of the decree, 47 sections dwell extensively on development control. These in order words, signify how fundamental development control is to urban land use; the growth and development of our metropolitan areas. In contrast, scholars have also criticized the much-celebrated decree No. 18 of 1999 and challenged its provisions in the apex court (Omole, 2012). Most of the intervention in urban land use planning have significant result, it is saddening to know that in reality, the enactment has not achieved the desired result which brought about the National Urban Development Policy in 2012.

2.4.3.4 *2012 National urban development policy*

Population growth and urbanisation have fuelled socio-economic and political issue in major cities in Nigeria (NUDP, 2012). These have occasioned high rate of land pollution, housing shortage, high land value, heightened the proliferation of slums settlement among others things. Nigerian cities are becoming more unsafe as a result of disaster and risk which include: flooding, the collapse of buildings, erosion, and desertification (NUDP, 2012).

These crises among others in 2010, crave for the creation of a Federal Ministry of Lands, Housing and Urban development to institutionally champion housing and urban development across Nigeria. To rejuvenate the sector there was need to revise National policy on urban development and a policy document was developed in June 2012. Sections of the National policy were strategies to ease the shortcoming of the Lands Use Act of 1978, Urban and Regional Planning Decree No. 88 of 1992/ Decree No.18 of 1999.

The significant provision of the policy as it relates to land and land use Planning and development include Land accessibility has a dual viewpoint which could either be in terms of physical access or legal right (UN-Habitant, 2008). Access is the capacity to benefit, occupy or make use of land for purpose of housing and for various productive activities which could be temporary or permanent in nature (Gbadegesin *et al.,* 2016). While, Land rights is defined as legally and socially recognized claim to access, use and control of a definite area of land and associated natural resources. The policy framework on accessibility to land in Nigeria is germane because of the need to make land available for all-purpose through controlled and orderly development.

The objectives include: access to large tract of land, with secured land title in order to reduce cost of construction; access to land in planned location to curtail the effect of unplanned urbanization. This will result to a more secured system of land ownership with the emphasis on protecting the largely most vulnerable group and enhancing the transaction ability of the property with the aid of the emergence of a sustainable and dynamic land market in Northwest, Nigeria.

Compensation without allowance for a free market enterprise was the position of the 1978 Act as regards land transaction. This is considered too rigid to support private sector driven enterprises and development in the land (Nuhu, 2008; Udoekanem, 2013; Sule, 2014). Ensuring free market enterprise in line with democratic principles will surely increase private sector participation in real estate development, thereby increase investment in landed property by allowing the citizen to buy and sell land at will (Thontteh & Omirin, 2015).

For decades' scholars in urban planning have reaffirm the plethora of challenges bedevilling the performance of the agency in charge of land use planning in Nigeria (Sanusi, 2006; Fagbahun, 2007; Rivkin, 1976 as cited in Aluko, 2011a; NUDP, 2012; Akimbamijo, 2012; Aribigbola, 2013; Madu & Innocent, 2013). Remedying the recurrent bottlenecks in urban planning will no doubt encourage all-inclusiveness (Bottom-Top approach) in planning by extension achieving orderly and sustainable development in towns and cities across Nigeria (Thontteh & Omirin, 2015). Oyesiku (2007) shared a similar opinion that urban land use planning is a preventive measure. Planning basically provides the blueprint for guiding development in cities. In contrast, it is visible that Nigerian cities have not accorded land use planning its rightful position which occasioned disorderly, non-functional, unhealthy and unsafe, aesthetically and unappetizing urban centres. More so, in the NUDP (2012) document stated that most of the planned neighbourhoods in Nigeria are hinged on foreign belief, parallel to Nigeria cultures, customs, norms, and traditions.

The policy drive of NUDP (2012) is to fortify land use planners to embrace an inclusive, robust and self-motivated land use plan within the framework of Nigerian culture all through Isolating land use plan for each city in line with the provision of planning laws; all-inclusiveness in city planning and management; the planning concept must be locally/context inclined. Strategies were put in place to realize these objectives and encompass, the need to timely revise the Nigerian Urban and Regional Planning Act of 1992/(Amended)1999 at the Federal level and other State laws, to be in line with the multi-facet challenges of urban development, in the context of the local economic empowerment and development strategies (LEEDs) program.

Public enlightenment campaign is a very robust mechanism for enlightening the populace on trend in urban planning and the associated benefits, it increases all-inclusiveness in planning. Thus, heightened the knowledge base of the inhabitant on land use planning and associated benefits. Infringement of development control is partly as a result of an un-inclusive system during formulation and implementation process (Olugbenga & Adekeni, 2014). In line with the policy guide for land use planning and development of cities at the federal level as specified in Land Use Act, Urban and Regional Planning Laws of 1992/ (Amended) 1999 and the NUDP of 2012 stated that all federating state in Nigeria should domicile urban planning laws at the state level, this paved way for the emergence in Kano and Kaduna states, the laws to guide land use and property development.

2.4.4 Kano State urban planning and development (Building) regulations 1987

The edict was enacted in 1988 by Cpt. Mohammed Ndatsu Umaru, the military administrator of Kano state in line with the mandate of section 29 of the Kano State Urban Development Board edict of 1976. The regulations are applicable to all land selected as urban centres by the Land Use Act No. 6 of 1978. Though the agency saddled with the responsibility to oversee the implementation of the Kano State Urban Planning and Development (Building) Regulation edict of 1987 is the Kano State Urban Planning and Development Authority (KNUPDA). The Agency was established by KNUPDA law 2011 and it commenced operation on 28th December 2011. KNUPDA has metamorphosis in terms of its name over the years, the KNUPDA law 2011 in section 26 and 27 repelled the former Kano State Environmental Planning and Protection Agency (KASSEPA) and revoked the Kano State Urban Area Order of 1993 and subsequently transferred its assets and liabilities to KNUPDA.

However, part III Section 10 to 15 of the KNUPDA law 2011 stipulates its functions and power to include: serving as planning authority for all urban areas under its jurisdiction and implement all the state scheme; shall encompass; furnishing, publishing and giving approval for planning scheme for all urban areas under its jurisdiction; regulating the development and utilisation of land in urban areas; providing and preserving suitable infrastructure for urban development; provision of turn-key housing estate; designing of residential layout among others; persecuting of erring person or any organization that contravenes section 12, 13 and 14 of the edict and the culprit shall be liable upon conviction. The Kano state development control department derived its tasks from the KNUPDA law 2011. Part 2 Section 10, Sub-section 2(b) states that it shall be the responsibility of the Authority to control the growth and usage of land in the urban areas as defined by the LUA of 1978. By taking charge of all control or management in line with the standard provided by Town Planning Laws 1991 and Bye-Laws or Building Regulations of 1988 for Kano Metropolis.

The Obligation of the development control department under KNUPDA law 2011 includes:-Isolation and prosecution of buildings without approval; identification and prosecution of alteration or contravention of building plan approval; strict monitoring of approved building plan to guarantee stringent compliance; isolation and prosecution of unilateral land use conversion; regulating illegally established layouts; accept from the public and corporate entity petition regarding building development; confiscate structures in public or individual land without the consent of the authority; accessing and clearing of occupied hereditament for government projects; supervision of approved projected land use developments from urban planning section; managing erection of telecommunication masts and billboards; managing posters posted on street, roadside, road barricade and other structures. Major provision of the 1987 edict relative to residential (building) development in Kano fundamentally determine the structural, location and neighbourhood characteristics of housing which must be strictly adhered to by all developers in order to have a harmonious land use pattern in the urban areas (Appendix P).

2.4.5 Kaduna State urban planning and development agency (KASUPDA MANUAL) development guide 2017

The Kaduna State Executive Governor Alh Mukhtar Ramalan Yero sign a bill to establish the Kaduna State Urban Planning and Development Agency (KASUPDA) on 27th May 2015 to be known as the Kaduna State Urban Planning and Development Agency Law, 2015. The Law in section 85 and 86 empowered the commissioner charged with the responsibility of lands, survey and physical planning in the state that he may by the governor's consent make regulations as regard the urban land uses. Hence, it should be in accordance with the Urban and Regional Planning Act as modified and the Nigeria National Building Code. In addition, section 87 (1) merge all asset, property, and liability that were formerly assigned to the Kaduna State Urban and Regional Planning Authority Edit No. 10 of 1985 and the Kaduna State Urban Planning and Environmental Protection Agency edit No. 14 of 1991 to Kaduna State Urban Planning and Development Agency (KASUPDA).

Section 25(1) stated the establishment of a development control department which has power to recommend for the issuance of a development permit for the applicants that comply with the provision of the building regulations, most importantly the National Building Codes. Section 32 (1) mandates the monitoring and compliance department to implement all the right and duties attached to the development permit to a developer/investor, section 35, (1) e, states that when a developer contravenes the supervision of building production/coordination as enshrined in the national building code development, the permit should be revoked. However, section 38 (1), (2) empowers the monitoring and compliance unit to either serve notice of contravention; notice to stop work; notice to quit; notice to seal up; or demolition notice. Also, an enforcement notice may be served in pursuant of section 38 (1) notwithstanding that the building was erected prior to the enactment of the KASUPDA Law 2015. Therefore, from deduction of the KASUPDA Law, 2015 empowered KASUPDA with the responsibility of producing, managing and executing building regulation (KASUPDA manual 2017) within the jurisdiction of Kaduna state as enshrined in the Land Use Act of No.6 of 1978.

2.4.5.1 *The main provision of the KASUPDA Manual 2017 as regards to residential property development*

Following the multifaceted nature of the people of Kaduna state and also taking cognizance of their socio-economic and cultural make-up, KASUPDA manual detailed the standard to be implemented for residential property as stipulated under the jurisdiction of the Land Use Act of 1978. These standards in the KASUPDA manual of 2017 determine the basic minimum standard in terms of the structural, location and neighbourhood characteristics of housing, hence must be adhered to (Appendix Q).

2.5 Urban Land Use, Value and Trends (Early understanding)

Scholars in urban land use economics have contended that urban areas generally grow from the inner core outward, consequently, this gives rise to districts built at different times. Early land use models tend to reveal this unique component of cities from a geographical perspective, (Burgess, 1925 Figure 2.1; Hoyt, 1939 Figure 2.2; Harris & Ullman, 1945 Figure 2.3). They are not exclusive but complementing one another on how the cities metamorphosis over time. Identification and analysis of these theories are relevant to this research in order to gain insight on the growth of rental and capital values appreciation of residential locations, by segregating the locations of residential properties and the effect of such location attributes on residential property performance trends in urban centres. Obviously, concentric shapes of land use of Burgess Theory follow cogently from the Von Thünen analysis, research on actual shapes of land use emerged around the 20th century (Harvey & Jowsey, 2004).

2.5.1 Burgess theory

Figure 2.1: Concentric pattern of urban structure
(Adapted from Ling & Archer, 2013)

Burgess (1925) Figure 2.1 describes the distribution of land use in the urban landscape by observing the historical growth of Chicago in the 1890s through concentric zone theory. Ling and Archer (2013) opine that contrary to Von Thünen approach Burgess's theory is descriptively inclined instead of being analytical, in order word Burgess asserted that the usual process of urban growth is via a series of concentric rings succeeding radially from the Central Business District (CBD) see Figure 2.1.

Under this model, cities were made of 5 radial zones characterised by unique land uses: 1) the CBD containing an area of greater commercial activities; 2) the transition zone characterised by residential decay and light industries; 3) working-class neighbourhoods; 4) middle-class residential neighbourhoods; and 5) higher class neighbourhoods with wealthier commuters.

Although Burgess radial land use pattern only showed a broad land use pattern, according to critiques they were not flexible to conform to reality on ground and lack details, because he downplayed the influence of transport system and physical characteristics of urban structure. The author down plays the prominence of the various aspect of accessibility, apart from zone of transition recognised as being an area of transformation. Hence, the theory ignores the dynamic features agglomeration which propel the process of growth and development in an urban area (Ling & Archer, 2013).

2.5.2 Sector theory

Akin to the Burgess concentric zone model was the Hoyt sectorial model, Figure 2.2 depicting Sector theory

Figure 2.2: Sector pattern of urban structure
(Adapted from Ling & Archer, 2013)

The aim was to produce a more inclusive model that will portray the effect of access to transportation facility on urban structure and form. The model explains deeper the distribution of urban land use, each zone emanating from the CBD in wedge-like shapes along transport lines, instead of radiating outwards from CBD in circular shapes as in the Burgess theory (Bohland & Levy, 1985). The Hoyt model primarily laid emphasis on the location of housing in urban areas, indirectly mentioning the location of businesses (Harvey & Jowsey, 2004).

In describing the relocation of households as the city expand and the propensity for different socio-economic activities to segregate, it is suggested that with the influx of time, high-grade housing tends to develop outwards along the fastest route from the centre (Harvey & Jowsey, 2004). The trend enduring in this direction, will create a wedge-like pattern, which may not necessarily conform to the land use through which they pass. Contrary to the high grades housing, close to the CBD are, the low-income housing groups habitually locating close to industrial land use.

Hoyt imagined the concentric rings develop into sectors (wedge-shaped). Residence or sectors develop outwards from the centre, segregating or limiting wholesaling or manufacturing into other sectors of the model city (Harvey & Jowsey, 2004). In the model, housing is segregated by disposable income and take a different direction in different sectors of the city. Likewise, as high rent causes, abandonment of high rent residence, low rental groups occupy them (predominantly by high-density occupation). Hoyt advocates a pattern of growth and explains how different parts of the city can experience different growth rate. Hence, wedge-shape pattern tolerates the development of irregular pattern in the city structure see Figure 2.2.

Thus Hoyt theory captures common factors of urban land use and values (Harvey & Jowsey, 2004). Sector 3 could be explained largely by the poor school, rundown appearance among others, ultimately degenerating into shantytown sector. Similarly, sector 5 is influenced by "special accessibility" factors, the populace willingness to pay (WTP) more rent to reside in proximity to people with comparable taste, income, and possible culture. The sector theory lay more emphasis on factor influencing high-income housing and concentrated less on factors influencing the location of employment opportunities. Yet these issues are critical to low-income housing, employment opportunities are germane to outward expansion of cities (Ling & Archer, 2013).

However, Burgess and Hoyt's models were a novel concept trying to illuminate basic city patterns, they simultaneously drew peculiar criticisms see (Smith, 1962). Perhaps the most fundamental criticism of Burgess and Hoyt model was they placed much emphasis on the central business district (Bochnovic, 2014). This in no doubt could be as a result of urban centres which are cradle of growth and development with varied opportunities.

2.5.3 Multiple nuclei theory

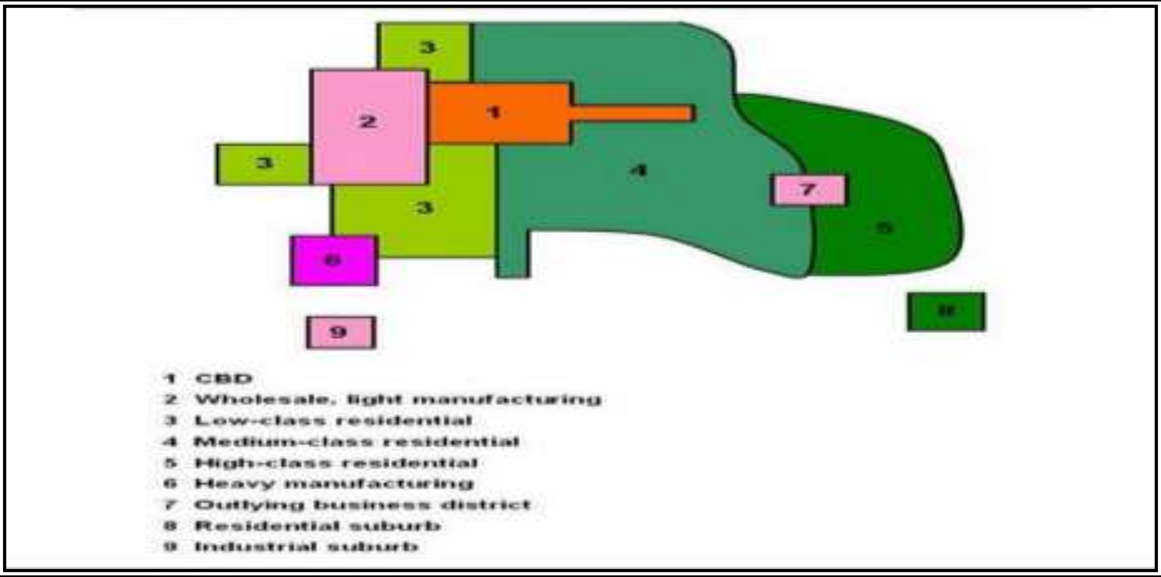

Figure 2.3: Multiple-nuclei urban structure
(Adapted from Ling & Archer, 2013)

Criticism of earlier models gainer traction as CBD's metamorphosis to play a less pivotal role in modern cities. Harris and Ullman (1945) departed authoritatively from the concentric zone model around a single CBD, they argued that the mid-20th-century emerging cities are defiant of mono-centric form. Large cities have a cellular pattern with a propensity to develop nuclei which function as a focal point for agglomeration tendencies, with varying level of importance, specific to independent uses (Harvey & Jowsey, 2004).

The growth of independent nuclei owns up to: 1) the requirement for specialized facilities; 2) the advantage of agglomeration economy; 3) the need to isolate land use that is detrimental to other land uses; 4) the issues of inability of actors to pay for site (Harris & Ullman, 1945 as cited in Bochnovic, 2014). This nucleus may have different origins, some existed as small settlement and are reinforced by common factors, shaping the allocation of land to a particular use while others were created owing to population and local purchasing power supporting a suburban industrial or business\shopping centres. More so, increase rent in the CBD prompts firms and household to re-establish or migrate to outlying areas, while external economies and diseconomies, specialized facilities for unique service and clienteles, compactable use will lead similar households and firms to concentrate in some specific locations (Harvey & Jowsey, 2004). This explains why complementary land uses are found adjacent to one another in some location around the cities. Obviously, a depiction of polycentrism. A large body of literature exists to showing evidence of transformation from monocentric to polycentric urban form (Bish & Kirk, 1974; Hirsch, 1984; Bertaud, 2004).

2.6 Contemporary Approach to Urban Land Value in the Polycentric City

The irregular pattern of land value/rent has constantly defied our thought in the pattern of urban land value distribution across the city. Several studies have established the fundamental factors controlling land value other than distance variable (zoning, building features and land use regulations (Kim & Short, 2018) land tittle, infrastructure and distance (Wen *et al*., 2017a); Physical determinant (Uju & Iyanda, 2012; Zou, 2015) and unveil that land value in suburb farther away from CBD are lower than in central business districts. In contrast to this Ai (2005); Daams *et al*. (2016) believes that land price escalates faster in a suburb than in the central business districts, this stem up owing to rise in technology, the emergence of polycentric cities where neighbourhoods' business districts serve the needs of local communities at various location as depicted by the Figure 2.4.

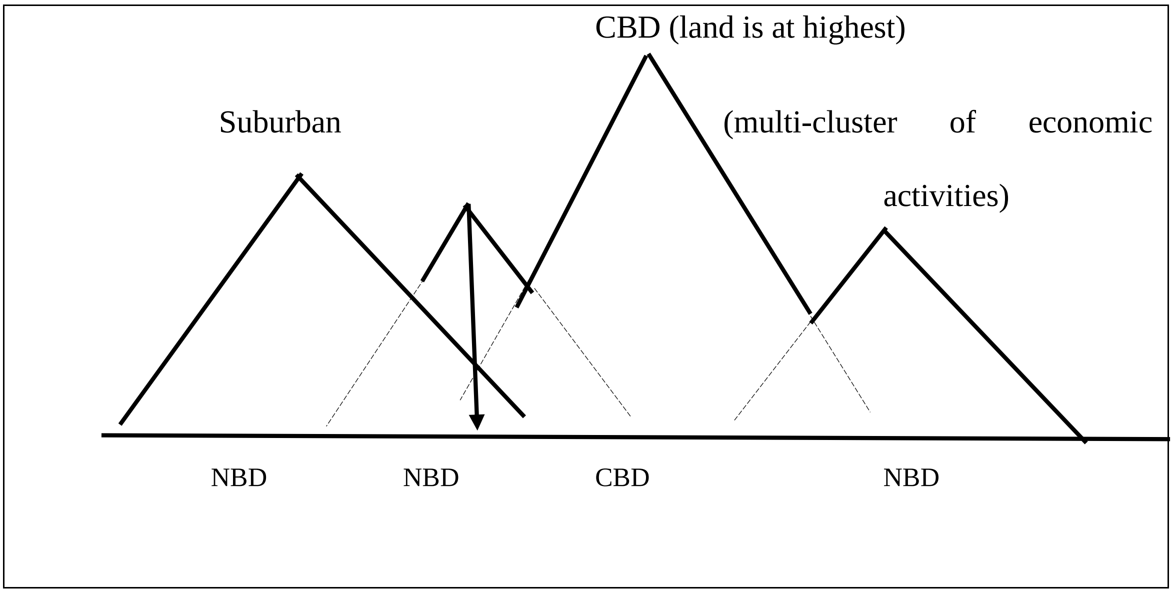

Figure 2.4 Polycentric city
(Source: Ai, 2005)

Globally, institutional restriction from the government at all levels are used to influence location decision, using its policies. The government does this through development control, zoning regulation, building standards, investing in infrastructure, establishing a new town, urban renewal, tax exemption (Alexander, 2001). Suggesting that complementarity and government policy interrelate to influence patterns of residential property performance in urban areas.

Every urban centre begins its growth from a prime locale. In fact, when a city transforms in size, the prime location by extention transformed to the mid city (Harvey & Jowsey, 2004). Urban residents prefer residing in these areas because of accessibility to complementary service occasioning competition for the restricted space, household tend to compare the cost of rent paid and commuting cost including associated liabilities in their decision making, competition for this limited space establish prime capital/rental values because of accessibility and conveniences (Harvey & Jowsey, 2004). This creates tendencies for intensive land use practices justifying, higher land value and residential investment performance (Barlowe, 1978; Harvey & Jowsey 2004) at the detriment of human health and environmental hazards. The incessant competition for space by household to satisfy housing needs within the context of the urban economy also induces incessant rental adjustment, household's capability to get (secure) and hold on to homes is reliant on the strength of their effective demand (disposable income) (Bochnovic, 2014).

The cyclical process often results in capital appreciation and rental income growth trends distribution to the different class of residential properties across polycentric residential neighbourhoods in cities. This pattern is rarely stable as a new adjustment to family size, disposable income, taste and preference, rental growth and capital appreciation/depreciation trends are always taking place because of the dynamic characteristics of real estate. Hence, the need to isolate and continually assess the trends of residential property performance (investment returns) for stockholders in a city management (Dabara, 2014). ULUPRs are embodiment of planning risk, legislative risk, structural risk and legal risk that are usually part of residential property (Baum & Crosby, 1988; Udobi *et al*., 2018), they influence trends in residential property performance (investment returns) over time the more an investor is able to predict their influence the more rational the investment decision choice will be. Identifying and factoring this line of thought on residential profit (investment returns) in the cities for inform investment decision making most especially in this era of uncertainty that have beclouded the investment world is apt.

2.7 The Concept of Residential Property Investment

The concept of investment in real property is multi-facet but relative to this study, Sayce *et al.* (2006) assert that investment is a conscious action taking by of an individual or group that occasions utilisation of assets with the sole intention to acquire a target returns within a definite time horizon. However, the economist view investment in real property from a dual perspective Harvey and Jowsey (2004) which is in line to this study as:

a) Expenditure for the acquisitions of an existing asset -that is an interest in an existing tenanted residential building;
b) Expenditure for the establishment of a new fixed asset-that is the development of a new residential building.

Hence property investment is an example of the initial meaning whilst property development is the connotation of the later meaning. The far-reaching objective of real estate investment is to enhance or preserve the real value of hereditament and to acquire a flow of income over time which may be rental income or capital appreciation or both (Oyebanji, 2004).

2.7.1 Residential property investment returns

The concept of investment return has its applicability in different field. In relation to this study, it is the measure of the performance of residential property over a period of time, usually annually. It is used in assessing the efficiency (return) of a residential property investment relative to its cost. Contextually, the research will lay his emphasis on total return because it is all inclusive returns hence having a component of capital value and rental income. Real estate total return expresses what an investor earned on an investment during a certain time period in the past. It is basically in retrospective because it describes what an investment has earned over a period of time. Total return determines an investment's true growth over time or shrinks before other deductions are made. It is important to evaluate the decades and not just one return metric when determining an increase in value or shrink (Oyebanji, 2004).

Total return is used when analysing a company's historical performance. Calculating expected future return puts realistic expectations on an investor's investments and helps plan for retirement or other needs. Total returns are simply the sum of periodic income (rental) and capital appreciation (capital value) or shrink over a period of usually one year. According to Dabara (2014); Umeh and Oluwasore (2015) total return is the best method of measuring real estate performance as compared to other approaches because it has a constituent of income and capital return approach.

The expectation of returns from an investment is a fundamental component of a vibrant investment, relative to real estate, this might be a lump sum (capital value) or a sum received in piecemeal (rent income). On the contrary, investment in shares and stock will attract dividends during the period of holding (Investment Property Forum, 2018). In either situation, an amount must surely be invested in anticipation of a particular return. If the investor retained the property as an owner-occupier, the return is a non-pecuniary benefit. This could have been an equal benefit of rent receivable if it were lease out. It is the prerogative right of an investor to consider the return from an investment before he invests his scarce resource in any transaction (business). By and large the inducement to invest in real estate primarily hinges on the quantum of the total return from a particular hereditament (Dabara, 2014).

Barlowe (1978) postulates the economic goals or qualities of a good real estate investment to include: Safety of investment - that a real estate property should guarantee that the investment will produce adequate yield or increase ample in value to warrant resale at a price in a surplus of acquisition cost. Certainty of yield- the capacity of real estate hereditament to deliver periodic returns or increment of surplus capital value that will give the investor an acceptable investment returns from his investment. Though, Harvey and Jowsey (2004) opined that residential property tends to show the positive returns over time and a new trend in real estate specifically for the private investor. Liquidity of investment- the property should have relative ability of an owner of a hereditament to liquidate investment at it rack market price within the limited time. Capital appreciation – that the investor should have optimism that the investment will definitely raise it capital worth, also infinitesimal depreciation in worth, and the hereditament will be a windbreak againt the devastating tendency of inflation.

Other factors also encompass managerial responsibility- the investment should provide the investor with the leverage either to partake or break free from the managerial responsibility and the potential liability linked therewith the property. Reinvestment of net returns- the investor will anticipate opportunities for reinvesting flows of profit from the investment and land rents. Opportunities for the leverage- the ability of the investor to use his equity funds alongside borrowing capital to spread one's jurisdiction of economic dominance over the larger amount of property. Tax exemption-anticipation that investment will have potential of been selected for restricted tax treatment advantage that will ease the tax paid by the investors. By implication the economic goals are not sacrosanct, an investor may also have other goals that are linked with private satisfaction and social pleasantries.

2.7.2 Categories of property investment

Oyebanji (2004) gave a detailed classification of property investment to include:

i. Property acquisition: - this occurs when an investor selects and acquire a hereditament, which could serve his interest best, taking into cognisance risk attached; income; possibility of capital appreciation and scope of management responsibilities. By acquisition an investor assumes all the responsibility for profit and liability accruing to the investment, it is his prerogative right to either manage or delegate his agent to manage the interest on his behalf. The principal type of property which can be acquired for investment opportunities includes: residential, commercial, industrial and agricultural.

ii. Mortgage investment: - this is a conveyance of a legal interest in a property with a provision for recovery. The mortgagor is the conveying party; the lender that obtain interest from the creation of the security is the mortgagee while the debt for which the security is formed is called the mortgage debt. A mortgage is simply a loan secured on the value of a hereditament. In fact, property investment through the mortgage is virtually safer as the amount of mortgage is normally 2/3 of the market value of the property. Though an investor at his disposal has remedies in case of mortgage default. This includes: 1) mortgagee taking over the ownership of the property; 2) mortgagee collecting income from the property; 3) mortgagee foreclose the property and retail the asset to repay debt; 4) Mortgagee suing the mortgagor on any unpaid debt.

iii. Property development: - property development entails construction exercise that are connected with alteration or restoration in the use of a specific land over a limited time. Investing in property development encompass structural alteration, rebuilding operation, and other specific task habitually undertaking by the operator (builder). Property development is capable of providing the high return on investment provided it is skilfully handled.

iv. Property company shares: - this type of investment circumvent management challenge because a potential investor can acquire share in a company that is largely made of real estate assets, risk in this company are spread along a variety of property asset of the company. The value of the shares may fluctuate based on the dynamics of demand and supply in the stock exchange market and managerial skill of the company.

Identifying the ideal category of real estate investment by a savvy investor is critical, also knowing where and how to invest in the real estate cyclical process is fundamental in determining the investment return trends, hence the need to isolate the cyclical process of the real estate market life cycle.

2.7.3 Cyclical residential property investment phases

Understanding the real estate market cycles is fundamental in identifying investment opportunities in the property market. Being able to isolate investment opportunities comes with knowledge of the trends in the progression of each phase in the cyclical process. Thus, investing can be successful in each cyclical phase, understanding the market factor dynamics is vital, either the cyclical process is ascending towards the peak market or on a descending slope toward market low. Knutsson (2016) opines that cyclical process may eventually affect expectation on rental income, capital improvement timing, market exist strategies and holding periods. The challenge in the market cycle lies in the ability to predict the cyclical mobility from one phase to the next phase since at every phase there are investment opportunities, the timing of the acquisition and sells is pivotal in the decision making. The following are the four (4) phases Figure 2.5 of property market cyclical in ascending order: -

Recovery: Arguably, understanding this point in the cyclical process is challenging owing to the fact that the market outlook is fuzzy as if still in recession, though this phase is the best in terms of acquiring residential investment property by a savvy investor. The real estate market is recovering from the last downturn, it is no longer in free fall, and the trend starts to turn upwards reducing the supply of residential properties in the market.

Foreclosure rates and general uncertainty in the population, high unemployment are typical for this phase and rental rate gradually stabilizes though securing financing is often challenging because of the uncertainty from banks and other mortgage institutions. A savvy investor always understands this fact that if you acquire property at a low price you will sell high hence improve returns.

Expansion: at this stage, the economy plays a key role during the expansion period of the real estate cyclical process, though certainty in real estate sector begins to develop as business begin to add up employees to their payroll indicating an increase in demand for housing. However, rents begin to rise more quickly generating the real estate bubble. Basically, the savvy investor will deduce when demand and supply intersect equilibrium is established and the expensing period terminates.

Hyper-supply: on the contrary at this stage the market does not recognize the equilibrium state therefore new construction will continue to erupt within the neighbourhoods, supply will tentatively exceed demand, stirring the property market into the hyper-supply phase of the cyclical process. At this point void state will set in. That is, the occupancy rate will begin to decline, operators within the market will start to identify the shift in the cyclical phase occasioning slowness in new construction. However, Knutsson (2016) believes that the real estate market is most often likely to remain in the hyper-supply phase for a long duration in the real estate investment cycle.

Recession: once the occupancy rate of residential property falls below the long-term average and has a major influence on the dynamics of supply and demand, recession is believed to have set in the property market. This will display a clear economic impact on the property market and the entire society. The rate to expand and maintain the property will exceed what is accessible from rents and mortgage. During a recession, changes or variation will be observed in the economics dynamic within the nation (Mueller, 2017). This cyclical phase witness greater amount of foreclosure.

Habitually once this process surfaces, the cyclical process will shift to the starting point which is the recovery phase. Though institution, socio-economic and political factors have influences on the real estate investment circle, the implication of this cyclical process to the Estate Surveyor and Valuers and investors is the potentiality of being able to isolate which of the factors is affecting each phase will give the savvy investor or his client an edge on the future of the market. Up-circle and down-circle are the most fundamental indicator of the shift or movement in phase. Isolating individual shift in the early stage, allows a participant in the residential real estate market to effectively prepare and understand how the market will operate progressively over time. Understanding the dynamics of the real estate cyclical phase create impact on the ability of the operators in the market to make a wise investment decision at any point in time.

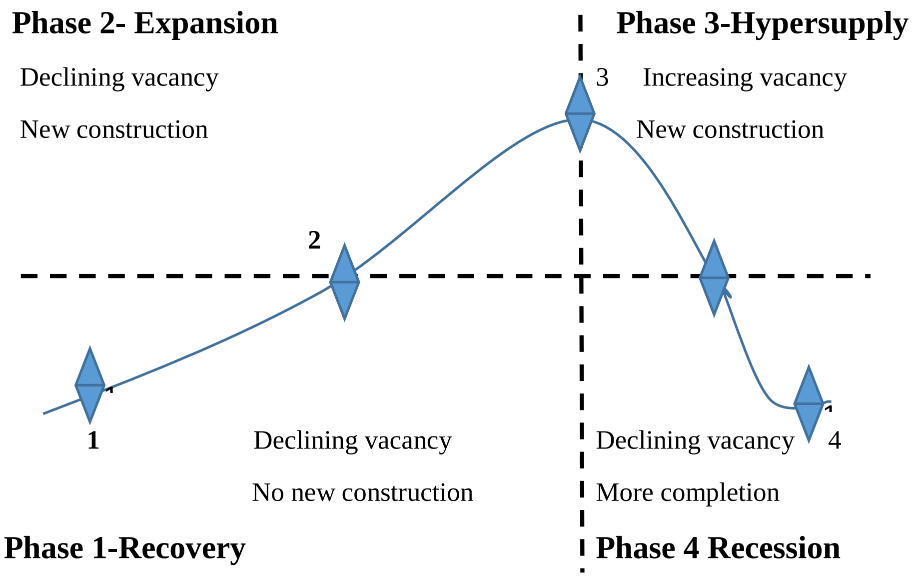

Figure 2.5 residential property investment cyclical phases
(Source: Adapted from Mueller, 2017)

The lag in demand growth and supply response in the residential property market is largely responsible for the volatility in the residential property market, the rate of change in demand and supply for residential property by actors in the locale dictates the real estate cycle (Mueller, 2017). However, from Figure 2.5 it is evident to see that the market growth rate is having two up-cycle (recovery and expansion) where effective demand growth rate is greater than supply growth rate owing to the inelastic nature of housing supply at the short-run, and two down-cycle (hyper-supply and recession) where effective demand growth rate is less than the supply growth rate. Thus, in reality, all real property market can either have an effective demand growing faster than supply or vice-versa. It is pertinent to note that the demand and supply growth rate are only at equilibrium at the peaks and trough of the residential property market cycle. Because the trough point is when oversupply is terminating and low demand growth is garnering momentum.

The only equilibrium point is at peak of the residential property market cycle where supply growth rate has caught up with demand growth rate. After this point either the supply growth rate begins to accelerate or demand growth rate begins to slow, these peaks may occur at various times as the market moves between growth and hyper-supply phases in the property market. The implication of the property market cyclical is that the Estate surveyor and valuer's should be abreast with this trends in order to make a resounding forecast of the market to aid client on decision making.

2.8 Evolution of Urban Land Use Economics and Residential Land Rent

The concept of rent in urban land use economics upon which this study is founded cannot be over emphasised. The rental payment represents the economic returns that go to the indestructible real estate resources for their use in production, since the beginning of organizing land settlement (Barlowe, 1978). In contrast, the genesis of contemporary rent had been linked to the intensification of land use due to individual enterprise, rights, and specific responsibilities which was occasioned by feudal system of landholding. Rent is the economic return tax for the use of land resources (Udoekanem, 2014). In the Nigerian context, Ifediora (2005) points out that it is the worth of a piece of land mostly annually. Consequently, Investors and property owner perceive rent as an earned return on the monetary worth of their real estate investment, they use this return as comparable for returns in alternative capital investments.

2.8.1 Chronology of classical land use theory and rent

Understanding and appreciating the foundation of bid rent curve theory underpinning this research is imperative. David Ricardo and Johan Heinrich Von Thünen scholarly works in the 19th century provided the maiden theories on land use planning and land value. Relative productivity of agricultural land use was the centrepiece of Ricardo's economic theory, whereas locational qualities of land in terms of its use and value are the focus of the Von Thünen geographical theory. Developing a model that could practically explain the rental pattern of land values within an urban setting was unsuccessful prior to Alonso model. Hurd (1903) as cited in Bochnovic (2014) was only able to demonstrate how the wealth of an urban centre could fairly well be explained by the city's ground rent of land but however failed short of unearthing the principal causes to variation in ground rent. Despite this concerns about early scholar’s effort to describe urban rent, the foundation of Alonso's theory and others were based on Ricardo and Von Thünen's fundamental principles.

Von Thünen *“The Isolated State”* for instance has a profound effect on Alonso's bid rent theory, Von Thünen revealed how agricultural land uses could change as a result of increasing distance from the urbane area. Dickinson (1969) as cited in Bochnovic (2014) asserted that West-Malthus- Ricardo theory of land rent distribution was reconsidered because of the novelty in the Von Thünen model. The core of West-Malthus-Ricardo idea was centred on the law of diminishing return that at some distance phase in production, a decrease in output will be observed at the detriment of increase input (Stigler, 1952). This classical approach uses one variable (soil fertility) and overlooked the cost of transportation in determining goods price. Multiple product variables that could contribute in the preceding thought of land rent was introduced by Von Thünen on land rent, to increase or decrease investment returns (Bochnovic, 2014). Spatial economics was profoundly influenced by this paradigm shift and it built a framework which Alonso utilised in his work.

Von Thünen theory assumes that the land is a featureless, flat plane with a single urban centre (market) plan (O'Kelly & Brain, 1996). Concentric ring showing the distance from the single urban centre revealing the increasing distance of each agricultural area from the hypothetical centre. There will be a substantial change in the specialization of land at the isolated location due to adjustment between the associated transportation cost and rent. Land with increasing distance from the city centre would be purchased and utilised more extensively for less intensive agricultural activities, so as to cover the liability associated with transportation cost. Taking this within the purview of this study, adjustment within the various land use is also a mechanism of urban planning.

2.8.2 Chronology of neoclassical land use theory

a) The Alonso's Bid rent curve

Von Thünen assumption of a featureless, flat plane with a central urban area paved way for an outstanding advancement in spatial economics, and also served as a vital framework for Alonso bid –rent curve/theory. As postulated by Alonso theory cost is a direct function of distance between places and an urban area is populated with rational persons. Under this context, Alonso created a framework that aided in assessing land market in cities.

With distinct attention to residential pattern, Alonso (1960) reveals that rational consumers of housing will seek out a location to balance the trade-off of commuting and the implication associated with it. Thus consumers Willing to Pay (WTP) for extra premium land will locate nearer to the CBD of an urban area and will enjoy the comparative advantage of minimal transportation cost, similarly, households paying a low premium land will consequently pay an additional cost on transportation owing to increase in distance from CBD. Regardless of the outcome, both decision will be sole responsibility of rational households (Knox & McCarthy, 2005). He showcased this function through a bid rent gradient or curve, illuminating a negative relationship between rent price and the distance from the central business district illustrated in Figure 2.6

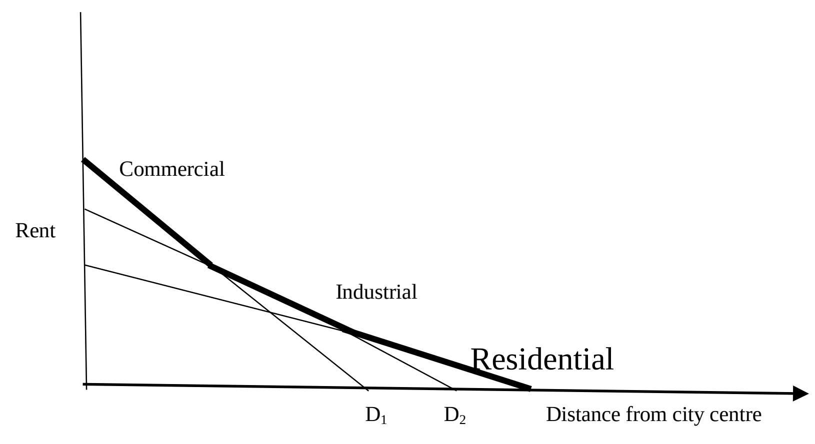

Figure 2.6 Bid-rent-gradient
(Source: Adopted from Bochnovic, 2014).

The Figure 2.6 displays isolated urban land uses relative to the urban centres, each urban land use is characterized by different gradients. The intensity of each urban land use is a function of distance from the urban centre which determines the variance in gradient. The variance in the activities gradient from the centre depends on the nature of the activities; their sensitivity to the cost of transport and ability to take advantage of highly bid centres (Harvey & Jowsey, 2004). More extensive land use is located far away from the CBD whereas more intensive use of land is in the inner core of the CBD. Taking Von Thünen concept that mass yielding crop is in the large plot outside the CBD whereas intensive specialized crop is grown in little plots closer to the marketplace.

This theory explains the justification needed for the various pattern of land use gradient and values in the urban areas. Base on the current study, residential land use is the largest occupier of urban space, in some instances may desire a fairly dominant location (though preference for suburban quality is on the rise due to improve technology). In contrast to other land use, residential use may not derive sufficient utility to outbid industrial and commercial land use. Therefore, consigned to the lower level of the bid rent gradient on location farther away from the centre as depicted below in Figure 2.7

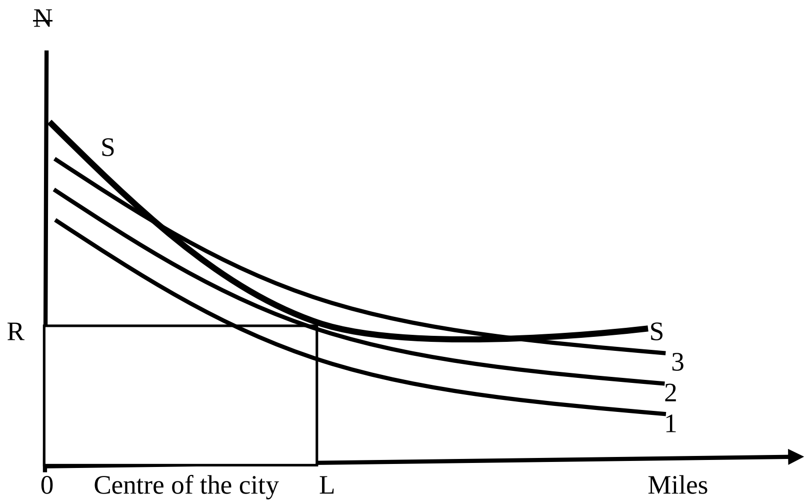

Figure 2.7 Residential bid rent gradient
(Source: Adopted from Bochnovic, 2014)

The Figure 2.7 is depicting bid rent gradient for residential rent in the urban area, the gradient ‘S' illustrates an accelerated increase in price at a location nearer to the urban centre and a slow decreasing rent at a location far away from the urban centre. At any point on the gradient, a rational consumer (household) find equilibrium between ‘R' and cost incidental form distance ‘L' which determines the household location within the urban centre. If households continue to evaluate location farther away from CBD, as long as gain is made by household through a reduction in rent paid by outweighing the increasing cost of commuting, a household will continue to move distant away from the CBD.

Consumer’s (households) satisfaction in relation to location and commuting cost reveals the causal reason for household's choices on residential location. Knox and McCarthy (2005) posit that Alonso argument on stabilising costs is a ‘trade-off' with reference to physical location and transportation cost. The trade-off refers to compromise by households in order to maximise their utilities by seeking for perfect location that will cater for individual preference. Location decision by households along the bid rent curve is determined by utility derivable by individual households. Each house-holds will be content with cost concomitant with their individual location decision regardless of the house-holds location on the bid rent gradient.

Alonso made a remarkable concession to this logic termed “Paradox of urban cities” it envisaged that more marginalized and poorer urban dwellers will reside closer to CBD, where land is more expensive. In accordance with the logic of bid rent curve, areas of higher land value are to be occupied by more affluent households. This discovery lies contrary to the notion of extensive viz-a--viz intensive land use in urban centres, all of which rely on the distance from the CBD. The notion of more expensive land will be intensively used in the city core, the less expensive land will be extensively used at the urban fringes (Alonso, 1960; Dickinson, 1969) was universally understood. Therefore, a variable becomes eminent to explain the paradox in the Bid rent theory curve.

Beckman (1957) posits that the critical variable was space, precisely, the quantum of space to be occupied by individual households, within the purview of the paradox, poorer individual households will maximize their location decision for the trade-off of reduced commuting cost. But at the expense of lesser occupancy space whereas more affluent individual households with greater disposable income will choose from any of the following residential choices; location nearest to the CBD with large open space; location with small space but within the CBD; and location beyond from the CBD.

Addressing the issue of urban paradox by adding space as the critical variable was a breakthrough because it illuminates the need to contemplate the effect of other locational interdependence or factors on rental/capital value patterns. For the purpose of this dissertation, trends in RPIRs will be exclusively examined as predicted by ULUPRs.

b) Expansions of the bid rent gradient

land economists meticulously dissect Alonso bid rent theory and worked in the field of locational interdependence. By and large, they started expanding the bid rent theory (Bochnovic, 2014), locational interdependence centre-piece was to address variable affecting land values, that were not clearly explained by Alonso's bid rent theory (Bohland & Levy, 1985). In the same vain Muth (1969) stresses that Alonso's model should be expanded to account for other determinant variables of residential land use to encompass housing preference, racial discrimination, the age of building, neighbourhoods. Mills (1972) believes that challenges of urban inner cities can be revealed by the bid-rent theory. Muth (1969); Mills (1972) presented distinctive argumentation to Alonso's framework. In spite of these they still maintained that the fundamental determinant of residential rent and use remains distance from the CBD. Collectively the work of Mills, Muth, and Alonso conceive the crux of bid rent theory. In attempting to establish the influence of externalities on land rent Straszheim (1973) and Kim *et al*. (2005) towed the path of Mills and Muth by presenting new variable to the Alonso model of bid rent theory.

The need to reveal endogenous and exogenous variables different from transportation and location that have influence on house choices and cost was glaring, as such there is a commonly and profoundly cited theory by Tiebout (1956). It advocates that, the basis of household selecting their individual location is centred entirely upon local location utility to satisfy their unique set of individual preferences, rather than selecting residential location by rational economic decision. Under this concept Tiebout asserted that households were more concerned with local amenities, or public good that are available to them in different locations/areas. By identifying with this logic transportation and distance to CBD will be an afterthought to households (Tiebout, 1956). This study also tows the part of Tiebout (1956) that households are more concerned with micro-amenities within the environment that give them higher utility.

Integrating Alonso and Tiebout theories will provide a more effective scenario on factors that influence housing price and rental values (Yinger, 2017; Hanushek & Yilmaz, 2014). Hence, it is clear that integrating the ideals of these models will provide a sound bases in understanding wide ranging of research questions on RPIRs that arise in this study.

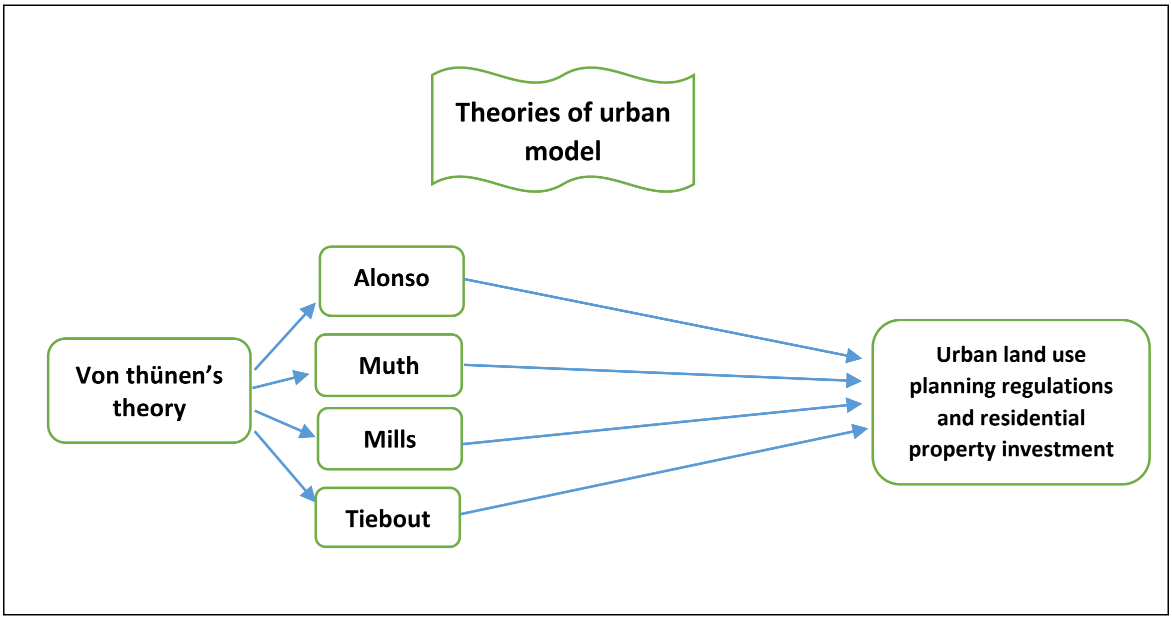

Figure 2.8. Showing evolution of proponent of urban models
(Adapted from Bochnovic, 2014)

2.9 The specifics of the residential land value

Residential land use is a multi-faceted commodity in the property market, typified by spatial fixity, structural inflexibility, and durability. However, accessibility to work, structural characteristics, transport and amenities and neighbourhood facilities are the unique bundles of activities associated with each unit of property. The classical location theory purported that housing and accessibility are mutually purchased in that those who pay high premium are compensated by the low cost of commuting to the city, thus housing price is positively related to accessibility to the CBD (Yang *et al*., 2019). As housing price increase so households move to choice location of accessibility to maximize utility, buttressed by the households' willingness to pay for utilities. Thus, the Housing market is an intrinsically dynamic entity.

The link between RPIRs and ULUPRs is the result of observable variation in the micro-locations across residential properties coupled with the heterogeneity nature of the real estate market. For instance, housing built in accordance with urban development controls could reflect the quality of the location that in turn prompt more quality housing to locate within the region. Harvey and Jowsey (2004) opine that higher income metropolitan areas have proportionate better quality housing, reflecting high median rental growth and capital appreciation. Also, intra-metropolitan disparity in levels of infrastructure and amenities are visible in most urban centres in Nigeria (Mohammad & Abubakar, 2019), these undoubtedly could contribute to intra- metropolitan variation in residential property investment returns.

2.10 Relationship between Urban Land Use Planners, Resident and Investors

The government is usually seen as the key player in residential development literature while the actors on a micro scale are the estate investors and the residents (Sun *et al*., 2014). The relationship between the three has been designed (Sun *et al*., 2014), while the planning authority retains the power of allocating certain location for residential improvement. The behaviour of the resident and estate investor in the market is based on the assessment of willingness to live and willingness to develop which shape the property market. Consequently, Zhoa (2017) opines that the infinitesimal behaviour of the market operator may promote or hinder the actualization of the planning objective.

Real estate investment is a risky investment with volatile prices, though it becomes vital for the investors and potential clients to critically assess the location taking into cognisant of neighbourhood attributes, structural attributes and location attributes of the hereditament, these might affect the decision of the investors and potential resident hence the real estate market. Therefore, the variance observed in the distribution of the market values and cost of development are the primary factors influencing investors and potential resident (Cooks *et al*., 2012), in simple term, location mainly detect market values (Alonso, 1964; Kiel & Zabel, 2008). In the same vein, Kuethe (2012) argues that real estate is secured to a particular location and its features are fashioned by the adjoining physical environment. This perception has inspired a considerable body of research that addresses the pecuniary impact of various land use attributes on adjoining properties. A case in point Luttik (2000); Bello and Yacim (2014) observe that tree and other natural elements increase property value.

2.10.1 Potential effects of ULUPRs on property values

Liu (2010) highlighted the influencing factor of urban land use to include demography (population structure); location (accessibility, distance to market and employment); economics (returns on land use, housing investment and job creation); land use planning (subdivision, zoning, setbacks, amenity); neighbourhood (access to utility site, agglomerations of uses) and access to technology; topographical characteristics which vary with regions. Earlier studies, tried to identify the driving forces shaping urban growth and development pattern in different regions. The studies utilise the mono-centric city model to determine the latitudinal scale of metropolitan areas (Ke *et al*., 2009), the implication of this is that urban cities are now polycentric in nature because of multiple CBDs, thereby raising different unanswered research questions.

The effect of land use regulations on property values can be in a variety of complex ways, and most often misconstrued or misinterpreted. To be specific there is the supposition that land use regulations invariably decrease property value when, in fact, in some studies they frequently have a positive effect. Though Jaeger *et al*. (2012) have acknowledged that there are three possible effects of land use regulations on land values:

a. Restrictive effects: - this occurs when land use regulation constrains the alteration of an individual piece of land such that its ‘Highest and best use' is barred, it can obviously decrease the property value. On the contrary, if the proscribed use would not be selected for it is not the ‘highest and best use ‘of that particular land, then the land use regulation will have no effect on the hereditament. Restriction on a parcel of land can also affect neighbouring property. For example, development restriction may produce open space amenities that increase a property value (Jeager, 2007).

b. Amenity effect: - These effects symbolize several kinds of positive effects, and most often are the goals for introducing land use regulations. For instance, regulations are habitually designed to enhance the liveability of the urban structure by eliminating incompatible land uses. Consequently, regulations that protect natural amenities and open space can have a similar positive effect. Similarly, zoning that stipulates the characteristics of residential properties can create a more appealing and predictable neighbourhood (Jeager *et al*., 2012).

   The value of a particular piece of land is influence by the quality of adjoining land and land uses. Hence, laws that safeguard positive attributes of adjoining properties may increase the market value of a property. Despite the fact that regulation restrict individual land use decision, amenity effects of this nature often are reciprocal. They produce a positive feedback effect that all landlords and tenant enjoy like police and fire protection service, infrastructure such as road and utilities, this service make communities to flourish and make them attractive to reside, which in turn raise property values. Arguably, one vital peculiarity between restrictive effect and amenity effect is that restrictive effects are projected to have a negative effect on the controlled property, whereas amenity effects can converse positive benefit on the nearby or affected property.

c. Scarcity effects: - this is a scenario that occurs when land use regulations change the dynamics of the supply of land that can be utilised for a specific use in a particular location. For instance, if a regulation allows single-family housing and prohibits multiple family housing, the supply of land for single family housing will increase and supply of land for multiple family housing will decrease. Depending on how mandatory the restriction is, the price of land for single-family housing may decline, and the price of land for multiple families may rise. If multiple family housing is proscribed on certain land, thereby decreasing the supply of land for multiple family housing, then the value of other land in the same property market that can be used for multiple family housing can be expected to bid up in the market.

Occasionally, land use regulations of various types are introduced in nearby and afar location or interlinked land markets having spill over effects. In this case, there are likely to be both indirect and direct scarcity effects that influence demand, supply, and price across several markets. It is worthy to note that the scarcity effects do not apply directly to the regulated properties, but rather to adjoining property in the same land market (Jaeger, 2007). Undoubted researchers globally find varying results from different geographical locations, hence have not arrived at a consensus result on the effect of ULUPRs on rental or capital value, the implication of this outcome is that contextualising research is critical.

However, there exist other urban planning regulations that are peculiar to Kaduna and Kano Northwest, Nigeria. These regulations ideally should guide land use and shape the study area land use pattern and the property market but have not been captured in previous studies, these domicile extant regulations are: The Kano State Urban Development (plus building) Regulations of 1988 and the Kaduna State Urban Planning and Development Agency manual 2017 respectively. These two laws are offshoot from the lands use act of 1978, the urban and regionals planning decrees No. 88 of 19992/ No. 18 of 1999 as amended, and the NUDP 2012 as amended. Hence, the need to unveil the peculiarity of how RPIRs is dampen by ULUPRs in the study areas that have not been given much empirical attention in literature.

2.11 Empirical Studies Relating to Effect of Urban Land Use Planning Regulations on Rental and Capital Values.

Previous studies have examined ULUPRs variable on residential property rental value since the late 2000’s. Jaeger (2007) in United State of America examines the effects of. lands use regulation in general on properties value in Oregon, collected data for over forty years before the establishment of the laws and compared land value for regulated land and unregulated land; the outcome centre preciously on land value of 5 counties, three in Oregon and two in Washington. OLS regression was used for analysis. The research found no generalised reduction in land value, land with most stringent restriction rise in value parallel to those without restriction. The property market in Oregon is designed according to the urban land use planning that is not restrictively sway by volume of development but to induce situation of development. Total return was not captured in the study which is the best measure of residential property performance.

Yusuf and Resosudarmo (2009) conducted a study on hedonic price on housing market, in Jakarta. Dependant data collected are monthly housing rent whilst structural characteristics (size of the house; number of rooms; material for walls, roofs, and floors; and water source availability. Wall, roof, and floor materials), and neighbourhood characteristics (unemployment rate, percentage of people with university education, accessibility to employment) and air pollution. Findings reveal better air quality is associated with higher rental property value, hence tenant pay more to the investor. Planning regulation that is strict on air quality can have amenity effect on residence, hence higher pecuniary benefit to the investor. The study did not isolate the prominence of total return, it only covered capital value.

Michael and Palmquist (2010) did a study on environmental land use restriction and property values, the emphasis of the paper is legal restrictions on the use of private property. The exogenous variable used are growth management laws, minimum lot size or density restrictions, agricultural, and open space zoning and utilise content analysis. The result shows legal restrictions have a mixture of negative and positive effects on land values. To accurately determine the net effect of any particular restriction requires careful empirical research. Total return was not captured; only rental value was considered.

Adebayo and Oni (2011) examine the neighbourhood effect of sustainable industrial land use on residential property values, two set of toilored questionnaire were skilfully administered differently to five hundred inhabitant of Agbara Village and the housing estate Lagos Nigeria. Endogenous variable used is rental values, while the exogenous variable are the socio-economic features, perception on security and health issues. Percentages and table are used for analysis. The study unveils Positive change in property rental values due to the industrial concerns arising from sustainable industrial practices. The prominence of total return was down played in the study.

Donovan and Butry (2011) examine the effect of urban trees on the rental price of single-family homes in Portland, USA. Endogenous variable is the rental values, characteristic of the house, neighbourhood and environmental quality are the exogenous variable used. Hedonic regression was used for analysis, additional tree on a house’s lot increases monthly rent and a tree in the public right of way increased rent. Tree adds positive amenity effect to the monthly rent and annual rental value. The study only considered rental value.

Balta and Eke (2011) did a research in a metropolis on spatial/latitudinal reflection of urban planing and urban land rental; the research seeks to examine the tentative development that have occurred in the access strip of west Ankara metropolitan area taking into cognisance urban land rent among others. Hedonic model was used to analysis the data. The study found that frequent amendment of urban plan and implementation of plan on a piece meal basis have direct bearing on urban rent. The study centres on the increase in rent as a result of planning laws without looking at the variation in the distribution of rent in the neighbourhood. The study did not consider total return; only rental value was captured in the model.

Jaeger *et al*. (2012) did a study on how urban land use planning affect property values. Dependent variable used in the study is rental levels in Oregon, USA. Zoning and setbacks were the independent variable. Simple difference-in-difference estimator was used for the analysis and assessment of the average land value growth rates at multiple points in time before and after the adoption of regulations. They observed that property values had increased at comparable rates both inside and outside urban growth boundaries, and across parcels zoned for different uses and across state lines. Land values has noticeable ascended owing the instituting of Oregon's land use planning system. The planning system is all-inclusive, taking into consideration the supply of land at an interval. Each land has a different effect. Total return of the property was not isolated; only capital value was considered.

Ajibola *et al*. (2012) did their study on effects of urban planning on residential property values at Agege, Lagos. Data was collected on socio-demographic feature from real estate specialists and through structured questionnaire. Descriptive statistics and linear regression was used for analysis. Residential Properties situated in planned areas have higher rental values than those situated in less planned areas with significant difference. The study reveals that there is a statistically significant relationship between land use planning and property value. Total returns were not isolated in the research as a dependent variable.

Bello and Yacim (2014) examine the effect of tree shade on rent (residential) for properties situated within Maiduguri metropolis, dependent variable is the rental levels while the independent variable are the structural component and available tree. Questionnaire was used to retrieve data for the analysis, hedonic model in linear form, was used to weigh the influence of tree shade on rentals value of residentials property in the study area. Paired sample T test was used to test the difference between the rental value of residential properties with tree shade and those without tree shade in the study area. It was discovered that Tree shade has a positive impact on the rental value, hence the amenity effect enjoyed by resident. Total return was not isolated.

Salihu (2015) did a comparative study of residential property rental values in planned and unplanned neighbourhoods of Minna Metropolis, the exogenous variable is set-back, zoning, density and building codes and endogenous variable. The study utilised gini-coefficient and regression for analysis and discovered that areas that are well planned have higher rental values. The study concentrated on rental value with considering the best measure of residential property performance (total return).

Sun *et al*. (2016) examine impact of Subway Lines on Residential Property Values in China. The dependent variable is rental levels while accessibility (distance to the nearest CBD, subway station, park, school and artery), neighbourhood (government-provided service facilities, schools, hospitals, parks, and large commercial facilities), and structure (floor area ratio and the greening rate form) variable are the independent variable.

Hedonic pricing model using multivariate regression analysis suggested that Subway plays a significant role in enhancing the surrounding land prices. The range of influence of rail transportation is positively linked with the distance from the city centres, but it does not consistently increase with it. Only rental value was considered in the study.

Guo *et al*. (2017) did a study the impact of built environment and property walk accessibility on single-family residential property values in Australia, the endogenous variable is the capital value while the exogenous variable include census data, road network data, land-use data, and the walking time: Ordinary least square regression was used to validate the model, the study used a generalized dissimilarity index, which is not limited to the data recorded type used in practice, and was introduced to quantify land-use mix, a key component of built environment. The study unearths that single-family residential property value per square meter is higher in homogeneous residential neighbourhoods with higher property walk accessibility. It also indicates that larger or intense uses can have a negative effect. Neighbourhood that is well planned has a positive effect on rental values as compared to lesser planned areas. The study centred on rental value ignoring total return.

More so, previous studies have also examined planning variable on residential property capital worth since the late 2000's. Ihlanfeldt (2007) studied the effects of land use restriction have on housing and vacant land prices within Florida. The dependant variable used is sales price while the independent variable are the structural characteristics (index of restrictiveness which are log of square feet of living area, log of lot size in acres, age), neighbourhood and location attributes for the study. Questionnaire instrument was used to obtain relevant data. OLS regression was used to analyse data and result unearth that land use regulation has positive effects on the prices of housing and otherwise on land price. Though the study ignored total return which is the best approach to measuring residential investment performance.

Tang and Yiu (2010) conducted a study on the link between development intensity and housing cost in Hong Kong. The study seeks to establish the relation between intensity of development and housing price. The dependent variable for the study is the selling price. Locational features, property features, neighbourhood characteristics are the independent variable. Hedonic or OLS regression was used for analysis, result suggests that buyers tend to pay more for a larger amount of internal and external housing space. There is an "ideal range" of development scale measured in terms of the total number of dwelling units in a housing estate. Adhering to regulations on development characteristics of housing estates may also affect the price of an individual dwelling unit. Housing prices tend to increase with the average unit share of public space (spaciousness), thus providing a positive amenity effect. Total return was ignored.

Yan *et al.* (2010) study the housing price dynamics in China from 2000 to 2007 and incorporated land supply, regime shift and urban regulation factors. The study unveil land supply have significant influence on having housing price volatility. Total return was overlooked in the study.

Huang and Tang (2012) did a study on residential land use regulation, geographic land scarcity, and subprime mortgage credit expansion that is related to the amplitude of the housing price cycle. Dependent variable used include housing price, while the independent variable was regulatory process, household income, open space requirement, density restrictions, employment rate, wheaton land use regulatory index (WRLURI). Multiple regression was used for analysis, result suggest cities that are more regulated and have less developable land experienced greater price gains between January 2000 and

June 2006, and greater price declines between June 2006 and July 2009. Regulation has a positive effect on a property but it depends on the level of compliance by the occupant to this planning laws. The study over looked total return.

Magliocca *et al*. (2012) examines the effect of zoning on land and housing prices, and on urban spatial development patterns in United States of America. Data for the study were stimulated. The stimulation unveil that inferior development value of the land is in the restricted region, lesser lots is given per acre and is compensation by the higher bid price from the supply restriction. Total return was overlooked only capital value was considered.

Wen and Goodman (2013) conducted a study on the effect of various educational facilities on housing prices. Endogenous variable is the housing price, and exogenous variable used for the study is educational facilities. OLS regression was used for analysis, result shows that College institution improves the surrounding housing prices through accessibility because of amenity effects, buyers and investors are willing to pay for education quality or accessibility. The study overlooked total return.

Monkkonen and Ronconi (2013) conduct a study on impact of land use regulations, compliance on the land market in Argentina. Variable were gathered on survey parcel price, features of vacant lots, land use regulations and constraint to low-cost housing. Econometric analysis was utilised using multiple regression. Result shows that rigid land-use regulations are associated with lower compliance rate and at minimum property right rule and lesser land price, at the macro level, the result has contradictory theory and evidence from the developing countries intuitive land use regulation has a negative relationship with the land price at the micro level. Total return was not captured.

Monkkonen (2013) did a study on the relationship between land use regulations and housing markets in Indonesia through various analyses. Data collected includes construction permit, time and cost of registering land, result shows that regulations do impact on the production of housing in Indonesia, but they do not affect housing markets in the predicted way because of their flexible enforcement and a widespread and dynamic informal housing-production system. The case of Indonesia demonstrates the importance of regulatory enforcement and local context in the analysis of land use regulations. Total return was not captured.

Du and Zhang (2014) did a study on Home-Purchase control, Property Tax regime including Housing worth (monetary worth) in China. The endogenous variable used is housing price, property tax, purchase control reduced consistently the annual growth rate of housing prices by 7.69 percent; the trial property tax reduced the annual growth rate of housing prices; the trial property tax of Shanghai has no significant effect on housing prices. The study recommends that in order to curb the soaring housing prices of home, purchase restrictions should be lifted, at least in the short run, replaced by property taxes to have a perfect market. Total return was overlooked in the study.

Qin *et al*. (2014) examine spatial effect of lake landscape on housing price in China. The endogenous variable used is housing price, and the exogenous variable are public facilities, property management quality, living facility, surrounding environment, building age, inner environment, external environment, education facility and sport facility, traffic condition, subway nearby and distance to new-centre. Sample data used contain 660 communities distributed across six urban district. OLS/Hedonic Regression was utilised for analysis. Result suggests that West Lake has a significant positive external effect on housing price. The amenity effect of the West-Lake on housing prices exhibits the directional and distance heterogeneities, total return was not considered.

Wen *et al*. (2015) conducted a study on Amenity effect of various landscapes on housing price, independent explanatory variable from four dimension used include Building component (structure), neighbourhood, location, and landscape. Descriptive and hedonic regression. Result suggests that four lakes have significant effects on the housing prices. Urban residents are evidently willing to pay an additional price on environmental amenities. Effect on total return was not isolated.

Zou (2015) analyses the effect of Central District have in China on House worth. The Endogenous variable used is housing prices whereas, the exogenous variable includes floor space, bedroom, bathroom, age, floor level, green coverage, distance to CBD and railway, decoration. Descriptive and hedonic regression were utilised for analysis. Findings suggest that house worth have shrink with distance from CBD and short walking distance to the nearest concealed train station Negative price gradient from the CBD. Effect on total return was not considered.

Grimes and Mitchell (2015) examines the impact planning rules and regulation have on cost of housing as perceived by developers. The dependent variables include structural and neighbourhood attributes whilst the dependent is the housing price. The study unveil that cost imposed by council regulations or by uncertainty and delay have influence on housing price at the long run. The study ignores the investment performance (total return).

Daams *et al*. (2016) studied the Effect of Natural Space on Nearby Property Prices in the Netherlands. The dependent variable is the selling price, but the independent variables are date as well as a number of structural characteristics: living area, parcel size, number of rooms, period of construction, type of heating, type of structure, and the presence of insulation materials. The study unveils that Dutch property buyers pay higher prices for properties located at a distance of up to 7 km from attractive natural space. The relative size of attractive natural space effects on property prices decreases with distance. Total return was not captured in the study.

Jackson (2016) studied the extent to which land use regulation stifle supply of housing in California. Data employ for the study includes population control, zoning control, political control and general control. The study utilised regression for analysis and unveil that land use restriction significantly deplete housing supply and new constructions in cities. The study overlooked total return.

Kim *et al*. (2016) examines the effect of regulation restricting short-term rentals on property values. Data collated include sale prices, rental income, city, subdivision, lot size, residential zoning, flood zoning, and current owner's name. The latitude and longitude information, building features- year built, living area, number of bedrooms, and number of bathrooms. As rental-restricting regulations increased (decreased) property values in neighbourhoods where the density of non-resident owned homes is great (low). Across neighbourhoods, sale prices are most negatively affected by the rental-restricting regulations. The rental restricting regulations may hurt property sale prices; but, the ability to rent properties at short-term with fewer restrictions may enhance property sale prices. The residential investment performance (total return) was overlooked.

Lees (2017) examines the impact of land use regulation on housing price in New Zealand. Employed regression to test for impact. The result indicates a potential high impact of housing price. land use regulations add up 56% premium of Auckland housing price. The study down played total return.

Wen *et al*. (2017a) conducted a study on Measuring the Stringency of Land-Use Regulation on housing price in China. The endogenous variable is the land sales, while longitude-latitude coordinates, GIS for distance to employment centres, local infrastructure, and various amenities are the exogenous variable. Result suggests that stringent regulations affect housing prices these are based on the immediate feature of the environment and economic efficiency of the state. Regulations across Chinese cities vary and the effect is based on the site attributes (planning regulations attributes). Total return was not examined.

Wen *et al*. (2017b) used quantitative analyse to evaluates the effect of compulsory urban education in housing price. The endogenous variables were housing price whilst the exogenous are the contextual structural, neighbourhood and location attributes. Hedonic price model was used for analysis by employing three different regression model for outcome. The result shows qualities of primary and junior high educational school have a positive influence on housing price.

Greenaway-Mcgrevy *et al*. (2018) examines the effect of policy change on housing price in New Zealand, dependent variable includes transaction data (sale price,) while the independent variable was (structural attributes) date of sale, land area, floor area, site footprint, latitude and longitude, bath and bedroom among others). OLS regression suggests that low site intensity properties located in areas that are up zoned, experienced a significant increase in value when compared to properties that are not up zoned hence restriction can have any of the three effects on investment return, this is dependent on the micro characteristic of the property. Only capital value was assessed in the study, total return was ignored.

Albouy and Ehrlich (2018) in their study on Housing Productivity and the Social Cost of Land-Use Restrictions, using secondary data, observed stringency regulation and geographic restriction largely increase housing price as compared to land and construction cost. Total return variable was not considered in the study.

Li *et al*. (2018) analyse spatial patterns of housing prices and their relationship with local attributes, they discovered that central pattern of distributing transport facilities and amenities made the market to be mono-centric. Accessibility, structural attributes, public and private service amenities significantly influence real estate prices. The study overlooked total return.

Bigelow and Plantinga (2018) studied how value of developed land transform over time in urban centres that have adopted urban growth boundaries (UGBs) laws. Data for the study was real market values (RMVs) from 1973, 1980, 1986, 1990 and 2000 from four countries. The study demonstrates that parcel of land out UGBs appreciate faster than otherwise, also that change in land quality influence price wedge among parcels inside UGBs. The study did not isolate total return.

Brueckner and Singh (2018) studied the relationship between the value of vacant land and the extent of a particular regulation to gauge the regulations stringency in USA. The endogenous variable is land sale while zoning maps, size of the parcel wall, distance latitude and longitude code are the exogenous. Regression was utilised, the study unveils that elasticity of the land price with respect to floor area ratio is a proper stringency measure. The result obtained for most of the areas under study are based on the micro-features of the locale, given divergent result base on the stringency of the regulations across the study area hence mix result in study prompting further research. Residential property performance (total returns) was ignored.

Severen and Plantinga (2018) did a study on Land-Use Regulations, Property Values, and Rental income in USA. Data collected on rental income, age at the time of sale, lot size, number of the unit, build sq ft: Regression was employed for the analysis, result suggest that restriction Act raises the price and rental income of multifamily housing units situated within the Coastal Zone. Local benefits generated from restrictions on immediate neighbours and from amenities, the effect created spatially increases the price and rental income. The study overlook rental investment performance (total returns).

He *et al*. (2019) used quantitative approach to examine the pricing mechanism of China's informal housing market. Data used includes data on property price, structural attributes, neighbourhood's characteristics and location attributes online from Anjuke.com and uncover that housing price premium are due to embodiment of ambiguity of property right established in small property housing in China. The study did not consider residential investment performance (total return).

Jeon (2019) studies the impact of the greenbelt relaxation on the dynamics of the Seoul Metropolitan area housing market. The research utilized apartment, job density, local expenditure density and net migrate rate as independent variable while housing price and rent are the dependent variable. The study unearth that housing price have increase in all the suburban areas under study with the exclusion of the central city area. In order words, localities (suburban) with unrestricted greenbelt land for development have about 76.5% higher housing sales prices and about 60.1% premium rent while the urban core is insignificant.

Choi *et al*. (2019) examines the impact of both planned and current urban parks on housing prices in Korea, data on housing sales of 11,498 sales were used as the dependant variable and all data on housing structural attributes and park features as independent.

The study unveil that proximity effect exist between urban park and increase in housing prices in all the classes of properties. Residential Investment performance (total return) was not considered.

Tan *et al*. (2019) studied the effect of opening metro-station on second hand housing prices in Wuhan, China. Inferential and descriptive statistics was employed for analysis and conclusion. The study unveils that average value of a housing within 400m of a metro station has a 26.6% premium than that of a home outside 4800 m. The effect of a metro station on housing prices of 1600 to 3200m and 3200 to 4800m from metro-stations is still statistically significant in Wuhan.

There is vast literature on ULUPRs and residential properties values globally (Appendix A) it suggest that neighbourhoods, structural and location attributes are shaped by National, state, municipal laws and policies and are diverse according to regions, which can be judgementally group as the recognised formative variable (neighbourhood regulation attributes, structural regulation attributes and location regulation attributes "exogenous") of ULUPRs from literatures. Also each regulation attributes affect rental and capital values (endogenous) at varying degree in different region globally with a mix outcome buttressing the need to answer more research question that have practical and policy implications.

In addition, all the aforementioned studies only captured rental or capital value while Severen and Plantinga (2018) attempted to combine the effect of ULUPRs restrictions on both capital and rental values of residential properties. Such studies informed this study of the investment returns performance (total return) which is a combination of both rental and capital value, and have been adjudged as the best measure of the performances of residential property trends over a period of time (Dabara, 2014; Umeh & Oluwasore, 2015), instead of focusing on either rental or capital values. Total return is another dimension to residential property performance specifically now that global emphasis has shifted to real estate investment performance (Nwankwo *et al*., 2018; Nissi *et al*., 2019). Studies on the effect of ULUPRs and RPIRs can improve the overall efficiency of the urban property market through informed decision marking, by fully asking research question that addresses the housing needs and preference of the consumers.

Studies relative to Africa and particularly Nigerian cities are scare only (Adebayo & Oni., 2011; Ajibola *et al*., 2012; Bello & Yacim, 2014) focused their research in this direction. In addition, there are very limited empirical research paper related to North-West, Nigeria. More, so the analytical tools used are mostly Ordinary Least Square Regression and Econometric model which are found to have some limitations (Hair *et al*., 2013; Awang, 2014). These have occasioned dearth in knowledge in this aspect that will be beneficial to Estate surveyors and valuers, Town planners, Investors among other.

2.11.1 Related literature on residential property investment returns

Real estate investment returns been studied in both developed and developing nations, but performance data in the form of total return capturing ULUPRs of residential property have been limited most especially in the Nigeria context. Despites the fact that residential housing is a major investment portfolio in the Nigeria property market (Mfam & Kalu, 2012). Investors and households demand residential property either as a producer good or consumer good because of satisfaction derivable from it intrinsic and or, extrinsic attributes while in occupations. The satisfaction derivable undoubtedly in some part is shaped by level of compliance to urban land use planning regulations that shape the housing intrinsic/extrinsic features (structural, neighbourhood or location attributes) during housing formative timeframe. These extrinsic/intrinsic attributes largely determine the rental and capital value attached to residential real estate, consequently the volatile property performance trend in diverse locations.

Mfam and Kalu (2012) analyse the risks in directed residential and commercials properties situated in Calabar. The study uses quantitative approach to collect data for the study. It discovered that risk in residential property is statistically significantly higher than commercial property. In addition, the study advocated for development of residential property in planned sites without empirical evidence to show that planning risk is predictors of progressive investment performance. Hence, in part a motivation for this study.

Oyewale (2013) campared performance of retail commercial and residential real estate investment located at Ilorin. Employing systematic random sample technique and utilising descriptive statistics for analysis. The outcome showed retail commercial estate outperformed residential real estate in both returns and risk. The study did not isolate the types of residential property and risk that predict investment performance in the study, the variable explaining variation in risk -returns might be related to the intrinsic and extrinsic attributes (planning regulations) of the hereditament which has been given less attention.

Wahab *et al.* (2017) did a comparative evaluation of residential property market performance situated in Abuja with the intent to understand the market dynamics. The study used quantitative research strategy, inferential and descriptive statistics was utilized for the analysis of data for three and four-bedroom property. The study unveiled that different location has isolated return and risk characteristics, undoubtedly corroborating the assertion that diverse location factors are responsible for the variations in residential returns, hence the need to established the predictor variables from the perspective of planning or legal risk.

Udobi *et al*. (2018) also, compared the performances of residential and commercial hereditament situated in Onitsha, metropolis. The study specifically employed quantitative research approach and employed descriptive statistics for analysis. The study demonstrated that commercial real estate performed better than residential real estate investment. Therefore, having divergent risk-returns features in different locations. Unearthing factors that explain the mix outcome in risk-returns from the purview of planning risk would have been timely.

Nwankwo *et al*. (2018) carried out a comparative study of residential real estate in Uyo. Data were collected quantitatively from estate surveying and valuation firms. The study employed descriptive statistics for analysis and discovered that different location has differential risk-returns feature across and within property types. The study did not unearth the predictors of the result of risk-returns profile from the perspective of planning risk across the study neighbourhoods.

Osa and Ekanta (2019) carried out a comparative assessment of residential and commercial property investment returns. Quantitative research approach was employed and the study unearth that residential and commercial properties have volatile positive returns profile and vary in various locations. The study intuitively opined that volatility in property performance is caused by conditions of repair of the property (structural attribute). Without empirical evidence of the predictors of the result from the purview of planning risk which should have been apt.

Mbam and Udobi (2019) comparatively analysed residential and commercial property situated within Awka, Anambra State. Data utilised were quantitative by nature and employed descriptive statistics for analysis. The study discovered that investment returns from commercial property performed better than investment returns from residential property. Hence, the risk in commercial property investment is greater than that of residential investment but the study did not consider planning risk as predictor of the returns.

Deducing from aforementioned literatures review on investment performance shows that studies have been conducted on income returns, capital returns and total returns without capturing planning risk. Undoubtedly, planning risk is often a natural part of real estate property investment, specifically residential property. These risks include planning risk, legislative risk, structural risk, legal risk which insurance company are aware that it could increase or dissipate residential investment returns (Baum & Crosby, 1988; Udobi *et al*., 2018). Udobi *et al*. (2018) asserted that returns and risks from residential properties vary according to locations and nature (structural, neighbourhood attributes) of the property. The more an investor is able to quantitatively quantify the planning risk associated with real estate property the more rational the investment decision (Udobi *et al*., 2018). Different locations have varying risk-return features from the aforementioned literatures. Consequently, the need for more research questions that can answer practical and policy implication on planning risk-returns structures from different regions because planning risk affect positively and nagetively on property worth. This in part inform the need to explore the effect of ULUPRs on RPIRs in Northwest, Nigeria.

2.12 Kano Theory/Model

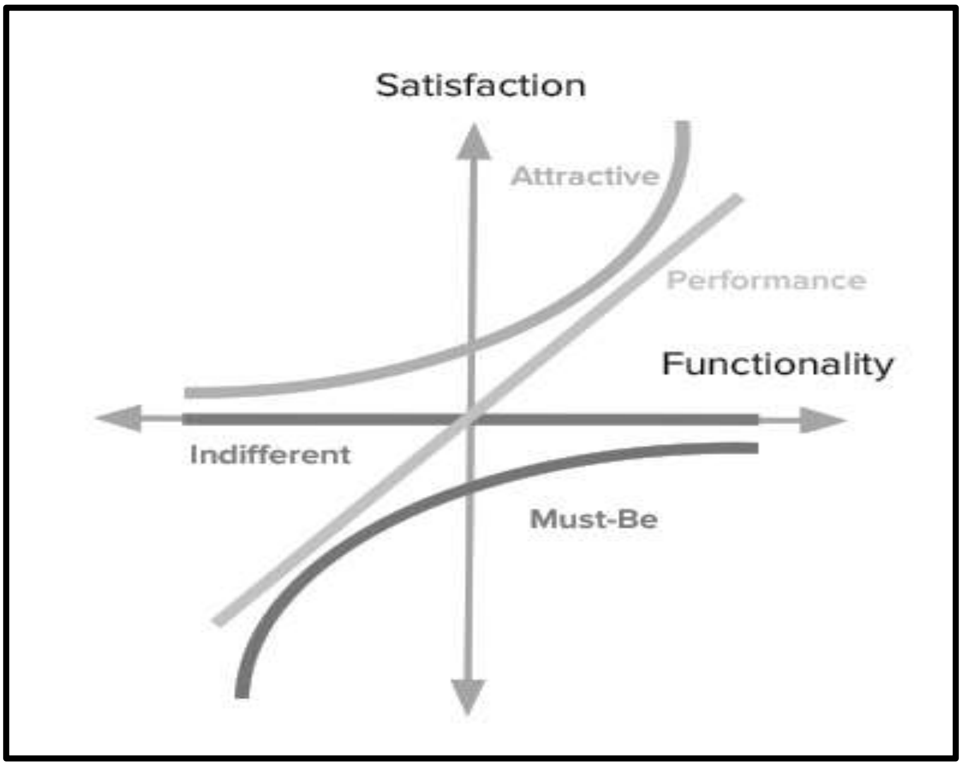

Figure 2.9 Kano model of consumer requirement

Adapting and applying the Kano model (See Figure 2.9) to the property market (housing) is appropriate because of its preposition that a product characteristic does not have constant effect. This study integrates Kano model to the Hedonic model to provide additional insight into customer preference by looking at combinations of ULUPRs attributes that makeup the more inclusive housing product offering because rental growth and capital appreciation are primarily established by consumer expectations (Gelain & Lansing, 2013). It will be of interest to note that Kano model provides insight to respondent perspective rating of attributes preference independent of one another. In order words, it address isolated attributes of a product offering which is in line with this study attribute offering having a combination of three ULUPRs attributes.

Housing is a product that have transcended four walls and a roof (Jinadu, 2007) in the property market. It comprises of a bundle of attributes, inefficiency in one of the attributes render the product (housing) as incomplete, though individual make trade off among the various housing attributes (neighbourhood regulations attributes, structural regulations attributes and location regulation attributes) by evaluating this attributes client making choices (Tcvetkova, 2017) among the various product (housing) propels effective demand and informed investment decision.

2.13 Theoretical Framework Underpinning the Study

Deduction from previous literature on land use and value determinants, have clearly shown that earlier studies theoretical underpinning embraces the work of Alonso's (1964) (bid rent gradient) theory which initially postulated the willingness to pay notion in line with the mono-centric and subsequent polycentric nature of the modern urban structure model. Muth (1969) and Mills (1972) embrace and built on the work of Alonso's (1964), they developed the land value concept. This study theoretical underpinning is mainly on Rosen model (1974) which established the hedonic theory base on the utility bearing feature of goods, thus forming the crux of theoretical underpinning of real estate property value. The concept of Willingness To Pay (WTP) for intrinsics and extrinsics attribute of the residential properties is as a result of perceived satisfaction or utility to the end user or owner that paves the ground for the extensive use of hedonic price modelling of Rosen (1974) in rental and capital values studies, including estimating value of other wide variety of environmental good (Donovun & Butry, 2011).

Interest shown on a residential property is defined by the WTP for the residential property attributes by household. We cannot over-emphasise the concept of WTP for a residential property to achieve utility since it seemingly significant to lands use and residential property returns analysis. Consequently, in reality what actually defines land use pattern is the interest to acquire it. The display interest subsequently generates effective demand which sustains residential property investment returns. The effective demand displayed by household defines the market forces of demand and supply to establish equilibrium price, thus marginal equilibrium price if high, serves as an incentive to compel investors to be Willing to Invest (WTI) in the housing sector.

Rosen (1974) hedonic model hinges on the principle that the price or value attached to a commodity is determined by the satisfaction or utility derivable from the various intrinsic and extrinsic attributes of the individual commodity at varying level. Once the intrinsic and extrinsic attributes (location, structural and neighbourhood attributes) of the property are regressed against the aggregate value or returns, the observed coefficient of the various attribute establish the hedonic value or price of the various intrinsic and extrinsic features of the property. In this case, the investment returns of the property will be established. The willingness to pay for this intrinsic and extrinsic attributes, hence, determines the cumulative price/pecuniary worth or investment returns of the property.

This study moves further to integrate supporting theory of an earlier model of Tiebout (1956) that is built on the presumption that choices of location by household is based on the utility derivable from local amenities and public good enjoy by the key players (household, firm and government) in various locations in the urban environment to comprehend factors that cause variation in RPIRS. To understand volatility in property performance Kano model (1984) was incorporated to Hedonic model, Kano model is built on the premise that user satisfaction of a product (Housing), is centred on the requirement from the product which vary according to household taste at varying location, thus suggesting different peaks of RPIR at different locations according to satisfaction derivable. Additionally, both Hedonic and Kano models are built on the preposition that all the attributes of housing have non constant effect on rental or housing price.

Public Interest Theory on Regulations (PITR) is also a supporting theory and is built on the preposition that economic market is subject to fragility and has a predisposition to operate inefficiently and to the benefit of action of a few while extending the negative externalities to the society. Consequently, obnoxious land uses are visible in nooks and cranny of metropolitan area.

The theory of land rent and land location in polycentric city model advocated that land values, housing prices and population density have different peaks at distinct location in the urban centres and changes with distance from the dominant central business district (CBD) (Sun *et al*., 2016). Changes in property value is based on the perceived utility derivable from micro-level structural, location and neighbourhood amenities enjoy by the key player in the urban environment Tiebout (1956) as illustrated in Figure 2.10. Hence, Guo and Peeta (2017); Kim *et al*. (2018) Opined that the essential detecting factors of land use and residential property rental and capital value from literature are confined within locational, structural and neighbourhoods' attributes of a building. These attributes are shape by the level of individual compliance to ULUPRs.

Previous research seems to be adept at unveiling contextual attributes related to ULUPRs and their effect on housing and how it influences rental and capital values. Perhaps they fall short by not addressing the more significant questions facing the property market today (investment returns). To this end and with the utilisation of structural equation model, this study unveils research and practical questions of how clientele satisfaction with the availability or else of housing regulations attributes and the effect on the residential property value. The Kano theory (1984) aided in Understanding clientele expectation on housing attributes and their preference on these attribute at various location from the purview of Estate surveyors and valuers and town planners of which will offer a platform for answering practical and policy implication questions. If achieved, a well structure predictable model result of sale and rental income that will sustain residential property marketing efficiency as a result of ULUPRs will be developed.

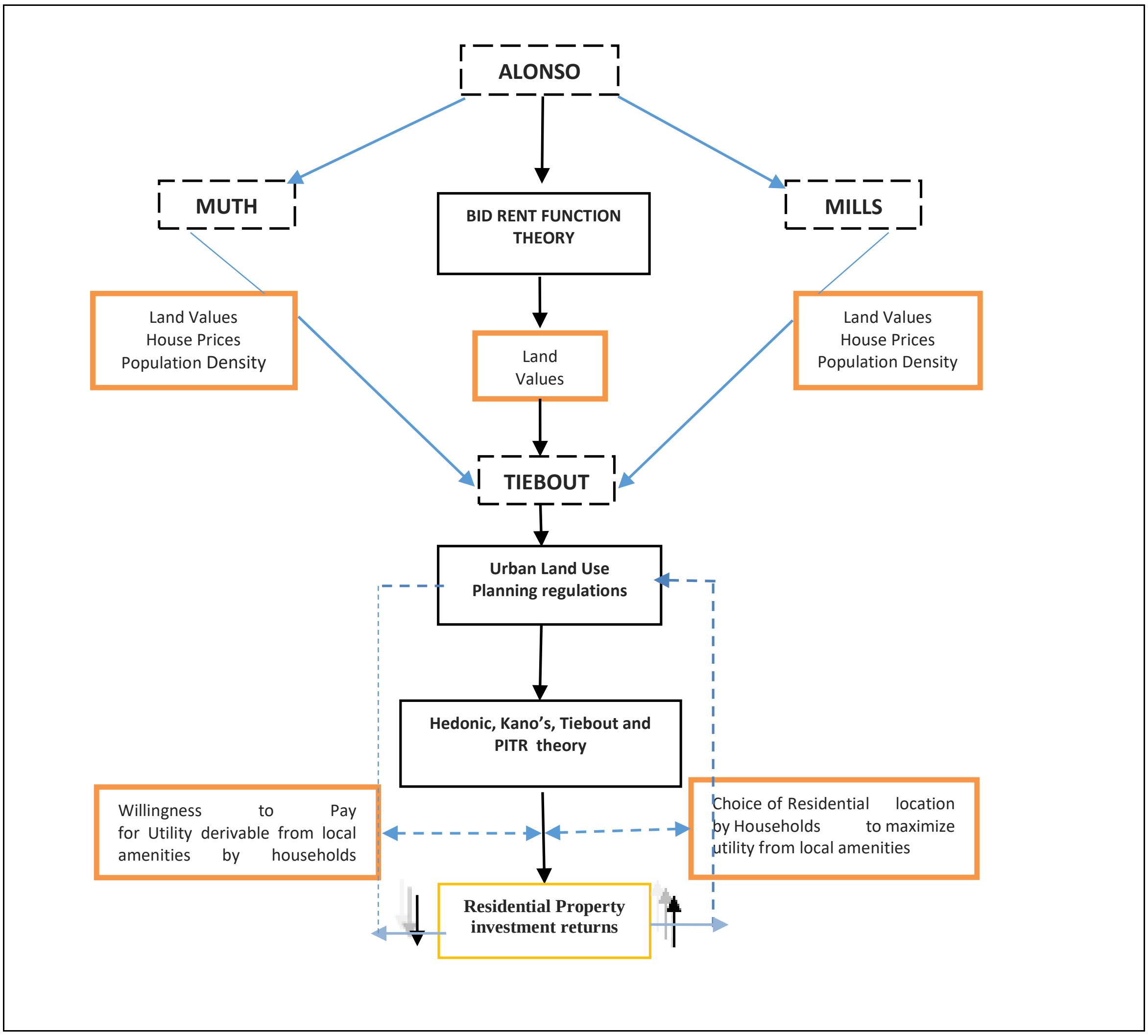

Figure 2.10 Evolution of theoretical underpinning for the study

(Adapted from McDonald & McMillen, 2007)

To some residents, the major consideration of choice of residency is the distance to the CBD. Households with higher disposable income that can afford housing (amenity effect) close to the CBD spend less on transportation cost (performance attribute) due to their proximity to the CBD and local amenities derivable (excitement attributes). Housing nearer to the CBD attract higher capital and rental values at different peaks but with less space and lot sizes (restrictive effect). Similarly, due to the proliferation of human socio-economic activities and subsequent competition for useable space pose challenges to urban planning, these challenges encompass traffic congestion, overcrowding and contravening urban planning regulations (negative externalities) among others (Bochnovic, 2014).

Thus, based on household scale of preference some might secure residence away from the CBD. Though spending more on transportation cost to and from the workplace as a result of distance travel, time might not be a serious issue owing to the advent of faster means of transportation in the urban locale (Tiebout, 1956). These households have more space and lots sizes in their residential apartment due to less competition for space by various land use in such location within the urban context, undoubtedly less competition for space owing to flagrant of ULUPRs hence urban biasness in term of infrastructures and services.

Utility and satisfaction derivable determine the willingness to pay for residential properties intrinsic and extrinsic characteristics. Ideally, this characteristic/attributes are largely shaped by neighbourhoods, structural and location regulations, consequently residential property investment return in form of capital and rental values. Is there; if any variation on residential property investment returns as a result of the differential utility derivable by households in the Kano and Kaduna metropolis as in Tiebout (1956) model?

2.14 Linkage between the Polycentric City Model, Urban Land Use Planning and Residential Property Investment Returns for the Study

Shaping the polycentric city model were based on the theory of land rent and land location on the initial work of the bid rent gradient theory by Alonso (1964) and later as the contemporary urban form transformed to have many sub-urban centres distinct from the dominant CBD. The contributions of Muth (1969), Mills (1972) and Tiebout (1956) formed the crux of the polycentrism studies, Figure 2.10. The polycentric city model as discussed earlier is based on the premise of mono-centrism that housing prices (capital value and rent), land value, population density and local amenities decline with distance from the CBD, that households tend to locate in a locations that provide them with comparative advantage, but with the advent of the polycentrism the CBD is no longer a single point but various CBD within the urban setting each providing different level of satisfaction/amenities to the household. In order words user satisfaction and customer requirement (threshold attributes, performance attributes, excitement attributes, indifferent qualities and reverse qualities) form the housing product. Thus, Ling and Archer (2013) posit that dynamism of the complexities of the polycentrism of urban centres still revolves around the nearest CBD (mono-centric effect) that exercises influence on properties.

This study tries to utilise the ideal principles of theory of hedonic model, polycentric city model and Kano theory from the purview of residential property performance. The study intends to find out if the component upon which utility derivable for households' user satisfaction and achieving customer requirement from housing as a product in Kano and Kaduna metropolitan areas is local amenities (structural, neighbourhoods and locations attributes). Do residential property investment return peak only in location proxy to local amenities with non- linear pattern? Are there other dynamic factors which determine non-linear pattern of RPIRs? Is the supposition of the hedonic and Kano theory applicable to the nature of the relationship between ULUPRs predicting RPIRs in Kano and Kaduna metropolitan areas?

2.15 Conceptual Framework of ULUPRs to RPIRs

The conceptualisation of this study, hinges on previous literature review, by utilising their theoretical basis, the current study assemble a research framework from literature to address and identify research gaps, during the course of this research conceptual framework development, professional Estate surveyors were consulted, evidence was sourced from literature to identify the link between the research construct. In addition, a substantial number related empirical studies were reviewed and analysed to ascertain the theory employed on understanding ULUPRs that predict rental and capital value. These regulations were further validated through a questionnaire validation technique and a final contextual variables was realised under the relevant construct of ULUPRs.

The framework was predestined to identify the extents to which the observed constructs affecteds RPIRs in a positives way. Urban land use planning regulations (Neighbourhoods regulations attributes, structural regulations attributes, location regulations attributes) and the effect it has on residential property investment return (Total return) are illustrated in Figure 2.11. ULUPRs affect housing formation at varying degree through it neighbourhood, structural and location component. Neighbourhoods, structural and location attributes affect residential property value in diverse forms (Restrictive effect, amenity effect and scarcity effect) and the effect could be positive, negative or neutral Jeager (2012) because of the unique characteristic of physical immobility of real estate (Babawale, 2011).

Housing is a bundle of good (product) (Jinadu, 2007) and the development of the product is guided by a combination of regulations, compliance to each regulation by the investor provide the user with some level of customer requirements and satisfaction as a product which differ in terms of households. Looking at this study from the purview of Kano theory (1984), the characteristic of customer requirement as postulated by the Kano theory (1984) includes (threshold attributes, performance attributes, excitement attributes) of the product component, though the qualities of the product do not remain constant. The level of customer requirement that is achieved is through adherence to the ULUPRs in residential property development. The peculiarity of the user satisfaction determines the household willingness to pay a high or low price for the product at each point in time.

Hence, the level of returns accruing to the residential property investment. Residential property investment return is a measure of the performance of residential property investment as compare to other investments such as stock and bonds, though total return is utilised in this study because it is undoubtedly the best approach to measure the performance of property investment as compared to income or capital value approach because it has a constituent of both type of value (Dabara, 2014; Umeh & Oluwasore, 2015).

Establishing the influence of these formative constructs (ULUPRs) on residential property investment return provides a very strong test of nuisance versus amenities effect in residential property investment. The amenity effect is a positive impact on the urban land use, by extension increases the investment returns/performance (Harmonious land use). The nuisance effect is a negative impact on urban land use, by extension reduces the investment return/performance (Obnoxious land use) while the neutral effect is no effect (Famuyiwa & Babawale, 2014; Jaeger *et al*., 2012). Similarly, due to drive to maximize utilities derivable from the use of a residential property (product) by household, their user satisfaction is positively related to the customer requirement from the housing product, hence enforcement of ULUPRs have an influence on residential land use location choices and it is a subject of concern by households and the Estate Surveyor and Valuers that market housing investment as a product. If customers are not satisfied they look for other competing suppliers (Estate firms) of the product (housing).

This means that the company must put in place a strategic idea to meet the expectations of its customers and try to create more added value through its response to the requirements of its customers. Hence, the timing of this study is apt. Using the widely acclaimed Hedonic model and integrating Kano model (1984) in analysis of this study describe the connection between user satisfaction of a product (Housing), requirement from the product (utility) and return from the product (investment returns) by investors. Based on the fact that there is no real balance between satisfaction and customer dissatisfaction. Some factors or components of housing (neighbourhood attributes, structural attributes and location attributes) may strongly influence customer dissatisfaction when they are absent without generating satisfaction when they are present and vice versa. Indeed, the basic attributes/ threshold attributes are the type of need that the customer expects. Customers will be much less satisfied if the basic/threshold attributes are not present, but will be totally indifferent when it is present, it does not raise the customer satisfactory level above the neutral level (Rosmaini *et al.,* 2013).

A good example in the context of residential property is structural attributes (the bedroom or living-room) meaning that having secure a bedroom or living-room in a residential property and other related issue does not raise the level of customer satisfaction whilst non-existence in housing will cause customers dissatisfaction. Performance factors are attributes that makes customers need more satisfied when they are present. Conversely, less satisfied when the need is not satisfied. Client become dissatisfied due to cost (transportation) (Harvey & Jorsey, 2004; Bochnovic, 2014). A good example is neighbourhood attributes access to school, shopping malls and security are likely to be performance need, whilst proximity (low or no-cost) to school, shopping malls and security (neighbourhood) may increase client satisfactory level. Excitement/attractive factors are attributes that provides satisfaction simultaneously with the increment of this product/service. Though excitement/attractive factor do not cause dissatisfaction when not fulfilled. They are not normally expected and thus often unspoken. An excellent example is location attributes (street trees, distance to hospital, distance to parks).

Conversely, if residential property has these attributes the client will be excited and delighted (Harvey & Jorsey, 2004). Excitement attributes generate proportionally from customer satisfaction or dissatisfaction and are often points of competitive advantage (Gregory, 2011). The need to establish the question of equilibrium between client satisfaction and company profit is fundamental to real estate investment. This connotes that in a competitive environment satisfying basic attributes and performance attributes by a product (Housing) could not only satisfy the need of the client for him to be willing to pay. As such Estate firms must streamline the approach to be willing to enhancing service delivery that excites and over satisfy the client need.

The competitive differentiation or advantage is the offer proposed by a company to differentiate itself from the others by offering a better good/services in terms of value (Michael, 1998). Using Kano theory to connect this study Hinge on the fact that it will provide the Estate surveyor and valuation firms with valuable insight regarding the client or customer requirement of the residential property not mere assumptions. Kano theory, (1984) addresses three types of requirement of the client and strengthen the firm. Firstly, by satisfying the basic needs/threshold needs of client will allow the estate firm to get into market, satisfying performance need will allow the Estate firm to remain in the market and satisfying excitement needs will allow a company to excel to a world class (Kano *et al*., 1984). Ability to empirically prove this requirement will provide the estate firm with an insight to clientele requisitions over time. Consequently, this necessitates the need of employing Kano's theory for this type of study. In essence, attributes that greatly influence residential property investment returns can be easily established and can also lead to designing policy that emphasis on clientele needs by simply examining attributes that influence residential property investment returns. The conceptual construct of ULUPRs as it affects RPIRs is illustrated in Figure 2.11.

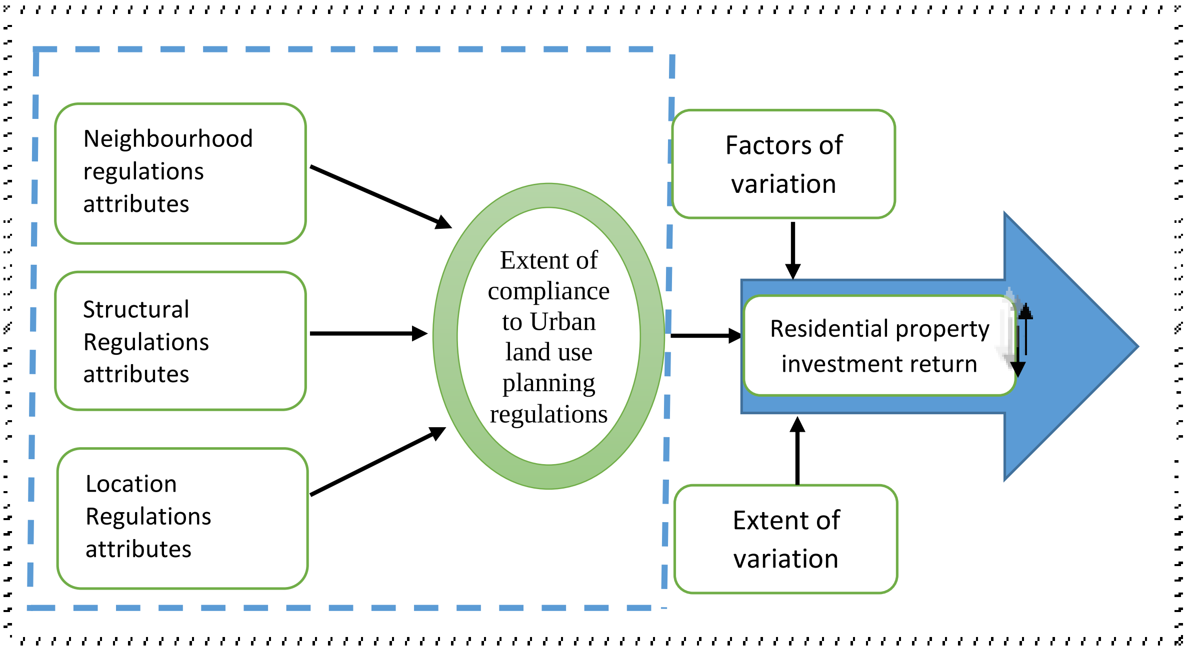

Figure: 2.11 Conceptual framework of ULUPRs affecting RPIR
(Source: Author's Construct 2019)

Figure 2.11 shows the framework for this study, it is not as exact as the Kano's model but have been modified within the context of ULUPRs and residential property market. The linkages of the relationship of the conceptual framework is built on the premise that previous study have established isolated formative variable of ULUPRs that positively explain rental and capital values of residential property. Consequently, rental and capital value are the formative construct of RPIR (Dabara, 2014; Umeh & Oluwasore, 2015).

These formative ULUPRs variables and RPIRs variables will naturally form a basis for another dimension of practical research question (Kohlscheen *et al*., 2018). The practical research question in this study is hope to aid in determining the point of convergence or divergence on whether ULUPRs affects RPIRs (Total return) or it only have influence on either rental or capital values as unearth by other studies. The variable employed by previous literature as they affect rental or capital values of residential property are subgroup and itemised with their sources below, hence serve as theoretical premise for the variable utilised in this study:

Neighbourhood regulations attributes: the variable utilise in other studies relate to neighbourhood amenities such as: schools, playground, hospital, sporting facilities, police post, public transport, fire-fighting equipment, trees, commercial centre, community park, tarred road, street trees direct to housing, telephone facility, University (Kano State Urban planning and development Agency (KANUPDA) Regulation, 1988; Yusuf & Resosudarmo, 2009; Donovun & Butry, 2011; Awuah *et al.*, 2014; Sun *et al*., 2016; Ze, 2016; Kaduna State Urban Planning and Development Agency (KASUPDA) Manual, 2017; Brueckner *et al.*, 2017; Li *et al*., 2018; Tan, 2019).

Structural regulations attributes: the variable used in previous studies includes house size in m^2, numbers of rooms, wall material, roof material, floor material, water sources, building age, inner environment quality, property management, traffic condition, Garage, bathroom, toilet, liquid waste, solid waste, source of drinking water (Donovun & Butry, 2011; Boamah, 2013; Wen *et al.,* 2015; Ze 2016; Sun *et al*., 2016; Li *et al*., 2017; Guo *et al*., 20,17; Brueckner & Singh, 2018; Li *et al*., 2018), lot size, height of building, set-backs, open space designations, volume of development/ density, population density, building permit, formalized tittle among others (Awuah *et al.*, 2014; Lima & Neto, 2017), occupancy ratio, ventilation, lightening, sanitation, plumbing, fire prevention, electric work and construction material (Yusuf & Resosudarmo, 2009; Donovun & Butry, 2011; Awuah *et al.,* 2014).

Location regulations attributes: the variable used are proxity to amenities such as distance to park, distance to city centre, street trees, distance to garbage dump, distance to slum areas, distance to hospital, green coverage (Donovun & Butry, 2011; Bello & Yacim, 2014; Zou, 2015; Sun *et al.,* 2016; Brueckner *et al*., 2017; Li *et al*., 2018; Kim *et al*., 2019; Jeon, 2019; Tan, 2019). Each of this urban land use planning regulations affects the housing product in terms of shaping the structural, location and neighbourhood constituent of housing as a whole product.

Residential property investment returns: this relate to the pecuniary benefit (returns or yield) an investor/property developer in residential property stand to gain over time both at the short and long run and are in form of rental and capital value (Dabara 2014, Umeh & Oluwasore, 2015). Intuitively the influencers of RPIRs includes town planning laws, legal requirement by councils, bye laws pertaining to safety of inhabitant, price paid on compulsory purchase, deregulation of the property market (Mbachu & Lenono, 2005; Adegoke *et al*., 2017).

Investors/ developers of residential property are lured by the rental income (annual rental income) or capital income (capital appreciation/selling price of a property) that will accrue to an investor (this in turn will either persuade the investor to maintain or sale the investment) if the investor chooses to invest in residential property as compare to shares and stocks. The success of RPIR could be associated with the theory and concept of Loss Aversion (Gachter *et al*., 2010) which is based on the preposition that people are more-subtle to a reduction in their wealth than an addition in the same. Therefore, shows that losses are being evaluated twice as much as corresponding gains. Relative to this study the value of a residential property habitually increases or decreases based on the estimated perceived utility derivable from contextual individual housing attributes.

The housing attributes is shaped by adherence or otherwise to the structural, locational and neighbourhood regulations that form housing during development phase as a bundle of good. The variable for urban land use planning regulation is grouped into three as identified in literature (Salihu *et al*., 2020), and was adopted as the exogenous variable while residential property investment returns is the endogenous variable. Consequently, the conceptual relationship calls for the research questions used in this study.

2.16 Summary of Deductions from Literatures Review and Link

Past studies related to the current research was reviewed, the theoretical underpinning upon which the researches were based was also discussed in this chapter. While reviewing empirical literature related to this study some gaps were identified. Firstly, the crucial issue of studying a robust model of urban land use planning regulations and meticulously examining how adherence to these regulations influence residential property total returns have not been addressed (Kohlscheen, *et al*., 2018). The very few related empirical researches conducted in Nigeria were in the Southwest and Northeast (Ukabam 2008; Adebayo & Oni, 2011; Ajibola *et al*., 2012; Bello & Yacim, 2014) specifically Maiduguri, Ogun and Lagos, the research hinges on isolated ULUPRs variables and it influence on rental or capital value with mix results because of lack of consensus by scholars on the outcome.

Secondly, previous studies have not analysed the situation of ULUPRs vis-à-vis residential property total returns of three-bedroom bungalow, two-bedroom bungalow and one-bedroom bungalow (residential property) in Northwest, Nigeria by integrating hedonic and Kano's theory of (1984) as the main theory and employing Tiebout (1956) and PITR as the supporting theory to analyse the research conceptual model under the theoretical framework of polycentric city model. Hence, there is little evidence in literature that seeks to analyse ULUPRs and residential property investment total returns dynamics. ULUPRs affect residential properties in diverse way (Jaeger, 2007), and the effect could be felt on the location, structural or neighbourhood characteristics of the residential properties.

Thirdly, few of the earlier studies relating to ULUPRs and property value were accomplished with analytical technique and tools that have been discovered to have some methodological restrictions in terms of theory confirmation, global goodness of fit, multivariate normality, modification indices and co-vary error terms which are likely to affect the quality of deductions and results made from such studies most especially the OLS regression (Hair Jr *et al*., 2014; Awang, 2014). Hence, the utilisation of Covariance based structural equation model (SEM-AMOS) to test whether the conceptual model and the hypothetical relationship among formative packages are supported based on survey data. This methodology takes care of endogeneity problem which surface as a result of a predictive variable been correlated with an unobserved/latent construct that influence land value and may create unreliable outcomes/results. The subsequent chapter discusses the research approach utilised in this study which includes the research design and the methods of data collection, analysis and interpretation.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

Every research has an implicit and clear research design (Yin, 2003). Research design for this study is formulated to generate quality findings, in line with Saunders *et al*. (2019) who opined that research design for a study form a strategy on how a practical or policy implication research questions will be answered. Research design describes the way that research is conducted (Jone, 2011).

The research philosophy is the ontology- as to defining "what exists" and epistemology – in form of "what can be known and how can we know it?" (Jones, 2011). Also, Babbie (2007) posit that paradigm is "the fundamental models of reference utilised to organise observation and reasoning" in research. Ultimately theories and paradigm are intertwining notions and also it is fundamental to mention here that theory clarify phenomena whilst paradigm provide ways of observing.

This research is focused on the positivist philosophical tradition because it is critical for a researcher to vividly illustrate her/his fundamental belief with reference to the nature of the world he resides in. The perception of the researcher regarding the world will immensely have effect in the way a researcher sees the topic and phenomenon, which influence the technique of data collection and the way in which the outcomes are comprehended. The researcher believes in the postulation of Chen and Hirschheim (2004), Teddlie and Tashakkori (2009) that certainty of positivist centred on the assumption that "reality exists objectively and autonomous from human experience or bias" and also "hypothetic deductive (inferential) testability of theories" from theory or conceptual framework to a specific (data points).

The fundamental defining principles of positivism includes: Firstly, human senses determine the acceptability of knowledge from phenomena. Secondly, science is carried-out in a value freeway, and thirdly, deduction of theories provides the platform to generate hypothesis that can be studied (through rational and unbiased means) to provide explanations. Hence, this research domicile with the positivist tradition as occasioned by the nature of the research objectives and questions (Saunders *et al.*, 2019). In order to ease the realisation of this study objectives, the study adapted a quantitative deductive methodology and then empirical assessment, in order to make generalisation on the causal relationship. In achieving a deductive approach several procedures were fundamental from: Theory, forming hypothesis, data collection, findings and lastly confirming or rebuffing of a theory and predictions. Hence, the adaption of the research design

Figure 3.1 display research design adapted in this research

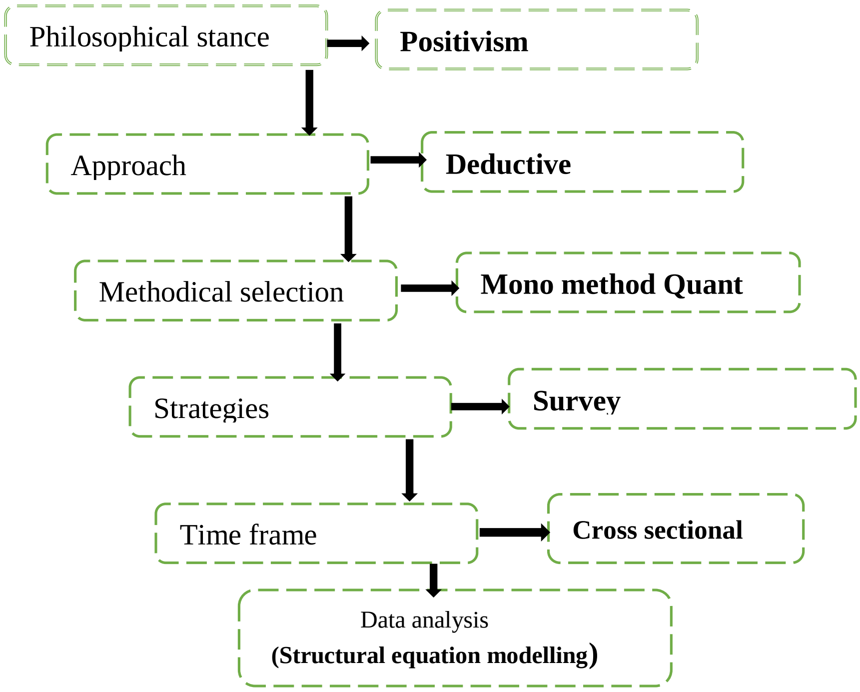

Figure 3.1 Research design
(Adapted from Saunders *et al.*, 2019)

The quantitative deductive method in this research measures values in terms of numbers and latent variables, therefore, investment returns is a construct that have a value determinant element and the value component is determined by ULUPRs construct, in this regards, quantitative data was carefully sourced by utilizing questionnaire administration through cross-sectional time frame.

Thereafter, this research adopted both inferential (Covariance based structural equation modelling (Analysis of Moment Structure "SEM-AMOS") and Analyze of Variancee "ANOVA") and descriptive statistics (weighted means, standard deviation, coefficient of variations and percentages) in order to make meaning to the data collected from the field. The descriptive statistic was utilised to provide an in-depth answer to question bordering on trends in residential property investment returns and level of compliance to urban land use planning and physical development control measures. While the regression analysis was employed to test for causal relationship between the constructs. That is the relationship between urban land use planning regulations (neighbourhood regulations attributes, structural regulations attributes and location regulations attributes "the exogenous variable") and residential property investment returns "the endogenous variable" were established using the SEM AMOS path analysis. The predictive research design (AMOS) was used to establish the ULUPRs attributes that explain RPIRs.

This study is a form of explanatory (confirmation /verification) research under the non-experimental (survey) research design as it is perceived as the original attempt to assess residential property investment performance in terms of total returns (the measurement endogenous variable) by measuring urban land use planning regulations. Thus, this study is centred on analysing the causal relationship between the proposed exogenous variable and the endogenous variable towards maximising residential investment performance in the property market.

This current study process is illustrated in Figure 3.2. It is structured into 3 phases: Phase 1 began by defining the stance of previous research through an in-depth literature survey/reviewing to highlights the trends in theories underpinning the phenomena. The phenomena being that of the effect of ULUPRs on RPIRs in the property market. The extant literature in the subject aided in the formulation of suitable measure that have been utilised in previous research and found to have significant impact on rental/capital values and the research model formulated. Consequently, in part of the Phase 2 the research hypothesis was formulated using the schematic diagram of the conceptualised research framework in Figure 3.4. Hence, statistical outcomes were created through executing of the constructs measurement and consequently a structural model. The Phase 3 contains presentations of the result of the survey data and the conclusion. of the study (Figure 3.2 below illustrate the processes).

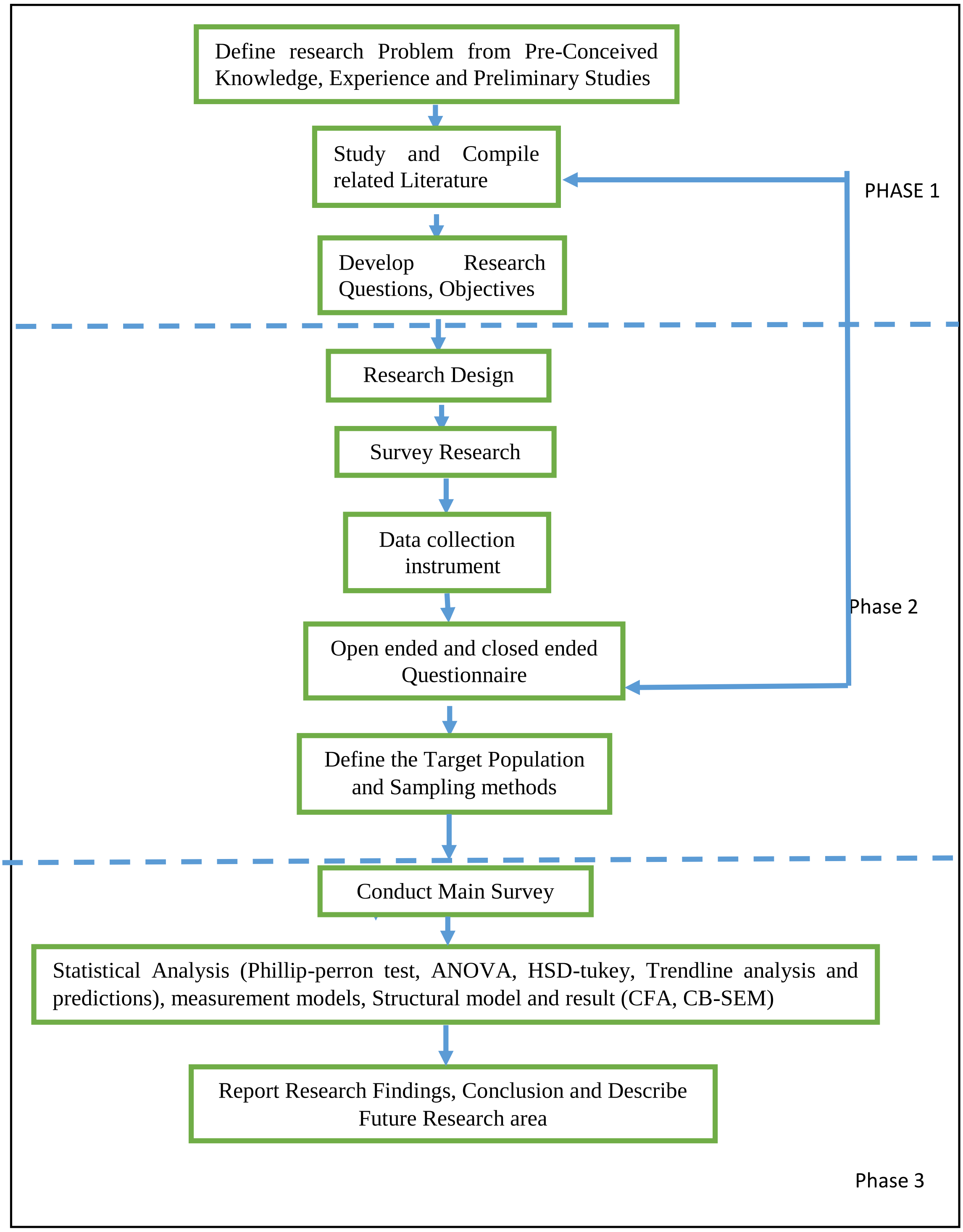

Figure 3.2: Research flow chart
(Author's construct, 2019)

3.2 Sources of Data

Data utilised for this current study were obtained from experts (Estate surveyors and Town planners) in the built environment because they are legal custodian of this data and some selected residential properties under estate management firm portfolio. This will aid in answering research questions and specific objectives of this study. The data source employed is primary in nature and are discussed subsequently.

3.2.1 Primary sources of data

Primary data utilised in this research are sourced from structured survey panel of respondent (unit of analysis) consisting of practitioners in both public and private sectors (Estate surveyors and town planners) in Kano and Kaduna Northwest, Nigeria. The need to determine the unit of analysis (capital value, rental value, residential properties attributes and perception) is fundamental to every research (Sekaran & Bougie, 2010). The experts (Estate surveyors and Town planners) were identified based on the NIESV and NITP 2017 directory to provide access to the unit of analysis.

The experts were drawn from a pool of specialist's who were often directly involved in issues relating to urban land use planning and real estate investment for the past 11 years, this timeframe was chosen because of the challenge of accessing data from the study area. Structured survey questionnaires have been utilised in research to identify, develop, validate and forecast trends, opinion and attitude in various research domains hence employed for this study. The source of data for this study is quite exclusive since previous related studies from developed nations (Jeagar 2007; Donovan & Butry 2011; He *et al*., 2019), data where sourced from secondary sources (online data bank website) which are not peculiar to the types in Nigeria where data are sourced from estate surveying and town planning firms. Two sets of primary data collection instruments were utilised in this study, these includes face-to-face survey questionnaire administration and check list/observation schedule.

3.3 Sampling Population and Sampling Frame

Before the survey sampling two things were very crucial; the potential population and the sample frame. Thus, Saunders *et al*. (2016) view research population as a whole organisation or group of people that the study wants to assess while a sample size is the subset in a population. Choosing an adequate number of the element from that particular population under study become a more appropriate technique to utilise. Forza (2002) opined that this can be achieved by selecting and studying the characteristics of a sample and can be used to make generalisation of the attributes of the population.

Neighbourhoods are used to identify subdivision in human settlement, with specific physical and social attributes that differentiate them from the other sectors of the urban settlement (Bentler, 2005). On this basis, this study viewed residential neighbourhoods as a geographical entity or location with similar attributes delineated formally or informally. Therefore, with respect to this study, there was the need for adaptation of the delineated homogenous neighbourhood with homogeneous features in Kano and Kaduna metropolis.

Awang (2012) emphasised that when a population is divided into homogenous unit that it guarantees equity. Hence, the estate surveyors and valuation firms and town planners were divided into two groups, those that have been in practice for less than eleven years and those above eleven years. Those expert in practice for the past eleven years were administered with the questionnaires because they fall between the target year for tangible information to be extracted while residential property (three-bedroom bungalow, two-bedroom bungalow & one-bedroom bungalow) within the strongbox of the estate surveying and valuation firms were also selected.

The sampling frame in Kaduna metropolis encompasses: Estate firms, town planning firms and six Kaduna State Government agencies that are saddled with land use matters in Kaduna metropolis. The agencies are the Kaduna State Environmental Protection Agency (KEPA), Kaduna State Urban Planning and Develop Authority (KASUPDA) and the Kaduna State Development and Property Company (KSDPC). Others encompasses, the Kaduna State Ministry of Lands and Country Planning, the Kaduna State Public Works Agency (KAPWA), and the Federal Surveys Unit in Kaduna, as well as the officials managing land issue in the study locale.

Whilst in Kano metropolis 5 agencies involved in land use matters were selected and they include: Kano State Urban Development Board, Kano State Bureau for Land Management (KSBLM), Kano State Environmental Planning and Protection Agency (KASEPPA), Kano State Urban Development Agency (KNUPDA), Kano State Ministry of Works and Housing, Kano State Housing Corporations and officials working in the local government estate offices within the municipal area. They were administered with the structured survey questionnaire because they are cluster groups with direct feedback on the subject of the research, hence their response to the questionnaire are valid and reliable for analysis as in (Gregory, 2011).

The NIESV 2017 directory and NITP 2017 directory provide the numbers of registered surveying firms and town planning firms practising in Kano and Kaduna metropolitan areas:

Objective 1 requires data from estate firms and town planners, purposive sampling technique was used to select those that are registered town planner and registered estate surveyors. Subsequently, simple random sampling technique was employ to collect the data required giving each individual the chance of being selected equally; objective 2 requires data on rent and capital worth (monetary) of residential properties for a period of 11 years, hence the purposive sampling technique was utilised to select properties with rental and capital data for that period of time.

In addition, objective three require data on compliance to urban land use planning regulations and physical development control measures. Purposive random sampling was also employed to select the residential properties under the portfolio of the estate firm in the study areas, so as to ascertain the level of compliance in the study areas. To achieve objective 4 and 5, purposive sample technique was also utilised to select Estate surveyors and Town planners because of their years of experience in practice.

3.4 Sample Size Determination

Multi-stage sampling approach was employed for this research, which took into cognisance the 95% confidence level and 5 percent margin of error. Firstly, to determine the minimal sample size in Rijiyar- zaki, Hotoro, Badawa and Naibawa/ Yar Akwa neighbourhoods in Kano metropolis and Barnawa, Sabon-tasha, Unguwar-rimi and Malali neighbourhoods in Kaduna metropolis. Kjercie and Morgan's (1970) table of sample size determination (Appendix B) was employed in order to achieve research objectives one (1) two (2) and three (3) because Kano and Kaduna metropolis are mega-cities with thousands of houses. A minimal sum of 384 or more sample size was discovered to be sufficient from the table of sample size determination for study. The sample size table aided in determining the minimal sample size that is suitable and accurate for this type of quantitative research and the result can be utilise for generalisation. Though 389 sample size perception of estate surveyors and values and town planners was used to achieve objective one, four and five and 1036 sample size for residential property was afterward used to achieve objectives two and three respectively with the aid of formula in equation (1).

Secondly, in determining the minimal sample size to achieve research objectives 4 and 5 taking into consideration the analytical tool (AMOS) (Malhotra, 2010; Pallant, 2011; Awang, 2014), and complexity of the model, 300 or more sample size (Hair *et al.*, 2013; Awang, 2014) was required. To this end, based on the preposition of these literature, the researcher utilised 389 sample size through purposive random sampling which is above the required 300 from a sample frame of 980.

Table 3.1 Sample unit distribution from the sample frame

Sample frame	Frequency
Estate firms and town planners (Kano)	57
Officials of government agencies in Kano	450
Total	507
Estate firms and town planners (Kaduna)	83
Official of government agencies in Kaduna	390
Total	473

Source: Authors field survey (2019) and NIESV/NITP directory (2017).

The sizes of the individual strata were determined quantitatively utilizing Frankfort-Nachmias (1996) model used in literature for sample size calculation from the sampling unit's distribution in Table 3.1 from the sample frame in both study areas. Equation 1 is the formula used to determine the sample size

$$n = \frac{z^2 \ .p.q.N}{e^2 \ (N-1) + Z^2 p.q} \qquad (1)$$

Where N= Population size

n= Sample size

p= Samples population estimated to have characteristic beings measure (in this research, 95% confidence levels of the targeted population)

q= 1-p

e= Acceptable error

Z= 1.96 (The standard normal deviation at 95% confidences level).

A sample size of 197 was obtained at 95% confidence level for Kano metropolis while a sample size of 184 was also obtained for Kaduna metropolis at 95% confidence level. But 256 sample size was utilised from selected neighbourhoods in Kano metropolis, this include Rijiyar- zaki-67, Hotoro-58, Badawa-64 and Naibawa/ Yar Akwa-72 while in Kaduna metropolis, 239 sample size was also utilised this includes Barnawa-62, Sabon-tasha-64, Unguwar-rimi-55 and Malali-58, including a 30% sample size which was added to the minimum sample size in the study areas respectively. The rational for the 30% addition is to account for the possibility of questionnaire that might not be properly filled or returned (Glen, 2013).

3.5 Instrument for Data Collection

3.5.1 Questionnaire survey instrument

In this research, two sets of questionnaires were utilised. They include the closed ended structured questionnaire on one hand and the fill in questionnaire on the other hand, hence where the main tool us to collect data from respondents. The questionnaires were drafted in line with questions that arose from the research objectives.

However, the questionnaires were administered to the estate surveying and valuation firms, town planning firms and Local, State and Federal Government Officials, the observation schedule were piloted differently so as to assess the level of compliance to urban land use planning and physical development controls measures. The sound knowledge and work experience over time about the real estate industry by these experts and the enable laws that establish both NIESV and NITP ensures the legitimacy of the source of data obtain from the study conducted. Subsequently, data collected from the primary sources are opinion of experts in Estate management and Town planners in the study areas and subsequently represents the consensus views of the effect of ULUPRs on residential investment in the study areas.

The questionnaires were sectionalised base on the themes of the study. The initial section contains a covered later from the department of estate management and valuation (Federal university of technology, Minna) which introduce this research title, the purposes of the study, researchers and the instituted details (see Appendix C), and, thereafter the questionnaire consists of four sections (Appendix D). Part ‘A’ is sub-divided into two and subsection ‘A’ covers socio-demographic questions such as gender, educational level, respondent designation, type of organisation whilst section ‘A1’ covers length of time in service, institutional status, area of specialisation and type of property under the firm portfolio, awareness, use and gender of the users of RPIR data.

Part ‘B’ included causes of variation in residential investment returns, the indicators of variation in RPIRs assessed were- Education qualification, supply of a rental apartment, income level, population, demand for a rental apartment, vacancy rate, structural facilities, location, security of neighbourhood, neighbourhood facilities, owner/ renter mix, ethnic mix, land use density design, government housing policy, cultural affiliation of the inhabitant. These items stated are measured as subjective estimate utilising five point Likert scale.

Part ‘C’ comprised the fill in questions soliciting for information on capital and rental value for a three-bedroom bungalow, two-bedroom bungalow and one-bedroom bungalow for a period of 11 years that is from 2009 to 2019. Part ‘D’ covered information on neighbourhood regulations attributes, structural regulations attributes, location regulations attributes, ULUPR attributes and residential property investment returns attributes. The questionnaire items stated in this section are measured by employing five point Likert scale: 5 indicate “strongly agree” and 1 “strongly disagree”. In same vain, Allen and Seaman (2007) and Mathers *et al*. (2009) have reported that the Likert scale is one of the most universally used scale in survey research and it ensures the objectivity and proportionality of questions.

In using Likert scales for these study questionnaire, it was highly important to consider no less than 5 point of response in line with Allen and Seaman (2007). Because 5-point Likert scale offers adequate response choices thereby making the questionnaire items convenient and comprehensive for the respondents to answer. More so, Johns (2010) buttress the aforementioned assertion that when the response scale is less than 5 points, the response tends to be considerably erroneous due to its measurement of only direction rather than the magnitude. Also, scales more than 5 points are largely problematic for respondents in the aspect of finding divergence between the scales use in questionnaire. Hence, the employment of 5 point Likert scale.

3.5.1.1 *Expert survey on questionnaire development*

A lot of urban land use planning regulations have been suggested in literature to have been helpful in improving residential rental and or capital values in different regions. So, deciding on which regulations is important to this study region, or domain is extremely complex and difficult particularly within the property market. This was compounded with the lack of research in this domain. Hence, this research has called on the experience and knowledge of experts within the property market and academia from the built environment to respond to questionnaire during questionnaire validation, this add up to the once available in empirical literature. At this point the target of the survey was to identify what dimensions of the ULUPRs and residential property investment return (with 60 variable) that needed to be assessed and how each dimension should be weighted.

In this research selecting experts (private and public practitioner) with differing perspectives and views on large scale investigation basis and to have an overall opinion about real world issues can be accurately achieved through Delphi surveying. Hence, the need to call for knowledge and expertise within the study domain. The Delphi strategy provide a platform for this research to gather input from expert remotely (Irdayanti *et al.*, 2015). Delphi strategy has been a widely employed and accepted method for realising convergence of opinion regarding actual world knowledge seeking from expert opinion within a domain of knowledge (Hsu & Sanford, 2007).

The Delphi survey strategy was utilise in this research for an in-depth validation of the questions in the questionnaire aimed at assessing the feasibility of achieving the objectives of this study because it is a new domain of research using iteration process: definition, discussion, feedback and revisions. The study employed experts from the property market because they are practitioners with knowledge and experience over time and are legal members of Nigeria Institution of Estate Surveyor and Valuers [NIESV], and have registered with Estate Surveyor and Valuers Registration Board of Nigeria [ESVARBON] recognised by Decree No. 24 of 1975 which is known as Estate Surveyors and Valuers Registration Act and mandate among others to carry out letting, determine the value of all classes of property, sales and management of real estate. They have robust database of rental value trend, capital value (sales price) trends and are consultants on residential properties investment under their portfolio overtime. Also, practicing town planners provided data and viable information because they are members of Nigeria Institute of Town Planners and are empowered to carry out Plan preparation and administration, development control among others by the Nigerian Town and County Planning Act known as Decree No. 3 of 1988 and the academia. The Figure 3.3 shows the Delphi study process.

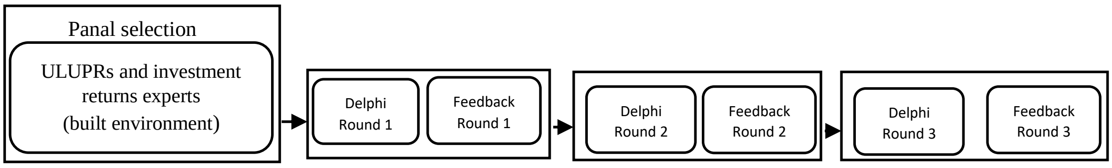

Figure 3.3 Delphi framework (Adapted from Horan, 2010)

As can be earlier recall the Delphi respondent consist of experts from the property market and the academia who are estate surveyors and valuers or town planner in Nigeria. The experts (5) were identified based on their active participation in their various institutions and their publications and then 2 others utilising snowballing sampling strategy.

In this research the Delphi strategy was used to identify and validate the questionnaire variables. With a single round strategy which is typical with this type of research from October 2019 to December 2019. In addition, the sample size of seven was in cognisance with the view of Irdanyanti *et al*. (2015) which is built on the preposition that no Delphi is typical, hence the method should be built based on the nature of the research and the research question. This study provided closed ended questionnaire, with predetermined questions in form of fixed phrasing and in sequential other for observations to be made in terms of achieving the aim of the study. The feedback gave the basis for utilising the questionnaire (Appendix D) which provided quantitative description of opinion and trends for generalisation (Tobi, 2013).

3.5.2 Observation schedule/checklist

Observation schedule/checklist was employed to assess the level of compliance to urban land use planning regulations and physical development control measures in the study locale. In this section respondent were not required to provide any information, the researcher and ad hoc staff made critical observation based on the checklist which was designed based on variables employed in previous literatures and also modification of the checklist was done to meticulously encapsulate the peculiarities of the study data, for instance, the inclusion of plant (two trees per house), connection to water and electricity main.

Open data tool kit App/software (ODK) was utilised, it was downloaded into Ad-hoc Staffs android handset who were majorly university students on industrial attachment, the Ad hoc staff were afterward deployed to the field so as to physically collect data from residential properties under the estate surveying and valuation firm's portfolio. ODK tool is a versatile mobile data collection kit that function both offline and online and has the ability to perform advance analysis in excel, hence utilised in this research. The phenomenon observed encompasses whether or not the sampled property met the basic minimum standard as required by the KNUPDA law 2011 "Appendix O"and KASUPDA "Appendix P" manual of 2017. This method was deemed fit because it is fast, easy to operate (user friendly) and save time.

Data collected through the utilisation of ODK was conducted through physical total enumeration survey of three-bedroom bungalow, two-bedroom bungalow and one-bedroom bungalow under estate firm portfolio. The data collected was downloaded to Microsoft excel. cleaning and filtering of the data was conducted to check for empty and incomplete filling of forms, six forms were discovered to have these feature and were deleted from the data set.

Also, questionnaire as an instrument for survey research is exposed to measurement error. common method variance (CMV) is a fundamental measurement error most researcher employing questionnaire as a tool of research faced when developing the questionnaire and in this study it was addressed. Podsakoff *et al*. (2003) sees CMV as a reoccurring problem that all researcher must addressed. Thus, this study when developing the instrument follows Spector (2006) who claimed that isolating dependent from independent variable and making questionnaire in survey studies as short as possible will surmount common method variance. This study accurately identifies research constructs in line with the research context, items that were previously validated in earlier studies were adapted and revised aptly, questionnaire were short to be certain that focused respondent easily identify the questions to minimise the influence of CMV. A case in point is the use of plot size instead of lot size, selling price instead of capital value among others.

3.5.3 Administration of questionnaire

Utilising questionnaire as an instrument for data collection in this study hinges on the opinion of Hutton (1990) that questionnaire aid in collecting tangible information by asking a potential respondent a set of prearrange questions. The potential respondent is an individual who is drawn as a representation of a defined population. Questionnaire has been use in data collection from large sample and believe to be more dependable and reliable (Kothari, 2004). The questionnaire administration is presumed to be most reliable strategy for the study to validate all the contextual causal relationship through cross-sectional time frame. The cross-sectional timeline research strategy, avail the best choice for studying investment performance because of the time line. Hence, Babbie (2007) opined that descriptive, explanatory studies are often cross-sectional because it deals with observation of a given phenomenon and sample population at a particular time.

This study questionnaire administration was multi-stage: First, through purposive random sampling techniques for the stakeholder because it gives the researcher the avenue to select the most qualify respondents. Second, through total enumeration survey (purposive random sampling technique) for the residential property because it gives the right property equal chance of been selected and retrieval lasted from August 2019 through January 2020. Employing questionnaire as the primary research instrument has aided in executing the research through a scientific process, which is required in answering the research questions and achieving the set objectives. After taking into cognisance different ways of administering questionnaire, face-to face questionnaire administration was deemed suitable for the study areas. This method was selected because it will enable one on one contact with the respondent and a large quantity of data will be collected. A combined number of 495 questionnaires were administered face-to-face (physically) and handed out to the respondent in Kaduna and Kano, 418 questionnaires were retrieved from the face-to face questionnaire administration and 77 not returned. While, 29 questionnaires out of the 418 were tag invalid because they were partly completed. Subsequently 389 questionnaires were considered valid and ready for processing.

Table 3.2 Questionnaire distribution

Numbers of Questionnaire distributed to :	Frequency	Retrieved	percent
Government agencies in Kaduna metropolis in charge of Est/mgt and urban and regional planning	200	167	83.5
Registered estate firm and town planners in Kaduna	80	52	65
Government agencies in Kano metropolis in charge of Est/mgt and urban and regional planning	158	130	82.28
Registered estate firms and Town planners in Kano	57	40	70.18
Invalid or not filled or monotone pattern		106	21.41
Total retrieved and ready for use		389	78.59

Source: Field survey, (2019).

From the Table 3.2. A total of 389 questionnaires in whole were retrieved and found valid for use representing 78.59 percent of response, and was considered sufficient to generalise (Awang, 2014) the outcome from the analysis taking into consideration the analytical tool to use (AMOS).

3.6 Data Preparation Strategy

3.6.1 Data coding and cleaning

A fundamental stride in preparation of every empirical research process is data cleaning. It enables the insertion of the collected data in statistical package for social sciences (SPSS). As can be observed (Appendix D) the survey instrument contains 60 question, in other words, the representation of each measurement of the five (5) construct for the study. However, for ease of identification a specific code is given to each item as a representation of the variable used for data analysis. As earlier started a total 495 questionnaires were administered but 389 questionnaires were collected and found worthy for analysis. Each of the questionnaire was given a specific code number for ease of tracing in case of error in entry. Descriptive statistic aided in identifying consistency and completeness in missing data through scrutinising the minimum and maximum statistic.

3.6.2 Monotone answering pattern

In survey questionnaire response, straight lining pattern may be a problem in survey questionnaire (Hair Jr *et al*., (2014). Monotone occurs when a respondent answers all the questions by ticking same answer. A case in point is when in a five (5) scale the respondent select 4 all-through for all his answers. Hair Jr *et al*. (2014) opined that the response is biased and should be discarded. In this study, 1 questionnaire was discovered to be having this problem after the initial straight line pattern screening and it was discarded.

Descriptive statistic also aided in testing for the normalities of the data in terms of skewness and kurtosis of the normal curve. One potentially serious outlier was found in the variables. V4 has skewness level of -2.700 and kurtosis level of 7.772. The rule of thumb in statistical measure of skewness may ranges from -3.0 and 3.0 but for more normal data the ranges is between -2.0 and 2.0 (Pallant, 2011). Following the postulation of Tabachnick and Fidel (2007) and Pallant (2011) that skewness and Kurtosis do not make substantive difference when analysing large volume of data above 200 sample, hence item V4 was retained for the final analysis, Also, Golob (2003) and Awang (2014) have demonstrated that CB-SEM (AMOS) using the Maximum Likelihood Estimator (MLE) is equally robust to skewness above 1.0 if the sample size is more than 200. indicating the data can be efficiently and reliably analysed using the (SEM) MLE, as the sample size of 200 and above is considered large enough even with a marginally non-normal data distribution.

To measure the internal consistency and reliability of all the constructs used in this research, reliability test for all the construct was done. These includes the Cronbach alpha coefficient test, Cronbach alpha measures the scale reliability by specifying the average correlation among the whole of the items that make up the scale (Pallant, 2011). Others encompass the item-total statistics and inter-item correlation matrix. The descriptive statistic and reliability test for each of the 5 construct are presented forthwith.

3.7 Sampling Technique

In order to draw the appropriate samples for the current study, the multi-stage sampling technique was utilised. The technique encompasses cluster, purposive sampling techniques and total enumeration survey. This multistage was employed because of the complexity of data required to achieve the study objectives in the study areas. In this method of sampling technique Naibawa, Hotoro, Rijiyar-zaki and Badawa of Kano metropolis and Malali, Barnawa, Unguwan-rimi and Sabon-tasha of Kaduna metropolitan areas were adopted as residential cluster based on the delineated residential neighbourhood within the model city plans (MCP) of these urban areas. While purposive sampling technique which was based on the sound judgement of the research was also used to select estate surveyor and valuers, town planners and government official working under agency in charge of development control in the study areas for questionnaire administration. Thereafter, a total enumeration survey of residential property (three-bedroom bungalow, two-bedroom bungalow & one-bedroom bungalow) under the coffers of estate surveyor and valuers was done to physically assess the level of compliance to urban land use planning and physical development control measures in the study areas.

3.8 Method of Data Analysis

This section dwells on the inferential and descriptive statistics used in the data analysis execution strategy, these are discussed objective by objective according. The inferential statistics used in this study embraces regression and path analysis of structural equation modelling. The data was prepared so as to assess multivariate assumption (linearity, normality among others), KMO and Barlett's test of sphericity before the proper analysis was conducted. First, Principal Component Analysis (PCA) was employed to determine what are the factors responsible for variation in RPIRs in the study area. Then, descriptive statistics was used for analysis with the aid of numerical (weighted means, coefficient of variation, standard deviation, and percentages) and graphical kit tool (tables and graphs) and Analysis of variance "ANOVA" to establish the extent of variation in RPIRs across the various neighbourhoods.

Also, percentage was utilised to establish the extent of compliance to urban land use planning and physical development control measures in the study. Lastly, the multi-regression technique aided in predicting the rate of change in RPIRs as a result of change in ULUPRs. These address the effect of ULUPRs on RPIRs as well as the nature of RPIRs model capturing ULUPRs for the study area. In addition, the result of the predictive model and relationships between the constructs are presented in the AMOS graphic (Figure 4.24).

3.8.1 Reason for choice of data analysing techniques

Utilising covariance base structural equation modelling (CB-SEM) regression is born out of the fact that the data obtained from the field is a panel data and the size of the data set. The regression has been used in analysing and understanding complex relationship between construct not limited to social sciences. Although, it has been employed to primarily evaluate complex multivariate data analysis in some studies (Hair *et al*., 2014). Awang (2012, 2014); Hair *et al*. (2013) opined that covariance base structural equation modelling regression can be used to confirm statistical relationship among and between items of constructs, and also model and analyse the multiple linear regression equation.

Hence, the adaptation of covariance base structural equation modelling regression in analysing this research equation (10).

The rules of thumb that was used in this research for selecting CB- SEM are: ability of the study to convert directly the conceptual framework into Amos graphics for analysis because the aim of the study is to confirm the current theory related to ULUPRs by introducing residential property investment returns in a new context as a key to enhancing the property market.

It ability to validate the measurement model of the unobserved variables in this study using confirmatory factor analysis (CFA) as this is the case in this novel study with five dimension constructs and 60 items, the measurement model specification error terms required additional specification, like covariance. Thus, the attribute of the data is large and has a normal distribution. Conclusively, the model evaluation entails a global goodness of fit benchmark (Hair *et al.*, 2013; Awang, 2014). Hence, CB-SEM is applicable and appropriate in this study.

3.9 Procedure of Data Collection, Test on the data and Method of Analysis Objective by Objective for the study:

3.9.1 Causes of variation in residential property investment returns

Initially, a detailed literature review was conducted so as to determine variables that cause variations in rental and capital value globally. A validation of the questionnaire was conducted to harmonise (Delphi survey) the variable (Appendix D) to use among the team of specialist (supervisors and estate surveyors) on investment returns. Afterward, the primary questionnaire survey was conducted on the sample size to capture a broad array of respondent with relevant knowledge (experience) on investment returns in the study areas. Descriptive statistics was employed to show at a glance the primary characteristics of the variable.

Principal Component Analysis (PCA) was afterward utilised to determine which variable cause variations in residential property investment returns in Northwest, Nigeria. According to Pallant (2011), Principal Component Analysis is a data reduction technique that take a large volume of variable and summarised it using a smaller set of component. In this study, the two factors that are fundamental for suitability of a data in performing factor analysis were considered, this include the size of the data used and the strength of the relationship among the items (variables). Consequently, this study utilised about 389 data which is above the submission of Tabachnick and Fidell (2007). Also the issue of correlation coefficient above 0.3 was also considered. Pallant (2011) also opined that Barlett's test of sphericity should be significant at a $P< .5$ and Kaiser-Meyer-Olkin (KMO) index to range between 0 and 1 for factoring to be considered adequate. The data used for this study have achieved all the requirement (see Table 3.3).

Table 3.3 Result of KMO and Barlett's Test

KMO and Barlett's Test	Values
Kaiser-Meyer-Olkin measure of sampling adequacy	0.790
Barlett's Test of Sphericity Approx. Chi-Square	1717.295
Df	105
Sig.	.000

Table 3.3 shows the KMO measure coefficient of sampling adequacy is 0.790 which is beyond the recommended 0.6 (Tabachnick & Fidell, 2007). The value of the Bartlett's test of sphericity stands at 1717.295 **(**Appendix E) and is significant at (p=0.000). Hence, the data is suitable to proceed with the data reduction procedure of CFA. In whole the Principal Component Analysis (PCA) standardised direct Oblimin using Kaiser's criterion was utilised as the extraction method. This widely utilised technique is based on

the assumptions that component with Eigen values greater than 1 should be retained for subsequent analysis (Pallant, 2011).

3.9.2 Variation in residential property investment returns

This Objective established the level of locational variation in RPIRs in Kano and Kaduna metropolitan areas. This was achieved through use of total returns data (Appendix G) from the study residential neighbourhoods. The residential neighbourhoods in the study areas were adopted as residential clusters. Rijiyar- zaki, Hotoro, Badawa and Naibawa/ Yar-akwa neighbourhoods were chosen in Kano whilst in Kaduna: Barnawa, Sabon-tasha, Unguwar-rimi and Malali neighbourhoods were selected. The areas were selected because of easy asses to data needed. In this study, the properties are strictly for investment motive and envisaged to generate benefit in the form of direct pecuniary returns and are presumed to have generated rental income through letting and capital appreciation through outright sales. Non-commercial investment properties (owner occupiers) do not generate rental income and therefore do not exercise rental growth.

Also, only three-bedroom bungalow, two-bedroom bungalow and one-bedroom bungalow residential properties where selected to enhance date collections in the study areas as they constitute a primary category of residential properties that periodic rent is paid for it occupation (by clients) and such rent undergo (up and down) changes periodically in the form of rental growth or rent re-adjustment and capital appreciation through outright sale. These categories of properties are mainly situated in the high density, medium density and finally low density neighbourhoods in the study areas.

Data on rental and capital values of this properties were collected from Estate surveying and valuation firms with aid of a fill in questionnaire (Appendix D). The choice of data from these firms is borne out of the fact that, the property studied are under the portfolio of these estate firms. These firms are more abreast with the capital and rental value trends in Nigeria context. A total enumeration survey of 1036 residential properties provided rental and capital values trend for three-bedroom bungalow, two-bedroom bungalow and one-bedroom bungalow residential property within the study locations/neighbourhoods in Kaduna and Kano metropolis were retrieved and found to be adequate for a study of this magnitude (Krejcie and Morgan, 1970 “Appendix B”).

The summative average data on rentals and capitals values collated from field were worked out for each year (from questionnaire filed by respondents “ESVs” only). The aggregated average of the rentals and capitals values (Appendix G) of residential properties within Kaduna and Kano metropolis was then transformed into income return, capital returns and total returns by utilizing the formula shown in equation 2, 3, 4. Equally, analysis of variance was conducted on total returns data while the risk associated with total return was measured/calculated with the aid of the asset risk and return formula in equation 5 and 6 because there are many subgroups within the study area:

$$\text{Income return} \quad IR_t = \frac{NI_t}{CV_{t-1}} \qquad (2)$$

Where:

IR_t = Income return for period t
NI_t = Net income received in period t (rent)
CV_{t-1} = Capital value at the end of period t-1

$$\text{Capital return} \quad CR_t = \frac{CV_t - CV_{t-1}}{CV_{t-1}} \qquad (3)$$

Where:

CR_t = Capital return for period

CV_t = Capital value at start of measurement period

CV_{t-1} = Capital value at the end of period t-1

$$\text{Total return } TR_t = \frac{(CV_t - CV_{t-1}) + NI}{CV_{t-1}} \qquad (4)$$

Where:

CV_t =capital value is at end of the year,

CV_{t-1} = is the capital value beginning of the year and;

NI =represents net income or rental value.

Equally, analysis of variance was performed on total return data in order to compare the effect of independent variable on dependent variable. In order words is there any statistically significant difference in Mean of total returns (TRs) across these classes of property under study. Three hypothesis were tested and are express as:

H_{01}: $U_i = 0$, H_{02}: $U_i = 0$ and H_{03}: $U_i = 0$

Where U= Mean difference

$i = 1, 2, 3, \ldots n^{th}$ (bedroom properties) (5)

In other words,

H_{01}: There is no statistically significant difference in the Mean score of total return of within group and between groups of one-bedroom bungalow properties in the study areas.

H_{02}: There is no statistically significant difference in the Mean score of total return of within group and between groups of two-bedrooms bungalow properties in the study areas.

H_{03}: There is no statistically significant difference in the Mean score of total return of within group and between groups of three-bedrooms bungalow properties in the study areas.

The multiple comparison table was later evaluated for statistical significance difference between each pair of groups.

Also, asset risk was asses with the aid of Standard deviation (SD) and risk-return ratio

$$\text{Assets risk/standad deviation formula} = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}} \qquad (6)$$

Wheres n-1 =dfs

x_i = asset period return

$\bar{x}$= the mean return

n= number of observation

$$\text{Coefficient of Variation (COV)} = \frac{\text{standard deviation}}{\text{arithmatic mean returns}} \qquad (7)$$

Where COV=

Co-variance: reveals degree to which the variability of returns tends to be.

That is, the percentage of risk encounter for every unit of total return earned. The rule of thumb for COV is based on zero to 100 percent. The lower the COV the lower the risk, though investment with low risk are the ideal choice for risk averse investors while high risk profile are for return conscious investment.

The summative (aggregate) average data on rentals and capitals value was transformed into total returns with the formula for total returns. This total returns data was further tested for stationarity properties (Phillips-Perron unit root test for stationary of data) in order words a data is stationary if the p-value Z (t) is higher than 0.05. In this study, Phillips-Perron test is critical in order for further analysis of the time series data not to produces spurious results and to capture the long run relationship between the data sets employed for the study. Consequently, aid the precision of total returns prediction for the study areas. In case the data are not stationary, the study finds first difference of the data sets to make it stationary to enhance accurate forecasting. Therefore, test regressien for the Phillips-Perron tasts is

$$\Delta y_t = \beta' D_t + \pi y_t - 1 + U_t \tag{8}$$

Where $\boldsymbol{U_t}$ is I(0) which at the difference level and may be heteroskedastic. Phillips-Perron Stationarity tests take the null statement hypothesis that y_t is trends stationary. As said earlier if y_t is not stationarity, the study takes firsts difference to enhance stationarity at a point.

In addition, the total return data (Appendix H) was again transformed into Total Return Index (TRI) (Appendix I) with aid of simple aggregate index formula 8, the TRI was employed to graphically make trend lines analysis of total return in this study.

$$P_{01} = \left(\frac{\sum P_1}{\sum P_0} + 1\right) * 100 \tag{9}$$

Where P_{01} = Total Return Index

$\sum P_1 =$ Current year total return

$\sum P_0 =$ Base year total return

100 = Base year index value

The TRI aided in graphically demonstrating trends from 2009 to 2019 because it is a statistical measure of change in representation group of individual data points, depicting at a glance percentage increase or decrease in total return and assisted in easing future prediction of trends. R^2 value was used to assess the reliability and accuracy of the prediction/ forecast. Afterward the total returns data was transformed to total returns index and the trend equation from the trend line was use to make total returns forecast for two consecutive years.

3.9.3 Compliance with urban land use planning and physical development control measures

Three-fold of data on extent of compliance to structural, neighbourhood and locations regulations were collected, to ensure that the population (residential properties) had equal chance of being selected. Both study locations were adopted as residential clusters in the various neighbourhoods as delineated by the planning authorities. Total enumeration survey of 1036 properties (Kaduna metropolis 590 & 446 in Kano metropolis) was conducted in the neighborhoods on residential properties with homogenous features under the collection of ESVs firms to achieve the require number of not less than 384 sample size (Kjercie & Morgan's 1970 "Appendix B") of residential properties.

Rijiyar-zaki 163 properties, Hotoro 104 properties, Badawa 155 properties and Naibawa/ Yar-akwa 114 properties neighbourhoods in Kano metropolis whilst in Kaduna metropolis: Barnawa 168 properties, Sabon-tasha 155 properties, Unguwan-rimi 104 properties and Malali 163 properties neighborhoods were selected.

This study premise on the Public Interest Theory on Regulation (PITR) in which Christensen (2010) opined that economic market is subject to fragility and have a propensity to operate inefficiently and to the benefit of persons concern while disregarding the prominence of the society. This results to obnoxious land use which affect quality of life in metropolitan areas. It becomes imperative for authorities to organise and monitor the heterogeneous nature of land in the property market. Applying PITR to this study illuminates why residential buildings in Northwest, Nigeria requires regulations which will guarantee compliance with recommended neighbourhood, structural and location planning standard. In this instance, the state carry-out enforcement by allotting and restricting right to improvement, and as such development control mediate in the growth of residential building development.

Descriptive statistics (percentage) was employed to make analysis of the data obtained from the field. Data were collected on extent of compliance to structural regulations attributes (Building height "> 5 m", Setback "front 4m, side 2m, and back 2m", Open-space "50%", Volume of development "50%", Pop density per room "1 person =12.08m2, 2=20.44msq =, 3=28.8msq,4= 37.16msq and 5=45.52msq", Building permit, Formalized title, Cross ventilation, Living room size "3m x 3m", Building coverage "high density neighbourhood is 60%, medium density 50% and low density neighbourhoods 40%", Dinning area "2.4 x 2.4", Bedroom size "3m x 3m", Kitchen, Kitchen size "1.8m x 1.8m", Fire extinguisher, Construction material "blocks or bricks", Toilet "use within", Bathroom size "1.5m x 1.5m", Colour code "Brown", House numbering "number plate to be placed on the wall", Garage, Store size "1.2m x 1.2m", Number of floors "3 floors", Source of water, Certificate of fitness for habitation, Numbers of trees "2 NO.", As built drawing).

Neighbourhood regulations attributes (distance to school, Street naming, Garbage receptacle, Waste disposal system "external wheeler bin /waste drum", Solid waste disposal "septic tank/sewerage", Right of way "road 10m", Change in use and habitation, Drainage system, Electricity, Security) and location regulations attributes (distance to park, distance to city centre, numbers of street tree, distance to garbage dump, distance to hospital of the residential property with the aid of Open Data tool Kit (ODK) application. The application was formatted in such a way that will elicit data on compliance to neighbourhood, structural and location regulations guiding residential properties development by direct measurement of regular variable of the buildings and their immediate outdoor space.

Data were collected from three-bedroom bungalow, two-bedroom bungalow and one-bedroom bungalow residential property which are under the portfolio of estate surveyor and valuation firms practicing and domiciled in the study area from August 2019 to January 2020. Research assistant mostly student on industrial attachment were taught on how to take the measurement and utilisation of a checklist on ODK application, these data were later downloaded to SPSS for further analysis. The downloaded data was put to cleaning and filtering test to check for incomplete filling of the forms. Six forms were deleted because they were below 85% filled, hence could not be used for analysis. The rule of thumb is that where the developer/owner adheres to each residential neighborhood, structural or location regulations, the building is scored 1(compliance) and otherwise 0 (non-compliance). Percentages and Tables were utilised to assess and report the level of compliance of a neighborhood or otherwise to a given ULUPRs. The inter-rate compliance to the regulation were classify as follows 0 - 49% = low compliance, 50 – 99 = High compliance and 100% = full compliance.

3.9.4 Effect of urban land use planning regulations on residential property investment returns

To establish the effect that urban land use planning regulations has on RPIRs in the study areas, four hypotheses were built and formulated from research question four, in order to achieve research objective four (Creswell, 2018).

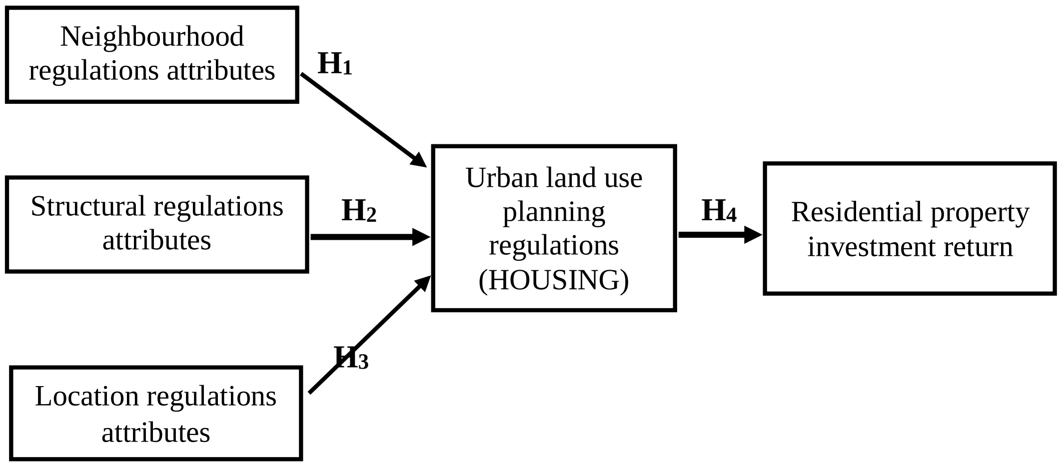

Figure 3.4 Hypothetical relationship between constructs

Data was obtained from estate surveyors and valuers, town planners (public and private practice) and other officials working under various urban land use planning and physical development unit. Before analysing the data, the data were put to some test to measure the internal consistency and reliability of all the constructs utilised in this research. Reliability test for whole constructs was conducted. This includes the Cronbach alpha measurement test, this test measures the scale reliability by specifying the average relationship among the whole of the items that make up the scale (Pallant, 2011). Others include the item-total statistics and inter-item correlation matrix. The descriptive statistic and reliability test for each of the 5 construct are presented forthwith.

3.9.4.1 Data reduction strategies: Exploratory factor analysis (EFA)

As this study progress towards application of CB-SEM for data analysis, EFA is utilised as a form of data reduction technique. Pallant (2011) opines that EFA is a technique that takes a huge set of variable and technically summarised the data using a smaller set of component or factors. Utilising EFA in this study is not aimed at telling whether one group of variable is significantly different from the other or to test hypothesis. More so, the study employed Principal Component Analysis (PCA) as the extraction method calibrated by Direct Oblimin using Kaiser's criterion. This widely acceptable technique is based on the premise that component with Eigen values greater than 1 are thus reserved for further analysis (Pallant, 2011). Equally, the EFA was focused on the Bartlett's test of sphericity, KMO measure of sampling adequacy, Eigenvalues and the total variance explained. Also, the factor loading of the items on individual component and their communalities added reliability to the analysis of the factor items.

3.9.4.2 *The EFA result/outcome*

The data obtained for this study were first evaluated to attest whether they are suitable for factor analysis. The evaluation was conducted with the aid of KMO measure of sampling adequacy and the Bartlett's test of sphericity. Table 3.4 present the details of KMO and Bartlett's test.

Table 3.4: KMO and Bartlett's test for effect size

Type of test	Coefficient
KMO measure of sampling Adequacy.	.779
Bartlett's Test of Sphericity Approx. Chi-Square	1717.295
df	2080
Sig.	.000

The Table 3.4 displays the KMO measure of sampling adequacy with coefficient value of 0.779, this value is greater than the benchmark of 0.6 (Tabachnick & Fidell, 2007). Also, the coefficient value of Bartletts's tests of sphericity is 1717.295 is significant at (P=0.001). The duo result suggested that the data is suitable to continue with data reduction techniques of EFA. Appendix J shows the result for total variance explained for the various items. Equally, utilising the Kaiser's criterion. It shows that the first eighteen component have Eigenvalues greater than 1. Thus, these component explain an aggregate of 67.18% of the variance in the items. More so, Appendix K shows the component matrix for the various items. The factor loading of individual items on the extracted 18 components are satisfied. In order words, all the items have loaded on all the eighteen components with the exception of one (1) item loading out of the total 18 components. The required threshold for the factor loading is 0.4, however this study adopted 0.3 in view of the fact that it is a newly developed scale (Pallant, 2011). Thus, higher factor loading is bolded for prominence (Appendix K).

Information on how much of the variance in individual item is explained (Appendix K). The variance in the whole items coefficient range from 0.505 to 0.844, significantly above the 0.3 benchmarked (Pallant, 2011). This connote that each of the items fit well with the other individual items in their component. Factor analysis as observed by Pallant (2011) is usually employed as a data exploration strategy, hence the judgement of the researcher determines interpretation and use which a study put it to rather than any statistical rule of thumb. Deducing from the extracted 18 components of the variables that explain 67.18% of the variance in the items, the factor loadings of the whole items on the eighteen (18) component are satisfactory. In addition to excellent communalities coefficient of the items, all the 60 items were reserved for advance analysis employing the Confirmatory Factor Analysis in Structural Equation Modelling (SEM).

3.9.4.3 Structural equation modelling

The Structural equation modelling (CB-SEM) was employed as the statistical analytical tool for this study because it has the capability to test formative constructs simultaneously in a model. It has the proficiency to analyse the correlational and causal relationship among multivariate data, in order words estimating their variance and covariance, running the Confirmatory Factor Analysis (CFA), testing hypothesis and modelling conventional regressions (Awang, 2012; Hair Jr *et al.*, 2014).

3.9.4.4 Measurement model assessment

3.9.4.5 Unidimensionality

Basically, unidimensionality is established in a study when the measuring items in a latent construct have acceptable factor loading for the individual latent construct. Awang (2012) opined that to achieve unidimensionality of a measurement model, items in the construct with a low factor loading should be deleted or set at free parameters. This should be achieved starting from the item with the lowest coefficient. In this study, items with low factor loading were deleted while some where set at free parameter. Since this is a newly developed item, the coefficient of 0.50 or more was considered adequate.

3.9.4.6 Formative measures validity

From a general perspective validity means the level to which a measure accurately signifies what it is expected to. Though Hair *et al*. (2013) believe validity mainly focused on how healthy the perception is defined by the measure. There are basically three types of validity that come to fore which are applicable to be executed on formative measures: construct validity, discriminate and convergent validity. These were achieved in this study as follow:

In this study convergent validity was assess by average variant extract (AVE) values, AVE signifies the degree the construct identifies the variance of it indicators, Awang (2012) posit that the AVE should be reported if it eventually exceeds 0.50. Also, CFA is also another indicator of convergent validity by using Covariance Based-Structural Equation Modelling (CB-SEM). Convergent validity was achieved when the factor loading on each construct exceed 0.70 on their construct more than the other construct (Hair Jr *et al*., 2014).

Construct validity was established when the fitness indexes of the construct reached the required benchmark of 0.90. The fitness index includes Discrepancy Chi Square (Chisq), Root Mean Square of Error Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit (AGFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI) and Chi Square/ Degree of Freedom (Chisq/df).

Also, the discriminate validity in this study refers to the degree each construct was distinctive from the other constructs, in order words free from redundant item in the model. In this study, the researcher identifies pair of redundants item because of its high modification indices with AMOS and the paired of redundant iterm were either deleted or sets has free parameter estimate depending on the intuition of the researcher. The model was rerun once more to achieve discriminate validity. Also the study followed Hair *et al*. (2014); Awang (2012) that discriminate validity is the correlation coefficient between the construct and also other constructs which should be lower than 0.85 (Figure 4.24).

3.9.4.7 Formative measures reliability

In this study reliability referred to the extent in which a sets of variables are consistently in what it intends to measure (Hair Jr *et al*., 2014; Awang, 2012). In simple terms it is the degree in which the latent variable replicates its true value with free error. In addition, to assess the formative construct Cronbach Alpha and composite reliability measures was extracted by Analysis of Moment Structure (AMOS). Pallant (2011); Awang (2012) and Hair Jr *et al*. (2014) postulate that measurement with Composite Reliability (CR) and Cronbach Alpha greater than 0.70 are considered very reliable. Similarly, Chin (1998) believes Composite Reliability is a more rigorous appraisal of reliability as compared to Cronbach Alpha, utilising the two reliability test gives this study resounding credibility.

a. Internal Reliability: the internal reliability for this study was established when the Cronbach's Alpha coefficient is more than 0.70 for all the 5 constructs. Each of the constructs Cronbach's Alpha coefficient is reported before conducting the CFA.
b. Composite Reliability: this refers to the composite reliability and internal consistency for the latent construct employed for this study. In other to achieve composite reliability for the present study, a value CR greater than 0.60 was established with the aid of the universal formula.
c. Average Variance Extract: this states the average percentage of variation as explained by measuring items for an individual construct. For this study the universal formula was utilised and the coefficient required to achieve AVE was not less than 0.50 for the construct.

From the foregoing the composite reliability and Cronbach Alpha of all formative construct are reported on each individual construct in Chapter four (4). From the results all composite reliability coefficient is above 0.685 and Cronbach Alpha ranges from 0.755 to 0.877. All formative items have achieved an acceptable benchmark of reliability.

Basically, utilising CB-SEM in the research, the various fitness indexes which reveals how fitted the model was to the data employed were achieved. This study follows Scholars like Hair *et al.* (2013); Holmes-Smith *et al*. (2006) that suggested the use of at least one fitness index from each category of model fit index, the index included Absolute fit (Chi/sq; RMSEA; GFI); Incremental fit (AGFI; CFI; TLI; NFI); and Parsimonious fit (Chisq/df) were subsequently achieved in the final structural model (Figure 4.23 and Figure 4.24).

3.9.4.8 *Assessment of normality of the final structural model*

The fundamental assumption underlying the use of CB-SEM for this study is in consonance with Arbuckle (2007) that the multivariate data should be normal. Although essential for assessment of multivariate normality is the requisite to check for univariate normality, as it is necessary, even though not a sufficient condition according to DeCarlo (1997) for multivariate normality. Multivariate kurtosis data are specifically challenging in SEM analysis (Byrne, 2010).

Empirical studies indicate that multivariate kurtosis sternly affect tests of variance and covariance while skewness tend to impact test of mean (DeCarlo, 1997). This study tends to utilising as it benchmarks the standardised kurtosis index of +/-3 as used in a normal distribution. Though computer program usually charges this scale by subtracting 3 from the β_2 coefficient (Byrne, 2010). Equally, rescale coefficient of β_2 equal or greater than 7 suggest a departure from the principle of multivariate normality in terms of multivariate kurtosis (Kline, 2005). Utilising this principle as a guide, no item was kurtosis (see Appendix O). The computed coefficient of the kurtosis and it critical ratio (CR) at the end of the table in (Appendix O) are the most important consideration. This study is in consonance with Bentler (2005) who opined that CR value greater than 5.00 reveals data that are non-normally distributed. The computed z-statistic of 4.011 establishes that the sample used in this study is normally distributed.

Equally, computed multivariate kurtosis for at least three constructs in a structural model should be lower than 50.0 to be guaranteed multivariate normality. Also the computed multivariate kurtosis coefficient for the final structural models was 48.707. This indicates that the assumption of multivariate normality was established. However, AMOS is fairly robust to skewness greater than 1.0 if the size is more than 200 sample size because of its

Maximum Likelihood Estimator (MLE) in this instance the sample size for this study was 389.

3.9.4.9 ***Developing predictive model on residential property investment returns***

Three set of respondent provided data for this study and they included Estate surveyors and valuers, town planners and other officials working under the agency in charge of urban development control and physical development. Rosen Hedonic (1974) model did not suggest a particular functional form of model for usage in the hedonic regression equation, in addition to the fact housing attributes do not have a constant marginal effect on rental or sales price (Donovan & Butry, 2011). This study employs multivariate regression analysis model equation in which RPIR is regressed against the ULUPRs with all variable represented linearly based on principle of the Ordinary Least Square regression model

$$Y_0 = \beta_1 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_n X_n + e_1 \qquad (9)$$

Therefore, the model selected for this study is

$$IR_{1,2,3} = \beta_1 + \beta_2 \, NRA + \beta_3 \, SRA + \beta_4 \, LRA + e_1 \qquad (10)$$

Where IR = the response variable (one-bedroom bungalow, two-bedroom and three-bedroom bungalow

investment returns as thee “Dependent Variable”)

β_2 ... β_4 = parameters to be estimated in the model “Slope”

β_1 = the intercept of the model

e_1 = the random error

NRA, SRA and LRA are the predictor variable

Note: NRA= Neighbourhood Regulations Attributes operationalised with 15 variables, SRA= Structural Regulations Attributes operationalised with 19 variables and LRA= Location Regulations Attributes operationalised with 6 variables while residential property investment return operationalised with 10 variables (three-bedroom bungalow, two-bedroom bungalow & three-bedroom bungalow properties). After the construct measure have been assess for unidimensionality, validity and reliability, 6 variables were advanced/fit to measure the scale of structural regulations attributes based on assessment and 9 variables was discarded.

Similarly, 6 variables were advanced/fit to measure the scale of neighbourhood regulations attributes based on assessment and 12 variables were discarded. More so, 5 variables were fit to measure the scale of location regulations attributes based on assessment and 1 variable was discarded. In addition, 5 variables were fit and accepted to measure the scale of urban lands use plannings regulation attributes based on assessment and 5 variables were discarded. Finally, 4 variables were fit to measure the scale of residential property investment returns attributes based on assessment and 6 variables was discarded. The next stage was to model these research constructs into structural model for analysis. The process started by specifying the schematic diagram from the exogenous constructs from left to the endogenous construct on the right (See Figure 3.4).

The fundamental issue for assessing the AMOS structural model were established: the significance of the path coefficients; the R^2 value in the standardized model estimate and the model fitness index. Lastly, after applying the Amos algorithm, estimate obtained represents the hypothesized relationships between the exogenous constructs and endogenous construct. These coefficient (depicted in %) suggested that the estimated change in the endogenous construct (ULUPRs) for a unit change in the predictor constructs.

3.9.6 Index adopted in determining effect size for the predictive model in the study

Effect size and practical significance are vital standards that give an in-depth interpretation of the meaning of study findings (Adams & Lawrence, 2015). In furtherance, the effect size informed the reader the strength or magnitude of the effect of a construct/variable (usually independent variable). The effect size used in this study is the percentage of variability on the dependent variable (RPIRs), which is explained by the relationship with independent variables (ULUPR). The effect size in this study is expressed as a percentage and range from 0.00 to 1.00. For instance, if this study effect size is 0.20, then 20% of the variability in the dependent variable (RPIRs) scores is explained by the independent variable (ULUPRs). Therefore, interpreting the effect size, between 1% to 4% is considered a small but rational effect, 9% to 25% is considered moderate effect, while 25% to 64% are viewed as large/strong effect (Adams & Lawrence 2015), this aided in evaluating the strength of relation for the study.

3.10 Summary of Chapter Three

This chapter provides an overview of the research design and paradigm of this study. As well as discussed the method employed in the field survey for collections of data during field work from the research population. The methods/procedures that were used by the researcher for validating and developing research measures are described concisely. The next chapter provides a detailed data presentation of results and discussions, data were presented in the form of Descriptive statistics, Principal component analysis, Percentages and Tables, the Analyze of data variances (ANOVA), Honesty significant difference Post-hoc test (HSD turkey), CB-SEM (AMOS) technique.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Factors Responsible for Variations in Residential Property Investment Returns in the Study

The results of factors that cause variation in RPIR were established from 15 items (Appendix D) of positive and negative scale. Principal component analysis was employed as an extraction technique to identify the factor that could best represent underlying relationships among variables responsible for variations in residential property investment returns in the study area. These are presented in descriptive statistics in Table 4.1.

Table 4.1 Descriptive statistics for factor causing variation in RPIR for the study

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
CVRPIR1	389	1	5	2.51	1.495
CVRPIR2	389	1	5	2.52	1.495
CVRPIR3	389	3	5	4.57	.564
CVRPIR4	389	2	5	4.31	.872
CVRPIR5	389	1	5	2.52	1.498
CVRPIR6	389	2	5	4.31	.771
CVRPIR7	389	2	5	4.16	.769
CVRPIR8	389	1	5	2.52	1.498
CVRPIR9	389	1	5	4.56	.549
CVRPIR10	389	2	5	4.16	.869
CVRPIR11	389	1	5	2.52	1.493
CVRPIR12	389	1	5	2.51	1.495
CVRPIR13	389	1	5	2.52	1.500
CVRPIR14	389	1	5	2.51	1.495
CVRPIR15	389	1	5	2.52	1.500
Valid N (listwise)	389				

Source: Analysis of survey data, (2019).

Table 4.1 Descriptive statistics shows at a glance the number of observations (389 sample size) and the Mean score which range from 2.51 to 4.57. The decision rule is that factors with the higher Mean scores suggests that they are factors to be considered affecting variations in RPIRs in the study area. Though assessment of Total variance explained will buttress the findings from the descriptive statistics.

In furtherance, Kaiser's criterion which is built on the preposition that only component that have eigenvalues of 1 or more should be retained. The Total Variance Explained Table 4.2 give more details.

Table 4.2 Total variance explained for factors responsible for variation in RPIR

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.198	27.985	27.985	4.198	27.985	27.985
2	2.148	14.321	42.307	2.148	14.321	42.307
3	1.420	9.470	51.776	1.420	9.470	51.776
4	1.361	9.073	60.850	1.361	9.073	60.850
5	1.119	7.462	68.312	1.119	7.462	68.312
6	1.001	6.241	74.553	1.001	6.241	74.553
7	.739	4.928	79.481			
8	.643	4.288	83.769			
9	.538	3.589	87.358			
10	.481	3.207	90.565			
11	.394	2.629	93.194			
12	.334	2.225	95.419			
13	.260	1.733	97.152			
14	.241	1.609	98.760			
15	.186	1.240	100.000			

Source: Analysis of survey data, (2019). Extraction Method: P.C.A

Table 4.2 suggests the presence of 6 component (factors) with eigenvalues above 1. These 6 component explained a summation of 74.55% of variance in the items. With factor one to six contributing 27.99%, 14.32%, 9.47%, 9.07%, 7.46% and 6.24% respectively. In furtherance, an evaluation of the Screeplot shows a slight break in the elbow after the sixth component (Appendix F). Using Catell's scree test as cited in Pallant (2011) this study retained these variables. Also the Component metrix (Appendix L) for the items shows the relationship between the 6 extracted component. All the items have loaded on all the 6 components with at least 1 item loading on 1 out of the 6 components. The threshold for the factor loadings is 0.4, (Pallant, 2011). Also, from Table 4.2 CVRP1 represent education qualification, CVRP2 represent supply of rental apartment, CVRP5 represent demand for rental apartment, CVRP8 represent location, CVRP11 represent rental mix, CVRP13 represent land use density design, CVRP14 represent government housing policy and CVRP15 represent cultural affiliation of inhabitant had factor loading less than 1. Consequently, the descriptive statistics (Table 4.1) and PCA (Table 4.2) suggests that CVRP1, CVRP2, CVRP5, CVRP8, CVRP11, CVRP12, CVRP13, CVRP14 and CVRP15 are having some eigenvalues below 1 while CVRP3 signifying income level, CVRP4 denoting population, CVRP6 representing vacancy rate, CVRP7 denoting structural facilities, CVRP9 signifying security of neighbourhood, CVRP10 signifying neighbourhood facilities are the variable left with factor loading above 1 and a good fitness index. Hence, these variables are the prime factors that cause variation in residential property investment returns in Northwest, Nigeria.

The findings of this study proved the significance of being abreast with the dynamics that cause variation in residential property investment returns in the urban property market. There is scanty empirical literature that confirms specifically the factors causing variation in residential property returns. However, the linkage between factors that may cause variation in rental or capital value was addressed (Wen & Goodman, 2013). The model employed in their research use four variable of urban households. But this study operationalised 15 variables which were sieve with the aid of PCA and the study was left with six variables which are fit/consistent. These variables that were unearthed have caused residential property investment returns to be volatile in different neighbourhoods in Kano and Kaduna metropolis.

The implication of this findings is that as the income level of the household head in a neighbourhood increases so is the amount of disposable income to cater for his housing needs and demand for choice location increases and likewise if the household head income level decrease resulting to variation in residential property investment return accruing to the investors across neighbourhoods in the study areas.

Populations in a neighbourhood is positively related to effective demand for housing in the neighbourhood most especially if the population is within the marital age bracket (child bearing). As the population increases so is the need for more housing and likewise if the population decrease the effective demand decreases resulting in variation in RPIRs across neighbourhoods in the study areas. Vacancy rate is associated with voids, hence, no income within the period in a neighbourhood. As vacancy rate increases or decreases so is the amount of investment returns to the investor at the end of a given period in a neighbourhood. This results in variation of residential property investment returns across the neighbourhoods.

Also, structural facilities available or otherwise determines to a large extent the intrinsic utility derivable and willingness to pay either for rent or capital value to an investor in a neighbourhood. Whenever the structural facility of the building appeals to the client he is willing to pay more to take possession of the property hence the amount of returns accruing to the investor across the neighbourhood. Neighbourhood facilities provide additional utility to the occupant of a property and save cost of transportation to clients hence client willingness to pay more to occupy a property in a neighbourhood, whereas areas with lesser neighbourhood facilities have lower effective demand from client and consequently lower rental and capital growth accruing to investors occasioning variation of RPIRs across neighbourhoods.

Similarly, security of lives and property also determine the premium a household is willing to pay when the level of crime is low in a neighbourhood clients are compelled to pay more to occupy and safeguard their lives and property as a result neighbourhood with better security have more effective demand hence higher rental and capital value while those with poor security have low demand for residential property hence lower rental and capital value occasioning variation in RPIRs across the study areas.

This study finding is in corroboration with the earlier literature of Quigley (1999) that unearth income level, vacancy rate as among the variable that account for about 10-40% of variation in housing price, also Wen and Goodman (2013) in china discovered per capital disposable income has a direct effect on housing price. Equally, Li *et, al*. (2018) in Shanghai also observed that area with metro-station has an increase in housing price premium.

Lastly, Jeon (2019) did a study and opined restrictive regulations on urban growth boundary (greenbelt land and zone) bring premium rent as compare to other types of land use with occasioning obnoxious land use. Though it can be recalled as said earlier that very limited analysis of factors that cause variation in residential property investment returns from literature except those relating to rental or housing prices. Therefore, the originality of unearthing the factors that cause variation in RPIR in Northwest, Nigeria will significantly enhance healthy investment decision making in the real estate market from the perspective of practice (old and potential investors) and policy implication (government agency).

4.2 Extent of Variation in Residential Property Investments Returns

To determine the extent of variation in residential property investment returns in Northwest, Nigeria. Total Returns (TR) was emphasised because it is the best measures of real estate investment returns performance (Mfam & Kalu, 2012; Dabara, 2014), in Nigeria context specifically Northwest, Nigeria. Descriptive statistics (tables, percentage and line graph) was used to analyse some of the data obtained from the field. Also, inferential statistics was further used (Analyze of Variancess "ANOVA" Table 4.3/Honesty significant differences post ad-hoc test 'HSDs' tukey) so as to assess for variation in total returns and also to determine the location where such variation exist.

While, the weighted means (weighteded mean score) was calculated and trends analysis of total returns index (Appendix I) was ploted for the study residential properties (bungalows) in Rijiyar-zaki, Hotoro/GRA, Badawa and Naibawa/Yar Akwa within Kano metropolis and also Barnawa, Sabon-tasha, Unguwan-rimi and Malali within Kaduna metropolis as shown in the Tables 4.4 and 4.5. Globally, real estate is postulated to display diverse risk and return characteristic as a result of peculiarities of the property type, its location and status in terms of development (Giliberto, 1993), thus, occasioning real estate volatility in different neighbourhood. It is obvious that isolating the trends of total return in real estate cycle for several years is fundamental for a healthy investment decision making.

Consequently, to measure the rate of volatility of total returns of three-bedroom (bungalow), two- bedroom (bungalow) and three-bedroom (bungalow) in the study areas is apt. Weighted average of the total return was computed and ranked to show neighbourhood with highest rate of total return for the 3 classes of residential properties.

In other words, areas with the highest weighted average returns among the properties have the highest rate of total return.

Equally, the standard deviation of total return and Coefficient of variation was calculated and ranked. This results fundamentally identified the risk involved in investing in any of the 3 classes of residential properties in the study areas, the rule of thumb is that areas with the lowest coefficient of variation indicates the neighbourhood that has the best potentials for real estate investment returns (lowest risk) among the three class of properties (see Table 4.4).

4.2.1 Variation of RPIRs in Kano metropolis

In this study, one-way ANOVA between group was performed to compare the effect of independent variable (property type) on dependent variable (total returns). In order words explore if there was a statistically significance difference in the Mean score of total return index for a three-bedrooms (bungalow), two-bedrooms (bungalow) and one-bedroom (bungalow) in Kano metropolis.

Table 4.3 present the result of ANOVA on total return s for the study categories of property in Kano metropolis. The result however revealed that there is no statistically significant difference between the Mean score of total return within group and between groups of one-bedroom bungalow in the study area. Since, the F- 1.047, p=value 0.13 is more than 0.05 level of significant. Based on the p=value the study fails to reject the null hypothesis (there is no statistically significant difference between the mean of total return for one-bedroom bungalow).

Also, the result reveals that there is no statistically significant difference between the Mean score of total return within group and between groups of two-bedrooms properties in the study area (F- 0.490, p=value 0.692). However, the result also shows a statistically significant difference between the Mean score of total return within group and between groups of three-bedrooms properties in the study area. (F=3.383, p=value 0.032).

These findings indicate that variance totals returns for a one-bedroom bungalow and. two-bedroom bungalow within the study locale are not statistically significantly different while the result (for three-bedroom bungalow) shows that there is a statistically significant difference across different location for three-bedroom bungalow. This variation across mean. between neighbourhood and acrossed property's type in the location might be associated. to location infrastructure, taste of the occupiers and investors comforts zone in terms of sense of investing in a property type.

Table 4.3: Analying of variance in total returns for Kano study areas

Type of. property	Source of. variation	Sum of square	df	Mean square	F	p-value
One bedroom room	Within. .groups	625.300	36	13.871		
	Between groups	206.677	3	25.559	1.047	.125
	Total	742.020	39			
Two bedroom flat	Within groups	360.656	36	11.596		
	Between groups	19.796	3	6.265	.490	.692
	Total	579.252	39			
Three bedroom flat	Within groups	565.215	36	16.700		
	Between groups	144.529	3	52.543	3.283	.032
	Total	619.844	39			

Source: Analysis of survey data (2019) calculated from Appendix H

Basically, the post-hoct test (HSD tukeys) allow for evaluation of insignificant difference in TRs in multiple compare Table 2 (Appendix M). It demonstrates where the significant difference in total return truly existed within the study locales. The multiple comparison

Table. (Appendix M) shows that for a one-bedroom bungalow there is significant difference between Mean of total return in Naibawa and Hotoro (Mean is 3.86 at P-value, 0.046), Naibawa and Badawa (Mean is 4.05900 at P-value 0.04) while Naibawa and Rijiyar-Zaki have no. significant differences in total returns (Mean=3.21900 at P-value 0.090). For two-bedroom bungalow, significant difference does exist in total returns among this type of property in the various neighbourhoods. Similarly, for three-bedroom bungalow, significant difference exists between the properties in Naibawa/Yar-Akwa and Hotoro (Mean is 4.08001* at P-value 0.0380), Naibawa/Yar-Akwa and Badawa (Mean=7.2950 at P-value 0.0080). It can be deduced that this significant difference in Mean of isolated residential properties might be attributed to locational infrastructure, taste of the occupiers and investors comforts zone in terms of sense of investing in a property type. These findings are in line with the findings in a study in Abuja, Nigeria (Wahab *et al*., 2017).

The result. in Table 4.4 illustrate the descriptive statistics of the total returns of rented properties in Rijiyar-zaki, Hotoro/ GRAs, Badawa and Naibawa in Kano metropolis for a period of 10 years. The Table shows one-bedroom bungalow was observed to have the highest level of total returns (weighted return=14.43%) in Naibawa/Yar-Akwa neighbourhoods and a corresponding asset risk (SD=3.76%) and COV (26.05%). Consequently, 26.05% of risk was taken for every unit of total return earned, whilst the least TRs for the equivelent category of property was in Rijiyars-Zaki (weighted return=10.40%) with a corresponding asset risk (SD=5.36%) and COV (51.54%). In order words, for every unit of total return earned 51.54% of risk was taken.

Table 4.4: Summary statistics of asset weighted and risk return of the property types in Kano metropolis from 2010-2019

Returns/property	Min.	Max,	Weighted Return	Rank (Weighted)	Std. Deviation	Coefficient of variation	Ranked (COV)
TR one-bedroom	7.71	21.08	14.4460	1st	3.7627	0.2605	1st
TR 2Bedroom	5.19	11.81	8.3540	4th	2.0877	0.2499	1st
TR 3Bedroom	4.85	14.98	8.1130	3rd	3.2255	0.3976	3rd
ATR N/Yar-Akwa			30.9130	2nd	7.6320	0.2469	2nd
TR one-bedroom	5.53	19.12	10.5960	3rd	3.9162	0.3696	3rd
TR 2Bedroom	5.95	15.55	9.3970	3rd	3.1610	0.3364	2nd
TR 3Bedroom	4.90	27.93	12.1830	1st	6.1952	0.5085	4th
ATR Hotoro /GRA			32.1760	1st	11.9070	0.3701	4th
TR one-bedroom	5.42	20.97	10.3970	4th	5.3581	0.5154	4th
TR 2Bedroom	5.99	18.82	10.2420	1st	4.7542	0.4642	4th
TR 3Bedroom	6.56	14.51	9.9300	2nd	2.9998	0.3020	1st
ATR Rijiyar-zaki			30.5690	3rd	10.0705	0.3294	3rd
TR one-bedroom	5.99	17.08	11.2370	2nd	3.3584	0.2989	2nd
TR 2Bedroom	4.29	15.60	9.6790	2nd	3.7724	0.3898	3rd
TR 3Bedroom	4.44	11.18	6.9880	4th	2.2403	0.3206	2nd
ATR Badawa			27.9040	4th	5.8372	0.2092	1st

Source: Analysis of survey data, (2019) Calculated from Appendix H
***ATR= Aggregate Total Return,

For 2 Bedroom bungalow, the result also shows that Rijiyar-zaki neighbourhood was generating the highest total return (weighted return=10.24%), having asset risk (SD=4.75%) and COV (46.42%). Similarly, Naibawa created the smallest rate of total return (weighted return=8.4%), a low risk (SD=2.8%) and COV (25%). Infact, relative to 3-Bedroom bungalow, the result indicates that hotoro neighbourhood produced the highest total return (weighted return=12%) and a proportionate highest 4th place asset risk (SD=6.20%) and COV (50.85%) equally, Badawa neighbourhood generated the least total return (weighted return=6.99%), a proportionate asset risk (SD=2.24%) and COV (32.06%).

Also, based on the aggregate weighted total return coefficient for all the property in each location, the Table reveals that Hotoro neighbourhood produced the highest total return (weighted return=32.1%), asset risk (SD=11.91%) and COV (37.01%) while Badawa generated the least in aggregate total return (weighted return=27.90%), low asset risk (SD=5.84%) and COV (20.92%). The Table 4.5 illustrates the risk profile of total returns in the study areas.

Table 4.5: Comparative Analysis of Risks profile of total return of Rental property in Kano metropolis (2010-2019)

Neighbourhoods/	Property type	Coefficient of variation	Rank (COV)
Naibawa/Yar-Akwa	one-bedroom TR	0.2605	1st
Hotoro GRA	one-bedroom TR	0.3696	3rd
Rijiyar-zaki	one-bedroom TR	0.5154	4th
Badawa	one-bedroom TR	0.2989	2nd
Naibawa /Yar-Akwa	2Bedroom TR	0.2499	1st
Hotoro GRA	2Bedroom TR	0.3364	2nd
Rijiyar-zaki	2Bedroom TR	0.4642	4th
Badawa	2Bedroom TR	0.3898	3rd
Naibawa/Yar-Akwa	3Bedroom TR	0.3696	3rd
Hotoro GRA	3Bedroom TR	0.5085	4th
Rijiyar-Zaki	3Bedroom TR	0.3020	1st
Badawa	3Bedroom TR	0.3206	2nd
ATR Naibawa/Yar-Akwa		0.2469	2nd
ATR Hotoro/GRA		0.3701	4th
ATR Rijiyar-zaki		0.3294	3rd
ATR Badawa		0.2092	1st

Source: Analysis of survey data, (2019). ***ATR= Aggregate Total Return

Table 4.5 reveals the Compared Analysis of actually risk element of the asset in Rijiyar-zaki, Hotoro/GRA, Badawa and Naibawa/Yar-Akwa, in Kano metropolis from the lowest to the highest on property types. The analysed result shows that total returns for a one-bedroom bungalow in Naibawa neighbourhood had the least rate risk-return profile (COV=26.05%) and highest in Rijiyar-zaki (COV=51.54%). Similarly, for two Bedroom property, Naibawa/Yar-Akwa neighbourhood had the least risk return profile 0.2499 (COV=24.99%) and highest at Rijiyar-zaki (COV=46.42%). From the Table three-Bedroom property were observed to have had the least risk-return profile (30.20%) at Rijiyar-zaki and a peak risk-return value (50.85%) at Hotoro/GRA neighbourhood.

More so, the aggregate risk return profile for each of the four locations was calculated and was observed that the total return for Badawa has the least aggregate risk-return profile (COV=20.92%) and highest risk-return profile at Hotoro/GRA (COV=37.01%) respectively.

The transformed data for this study was tested for stationarity features which is the Phillips-Perron test, to test the Null hypothesis of a unit root change (stationary features of the data sets) to accept or reject it at 10%, 5% and 1% significant level for total returns. The Table 4.6 present the Phillips-Perron test for all the data set.

Table 4.6: Phillips-Perron Stationarity test for all neighbourhoods in Kano

Location		Test Statistics	1% Critecal	5% Critical Values	10% Critical Values	MacKinnon approximates p-values for Z(t)
Naibawa	Z(rho)	-4.209	-17.2	12.5	-10.2	0.5573
Yar-Akwa	Z(t)	-1.452	5.75	-3	-2.63	
Hotoro/GRA	Z(rho)	-8.518	-17.2	-12.5	-10.2	0.0000
	Z(t)	-4.827	-3.75	-3	-2.63	
Rijiyar-zaki	Z(rho)	-7.708	-17.2	-12.5	-10.2	0.0430
	Z(t)	-2.92	-3.75	-3	-2.63	
Badawa	z(iho)	-.10.101	-17.2	-12.5	-10.2	0.0099
	Z(t)	-3.432	-3.75	-3	-2.63	

Source: Analysis of survey data, (2019)

Test results presented in Table 4.6 shows that this research will accept the statement of null hypothesis, in order words, the computed total returns trend data from Naibawa have unit root problem (not stationary). That is, the p-value = 0.5573 is greater than the conventional significance levels α = 0.05 and 0.01. Thus, the study concluded on the basis of the p-value that the total return from Naibawa/Yar-Akwa is not stationary over the period studied. Hence, we take difference of the data (total return from Naibawa/Yar-akwa) in order to make the data stationary for accuracy of total return prediction in Naibawa/Yar-akwa using the trend equation of Total Return Index (TRI).

For Hotoro/GRA, the studys reject outrightly the null hypothesis, the total returns trend data have no unit root problem (stationary). That is, the p-value = 0.0000 is less than the conventional significance levels α = 0.05 and 0.01. Thus, the study concluded on the basis of the p-value that the total return from Hotoro/GRA is stationary over the period studied. Hence, the study can make prediction of total return for Hotoro/GRA using the trend equation of total return index.

Similarly, for Rijiyar-zaki, data indicates thet the study outrightly reject the null statement hypothesis. that is. the total returns data contain no unit root problem (stationary). Hence, the p-value = 0.0430 was less than the accepted significance levels α = 0.05. Thus, the study concluded on the base of the p-value that the total returns from Rijiyar-zaki was stationary over the period studied. Hence, the study can make prediction of total returns in Rijiyar-zaki using the trend equation of total return index.

Equally, the test results in Table 4.6 suggests these study will reject the null statement hypothesis in fact total return from Badawa contain no unit root problem (stationary). In order words, the p-value = 0.0099 was less than the conventional significance levels α = 0.05 and 0.01. Thus the study concluded on the basis of the p-value that the total returns from Badawa was stationary over the period studied. Hence, the study can make forecast of total return from Badawa using the trend equation of total return index.

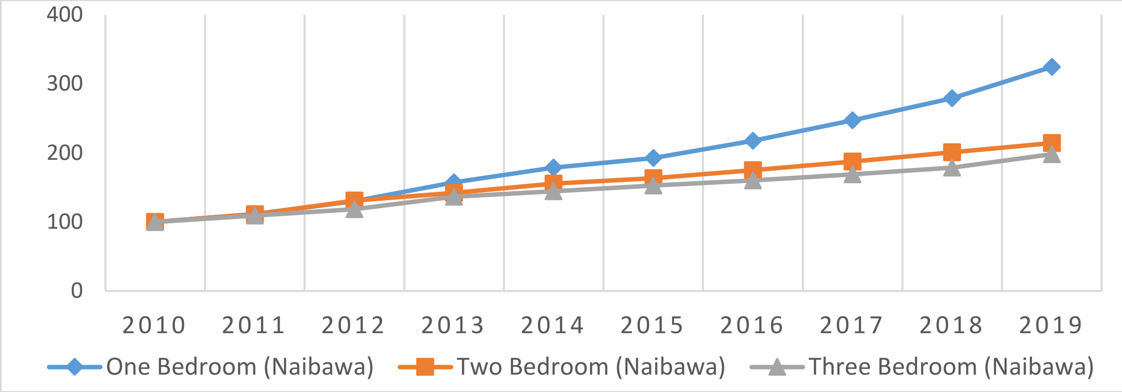

Figure 4.1: Trend analysis showing total return index for Naibawa/Yar-akwa, Kano metropolisfor one-bedroom, two-bedroom and three-bedrooms bungalow

The result from Figure 4.1 shows the Trend lines of total return index in Naibawa/Yar-akwa, for one-bedroom bungalow, two-bedroom bungalow and three bedrooms' bungalow. The graph suggests that the total return index was volatile for all the properties under study with minimal inflow over the years though not negative rate of returns. Deduction from the Figure suggests that the boom period for total return in the study areas was for a parlour and bedroom around 2012 continually.

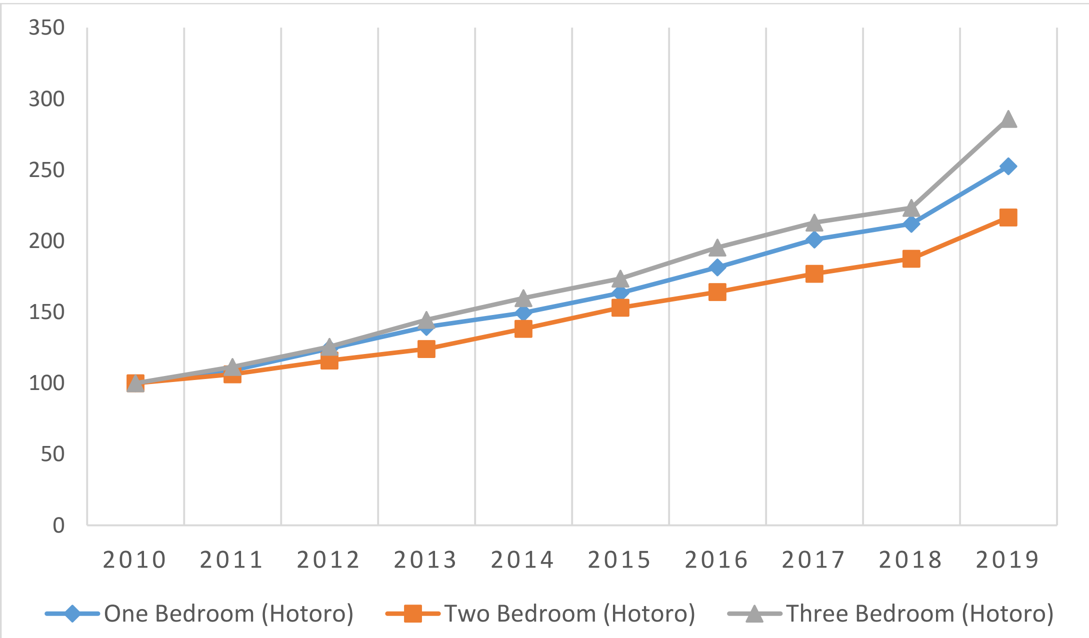

Figure 4.2 Trend analysis showing total return index for Hotoro/GRA, Kano metropolis for a one-bedroom, two-bedroom and three-bedroom bungalow

Trend lines in Figure 4.2 shows the Trend lines of total return index for Hotoro/GRA, for a one-bedroom bungalow, two-bedroom bungalow and three-bedrooms' bungalow. Deduction. from the graphs indicates that' the total returns were unstable for all the property under study, having a low trend with insignificant inflow over the years though a positive return profile. Inference from the Figure suggests that the highest peak period for total returns in the study area was for three-bedroom residential property around 2010 to 2019.

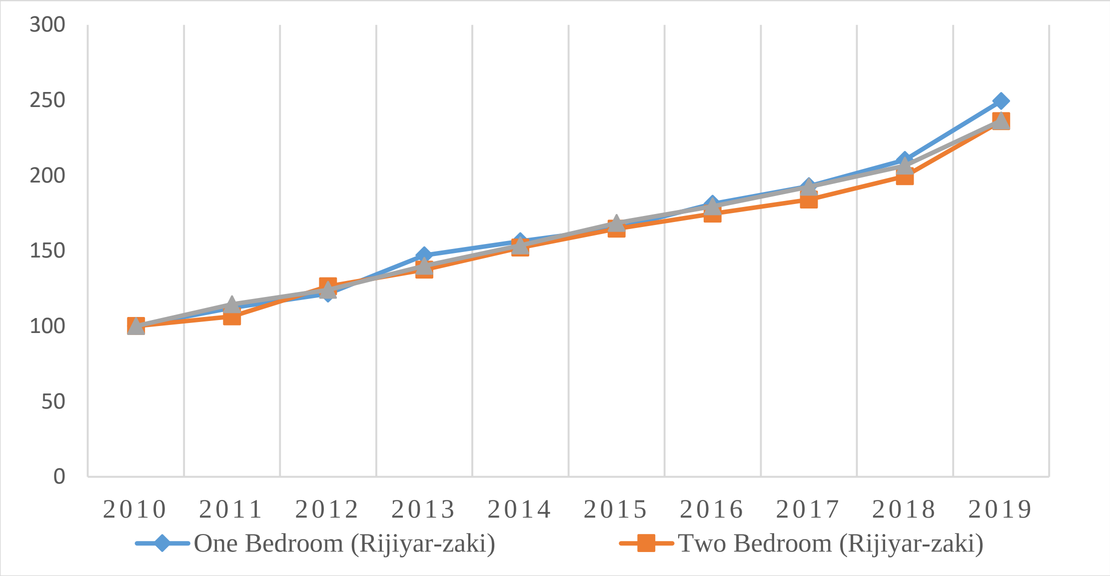

Figure 4.3 Trend analysis showing total return index for Rijiyar-zaki, Kano metropolis for one-bedroom, two-bedroom and three-bedrooms bungalow

The result from Figure 4.3 present the graphical trend lines of total return index for residential properties in Rijiyar/zaki. Evidence from the graph shows that the total return index in the study area was unstable displaying a marginal inflow over the years though not negative rate of returns. Deduction from the Figure shows that the highest peak period in total returns was in 2014 for a one-bedroom in the study areas.

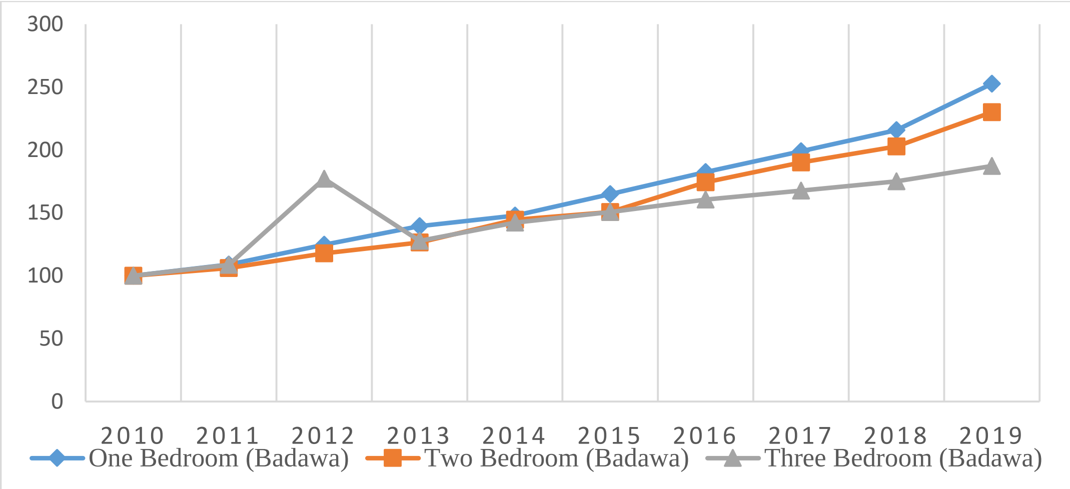

Figure 4.4: Trend analysis showing total return index of Badawa, Kano metropolis for a one-bedroom, two-bedroom bungalow and three-bedroom bungalow

The result in Figure 4.4 shows the trevd graph of total returns of properties (residential) in Badawa, Kano metropolis on one-bedroom, two-bedroom and three-bedrooms bungalow. From the trend lines it can be observed that total returns had been unstable for all the class of residential properties in the study area, having an undulating trend with uneven inflow over the years though not negative. Inference from the Figure suggests that total returns had it highest peak period in 2011 for a one-bedroom residential properties.

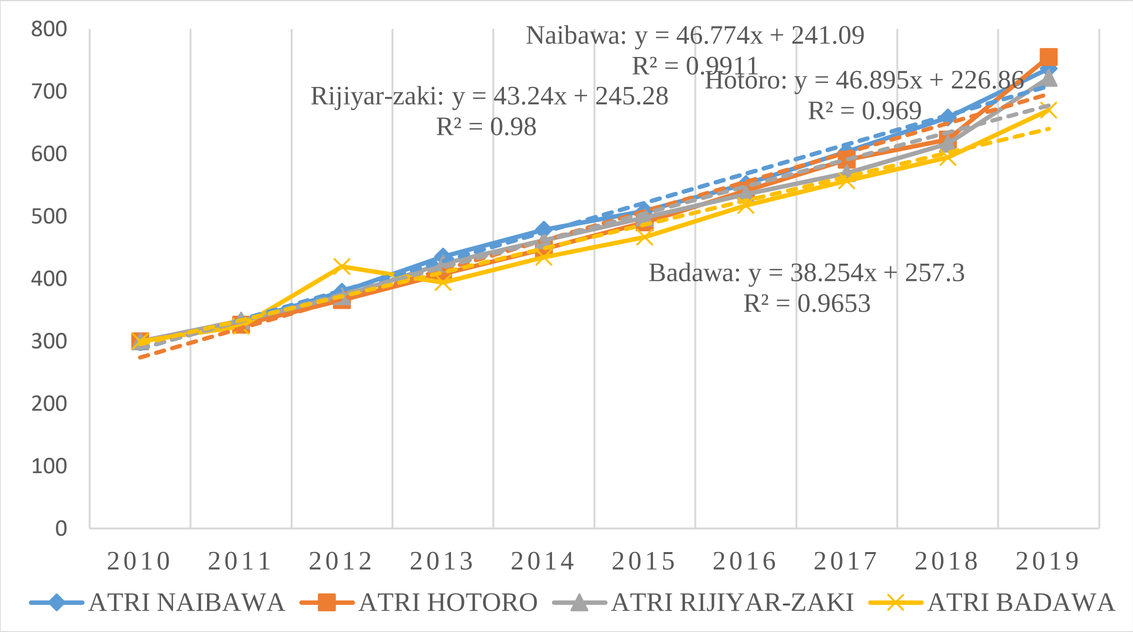

Figure 4.5: Trend analysis showing total return index in Rijiyar-zaki, Hotoro, Badawa Naibawa/Yar-Akwa, in Kano metropolis

The result in the graph from Figure 4.5 reveals the trend lines of total return index of residential properties in Rijiyar-zaki, Hotoro, Badawa Naibawa/Yar-Akwa in Kano metropolis for a one-bedroom bungalow, two-bedrooms bungalow and three-bedroom bungalow. Looking at the graph from trend line perspective the study noticed that aggregate total return index have consistently increase over the years in each of the study neighbourhood. This is in line with income from other factors of production (interest rate, wages and profit for the entrepreneur). Establishing the fact that as income from other factors of production increases, total return from land also increase with a positive return profile. The trend equations of total return index for different locations is presented in the graph with the R^2 values indicating the predictive ability and reliability of the model. Though the accepted rule from literature is that the likely sway of the R^2 value to 1 the healthier the rate of predictability. Hence, the predictive ability of the model is in good fits (99%).

4.2.1.1 *Trends equations of the study neighbourhoods and predictions for 2020 to 2022 using the trends equation of total return index for Kano metropolis*

i. Naibawa /Yar-Akwa total return index trend equation= 46.774x + 241.09.

Making forecast for 2020, the trend equation for total return index in Naibawa /Yar-Akwa is = [(46.774(11) + 241.09) ÷ 100] will be 7.55604 i.e. 7.56%. Similarly, for 2021 the trend equation will be = [(46.774(12) + 241.09) ÷ 100] which will give a coefficient of 8.02378 i.e. 8.02%. Also, for 2022 the trend equation will be = [(46.774(13) + 241.09) ÷ 100] which will give a value of 8.49152 i.e. 8.49%. The coefficient obtained suggests that total return index from Naibawa/Yar-Akwa will marginally rise in 2022 in comparison with total return index from 2019.

ii. Hotoro/GRA total return index trend equation = 46.895x + 226.86

Making forecast on total return index employing the trend equation for Hotoro/GRA = [(46.895(11) + 226.86) ÷ 100] and the value of the coefficient equals 7.42705 (7.43%). Again, for 2021 it will be = [(46.895(12) + 226.86) ÷ 100] the value of the coefficient will be 7.896 (7.90%). Similarly, for 2022 the coefficient will be [(46.895(13) + 226.86) ÷ 100] the coefficient of total return index is 8.36495 i.e. 8.36%. It was also observed that TRI from Hotoro/GRA will also have a slight rise as compared to total return index in 2019.

iii. Rijiyar-zaki total return index trend equation = -43.24x + 245.28

Prediction for 2020 = trend equation for total return index for Rijiyar-zaki = [(43.24(11) + 245.28) ÷ 100] and the value of the coefficient equal 7.2092 (7.21%). In addition, 2021 forecast will be [(43.24(12) + 245.28) ÷ 100] the value of the coefficient will be 7.6416 (7.64%). Also, for 2022 forecast will be [(43.24(13) + 245.28) ÷ 100] the value of total return index is 8.074 (8.07). This suggests that there will be a rise in residential property investment returns in comparison to 2019.

iv. Badawa total return index trend equation = 38.254x + 257.3

The trend equation for Badawa = [(38.254(11) + 257.3) ÷ 100] hence the forecast coefficient is 6.78094 i.e. 6.78%. Whilst for 2021 the trend equation is = [(38.254(12) + 257.3) ÷ 100] and the forecasted total return index will be 7.16348 i.e. 7.16%. In addition, for 2022 the trend equation is [(38.254(13) + 257.3) ÷ 100] the coefficient will therefore be 7.54602 i.e. 7.54%. It indicates a slight increase in the investment total return index in all the neighbourhoods under this study.

4.2.2 Variation of residential property investment returns in Kaduna metropolis

Also, one-way ANOVA between group was performed to compare the effect of independent variable on dependent variable. In order words, to explore if there was a statistically significance dissimilarity in the Mean score of total returns (TRs) for a one-bedroom bungalow, two and three-bedrooms bungalows (residential property) in Kaduna metropolis. In this study, the dependent variable is value of total return while the independent variable is the property type.

Table 4.7 presents the result of ANOVA on total returns for the 3 category of real property in Kaduna metropolis. The result revealed that these is no statistically significants differences between the Mean score of total return within group and between groups of a one- bedroom bungalow in the study area. Since, the F- 0.441, p=value 0.725 is greater than 0.05 level of significant. Based on the p=value the study fails to reject the null hypothesis (there is no statistically significant differences between the mean of total return for one- bedroom).

Also, the Table reveals that there is no statistical significants difference between the Mean score of total return of within group and between groups of two-bedrooms properties in the study area. Since, F- 1.063, p=value 0.377 is greater than 0.05 level of significant. Based on the p=value the study fails to rejects the null hypotheses (there is no statistically significant difference between the mean of total return for two-bedroom).

Equally, the Table also reveals that there is no statistically significant difference between the Mean score of total return within group and between groups of three-bedrooms properties in the study area. Since, F=1.593, p=value 0.208 is greater than 0.05 level of significant. Based on the p=value the study fails to rejects the null hypothesis (there is no statistically significant difference between the mean of total return for three-bedroom).

This point to the fact that variance in the total returns between the study locations in the study metropolitan are actually statistical different. This observed insignificant difference in Means in this locations might be connected to location features (structural attribute, location feature & neighbourhood characteristics).

Table 4.7: Analysis of variance on total returns in Kaduna study areas

Types of/ property	Source of variation	Sum of square	df	Means square	F	P-value
One- room (bungalow)	Within groups	760.465	36	21.124		
	Between groups	27.949	3	9.316	0.441	0.725
	Total	788.414	39			
Two-bedroom	Within group	634.495	36	17.625		
	Between groups	56.215	3	18738	1.063	0.377
	Total	710.71	39			
Three - bedroom	Within group	726.70	36	16.635		
	Between group	94.513	3	28.171	1.593	0.208
	Total	731.173	39			

Source: Analysis of survey data (2019) calculated from Appendix H

These insignificant differences in Table 4.7 is shown and could be assess in (posted-hoc test) "HSD tukey" (Appendix L). The result demonstrated where the significant difference of the data computed (Appendix M) really occurred with these study domains. The multiple comparism Table showed that only, three-bedroom bungalow in Malali and Ungawan-rimi neighbourhood had a significant difference (P-value 0.043), significant difference in aspect of total returns among other class of property was not attain, this could be associated with locational infrastructure, taste of the occupiers and investors comforts zone in terms of sense of investing in a property type.

Investing in residential real estate is associated with multiple risk complexity which include value volatility and negative performance among others (Mfam & Kalu, 2012; Dabara, 2014). Hence, the justification for studying the returns-risks performances of residentially real, estate properties in the study areas. The total return- risks perfarmance of residentail real estate in Barnawa and Sabon-tasha, Unguwan-rimi, Malali, are discussed in Table 4.8.

Table 4.8: Summary statistics of asset weighted and risk return of the property type in Kaduna metropolis from 2010-2019

TRs & Property Type	Min.	Max,	Weight Returns	Ranks (Weighted)	Std Deviation	Coefficient of variation	Rank COV
One- bedroom	5.92	18.93	10.4570	4th	4.2335	0.4048	2nd
2Bedroom	6.01	16.19	9.6210	3rd	3.2314	0.3359	3rd
3Bedroom	5.22	24.71	11.8820	1st	5.1921	0.4370	4th
ATR U/Rimi			31.9600	2nd	10.9464	0.3425	3rd
One-bedroom	4.49	20.13	11.4620	2nd	5.0410	0.4398	4th
2Bedroom	5.52	14.30	9.7190	2nd	2.9814	0.3068	2nd
3Bedroom	4.34	15.91	7.9300	4th	3.7112	0.4680	2nd
ATR Malali		20.13	29.1110	4th	9.7093	0.3335	1st
One-bedroom	6.55	20.66	12.6750	1st	4.5604	0.3598	1st
2Bedroom	2.37	23.26	12.3900	1st	6.8069	0.5494	4th
3Bedroom	6.14	19.32	10.8240	2nd	4.5678	0.4220	3rd
ATR Barnawa			35.8890	1st	12.1476	0.3385	2nd
One-bedroom	5.99	5.99	10.8850	3rd	4.5092	0.4143	3rd
2Bedroom	6.31	6.31	9.4430	4th	2.3662	0.2506	1st
3Bedroom	5.92	5.92	9.8920	3rd	3.0245	0.3058	1st
ATR Sabon-tasha			30.2200	3rd	10.5535	0.3492	4nd

Source: Analysis of survey data (2019) calculated from Appendix I
***A.T. R = Aggregated Total Returns

The outcome from Table 4.8. Present the descriptive statistics of the Total Returns (TRs) in Barnawa and Sabon-tasha, Unguwan-rimi, Malali, neighbourhood in Kaduna metropolis from 2010-2019. The Table shows that for one-bedroom bungalow, it generated the maximum level of total return (weighted return = 12.68%) in Barnawa neighbourhoods with a corresponding asset risk (SD = 4.56%) and COV (risk return profile = 35.98%), while the least total return (weighted return = 10.46%) was at Unguwan-rimi with a equally asset risk (SD = 4.23%) and COV (risk return ratio = 40.48%). In order words, 40.48% risk was taking for every unit of total return earned.

For two bedrooms, the Table shows Barnawa neighbourhood generated the highest total return (weighted return = 12.39%) with upmost level of asset risk at (SD=6.81%) and COV (risk- return ratio = 54.94), equally Sabon-tasha had the least rate of returns (weighted return = 9.44%) and a low asset risk (SD = 2.37%) and COV (risk return ratio = 25.06). In order words, 25.06% risk was taking for every unit of total return earned.

Than, for 3 bedrooms, the results show that Unguwan-rimi neighbourhood generate these highest total returns (weighted return = 11.9%) and an equivalent peak asset risk-return (SD = 5.19%) and COV (risk return ratio = 43.70%). While Malali had a least total return (weighted return = 7.9%) with a fair asset risk (SD = 3.7%) and COV (risk return profile = 46.80%). That is 46.80% risk was taking for every unit of total return earned.

Similarly, from the Table aggregate total return is highest (weighted return = 35.89%) at Barnawa neighbourhood (ranked first) with a proportionate asset risk (SD=12.15%) and COV (risk return ratio = 33.85%) while Malali had the least aggregate total return s value (weighted return = 29%) and, also a second place level asset risk (SD = 9.7%) and COV (Risk return ratio = 33.35%). The Table 4.9 presents a comparative analysis of the risk profile of total return in Kaduna metropolis.

Table 4.9: Comparative analysis of risks profile on total return s of residential properties in Kaduna State from 2010-2019

Location	Type of property	Coefficient of Variation	Rank (COV)
Unguwan Rimi	One-bedroom TR	0.4048	2nd
Malali	One-bedroom TR	0.4398	3rd
Barnawa	One-bedroom TR	0.3598	1st
Sabon-tasha	One-bedroom TR	0.4143	3rd
Unguwan Rimi	2 bedroom TR	0.3359	3rd
Malali	2 bedroom TR	0.3068	2nd
Barnawa	2 bedroom TR	0.5494	4th
Sabon Tasha	2 bedroom TR	0.2506	1st
Unguwan Rimi	3 bedroom TR	0.4398	3rd
Malali	3 bedroom State TR	0.4680	4th
Barnawa	3 bedroom State TR	0.4220	2nd
Sabon Tasha	3 bedroom State TR	0.3058	1st
ATR U/Rimi		0.3425	3rd
ATR Malali		0.3335	1st
ATR Barnawa		0.3385	2nd
ATR Sabon-tasha		0.3492	4th

Source: Extracted from Table 4.8

The result from Table 4.9 shows the Comparatives Analysis, of risks-reward factors of TRs of residentials properties investment in Barnawa and Sabon-tasha, Unguwan-rimi and Malali from the least to the highest. From the Table 4.9, deductions show that total return for one-bedroom bungalow in Barnawa neighbourhood had the smallest risk return ratio (35.98%) and highest in Malali (43.98%). Also, for two-bedroom bungalow, Sabon-tasha neighbourhood had the least risk return ratio (25.06%) and the highest value at Barnawa (54.95%). And also, for three-bedroom bungalow the study reveals that Sabon-tasha had a least risk-return ratio (30.58%) while Malali neighbourhood had an uttermost risk-return profile (46.80%). More so, aggregate risk-return factor on total returns for the locations was calculated and the study observed that total return for Malali had the smallest risk-return factor (33.85%) and Highest at Sabon-tasha (34.92%) respectively.

The study afterward tested the transformed data (Total returns data) for stationarity features (Phillips-Perron test) to test the Null hypothesis, if the data used contain a unit roots problems (i.e stationary character of the data sets) to accept or reject the Null statement hypothesis at 10%, 5% and 1% significance level on total returns.

Table 4.10: Phillips-Perron Stationarity test for all neighbourhood Kaduna State

locations		Test Statistics	1% Critical	5% Critical Value	10% Critical Value	Mac,Kinnon appro P-value for Z(t)
Unguwan-rimi	Z(rho)	-8.843	-17.2	-12.5	-10.2	0.0004
	Z(t)	-4.32	-3.8	-3	-2.6	
Malali	Z(rho)	-10.441	-17.2	-12.5	-10.2	0.0064
	Z(t)	-3.568	-3.75	-3	-2.63	
Barnawa	Z(rho)	-11.251	-17.2	-12.5	-10.2	0.0692
	Z(t)	-2.729	-3.75	-3	-2.63	
Sabon-tasha	Z(rho)	-3.251	-17.2	-12.15	-10.02	0.5753
	Z(t)	-1.414	-3.75	-3	-2.63	

Source: Analysis of survey data, (2019)

Test results from the Table 4.10 suggest that these studys should reject the null statement hypothesis, in simpler form, the calculated total returns trend data from Unguwan-rimi had no unit root (is stationary). With, a p-value = 0.0004 this was less than the acceptable significance levels $\alpha = 0.05$ and 0.01. Thus, the study concluded on the basis of the p-value that the total return from Unguwan-rimi was stationary over the period studied. Hence, the study can make prediction of total return for Unguwan-rimi using the trend equation of total return index.

For Malali, the result suggests the need for the study to reject the null statement hypothesis, that is, total return contains no unit root problem (is stationary). With, a p-value = 0.0064 less than the conventional significance levels $\alpha = 0.05$ and 0.01. Thus, the study concluded on the basis of the p-value that the total return from Malali was stationary over the period studied. Hence, the study can make forecast of total return for Malali using the trend equation of total return index.

Test results in the Table 4.8. shows that the study will accept the null statement hypothesis, in simple terms, the total returns from Barnawa did not achieve stationary. That is, the p-value = 0.0692 is greater than the conventional significance levels α = 0.05 and 0.01. Thus, the study concluded on the basis of the p-value that the total returns from Barnawa is not stationary over the period studied. Hence, the study will take a first time variance of the data to establish stationarity of the data before making prediction of total returns for Barnawa using the trend equation of total return index.

Equally, the test results for Sabon-tasha, suggest that the study will accept the null statement hypothesis, revealing data for total returns did not meet stationarity cateria. That is, the p-value = 0.5753 is greater than the conventional significance levels α = 0.05 and 0.01. Thus the study concluded on the basis of the p-value that the total returns from Sabon-tasha is not stationary over the period studied. Hence, the study will take an initial time differences of the data. to establish the stationarity before making prediction of total returns for Sabon-tasha neighbourhoods using the trend equation of total return index.

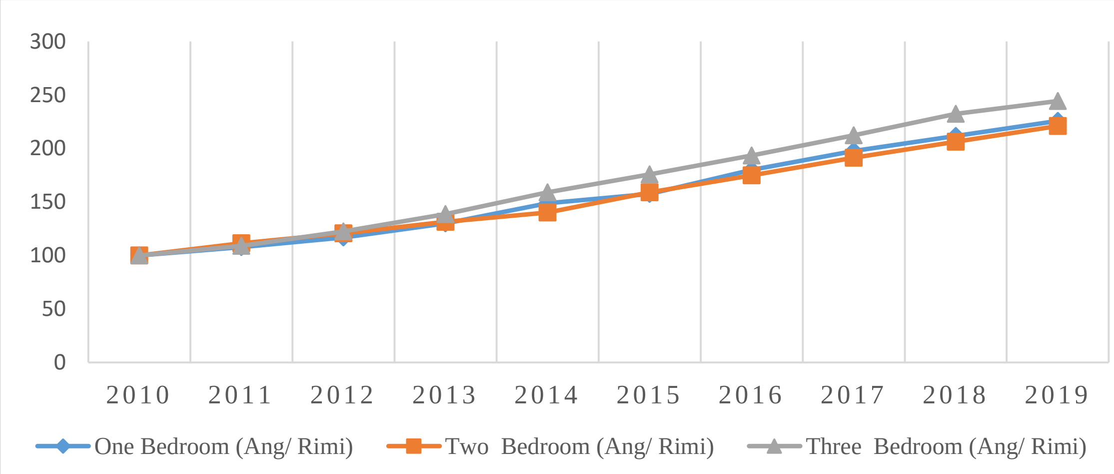

Figure 4.6: Trend graph showing total return index for Unguwan-rimi in Kaduna metropolis for one-bedroom, two-bedroom and three-bedroom bungalow

Figure 4.6 illustrate the trend lines of total return index for residential properties in Unguwan-rimi, Kaduna metropolis. From the trend lines analysis, it was observed that total returns had been unstable for all the properties in this area, having a slight upward trend with uneven inflow over the years though not negative. From the foregoing trend lines graph deduction shows that total returns index had continuous growth from 2010 most especially for 3 bedroom residential properties.

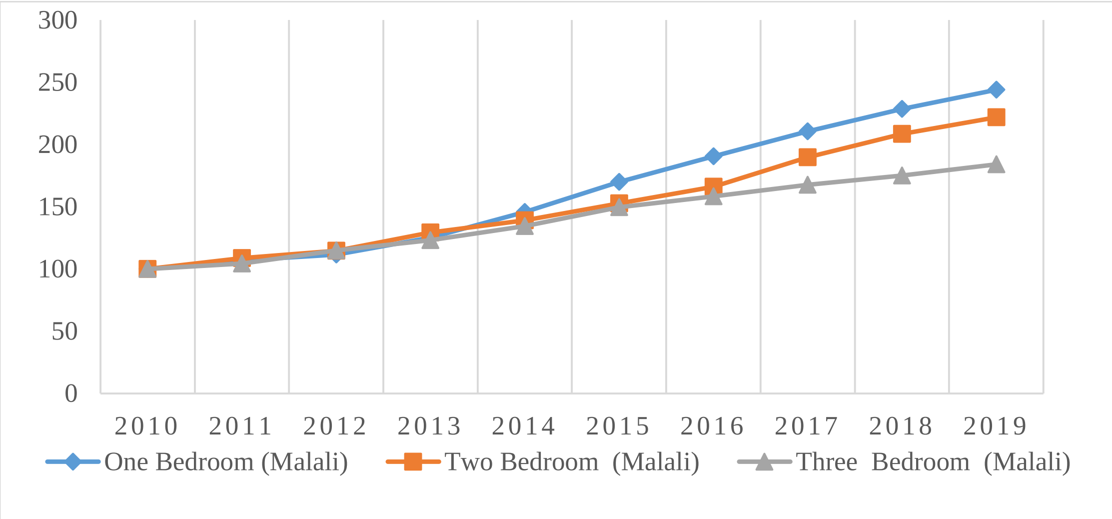

Figure 4.7: Trend graph presented total return index of property in Malali Kaduna metropolis for one-bedroom, two-bedroom and three-bedroom bungalow

Figure 4.7 shows the trend lines of total return index for residential properties in Malali, Kaduna metropolis. From the graphical trend lines, it shows that total returns had been volatile for all the class of properties under study, with an undulating slope trend and an uneven inflow over the years though not negative. Inference on the total return index trend lines indicated that 2013 was the growth base year specifically for a one- bedroom (self-contain).

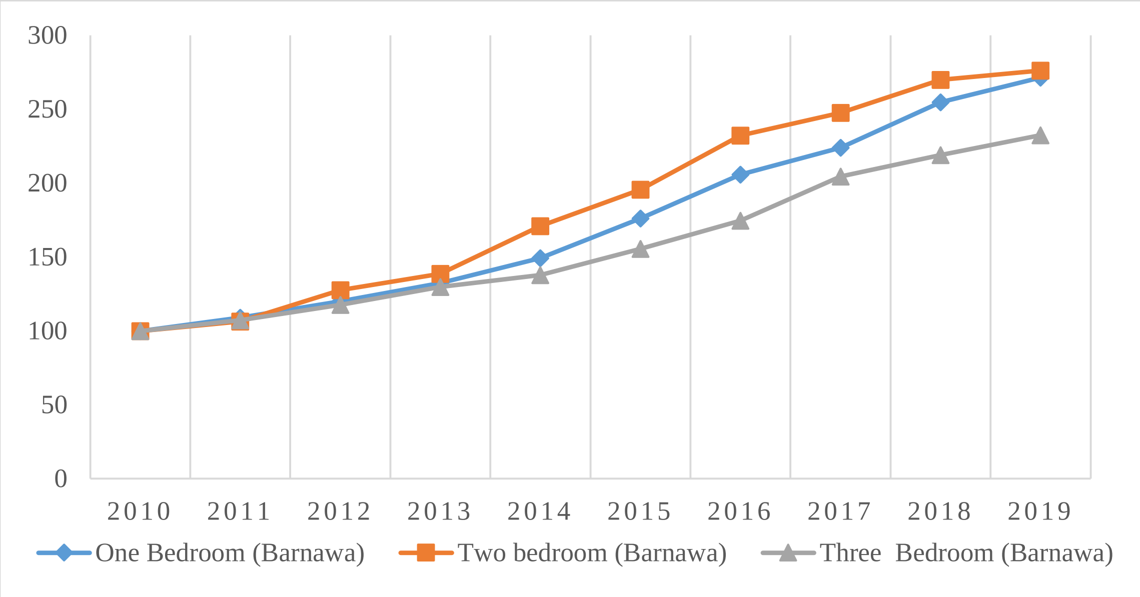

Figure 4.8: Trend graph showing total return index for Barnawa Kaduna metropolis for a one-bedroom, two-bedroom and three-bedroom bungalow

Figure 4.8 shows the trend lines graph of total return indexs in Barnawa for one-bedroom bungalow, two-bedroom bungalow and three-bedroom bungalow apartment. From the graphical trend lines, it depicts that total returns had been unstable for all the types of properties in the area having a fluctuating trend in income over the years though not negative. Deduction from the trend lines shows that total return indexs for two-bedroom residential property despites been unstable had continual growth from 2011.

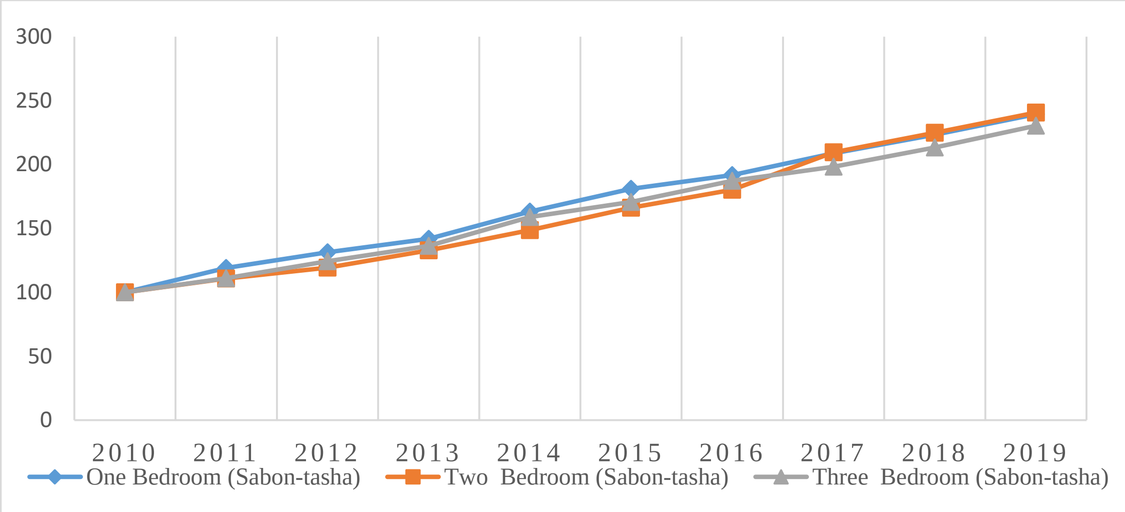

Figure 4.9: Trend graph showing total return index from Sabon-tasha property market for a one-bedroom bungalow, two-bedroom and three-bedroom bungalow

Figure 4.9 shows the trend lines of total return index in Sabon-tasha, Kaduna metropolis for one-bedrooms' bungalow, two-bedroom' bungalow and three-bedrooms' bungalow. From the graphical trend lines, it shows variation in total returns over the years for all the class of properties in this neighbourhood with uneven flow though not negative. Inference from the trend lines shows that total return indexs had consistent growth from 2011 for one-bedroom (self-contain).

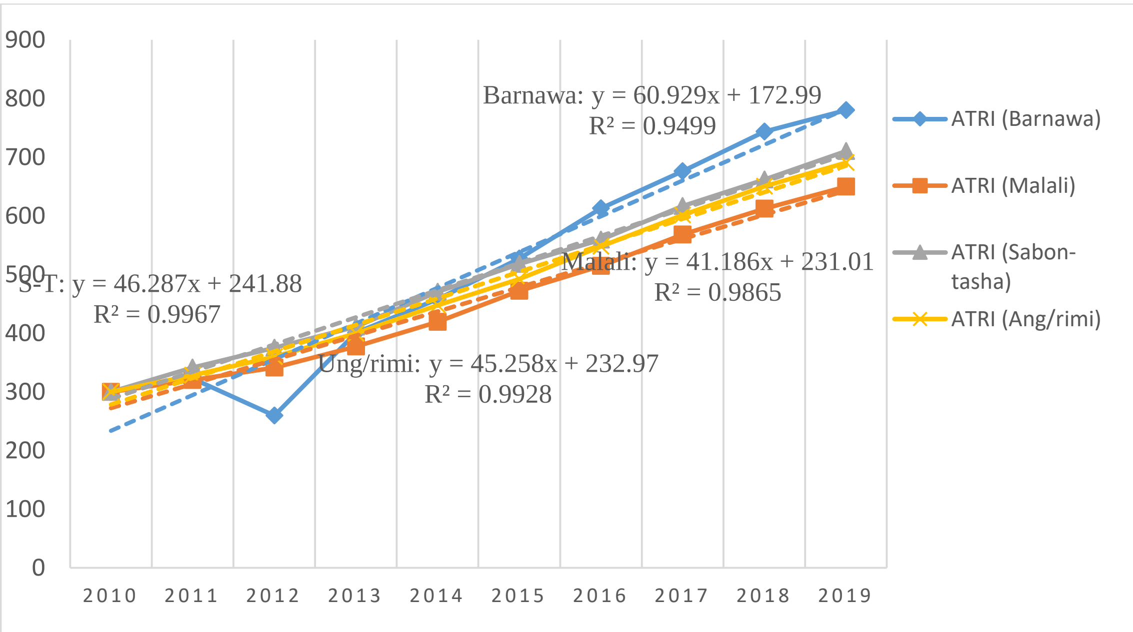

Figure 4.10: Trend graph showing aggregate total return index for Barnawa and Sabon-tasha Unguwan-rimi and Malali in Kaduna metropolis

Figure 4.10 shows the trend lines analysis of total return index in the study area. From the graph the study noticed that all the property market had a continual growth in total return index over time though not stable. This is in line with income from other factors of production (wages, interest rate and profit for entrepreneur). Demonstrating that as change in income from other factors of production occurs total return also increases from land, in fact the outcome unveil total returns fluctuation are promise. The trends equation for difficult location being studied is express in the graphs with the R^2 values showing the predictive ability of the model. Though the rule of thumb from literature reveals that, the more swaying of the R^2 value to 1 the more acceptable, 99% predictive ability is a good model. The total return indextrend equations for different locations in Kaduna metropolis aided in making prediction for subsequent years.

4.2.2.1 *Trend equations of the study neighbourhoods and the predictions for 2020 to 2022 using total return index for Kaduna metropolis*

a) Total return index trend equation (Unguwan-rimi) = -45.258x + 232.97.

Total return index trend equation = [(45.258(11) + 232.97) ÷ 100] and predicted values 7.30808 i.e. 7.31%. Similarly, for 2021 trend line equation for total return index [(45.258(12) + 232.97) ÷ 100] and predicted value is 7.76066 i.e. 7.76%. Also, for 2022 trend line equation is [(45.258(13) + 232.97) ÷ 100] forecast coefficient is 8.21324 i.e. 8.21%. The study forecast means that total returns from Unguwan-rimi Kaduna metropolis will continue to rise from the result of 2020 and 2021 but with a positive return profile.

b) Total return index trend equation (Malali) = 41.186 x + 231.01

Also, total return index trend equation for Malali in 2020 = [(41.186(11) + 231.01) ÷ 100] and forecast coefficient will be 6.84058 i.e. 6.84%. Equally, for 2021 TRI trend equation = [(41.186(12) + 231.01) ÷ 100] and predicted coefficient is 7.25242 i.e. 7.25%. In addition, for 2020 total return index trend equation = [(41.186(13) + 231.01) ÷ 100] and forecast value 7.66428 i.e. 7.66%. The trend line forecast shows that total return will slightly increase in 2020 to 2022 with positive return profile in nature.

c) Total return index trend equation (Barnawa) = 60.929x + 172.99

total return index trend equation = [(60.929(11) + 172.99) ÷ 100], hence predicted value is 8.43209 i.e. 8.43%. And for 2021 total return index trend equation = [(60.929(12) + 172.99) forecast is 9.04138 i.e. 9.04%. More so, for 2022 total return index trend equation = [(60.929(13) + 172.99) predicted value 9.65067 i.e. 9.65%. This study perceived that total return will slightly rise compared to 2019 with positive return profile.

d) Total return index trend equation (Sabon-tasha) = 46.287x + 241.88

In addition, total return index trend equation = [(46.287(11) + 241.88) forecast for 2020 = 7.51037 i.e. 7.51%. And for 2021 TRI trend equation = [(46.287(12) + 241.88) and prediction stance at 7.97324 i.e. 7.97%. More so, for 2022 TRI trend equation = [(46.287(13) + 241.88) predicted coefficient stance at 8.43611 i.e. at 8.44% Details shows persistent increase in total return index compared to others years. Thus, the rise in total return has a positive return profile.

It can be deduced from the foregoing that this study corroborated the findings from previous literature on residential property investment returns volatility (Dabara, 2015; Wahab *et al*., 2017; Nwankwo *et al*., 2018; Nissi *et al*., 2019) that residential property is not generally stable hence varies with location, although residential properties in previous studies were mostly view from location comparison, comparison of commercial and residential properties types performance. This study from the perspective of type of property (One, two & three bedroom), prediction of total return by emphasising on total return index was found to be among the most under-researched areas in literature, hence there is limited previous study in the context of focusing on one-bedroom, two-bedroom and three-bedroom in Kano and Kaduna metropolitan areas of Northwest, Nigeria.

For a one-bedroom bungalow, the maximum level of total return produced (Weighted return =14%) was in Naibawa/Yar-Akwa neighbourhoods and a corresponding of risk-reward factor (COV=26%), whilst the most minimal total returns is one-bedroom bungalow at Rijiyar-Zaki (weighted return=10.4%) with an equally peak risks-return features (COV=52%) (See Table 4.4). For two-bedroom, Rijiyar-zaki neighbourhood generated the highest total return with (weighted return=10.24%) having a high risk-reward factor (COV=46.42%). Similarly, Naibawa generated the lowest rate of total return (weighted return = 8.35%) and a risk-reward profile of (COV=24.99%).

For three-bedroom, Hotoro neighbourhood generated a high total return (weighted return=12%) and equally 4th place risk-reward factor of (COV=50.85%) and Badawa had the least total return (weighted return=6.99%) with an equal risk-reward value (COV=32.06%). Also, from the aggregatse perspective Badawa had generated the least aggregates total return factor (weighted return=27.90%) and a proportionate risk return profile (COV=20.92%) while Hotoro generated the highest aggregates total return (weighted return=32.18%) and highest risk return profile (COV=37.01%). Although all the neighbourhoods had a positive aggregates risk return profile (See Table 4.4). Inference from the foregoing indicated that the rate of performance of total return demonstrated a positive return and risk profile that is very volatile over time corroborating the findings in literature (Dabara, 2014).

Similarly, coefficient of variation was utilised to uncover the risk return profile within the study neighbourhoods, hence. it was discovered that: For a one-bedroom (self-contain), residential properties in Naibawa had the least risk profile with a coefficient of variation at 0.2605 first placed while Rijiyar-zaki had the highest risk with 0.5154 as it coefficient of variation at fourth place. This indicates that a one-bedroom in Naibawa had the best location for risk conscious investors to invest in among the study neighbourhoods, although all the locations had a positive risk return profile (See Table 4.5).

For two bedroom properties Naibawa/Yar-akwa had the least risk-reward profile with a coefficient of 0.2499 while Rijiyar-zaki had the highest risk-reward profile with a coefficient of variation at 0.4642. This suggested that for risk conscious investors wanting to invest in two-bedroom residential properties, Naibawa/Yar-akwa is the befitting location to invest though all the location had a positive investment risk return profile. For three-bedroom properties Rijiyar-zaki also had the least risk profile with a coefficient of 0.3021 while hotoro had the maximal risk-reward profile with a coefficient of variation at 0.5085.

The implication of this result is that for risk conscious investors in three-bedroom residential property Badawa neighbourhood is the best neighbourhood to invest among the study area though both areas had a positive risk returns profile. In the aggregate, among one-bedroom bungalow, two-bedroom and three-bedroom bungalow in Badawa had the aggregate least risk return profile with a coefficient of 0.2092 while Hotoro/GRA had the highest risk return profile with a coefficient of 0.3701. The implication of this result is that for risk conscious investors, Badawa is the best location to consider in terms of risk return profile though all the location under study had a positive risk return profile (See Table 4.5).

Also, in Kaduna metropolis, this study discovered that for parlour and bedroom, Barnawa generated the highest total return (weighted return=12.68%) and a corresponding risk-return (COV=35.98%), while the least total return (weighted return=10.5%) at Unguwan-rimi with an equally risk-return profile (COV= 40.48%) (See Table 4.8). For two-bedrooms also, Barnawa neighbourhood generated the highest total return (weighted return=12.39%) with a risk return profile (COV=54.94%). Equally Sabon-tasha had generated the most minimal rate of total return (weighted return=9.44%) and risk return profile (25.06%). Equally, for three- bedrooms, result shows that total return for Unguwan-rimi neighbourhood had a highest total return (weighted return=11.88%) and a proportionate risk return element (COV=43.70%), while Malali had a minimal total return (weighted return= 7.93%) with a proportionate (COV=33.35%) risk return profile among the neighbourhoods.

Finally, Barnawa total return summative (aggregates) weighted was ranked first with coefficient of total return (weighted return=35.9%) and an equally risk returns coefficient of variation (COV=33.85%), whilst Malali is the least neighbourhood with a summative (aggregates) total return (weighted return=29.11%) and, also a risk return profile (COV=33.35%) (See Table 4.8). Deduction from these findings suggest a positive rate of return profile that had been very irregular over time corroborating the findings of (Dabara, 2014). From the foregoing, the choice of where to invest depends on the nature of the potential investor, whether a returns conscious investor or risk conscious investor.

Likewise, COV was employed to detect and isolate the risk return profile (Table 4.9) among the study neighbourhood. Hence, it was discovered that for a one-bedroom bungalow, Barnawa neighbourhood had a minimal risk return profile (COV=35.98%) and highest in Malali (COV=43.98%). The implication of this result is that Barnawa offered the best neighbourhood to invest in for a risk conscious investors. For two-bedroom property, Sabon-tasha neighbourhood had the least risk-return profile (COV=25.06%) and highest risk return element at Barnawa (COV=54.94%), hence Sabon-tasha will be most considered location by risk conscious investors in this class of properties. For three -Bedroom bungalow, Sabon-tasha had the least risk return (COV=33.35%) and a high risk return value (COV=46.80%) at Malali neighbourhood. From the foregoing, for the risk conscious investors Sabon-tasha will be the most preferred location in terms of investing.

Finally, the aggregates total return risk return profile within the four locations showed that Malali had the least risk return profile (COV=33.35%) and High risk return profile (COV=34.92%) at Sabon-tasha respectively. Inference from the foregoing result showed that, for risk conscious investor, Malali offered the most preferred investment location. This undoubtedly showed a non-linear volatility in the residential property performance profile from the dominant CBD to the urban out sketch.

Prediction made by total return index trend analysis equation also unearth that from 2020-2022, there will be a slightly rise in residential property investment returns in Northwest, Nigeria (Kaduna & Kano metropolitan areas). Though the slowdown in residential property investment returns varies across neighbourhoods but the variation is of a positive return profile. These suggest that even when the economy slowdown investment returns from the property market have a hedge against inflation, hence investors still make profit.

The non-linear variations in residential property performance discovered from the dominant CBD to the urban periphery is in line with the assumption of polycentric city model that there are different pecks in land value as a result of multiple CBD and furtherance embrace the work of Tiebout (1956) that the fundamental factor that determine land value and the location of households is utility and amenities derivable from local municipalities. Hence this theory is applicable to research in polycentric urban centres in Northwest Nigeria. The Applicability of this theories in study of residential property performance could have been exacerbated by the visible nature of urban biasness in Nigeria, specifically in the provision of infrastructure and service in many cities (Mohammed & Abubakar, 2019) occasioned by uncontrolled urban expansion.

4.3 Extent of Compliance with Urban Land Use Planning Regulations and Physical Development Control Measures of residential properties in in the Study Areas.

To assess the extent of compliance to urban land use planning regulations and physical development control measures of residential properties in Kano and Kaduna metropolis, data obtained from the field are presented in tables and percentages. This information on extent of compliance are subgroup into structural, neighbourhood and location attributes as discussed in subsection 4.3.1, 4.3.2 and 4.3.3.

4.3.1 Compliance to structural regulations attributes

The extent of compliance to Structural regulations attributes are presented in Table 4.11

Table 4.11 Extent of compliance to structural regulations attributes (%)

	Kano metropolis					Kaduna metropolis				
Regulations	Badawa	Hotoro	Naibawa	Rijiyar-zaki	Aggregates Mean (%)	Unguwan-rimi	Barnawa	Malali	Sabon-tasha	Aggregates Mean (%)
Building height	87.96	91.49	98.44	98.92	94.20	95.43	95.91	93.46	94.85	94.91
Setback	34.26	18.09	21.88	8.60	20.71	85.79	89.80	88.00	21.65	71.31
Open-space	27.78	15.96	15.63	10.75	17.53	77	85	79.00	12	63.25
Volume of development	37.04	14.89	12.50	12.90	19.33	74.75	83.59	78.29	49.48	71.53
Pop density per room	45.37	42.55	26.56	16.13	32.65	77.3	86.20	80.00	33.00	69.13
Building permit	56.48	46.81	53.13	73.11	57.38	84.34	96.94	85.14	48.45	78.72
Formalized title	53.70	43.62	51.56	63.44	53.08	90.00	95.92	85.71	49.48	80.28
Cross ventilation	81.48	62.77	51.56	53.76	62.39	93.94	98.97	98.29	60.82	88.01
Living room size	98.15	96.81	98.44	97.85	97.81	83.51	88.27	77.71	79.79	82.32
Building coverage	42.59	34.04	31.25	19.35	31.81	20	50.51	23.14	44.33	34.50
Dinning area	59.26	64.89	48.44	59.14	59.93	74.24	59.69	66.29	38.14	59.59
Bedroom size	97.40	86.81	88.92	65.00	84.53	78.28	75.73	78.29	70.51	75.70
Kitchen	99.07	97.87	98.44	98.92	98.58	91.41	98.87	98.86	91.58	95.18

Table 4.11 Extent of compliance to structural regulations attributes in percentages (continues)

	Kano metropolis					Kaduna metropolis				
Regulations	Badawa	Hotoro	Naibawa	Rijiyar-zaki	Aggregates Mean (%)	Unguwan-rimi	Barnawa	Malali	Sabon-tasha	Aggregates Mean (%)
Kitchen size	59.26	87.23	79.69	83.87	77.51	73.98	84.69	71.43	40.63	67.68
Fire extinguisher	21.30	10.60	14.06	6.45	13.10	58.59	40.51	64	14.58	44.42
Construction material	100	100	94.68	98.15	98.21	99.49	98.47	100	96.91	98.72
Toilet	97.22	100	98.44	100	98.92	95.46	98.97	95.43	94.85	96.18
Bathroom size	91.00	90.42	82.81	77.42	85.41	94.00	84.10	70.11	67.80	79.00
Colour code	24.07	23.40	20.31	11.83	19.90	39.90	27.04	18.29	21.65	26.72
House numbering	87.04	95.78	98.44	100	95.32	98.48	98.46	98.85	96.91	98.18
Garage	78.52	80	60.94	79.80	74.82	78.40	70.00	89.60	60.12	74.53
Store size	42.59	43.60	35.94	47.31	42.36	35.11	44.90	29.00	20.00	32.25
Number of floors	92.59	93.62	100	100	96.56	96.92	97.44	92.44	100	96.7
Source of water	55.56	62.77	53.13	27.96	49.86	86.86	92.86	89.71	59.79	82.31
Certificate of fitness for habitation	7.41	14.89	7.81	4.30	8.60	7.63	6.61	6.54	1.91	5.67
Numbers of trees	87.96	97.87	100	98.92	96.19	96.97	97.96	97.14	94.85	96.73
As built drawing	4.62	3.21	3.10	2.50	3.36	22.13	20.00	15.00	1.05	14.55

The Table 4.11 shows the aggregates Mean score of the extent of compliance to basic minimum standard on various structural component: Building height = 94.2%, setback = 20.71%, open space = 17.53%, volume of development = 19.33%, population density per room = 32.65%, building permit = 57.38% and formalised title = 53.08% While Kaduna metropolis had an aggregates Mean score of building height = 94.91% , setback = 71.31%, open space = 63.25%, volume of development = 71.53%, population density per room = 69.13%, building permit = 78.73% and formalised title = 80.28% across the study residential neighbourhoods respectively.

Similarly, the aggregates Mean score of cross ventilation = 62.39%, living room size = 97.81%, building coverage = 31.81%, dinning area = 59.93%, bedroom size = 84.53% and kitchen standard = 98.58% in Kano metropolis whereas Kaduna metropolis had an aggregates Mean score of cross ventilation = 88.01%, living room size = 82.32%, building coverage = 34.50%, dinning area = 59.59%, bedroom size = 75.70% and kitchen standard = 95.18% across the study residential neighbourhoods respectively.

Likewise, Table 4.11 Shows the aggregate Mean score on extent of compliance to basic minimum standard on kitchen size = 77.51%, fire extinguisher = 13.10%, construction material = 98.21%, toilet = 98.92%, bathroom size = 85.41%, colour code = 19.90%, house numbering = 95.32%, garage = 74.82% and store size standard = 42.36% in Kano metropolis while Kaduna metropolis had an aggregate Mean score of kitchen size = 67.68%, fire extinguisher = 44.42%, construction material = 98.72%, toilet = 96.18%, bathroom size = 79.00%, colour code = 26.72%, house numbering = 98.18%, garage = 74.53% and store size standard = 32.25% across the study residential neighbourhoods respectively.

Also, compliance to basic minimum standard on Number of floors = 96.56%, Source of water = 49.86%, Certificate of fitness for habitation = 8.60%, Numbers of trees = 96.19%, as built drawing standard = 3.36% in Kano metropolis whereas Kaduna metropolis had aggregate Mean score of Number of floors = 96.7%, Source of water = 82.31%, Certificate of fitness for habitation = 5.67%, Numbers of trees = 96.73%, as built drawing standard = 14.55% across the study residential neighbourhoods respectively.

4.3.2 Compliance to neighbourhood regulations attributes

The extent of compliance to Neighbourhood regulations attributes are presented in Table 4.12

Table 4.12 Extent of compliance to neighbourhood regulations attributes (%)

	Kano metropolis					Kaduna metropolis				
Regulations	Badawa	Hotoro	Naibawa	Rijiyar-zaki	Aggregate Mean (%)	Unguwan-rimi	Barnawa	Malali	Sabon-tasha	Aggregate Mean(%)
Distance to school	77.04	80.22	81.33	88.12	81.68	69.04	89	69.44	57.80	71.32
Street naming	87.96	97.87	100	98.92	96.19	96.97	97.96	97.14	94.85	96.98
Garbage receptacle	38.89	44.68	42.19	43.01	42.20	85.35	80.10	80	34.02	69.86
Waste disposal system	89.81	94.68	33.24	45.23	65.74	95.96	99.49	97.14	45.09	84.42
Solid waste disposal	79.69	71.28	50	58.06	64.76	85.35	98.49	90.86	45.83	80.13
Right of way (road)	51.85	68.09	45.12	70.42	58.87	100	93.39	100	45.80	84.80
Change in use and habitation	7.41	14.89	7.81	4.30	8.60	7.63	6.61	6.54	1.91	5.67
Drainage system	51.85	54.26	78.13	79.57	65.95	86.80	90.31	89.71	43.30	77.53
Electricity	97.22	94.68	96.88	96.77	96.38	98.99	94.90	99.46	93.81	96.79
Security	43.89	42.68	40.19	43.23	42.50	62.20	77.10	76.34	32.05	61.92

Table 4.12 Extent of compliance to neighbourhood regulations attributes among residential property and neighbourhoods sampled for the study which are expressed in aggragate Mean percentages. Neighbourhoods regulations includes distance to school = 81.68%, street naming = 96.19%, garbage receptacle = 42.20%, waste disposal system = 65.74%, solid waste disposal standard = 64.76% in Kano metropolis whereas Kaduna metropolis had aggregate Mean score on distance to school = 71.32%, street naming = 69.98%, garbage receptacle = 69.86%, waste disposal system = 84.42%, solid waste disposal standard = 80.13% across the study residential neighbourhoods respectively.

More so, aggragate Mean compliance to basic minimum standard on Right of way (road) = 58.87%, change in use and habitation = 8.60%, drainage system = 65.95%, electricity = 96.38% and security = 42.50% in Kano metropolis whereas Kaduna metropolis had aggregate Mean score of Right of way (road) = 96.70%, change in use and habitation = 82.31%, drainage system = 5.67%, electricity = 96.73% and security = 14.55% across the study residential neighbourhoods respectively.

4.3.3 Compliance to location regulations attributes

The extent of compliance to location regulations attributes are presented in Table 4.13

Table 4.13 Extent of compliance to location regulations attributes (%)

	Kano metropolis					Kaduna metropolis				
Regulations	Badawa	Hotoro	Naibawa	Rijiyar-zaki	Aggregate compliance	Unguwan-rimi	Barnawa	Malali	Sabon-tasha	Aggregate compliance
Distance to park	77.14	72.46	90.44	93.22	83.32	85.44	90.47	92.45	94.66	90.76
Distance to city centre	69.46	73.11	91.12	80.60	78.57	70.12	73.44	91.02	95.11	82.42
Numbers of street tree	56.41	70.12	10.02	13.14	37.42	80.12	77.03	74.32	12.22	60.92
Distance to garbage dump	100	100	89.45	100	97.36	99.24	92.45	86.70	87.23	91.41
Distance to hospital	90.22	85.30	100	100	93.88	100	100	100	94.00	98.5

Table 4.13 shows the aggragate Mean Score of the extent of compliance to location regulations attributes which includes distance to park = 83.32%, distance to city centre = 78.57%, numbers of street tree = 37.42%, distance to garbage dump = 97.36% and distance to hospital standards 93.88 % among residential property sampled for the study areas. whilst Kaduna metropolis had an aggregate Mean score of distance to park = 90.76%, distance to city centre = 82.42%, numbers of street tree = 60.92%, distance to garbage dump = 91.41%, and distance to hospital standards = 98.5% among residential property sampled and within the study neighbourhoods respectively.

It can be deduced that the aforementioned findings of this study substantiated the findings on compliance to urban land use planning regulations (Ogbonna *et al.*, 2017; Ibrahim, 2019) even though there is no previous literature from a value perspective of public interest regulation theory in this context. In addition, urban land use planning regulations was operationalized with 42 distinct variables for this study. Which are the extent land use planning regulations and physical development control measures for residential properties in Kano and Kaduna Northwest, Nigeria. These laws have been domicile in laws regarding building development and control in the study areas respectively. For Kaduna State, it is called the Kaduna State Urban Planning and Development Agency manual of 2017 while for Kano state is the Kano State Urban Development Board (Building) Regulations of 1988 as amended 2011.

In the overall survey of compliance rate, results from Table 4.11, Table 4.12 and 4.13 shows that in Kano metropolis, regulations on building setback, open space, volume of development, fire extinguisher, population density per room, building coverage, net building height, Garbage receptacle, availability of two (2) trees or more in a house, colour code, store size, change in use and habitation certificate, certificate of fitness for habitation were below 49% compliance rate within the sampled property across the four residential neighbourhoods under study.

The implication of this findings in Kano metropolis is the proliferation of squalor buildings within the residential neighbourhoods affect client quality of life negatively causing voids in occupancy and volatility in rental income and capital appreciation of residential properties. Because of non-compliance to these regulations affect privacy, ventilations and indoor comfort of the clients hence his quality of livelihood.

Similarly, in Kaduna metropolis results shows that regulations on fire extinguisher, building coverage, colour code, store size, as built drawing, change in use and habitation certificate, and certificate for fitness for habitation were below 49% compliance rate across the sampled property in the four sampled residential neighbourhoods. The implication of this findings in Kaduna metropolis is the proliferation of squalor buildings within the residential neighbourhoods causing voids in occupancy, hence volatility in rental income and capital appreciation of residential properties.

The implication of this findings in Kano and Kaduna metropolis is the visible marks of the inefficiency of the urban planning strategy, while same residential neighbourhoods are enjoying good and accessible location with good condition of dwelling and neighbourhood characteristic with consistent rental growth and capital appreciations. The situation in some part of the town is pitiable with diminishing rental growth and capital value depreciation; this is related to the habitual disregard to ULUPRs by property developers and owners in line with PITR theory, obnoxious land uses is found adjacent to one another in the nooks and cranny of these cities subsequently affecting residential property values (Owei *et al.*, 2010; Owoeye & Omole, 2012) because non-compliance affect the resident quality of life within the neighbourhoods.

Non-compliance to urban residential land use regulatory and physical development control measures expose the residential estate to various urban planning risk (Udobi *et al*., 2018), consequently resulting in conflicting land uses with serious implication on the health, safety and business environment of urban dwellers. Evidence in insufficiencies or at some instances absence of public services like water supply, road network, electricity, fire-fighting equipment and basic sanitation. Thus, result in traffic congestion, overcrowding, overstretched-neighbourhood's facilities, loss of valuable goods to fire outbreak among others which are planning risk/uncertainty and may inhibit rental growth and capital appreciation of residential properties. These negative externalities lead to frequent changes in location decision between and across residential neighbourhoods by households to better housing location with greatest comparative advantage exacerbating voids in real estate occupancy. Voids in residential occupancy result in declining residential property returns, increase investors financial burden through continuous volatility of real estate returns trend in residential location exercebating mortgage default by the investors. Mortgage default is a fundamental contributing factor to global recession (Olowofeso *et al*., 2013).

4.4 Effect of Urban Lands Use Planning Regulations on Residential Property Investment Returns

4.4.1 Assessment of measurement model for neighbourhood regulations attributes

Fundamentally, running the CFA in CB-SEM for this study took care of the challenges of conforming if variable included in the construct actually fit the underlying construct. The threshold for the triple classes of fitness indexes encompasses: parsimonious fit (Chisq/df<5.0); incremental fit (CFI> 0.90, TLI>0.90, NFI>0.90); and absolute fit (RESEA< 0.08, GFI> 0.90) (Awang, 2014). In running the assessment for reliability and convergent validity of the construct, the Cronbach's Alpha coefficient were (≥ 0.70), coefficient of Composite reliability (≥ 0.60) and in addition AVE (≥ 0.50) were also established for the final models of the 5 construct employed in this study.

Neighbourhood regulations attributes construct had 15 items measuring neighbourhood regulations attributes as shown in Figure 4.11.

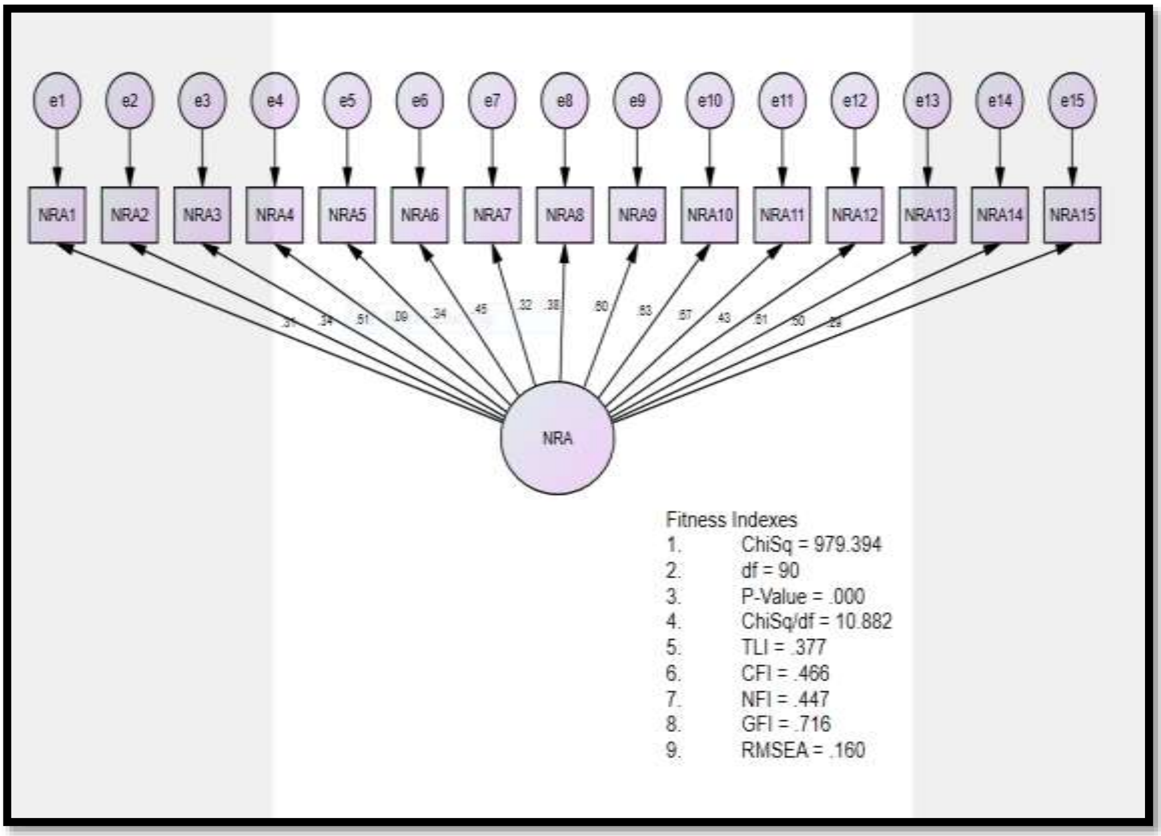

Figure 4.11: Measurement model for Neighbourhood regulation attributes

The Figure 4.11 illustrates that the coefficient of all classes of the fitness indices were not at the accepted benchmark. Hence the study reassessed the items with lowest factor loading, these items were subsequently deleted in order to improve the fitness indices. In this study 0.50 or more factor loading was adopted because it is a newly developed items in consonance with Awang (2014), that for newly developed items factor loading of 0.50 or more should be employed. As can be observed that NAR1= proximity to school, NAR=2 proximity to waste disposal point, NAR3= proximity to commercial centre, NAR4= proximity to hospital, NAR5=proximity to recreational centres, NAR6= proximity to arterial road network, NAR7=proximity to police post, NAR8= proximity to firefighting equipment, NAR15= Telecommunication had the lowest factor loadings (<0.50). These were deleted in ascending order one at a time. In furtherance the measurement model was reruned, while assessing the fitness indices in the process. The low factor loading items (<0.50) were sequentially all deleted in the process.

Figure 4.12 illustrates the final measurement model for neighbourhood regulations attributes with 6 items left in the model.

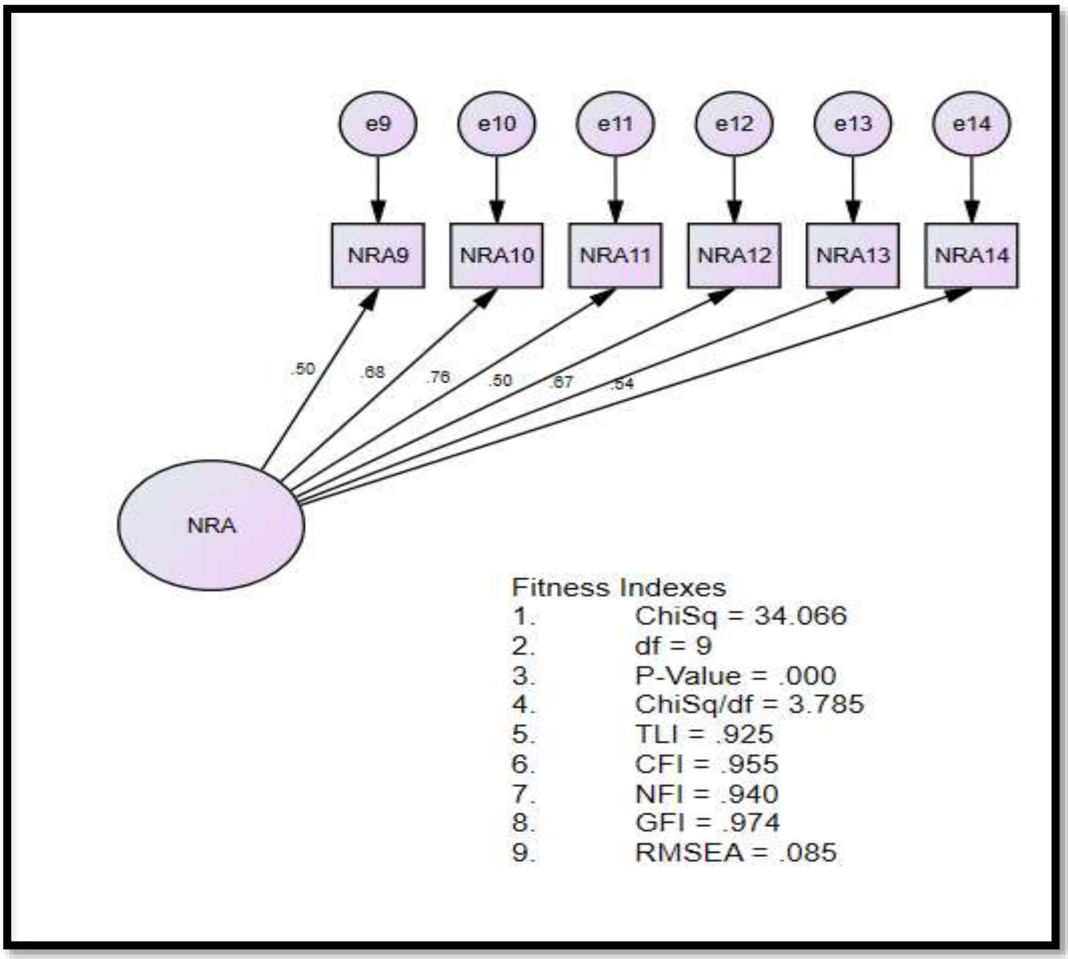

Figure 4.12: Final measurement model for neighbourhood regulation attributes

The Figure 4.12 shows that the coefficient of all the classes of the fitness indices are at the acceptable benchmark. Chisq/df signified the parsimonious fitness index was at the acceptable benchmark of <5.0 level at 3.785. CFI signified the incremental fitness index was more than the required 0.90 benchmarked at 0.955. GFI and RMSEA signified the absolute fitness index was above the required 0.90 and <0.08 or 0.1 benchmarked at 0.974 and 0.085 respectively. This indicated that the construct validity had been established. In order to established convergent validity of the measurement construct model, all the measurement model must be statistically significant (Byrne, 2010; Awang, 2014). The Table 4.15 displays the regression weights and their significance coefficients.

Table 4.15: Regression weights and their significance coefficients

Item		Construct	Estimate	S.E.	C.R.	P-value	Results
NRA9	←	NRA	1.000			***	Significant
NRA10	←	NRA	1.232	.146	8.429	***	Significant
NRA11	←	NRA	1.684	.192	8.774	***	Significant
NRA12	←	NRA	1.002	.141	7.132	***	Significant
NRA13	←	NRA	1.491	.178	8.372	***	Significant
NRA14	←	NRA	1.199	.162	7.400	***	Significant

*******P-value 0.001

Details from Table 4.15 shows that all the items were statistically significant at the 0.001 benchmarked. Hence, the convergent validity for the final measurement model had been established. In order to test the level of reliability of the measurement construct Cronbach's Alpha value, the coefficient of the Composite reliability and the AVE were calculated. These are presented in Table 4.16.

Table 4.16: Reliability test results for neighbourhood regulations attributes

Construct	Cronbach's Alpha	C.R	AVE
Neighbourhood regulation attribute	0.776	0.796	0.598

Deduction from Table 4.16 shows that the Cronbach's Alpha coefficient is above the benchmarked coefficient of 0.70. The coefficient value at 0.776 is an improvement on the earlier coefficient of 0.773 when the neighbourhood regulations attributes construct contained all the deleted items. The value of the Composite reliability is 0.796 more than the benchmarked coefficient of 0.60. In addition, the coefficient of AVE is 0.598 higher than the benchmarked coefficient of 0.50. Conversely, the reliability of the final measurement model was largely satisfactory since the benchmark of the Cronbach's Alpha coefficient and the composite reliability and validity had been established. In this reflective model assessment, 15 variables were employ to assess neighbourhood regulations attributes. 6 variables were fit to measure the scale based on assessment while 9 variables were deleted.

4.4.2 Assessment of Measurement Model for Structural Regulation Attributes

Structural regulation attributes construct had 19 items measuring structural regulations attributes as illustrated in Figure 4.13.

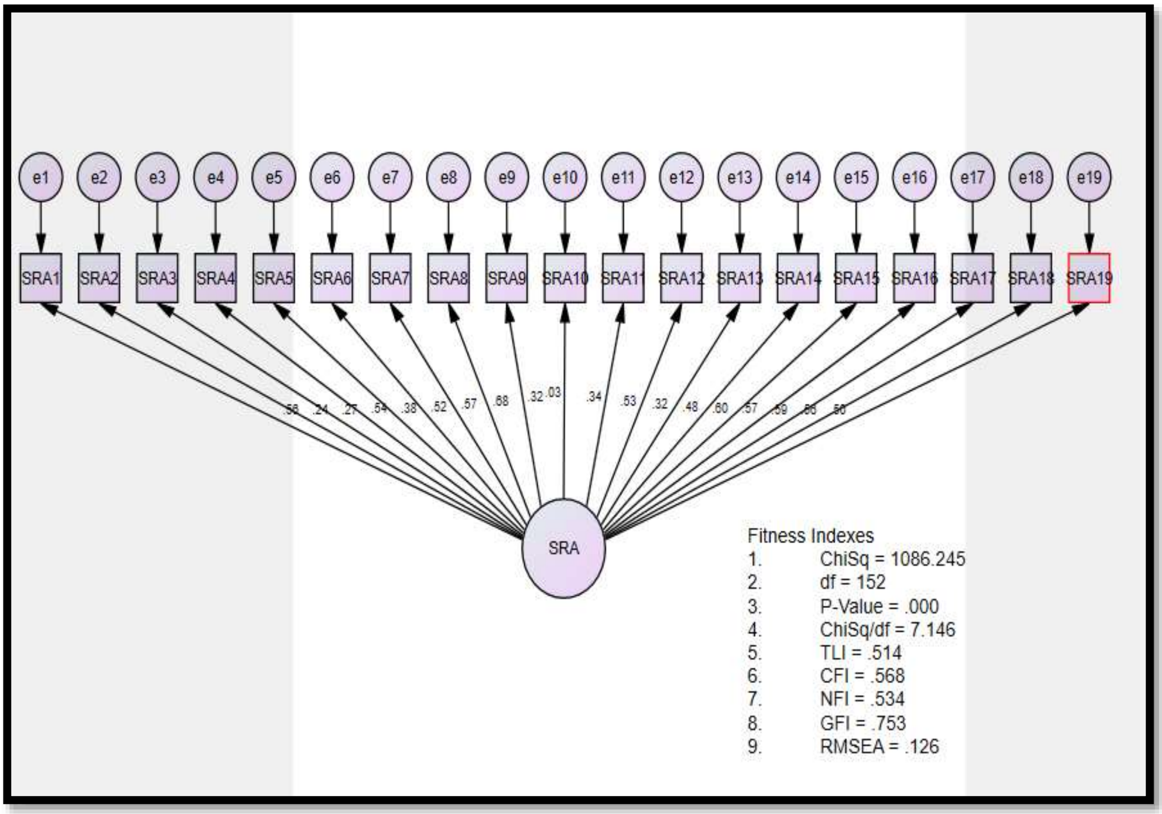

Figure 4.13: Measurement model for structural regulation attributes

Details from Figure 4.13 shows that the coefficient of all the classes of fitness indices are not at the acceptable benchmarks. A close assessment of the factor loading suggested that some items have low factor loading (<0.50), consequently these low factor loading were deleted so as to improve the model fitness indices. This study specifically followed Awang (2014) that for a newly developed items 0.50 factor loading or more should be adopted as the accepted benchmark.

As it can be seen from the Figure 4.53 SRA2=living room size, SRA3= numbers of bedrooms, SRA5=Cross ventilation, SRA9=traffic within the neighbourhood, SRA10=numbers of bathrooms and SRA12=building set-back had factor loadings lower than the 0.50. These items were successively deleted, starting with item with the lowest factor loading. The construct measurement model was reruned, and fitness indices were evaluated in the process until the required item with the acceptable benchmarked factor loading were established. The Figure 4.14 shows the final measurement model for structural regulation attributes with 7 items left after the analysis was rerun.

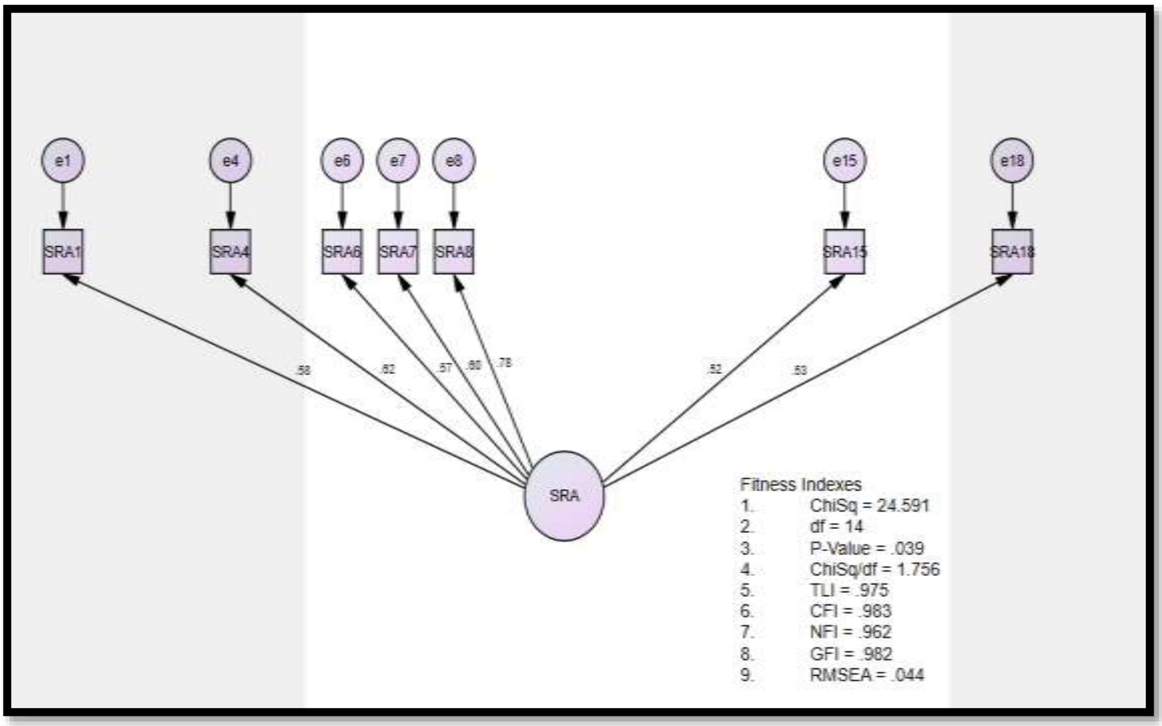

Figure 4.14: Final measurement model for structural regulation attributes

Figure 4.14 illustrates that the coefficient of all the classes of fitness indices are now at the required benchmark. Chisq/df signified the parsimonious fitness index is at the acceptable benchmark of less than 5.0 at 1.756. CFI symbolized the incremental fitness index is at the acceptable benchmark (0.90) at 0.983. GFI and RMSEA denoted the absolute fitness is at the required benchmark of >0.90 and < 0.08 or 0.1 at 0.982 and 0.044 respectively. This indicated that the construct validity had been established. In order to accomplish convergent validity, Bryne (2010); Awang (2014) postulated that individual items in the measurement model should be statistically significant. The Table 4.17 shows the regression weights and their significant coefficients.

Table 4.17: Shows the construct regression weights and significant levels

Item		Construct	Estimate	S.E.	C.R.	P-value	result
SRA1	←	SRA	1.000			***	Significant
SRA4	←	SRA	1.108	.122	9.120	***	Significant
SRA6	←	SRA	.994	.116	8.564	***	Significant
SRA7	←	SRA	1.056	.118	8.941	***	Significant
SRA8	←	SRA	1.425	.138	10.328	***	Significant
SRA15	←	SRA	1.035	.128	8.086	***	Significant
SRA18	←	SRA	.882	.109	8.129	***	Significant

*****P-value 0.001

Table 4.17 displays the results which showed that all the items in the structural regulations attributes are statistically significant at 0.001. This implied that the convergent validity for the final measurement of structural regulation attributes had been established. Equally, to test for the reliability of the measurement construct, the Cronbach's Alpha coefficient, the coefficient of Composite reliability and the AVE were computed. The computed coefficient is available in Table 4.18.

Table 4.18: Shows reliability test for structural regulation attributes

Construct	**Cronbach's Alpha**	**C.R**	**AVR**
Structural attributes regulations	0.796	0.789	0.550

The Table 4.18 showss that the Cronbach's Alpha value was above the benchmarked 0.70 at 0.796 thus lower than the initial coefficient at 0.825 when all the initial items were not deleted. The coefficient of the Composite reliability was 0.789, greater than the 0.60 benchmarked. Also, the coefficient of the AVE was 0.550 higher than the recommended coefficient of 0.50. Basically, the reliability of the final measurement model for the construct were achieved since the acceptable benchmark for Cronbach's Alpha and the Composite reliability and validity had been established. In this reflective model assessment, 19 variables were utilised to assess structural regulations attributes. 7 variables were fit to measure the scale based on assessment while 12 variables were deleted.

4.4.3 Assessment of Measurement Model for Location Regulation Attributes

Location regulation attributes construct had 6 items measuring location regulation attributes as can be observed from Figure 4.15.

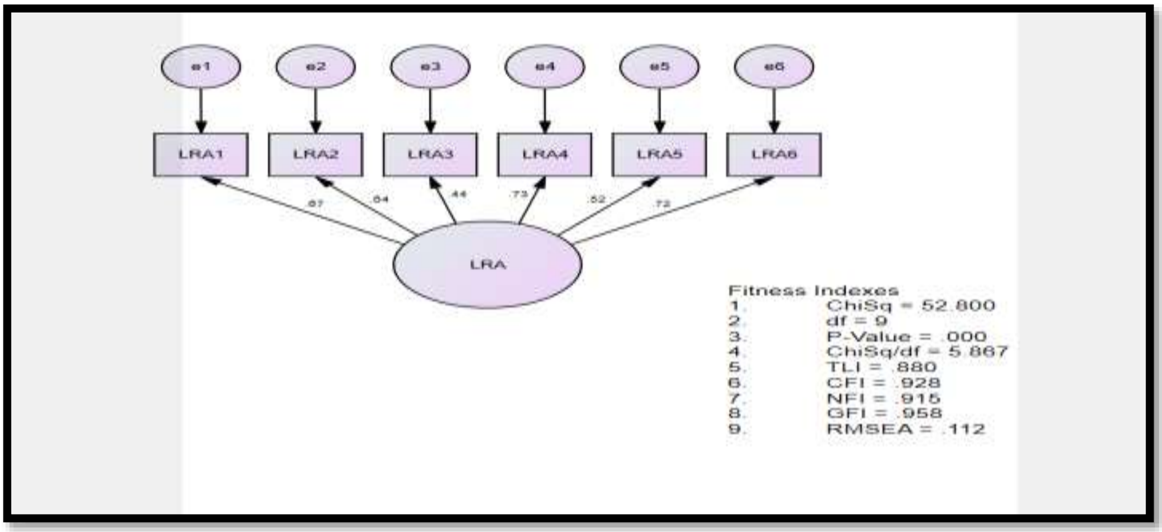

Figure 4.15: Measurement model for location regulation attributes

The Figure 4.15 illustrates that the coefficient of all the classes of fitness indices are not up to the acceptable benchmark. The factor loading of individual items were examined. The motive was to detect the item in the construct with lowest factor loading and delete it in consonance with Awang (2014), so as to improve the fitness indices coefficients. As can be recalled the study adopted a 0.50 or greater coefficient for the factor loading items because this is newly developed items for this particular study.

Also it can be observed that LRA3= distance from city centre had factor loading less than 0.50. The item was deleted and then the measurement model was rerun, while the fitness indices was evaluated in the process. The fitness indices achieved the acceptable benchmark thereafter. The Figure 4.16 shows the final measurement model for location regulation attributes and was left with 5 items afterward.

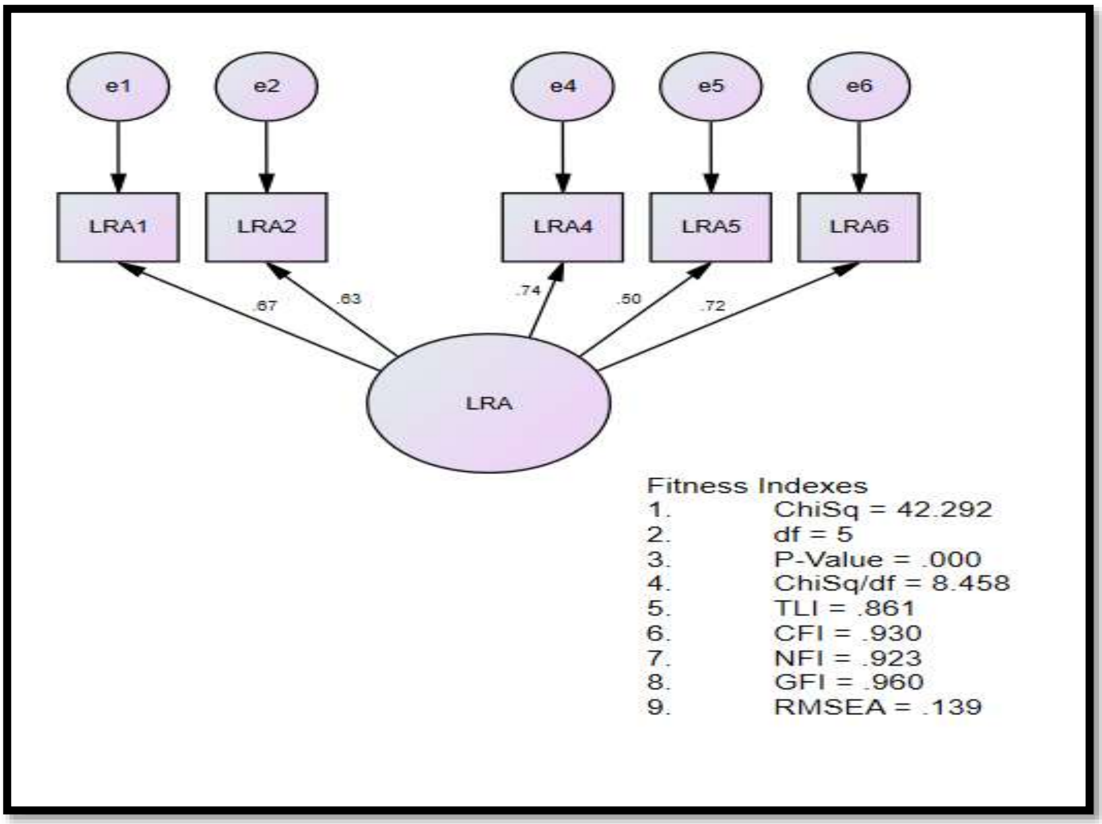

Figure 4.16: Final measurement model for location regulation attributes

Figure 4.16 indicates that the coefficient of all the classes of fitness indices were at the conventional benchmark ≥ 0.50. Chisq/df signified the parsimonious fitness index was above the required <5.0 benchmarked at 8.459. CFI denoted the incremental fitness index was greater than 0.90 at 0.930. GFI and RMSEA represents the absolute fitness index was above the 0.90 and 0.08 or 0.1 benchmark at 0.960 and 0.139 respectively. This implied that the construct validity had been established.

In order to established the convergent validity of the construct, Byrne (2010); Awang (2014) suggested that all the individual items in a measurement model must be statistically significant. Consequently, the Table 4.19 shows the individual items regression weights and their significant coefficients.

Table 4.19: regression weights and significant value

Item		Construct	Estimate	S.E.	C.R.	P-value	Label
LRA1	←	LRA	1.000			***	Significant
LRA2	←	LRA	0.946	0.092	10.330	***	Significant
LRA4	←	LRA	1.186	0.104	11.385	***	Significant
LRA5	←	LRA	0.598	0.069	8.637	***	Significant
LRA6	←	LRA	1.117	0.100	11.225	***	Significant

***P<0.001

The Table 4.19 indicates that all the individual items are statistically significant at 0.001 level. Hence the convergent validity of the construct for the final measurement model had been established. Similarly, to establish the reliability of the construct, the Cronbach's Alpha coefficient, the coefficient of Composite reliability and the AVE were computed. These are presented in Table 4.20.

Table 4.20: Reliability test result for location regulations attributes

Construct	**Cronbach's Alpha**	**C.R**	**AVE**
Location attributes regulation	0.790	0.784	0.425

The Table 4.20 indicate that the Cronbach's Alpha coefficient was more than the benchmarked ≥0.70. The coefficient value was 0.790 which is an advancement on the earlier value of 0.788 when the construct had the deleted item (LRA3). The coefficient of the Composite reliability was 0.784, more than the benchmarked value of 0.60. In addition, the AVE was 0.425, less than the benchmarked 0.50. Hence, the reliability of the construct final measurement model was significantly achieved since the requirement of the Cronbach's Alpha coefficient and composite reliability had been established. In this reflective model assessment 6 variables were employ to assess location regulations attributes. 5 variables were fit to measure the scale based on assessment while 1 variable were deleted.

4.4.4 Assessment of Measurement Model for Urban Land Use Planning Regulation Attributes (Housing)

Urban land use planning regulations construct had 10 items measuring ULUPR attributes as depicted in Figure 4.17.

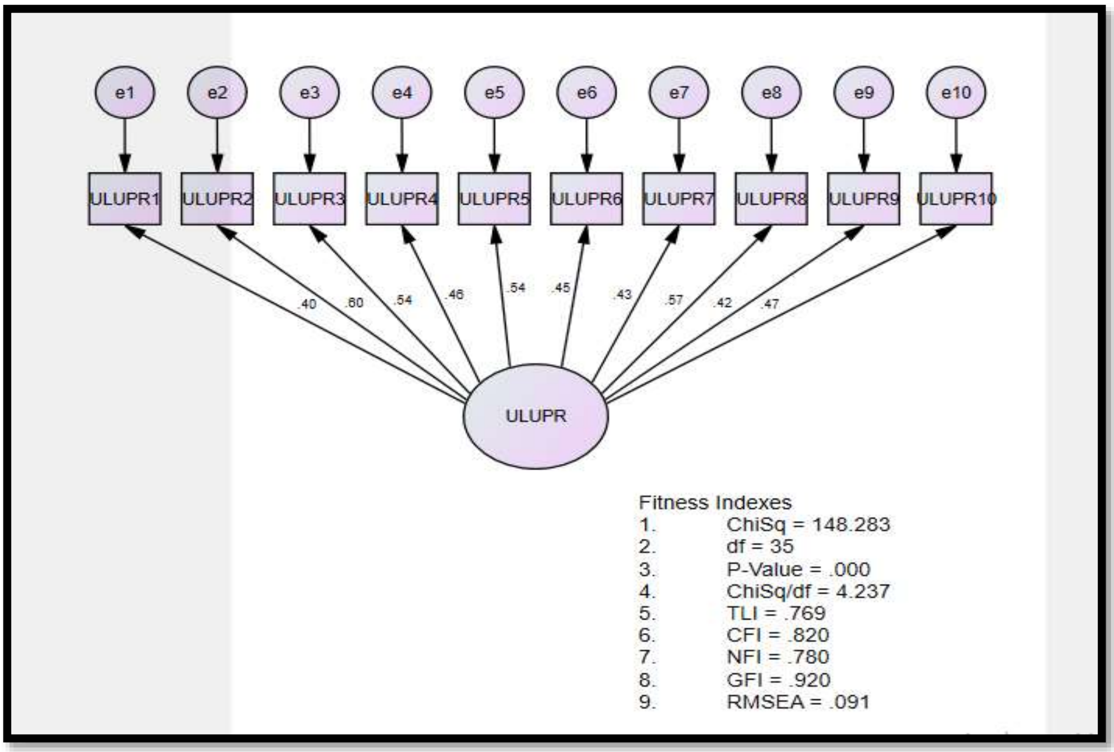

Figure 4.17: Measurement model for ULUPR constructs

The Figure 4.17 illustrates that the coefficient of all the classes of fitness indices are not at the acceptable benchmarked (≥0.50). The factor loading of individual items were examined. The reason for this was to be able to detect items with lowest factor loading so that it can be removed from the measurement model and improve the model fitness indices, this is in consonance with Awang (2014) that for newly developed items in a construct the factor loading should be ≥ 0.5. Equally from the Figure 4.18 it was observed that ULUPR1= Political will, ULUPR2=Awareness, ULUPR3 = Training and retraining, ULUPR7= Housing supply and ULUPR9= Density regulation all had low factor loading, they were deleted consecutively, starting with the variable with lowest factor loading. The measurement model was rerun taking into cognisant the fitness indices until items reached the accepted benchmark. The Figure 4.18 presents the final measurement model for ULUPR construct with 5 items left after the procedures.

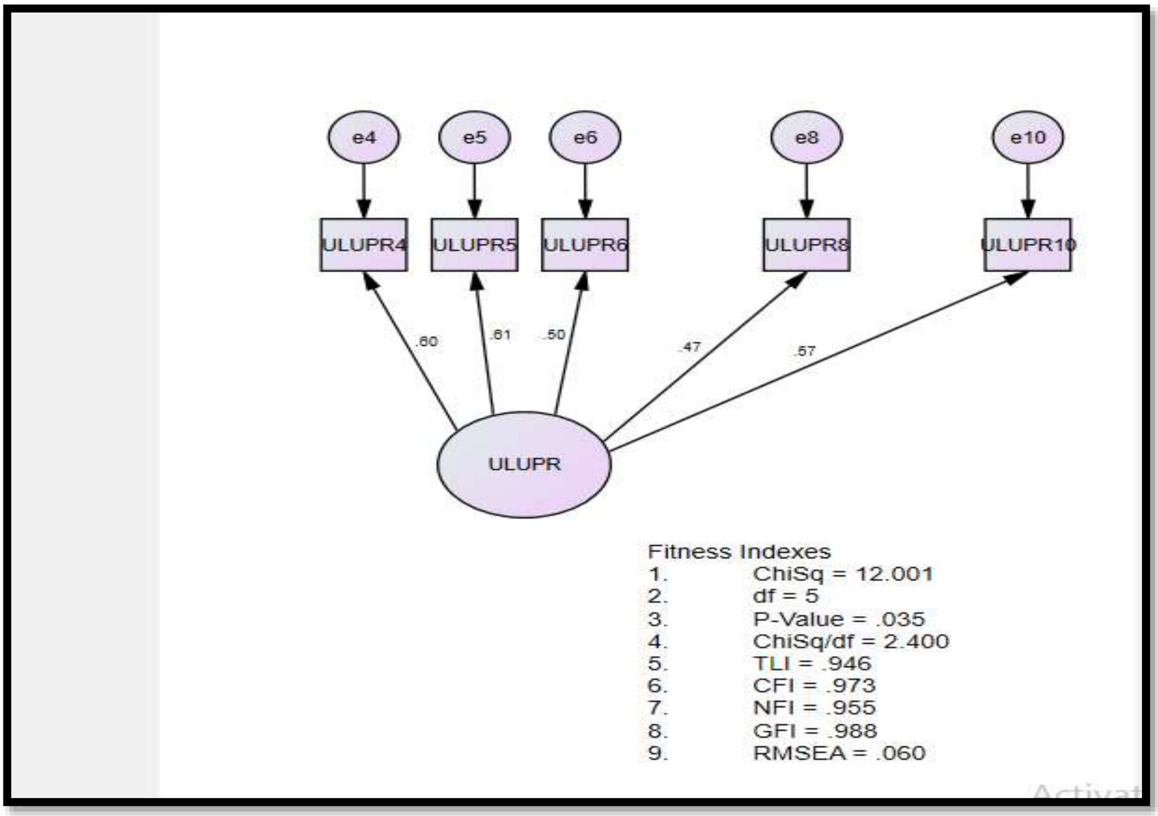

Figure 4.18: Final measurement model of ULUPR construct

The Figure 4.18 shows that the coefficients of all the classes of fitness indices are now at the accepted benchmark. Chisq/df signified the parsimonious fitness index was at the required <5.0 benchmark at 2.400. CFI represented the incremental fitness index was above the 0.90 at 0.973. GFI and RMSEA signified the absolute fitness index was above the required 0.90 and 0.08 or 0.1 benchmarked at 0.988 and 0.060 respectively. This suggested that the construct validity had been substantially established.

Similarly, to establish the construct convergent validity, Byrne (2010) and Awang (2014) stressed that all the items in a measurement model construct must be statistically significant. The Table 4.21 below shows regression weights and their significance values or coefficient.

Table 4.21: Shows regression weights and significance value for ULUPR

Item		Construct	Estimate	S.E.	C.R.	P-value	result
ULUPR4	←	ULUPR	1.000			***	Significant
ULUPR5	←	ULUPR	.965	.126	7.660	***	Significant
ULUPR6	←	ULUPR	.905	.131	6.900	***	Significant
ULUPR8	←	ULUPR	.839	.128	6.539	***	Significant
ULUPR10	←	ULUPR	.816	.110	7.402	***	Significant

***P-value 0.001

Table 4.21 indicates that all the items to be included in the ULUPR construct are statistically significant at 0.001 level. Thus, it established the convergent validity of the final measurement model for ULUPR construct. Also, testing for the reliability of the ULUPR construct, the Cronbach's alpha coefficient, the coefficient of Composite reliability and the AVE were calculated. These are presented in Table 4.22.

Table 4.22: Reliability test result for urban land use planning regulation attributes

Construct	**Cronbach's Alpha**	**C.R**	**AVE**
Urban land use planning regulation	0.755	0.685	0.506

Details from Table 4.22 indicates the Cronbach's Alpha coefficient is above the benchmarked ≥ 0.70. The Cronbach's Alpha value of 0.755 was an improvement on the previous value of 0.715 when the construct contained all the initial items. Also, the Composite reliability of 0.685 was more than the recommended coefficient of 0.60. The value of the AVE is 0.506, higher than the suggested value of 0.50. From the foregoing, the reliability of the final measurement model of ULUPR is achieved since the requirement of the Cronbach's Alpha, Composite reliability and AVE had been established. In this reflective model assessment, 10 variables were employ to assess ULUPR attributes. 5 variables were fit to measure the scale based on assessment while 5 variables were deleted.

4.4.5 Assessment of Measurement model for residential property investment Returns

Residential property investment return construct had 10 items measuring residential property investment returns attributes as illustrated in Figure 4.19.

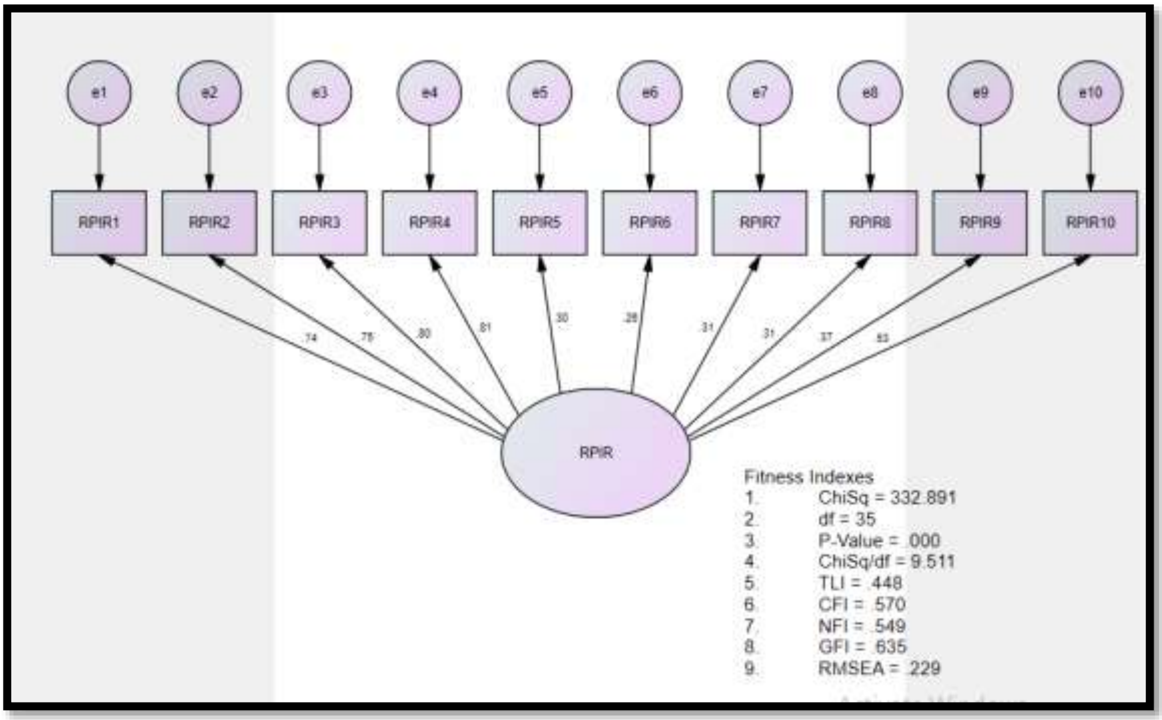

Figure 4.19: Measurement model for residential property investment returns

The Figure 4.19 illustrates that the coefficient of the fitness classes is below the acceptable benchmark. Individual factor loading of items in the construct were then examined so as to detect the item with the lowest factor loading and delete it in order to upgrade the fitness indices. This study adopted 0.50 benchmark or higher for factor loading in consonance with Awang (2014) because the items are newly developed particularly for this study. From the Figure, it was observed that some of the items have factor loading lower than the acceptable 0.50 benchmark. This items were sequentially deleted from the lowest and the measurement model construct was rerun, while assessing the fitness indices. The deletion of RPIR6= demand factors, RPIR5= nature of urban land use planning, RPIR7=supply factors, RPIR8 income, RPIR9, population and RPIR10 (employment rate) consecutively considerable improve the factor loading.

The Figure 4.20 illustrates the final model for residential property investment returns construct and was left with 4 items.

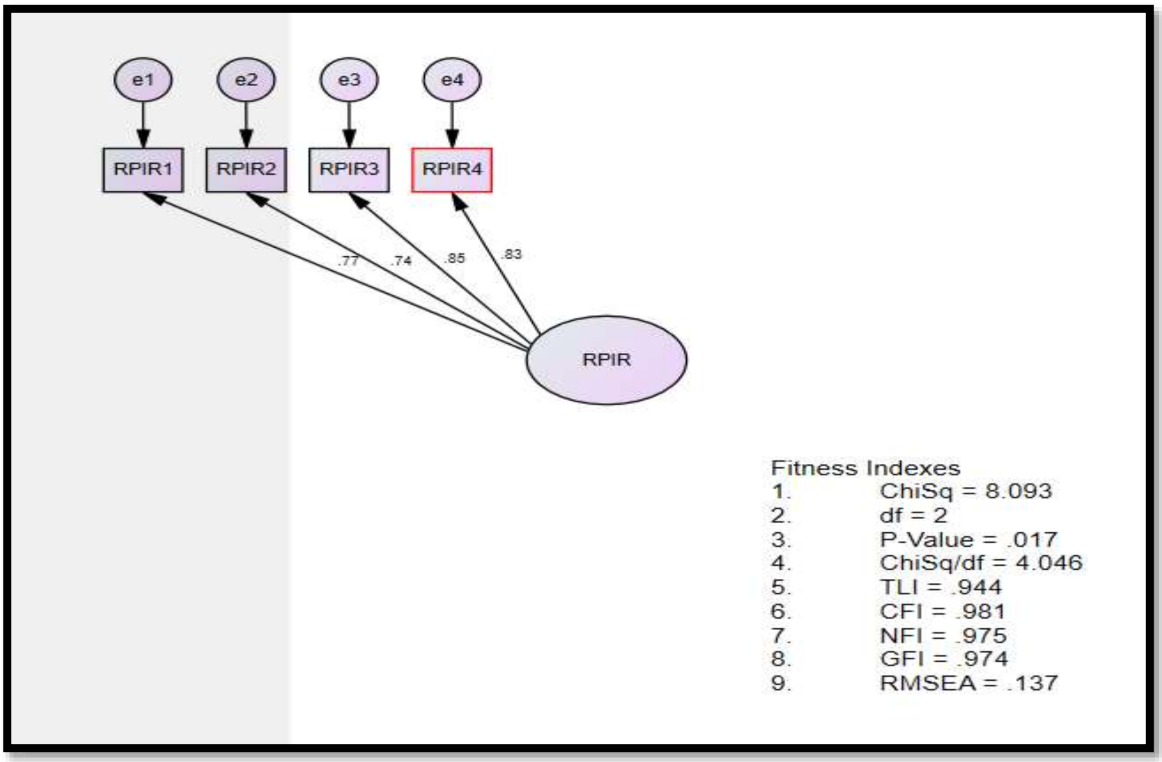

Figure 4.20: Final measurement model for RPIR construct

The Figure 4.20 illustrate that the coefficient of all classes of fitness indices are at the required benchmark ≥.50. Chisq/df signified parsimonious fitness index was at the required <5.0 benchmark at 4.046. CFI indicated the incremental fitness index was the required 0.90 benchmark at 0.981. GFI represented that the absolute fitness index is above the required benchmark of 0.90 at 0.974. This established that the construct validity had been attained.

Equally, to achieve convergent validity in this study, the study was in consonance with the postulation of Byrne (2010); Awang (2014) that all items in the measurement model construct must be statistically significant. Table 4.23 displays the regression weights and their level of significant value.

Table 4.23: Regression weights and significant level

Item		Construct	Estimate	S.E.	C.R.	P-value	result
RPIR1	←	RPIR	1.000			***	Significant
RPIR2	←	RPIR	0.941	0.100	9.412	***	Significant
RPIR3	←	RPIR	0.999	0.093	10.778	***	Significant
RPIR4	←	RPIR	1.037	0.098	10.544	***	Significant

*** P< 0.001

The Table 4.23 illustrates that all the items left in the RPIR are statistically significant at 0.001 benchmark. Consequently, the convergent validity for the final measurement model of RPIR had been established. Similarly, testing for the reliability of the measurement construct, the Cronbach's Alpha coefficient, the Composite reliability coefficient and the AVE was calculated. These are presented in Table 4.24.

Table 4.24: Reliability test for Residential property investment return

Construct	Cronbach's Alpha	C.R	AVE
Residential property investment return	0.873	0.875	0.638

Table 4.24 indicates that the coefficient for the Cronbach's Alpha is higher than 0.70 the acceptable benchmark at 0.873. This is an improvement from 0.832 when the construct contained the whole item before deletion process. The coefficient of the Composite reliability was 0.875, greater than the conventional value of 0.60. Similarly, the coefficient of the AVE was 0.638, greater than the recommended benchmark of 0.50. Consequently, the reliability of the measurement model construct was achieved as the requirement of the Cronbach's Alpha coefficient and the Composite reliability and AVE have been established. In this reflective model assessment 10 variables were employ to

assess RPIRs attributes. 4 variables were fit to measure the scale based on assessment while 6 variables were deleted.

In this study, measurement model was validated based on response items to assess underlying latent construct for the 5 constructs. The challenge of variable fitness to the underlying construct in terms of unidimensionality, validity and reliability in the individual measurement construct were surmounted (Table 4.15 to 4.24). All the validations were prerequisite to the modelling of the 5 construct into a structural model. Also, this study structural model is founded on the conceptual framework for this research (See Figure 3.4). The study hypothesised 3 construct (neighbourhood regulations attribute, structural regulations attribute and location regulations attribute) has significant influence on urban land use planning regulations. Equally, ULUPR has a significant influence on residential property investment returns. Figure 1.0 illustrates the hypothetical relationship for this study.

4.5 Hypothesis Testing

In this study, this section elucidates on the test of the hypothesis formulated that was built on the premise of research objective four. Individual hypothesis was specified and discussed before detailing a summary of the hypotheses statements and their outcomes.

H_1 =Neighbourhoods regulations attributes have significant influence on urban land use planning regulations.

Table 4.25 Path analysis for structural equation modeling for hypothesis 1

Construct	Path	Construct	Beta estimate	Standard error	Critical ratio	P-value
Urban land use planning regulations	←	Neighbourhood regulations attributes	0.167	0.039	4.282	***

Details in Table 4.25 shows that the probability of getting a critical ratio as large as 4.282 in absolute values is less than 0.001. That is to say, the regression weight for neighbourhood regulations attributes in the prediction of urban land use planning regulations is significantly different from zero at 0.001 level (two tailed). Also, the P-value is less than 0.05, as a result research hypothesis 1 is supported. The implication of this outcome is that this study established that neighbourhood regulation attributes has a positive significant influence on urban land use planning regulations. These outcome has buttress the relationship in the hypothetical structure (Figure 3.4).

H_1 =Location regulations attributes have significant influence on urban land use planning regulations.

Table 4.26 Path analysis for structural equation modeling for hypothesis 2

Construct	Path	Construct	Beta estimate	Standard error	Critical ratio	P-value
Urban land use planning regulations	←	location regulations attributes	0.178	0.040	4.45	***

Details in Table 4.26 shows that the probability of getting a critical ratio as large as 4.45 in absolute values is less than 0.001. That is to say, the regression weight for location regulation attributes in the prediction of urban land use planning regulations is significantly different from zero at 0.001 level (two tailed). Also, the P-value is less than 0.05, consequently research hypothesis 2 is supported. The implication of this result is that this study confirmed that location regulation attributes had a significant positive (increasing) influence on urban land use planning regulations. These result has buttress the relationship in the hypothetical structure (Figure 3.4).

H_1 =Structural regulation attributes have significant influence on urban land use planning regulations.

Table 4.27 Path analysis for structural equation modeling for hypothesis 3

Construct	Path	Construct	Beta estimate	Standard error	Critical ratio	P-value
Urban land use planning regulations	←	Structural regulations attributes	0.290	0.050	5.8	0.001

Details in Table 4.27 shows that the probability of getting a critical ratio as large as 5.8 in absolute values is less than 0.001. That is to say, the regression weight for Structural regulation attributes in the prediction of urban land use planning regulations is significantly different from zero at 0.001 level (two tailed). Also, the P-value is less than 0.05, therefore research hypothesis 3 is supported. The implication of this result is that this study confirmed that Structural regulation attributes has a positive significant influence on urban land use planning regulations. These result has buttress the relationship in the hypothetical structure (Figure 3.4).

H_1 = Urban land use planning regulations have significant influence on residential property investment returns.

Table 4.28 Path analysis for structural equation modeling for hypothesis 4

Construct	Path	Construct	Beta estimate	Standard error	Critical ratio	P-value
Residential property investment returns	←	Urban land use planning regulations	1.51	0.320	4.719	0.001

Details in Table 4.28 shows that the probability of getting a critical ratio as large as 4.719 in absolute values is less than 0.001. That is to say, the regression weight for urban land use planning regulations in the prediction of residential property investment returns is significantly different from zero at 0.001 level (two tailed). Also, the P-value is less than 0.05, thus research hypothesis 4 is supported. The implication of this result is that this study established that urban land use planning regulation has a positive significant influence on residential property investment returns. These outcome has buttress the relationship in the hypothetical structure (Figure 3.4).

Table 4.29: Summary of all the study hypotheses statements and their results

Hypothesis statement	**Result**
H_1 Neighbourhood regulations attributes have significant influence on urban land use planning regulations.	Supported
H_1 Structural regulations attributes have significant influence on urban land use planning regulations.	Supported
H_1 Location regulations attributes have significant influence on urban land use planning regulations.	Supported
H_1 Urban land use planning regulations have significant influence on residential property investment returns.	Supported

The result of the hypothesis confirmed the earlier intuition that neighbourhood regulation attributes, structural regulation attributes and location regulation attributes are indicators of urban land use planning regulations. Interestingly, the findings demonstrate that structural regulation attributes have more influence on residential property investment returns, followed by neighbourhood regulation attributes and then location regulation attributes and have a positive linear relationship.

This objective empirical finding is in agreement with the previous resaerch conducted by scholars like Brueckner *et al*. (2017) location regulation attributes, Li *et al*. (2018); Chiwuzie *et al*. (2019) structural regulation attributes and Tan (2019) neighbourhood regulation attributes affect rent/housing price.

4.6 Residential Property Investment Returns Structural Model Assessment

4.6.1 Initial Structural Model

Basically, in AMOS graphic the direction of the hypothesis detects the outline of the arrow that link the construct. In this study, the single headed arrow was used to test the causal effect of the constructs, whereas the double headed arrow was employed to assess the correlational effects among the constructs. AMOS graphic create an avenue in this study to analyse the multiple relationships among constructs simultaneously. Figure 4.21 depicts the initial path diagram after pulling together all the constructs, thereafter running the structural model. From the Figure 4.21 only the parsimonious fitness indices depicted by Chisq/df is lower than 5.0 at 1.794 and RMSEA showed absolute fitness lower than 0.08 at 0.070. Both incremental fitness and GFI depicting absolute fitness indices are less than the required benchmark. An assessment of the factor loading also indicated 2 items are having low factor loading issue (below 0.50). They included LRA6 and ULUPR4 with 0.39 and 0.19 respectively.

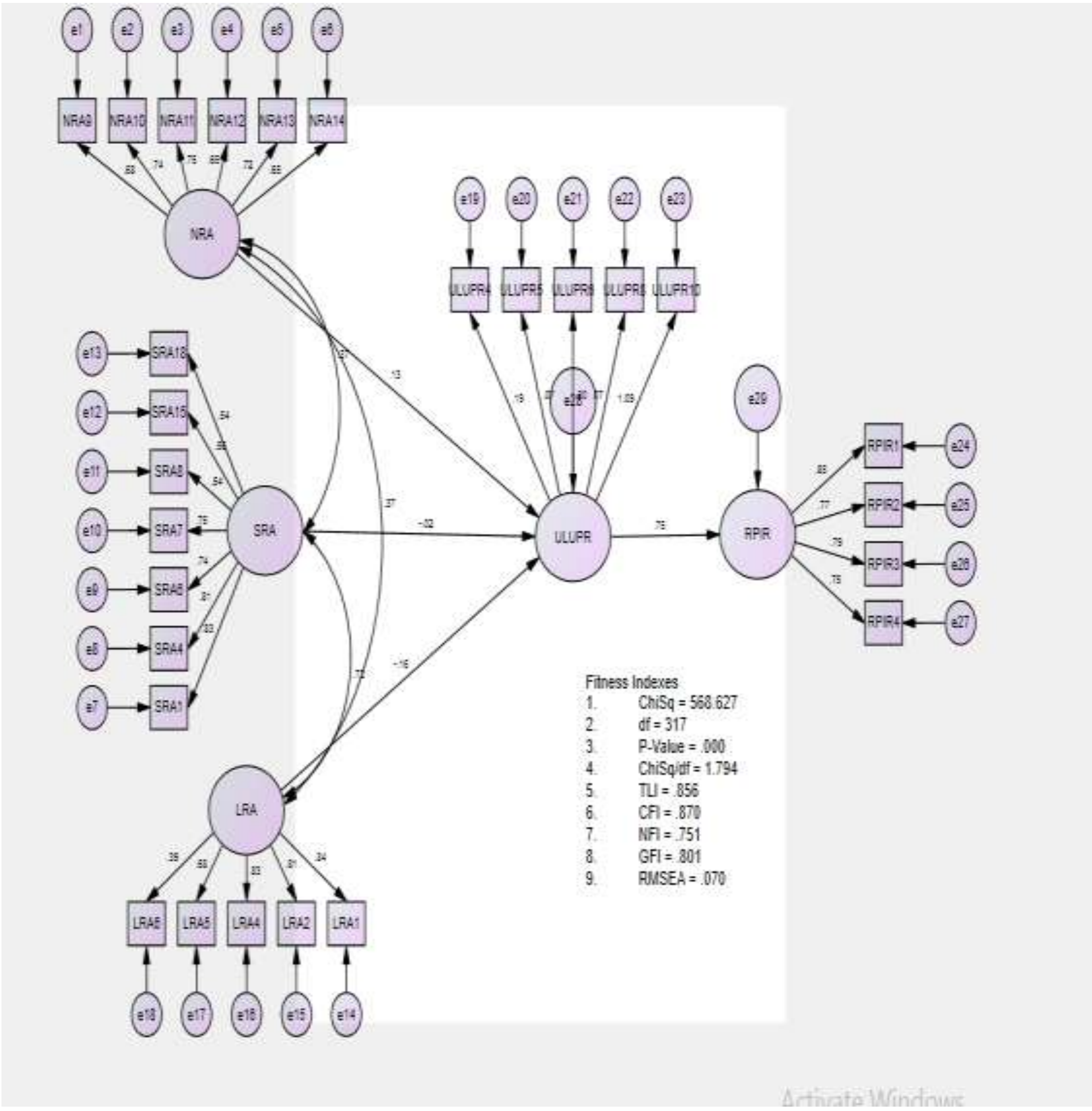

Figure 4.21: Initial structural model (unstandardized estimate)

Prior to the improvement, the initial path diagram unstandardized estimate (see Figure 4.21) the AMOS graphics indicated that 18% of the initial performance of residential property investment return might be estimated by employing 1 construct which is ULUPRs. Also, 3% of the initial performance of ULUPRs can be measured by combining 3 exogenous construct (independent variable) into the model, this include: Neighbourhood regulation attributes, structural regulation attributes and location regulation attributes.

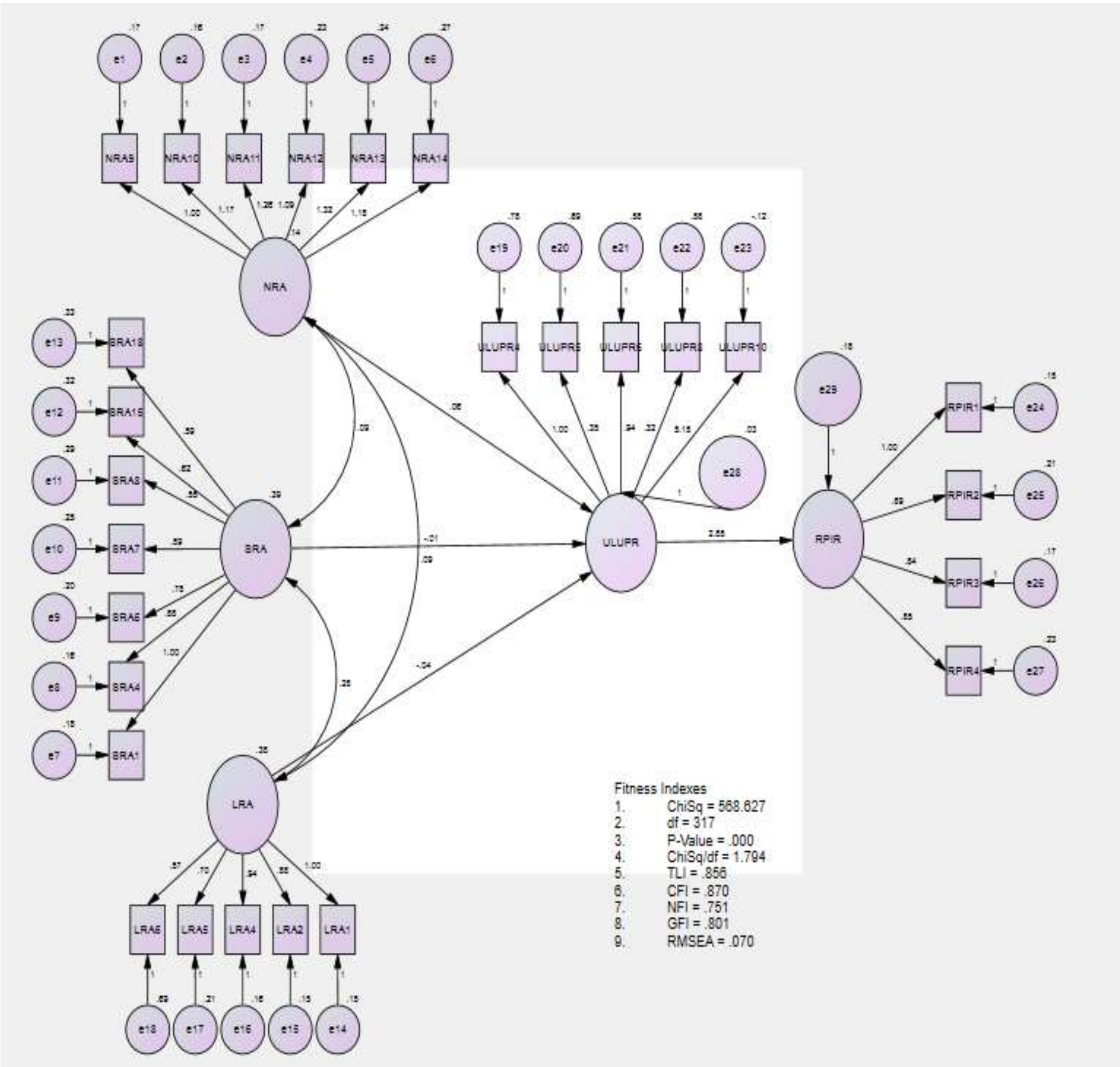

Figure 4.22: Initial structural model (standardised estimate)

4.6.2 The Final Structural Model

Development of a residential property investment returns predictive model was achieved by the final structural model, see Figure 4.23. While trying to develop the structural model, items with low factor loading were immediately identified and deleted, yet the structural model did not show much substantial improvement. Hence, the modification indices of the structural model were assessed to identify pairs of redundant items, e11/SRA8 and e12/SRA15 were discovered to be redundant items and were set as free parameter estimate which dramatically improve the structural model. This is illustrated in the Figure 4.23. From the structural model it was established that all the fitness indices have improved substantially. The Chisq/df signifying the parsimonious fitness indices was less than 5.0 coefficient at 1.513. CFI indicated the incremental fitness indices was above the required 0.90 benchmark at 0.921. RMSEA demonstrated the absolute fitness index is at the required <0.08 level at 0.056.

Deducing from the structural model indicated that 32% of the final performance in residential property investment return can be predicted by utilizing 1 construct which is urban land use planning regulations. Additionally, 24% of the absolute performance of ULUPRs can be measured by combining 3 exogenous constructs (independent variable) into the structural model (neighbourhood regulation attributes, structural regulation attributes and location regulation attributes).

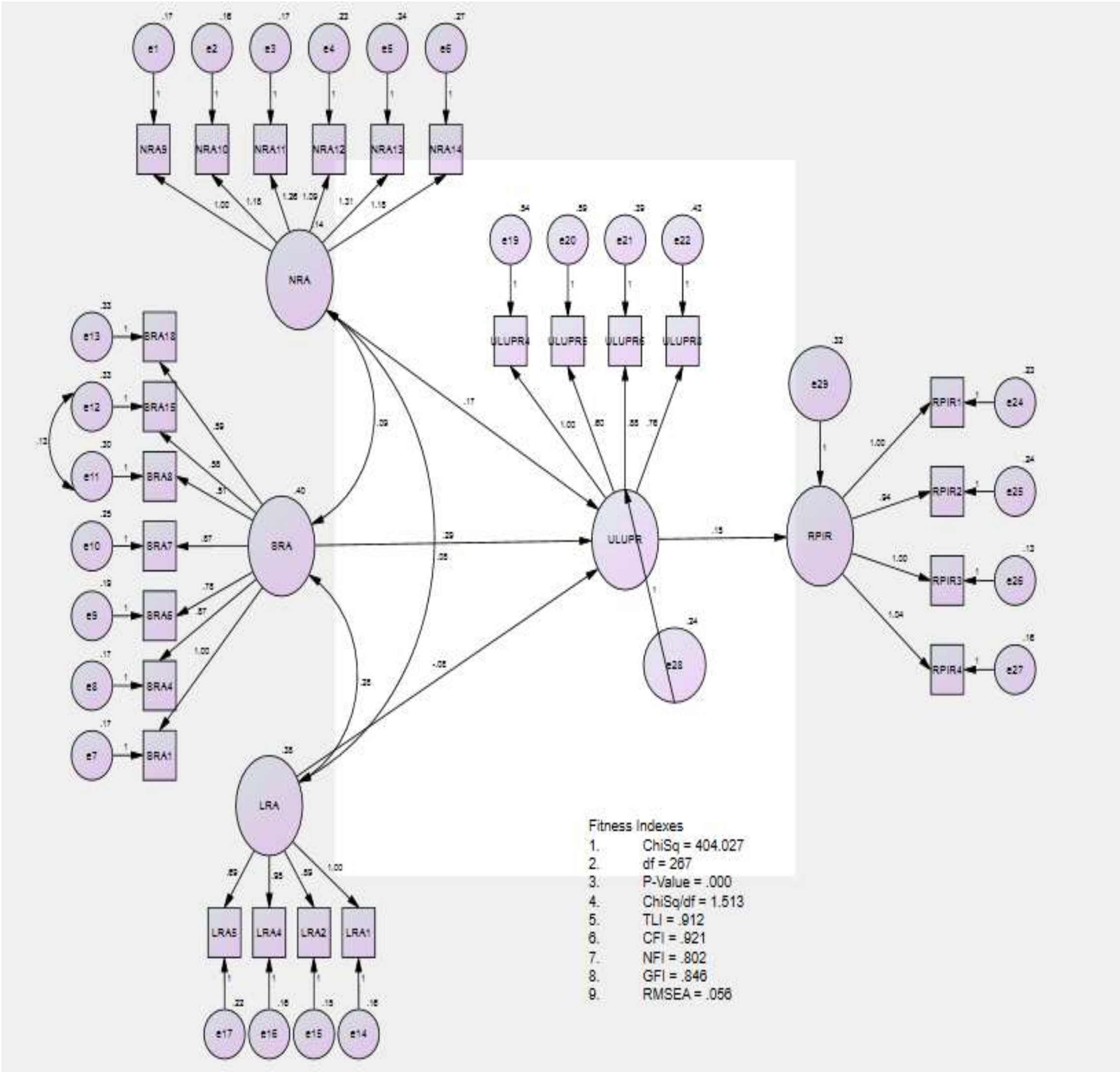

Figure 4.23: shows final structural model (standardised estimate)

Figure 4.23 it is evident that the structural model has achieved discriminant validity because the value of correlation between the model exogenous constructs is less than 0.85 (Hair *et al*., 2013; Awang, 2014). Thus achieving discriminate validity indicated no multi-collinearity problem as can be seen in Table 4.30.

Table 4.30: Measure of correlation between exogenous constructs

Construct	Path	Construct	Estimate of correlation
Neighbourhood regulations attributes	↔	Structural regulation attributes	0.086
Neighbourhood regulations attributes	↔	Location regulation attributes	0.084
Structural regulation attributes	↔	Location regulation attributes	0.281

Information from Table 4.30 were sourced from the text output of the final standardised structural model as shown by Figure 4.23.

In this study, from the final standardised structural model in Figure 4.23 regression weight demonstrating the beta value coefficient estimate that measured the effect of individual exogenous (independent) construct on the establish endogenous (dependent) construct are illustrated in Table 4.31

Table 4.31: regression weights and significance coefficient for final structural model

Construct	Path	Construct	Beta estimate	Standard error	Critical ratio	P-value
Urban land use planning regulations	←	Location regulations attributes	0.167	0.039	4.282	***
Urban land use planning regulations	←	Neighbourhood regulation attributes	0.178	0.040	4.45	***
Urban land use planning regulations	←	Structural regulation attributes	0.290	0.050	5.8	***
Residential property investment returns	←	Urban land use planning regulations	1.51	0.320	4.719	***

*** P>0.001(supply by AMOS text output to imply highly significant)

The values from Table 4.31 were sourced from the text output of the establish final standardised structural model as shown by Figure 4.23. Deduction from Table 4.31 shows that, path coefficient of neighbourhood regulations attributes increases urban land use planning regulations by 0.178. This coefficient demonstrated that for every isolated 1-unit compliance/increase in neighbourhood regulation attributes (proximity to schools = NRA9, paved street= NRA10, sport facilities = NRA11, drainage system= NRA12, electricity= NRA13, security= NRA14) its effect should contribute 0.167-unit increase in urban land use planning regulations. That is when neighbourhood regulation attributes increase by 1 unit, urban land use planning regulations increase by 0.167 unit.

The path coefficient for location regulation attributes to urban land use planning regulation is 0.167. This value signified that for every 1-unit compliance/increase in location regulation attributes (distance from slum areas = LRA5, garbage dumps = LRA4, city centre = LRA2 and parks = LRA1), its effect has contributed 0.167-unit increase in urban land use planning regulations. In simple terms, when location regulation attributes increase by 1-unit, urban land use planning regulation goes up by 0.167-unit. This means location regulation attributes contributes to urban land use planning regulations by 0.167-unit.

Similarly, the path coefficient of structural regulation attributes contribution to urban land use planning regulations is 0.290. This coefficient showed that for every isolated unit compliance/increase in structural regulation attributes (type of construction materials = SRA18, certificate of occupancy = SRA15, inner environmental quality = SRA8, floor material = SRA7, roofing material = SRA6, plot size = SRA4 and age of the building = SRA1), its effect will add 0.290-unit increase in urban land use planning regulations. That is, when structural regulation attributes increase by 1-unit, urban land use planning regulation attributes increase by 0.290-unit.

In addition, the path coefficient of urban land use planning regulations to residential property investment returns is 1.51. This coefficient demonstrated that for every unit compliance/increase in urban land use planning regulations (adherence to NRA= ULUPRs4, adherence to LRA= ULUPRs5, adherence to SRA= ULUPRs6, Price paid for compulsory acquisitions = ULUPRs8 =Awareness= ULUPRs10), its effect would add 1.51-unit increase in residential property investment returns. In other words, when land use planning regulations go up by 1 unit, residential property investment returns also go up by 1.51 unit.

Table 4.32: Path coefficient of the relationship among the model construct from the highest to the lowest

Construct	Path	Construct	Measurement of effect
Residential property investment returns	←	Urban land use planning regulations	1.51
Urban land use planning regulations	←	Structural regulation attributes	0.290
Urban land use planning regulations	←	Neighbourhood regulation attributes	0.178
Urban land use planning regulations	←	Location regulation attributes	0.167

The Table 4.32 clearly shows that urban land use planning regulations demonstrate a great influence on residential property investment returns while structural regulation attributes have a greater effect among the formative construct of urban land use planning regulations, than neighbourhood regulation attributes while location regulation attributes exert the least effect on urban land use planning regulations thereby confirming the fourth objective of this study.

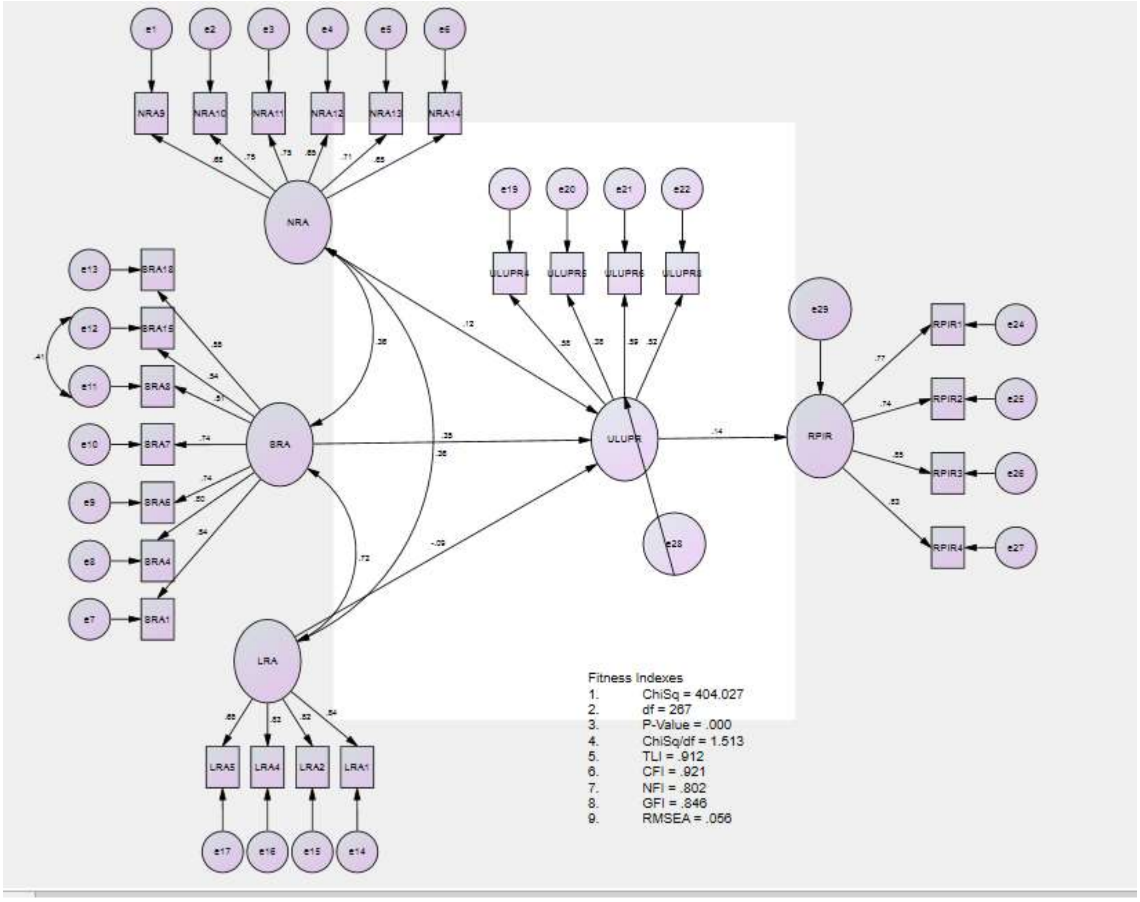

Figure 4.24: Final structural regression weight model (unstandardized estimate)

The coefficient of the causal effect among the construct are presented in Table 4.33

Table 4.33: Measure of strength and magnitude of association among constructs

Construct	Path	Construct	Estimate of correlation
Urban land use planning regulations	←	Neighbourhood regulations attributes	0.12
Urban land use planning regulations	←	Location regulations attributes	0.09
Urban land use planning regulations	←	Structural regulations attributes	0.25
Residential property investment returns	←	Urban land use planning regulations	0.14

Deduction from Table 4.33 indicates that the structural regulation attributes had the maximum effect on urban land use planning regulations with a coefficient estimate of 0.25. Neighbourhood regulation attributes have a moderate effect with a coefficient estimate of 0.12, whilst location regulation attributes had a least effect at a coefficient estimate of 0.09. Though these constructs are individual reflective constructs that made up urban land use planning regulations. Urban land use planning regulations as a whole affect residential property investment returns by 0.14 coefficient estimate. Hence, the last objective of this study have been achieved.

The residential property investment returns established model is well-thought-out in this study as the final and most fundamental aspect. The final model integrates all the findings derived from achieving the numerous objectives employing the appropriate methodological processes adapted for this study. The residential property investment returns model involves incorporating neighbourhood regulation attributes, structural regulation attributes as well as location regulation attributes in the form of a mechanism to unravel the full potential of residential property investment returns in the property market. The residential property investment returns model involves establishing urban land use planning regulations attributes that have direct effect on the residential property market.

The significance of not having neighbourhood regulation attributes, structural regulation attributes and location regulation attributes can only result in a less optimal real estate investment returns. Consequently, for optimal realization of residential property investment returns it is critical to have this neighbourhoods regulation attributes (zoning, tarred road, sport facility, drainage network, electricity, security), structural regulation attributes (age of building, plot size, walling material, floor material, inner environmental quality, certificate of occupancy, construction material) and location regulation attributes(distance from parks, distance from city centre, distance to garbage dump, distance to slum area) because it has empirically proven that their combine structure significantly affect urban land use planning regulations in order to optimize benefit realization in residential property investment returns.

The findings of this research provides evidence that neighbourhood regulations, structural regulations and location regulation are formative variable that collectively enhance urban land use planning regulations in the study area. The implication of this result is that the more an investor adheres to this confirmed ULUPRs attributes in the course of developing his residential property investment in the property market the greater chances of recuperating his invested capital. On the other hand, some of the variable identified are basically the responsibility of the public sector to provide for instance access roads network, electricity, waste disposal site, police post, fire fighter post, allocation of commercial centres, recreational centres. Consequently, their provision is beyond the purview of a private investor.

In order to establish the “wellness” of this study structural model, the final structural model output of the standardized residual covariance was examined. Awang (2014) opined that residual covariance refers to the difference between sample covariance and the model implied covariance of a model. The standardised residuals for this study were mostly less than 2.0 in absolute value hence the structural model is correctly measured in consonance with scholars like (Awang, 2014). Also, a close assessment of the standardized residual covariance of the final structural depicts that only 19 out of the 1682 calculated residual estimates were above 2.0. Subsequently the model is established to be in a good form (see Appendix Q).

4.7 Summary of Chapter Four

Basically, this chapter focused on results and discussion of the result, by presenting individual Factors that causes variations in residential property investment returns and the extent of variation were established. The level of compliance to urban land use planning regulations and physical development measures were assessed. Furthermore, this chapter detailed result from data analytical procedures by using CB-SEM (AMOS). Four hypotheses were tested by mean of employing fistly the measurement model and thereafter the structural model assessment, the four hypothesis were supported with establish empirically driven evidence. Also, the chapter presented the predictive ability of the final structural model as well as their fitness indexes. The next chapter elucidate on the summary of findings, the contributions, conclusion and recommendations as well as areas for potential further studies.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

This section fundamentally presented the conclusion and recommendations of the whole study. Some very fundamental salient findings were unveiled from the objectives of this research which includes:

1. The result from descriptive statistic and principal component analysis indicates that income level, population, vacancy rate, structural facilities, security of neighbourhood and neighbourhood facilities are the factors that causes variation in residential property investment returns among the neighbourhoods. The implication of findings is that availability of the aforementioned amenities in this neighbourhoods will stabilise the streams of investment returns from residential property and allow investors to recoup their invested capital timely.

2. The result shows that total returns from residential properties in Kaduna metropolis ranged from 7.93% to 12.68 % and the risk-return ration ranged from 25.06% to 46.80% among a one-bedroom (self-contain), two-bedroom and three-bedroom properties. There is a direct positive relationship between total returns and risk profile, Malali property market is suggested to be the most appropriate location for risk averse investors (COV=33.35%) among Unguwan-rimi, Barnawa and Sabon-tasha property market whilst in Kano metropolis the study revealed that total return for residential property also ranged from 6.99% to 14.44% with risk-returns ratio ranging from 24.69% to 51.54% within the property market. Thus, Badawa/GRA property market is the most secured location for a one-bedroom (self-contain), two and three-bedroom residential property investment in

the study area with lower risk (COV=20.93%) and consequently been recommended for risk averse investors. From the foregoing, RPIRs is volatile in Kano metropolis having a higher total returns as compared to Kaduna study areas. The implication of this findings is that a return conscious investor on this classes of property will recoup his invested capital in Kano metropolis earlier than his counterpart in Kaduna study areas all things been equal “Ceteris paribus” and the practical significance is that total return also increase from land as other factors of production (wages, interest rate and profit for the entrepreneur).

3. The result also indicate that in Kano metropolis, regulations on Building setback, open space, volume of development, fire prevention equipment, building coverage, net building height, Garbage receptacle, source of water, availability of 2 trees or more in a house, colour code, store size, change in use and habitation certificate, certificate of fitness and habitation were below 50% compliance rate within the sampled property across the four residential neighbourhoods of Naibawa/Yar-akwa, Rijiyar-zaki, Hotoro and Badawa. Similarly, in Kaduna metropolis regulations on fire prevention equipment, building coverage, colour code, change in use and habitation certificate, and certificate for fitness for habitation were also below 50% compliance rate across the sampled property in the four sampled residential neighbourhoods.

   Deductions from the foregoing findings is that investors in this classes of residential property in Kano study areas are insolent to regulations on urban planning and physical development control measures than their counterpart in Kaduna metropolis, the attitude leads to proliferation of squalor residential building in Kano metropolis than Kano metropolis and it evident in the nooks and cranny of Kano metropolis were obnoxious land uses are visible. This obnoxious environment leaves clients with limited choices in terms of household location decision to make, thereby increase tendancy of voids in residential occupancy.

4. The result of the study test hypothesis shows that the causal relationship of ULUPRs is explained by 0.25 coefficient estimate of structural regulation attributes, 0.12 coefficient estimate of neighbourhood regulation attributes and 0.09 coefficient estimate of location regulation attributes. The implication of this findings is that urban land use planning regulations is a critical component in residential property investment returns formation.

5. The result in addition indicates that a strong performance (32%) in residential property investment returns is explained by urban land use planning regulations. Also 24% of the absolute performance of ULUPRs can be measured by combining 3 reflective constructs (independent variable) into the structural model (neighbourhood regulations attributes, structural regulations attributes and location regulations attributes), with parsimonious fitness index at 1.513, incremental fitness index at 0.921, absolute fitness index at 0.056. From the foregoing, the implication is that investors should adhere to ULUPRs in the study areas because it will aid in providing plethora of choices in term of residential property investment returns opportunities.

5.2 Conclusion

ULUPRs has latitudinal effect on real estate, if stringently enforce in the development process it provides tangible property features that satisfy clients and a hot spot for investors because the environment is serene for habitation, an indicator for potential economic growth and development.

Harnessing information regarding risk-return characteristic from the study property market will serve as a yardstick for making informed investment decision that will minimise loss and maximise returns to the investor/developer because analysis shows that residential risk-returns features of residential property is volatile and positive and; variation in RPIRs is a consequence of some socio-economic and physical factors.

Also, non-compliance to ULUPRs has a tendency of making the property market operate uneconomically to the residents by extending negative externalities to the housing sectors, that is through obnoxious land uses seen in nooks and cranny of the study neighbourhoods that have implication on the quality of life of the inhabitant. Non-compliance can be minimised through public enlightenment on sustainable residential development control measures by the government and community based organisation. This can be achieved by utilising both hard (human) and soft (technology) control measures. And, can be realised by collaborations between the government, community based organisation and the inhabitant during the development and implementation of policy regarding development control. To achieve an overall value capture uplift, it encompasses incorporation of local priorities regarding culture and norms of the resident in terms of design guide, traffic measure and infrastructure.

Finally, the property market provide opportunity for diversification of Nigeria economy which have not been fully utilise understanding it behavioural pattern is critical hence the need for the Nigeria Institution of Estate Surveyors and valuers to encourage it members to embrace the predictive model develop because it empirically proven that ULUPRs can predicts RPIRs in the study area. This predictive model will guide investment decision in the sub-property market in Northwest, Nigeria.

5.3 Recommendations

1. The study recommend that a savvy investor should be abreast with information regarding income level, population rate, vacancy rate, neighbourhood facilities and structural facilities of the study residential neighbourhood (these are the socio-economic, intrinsic and extrinsic features of residential property) from the estate surveyor and valuers because this factors are the primary cause of variation on RPIRs in the study area. Where these variables are visible the location has stability in terms of investment returns profile from the results of descriptive statistic (Table 4.1) and PCA (Table 4.2). This approach could have a more practical significance if utilised by the estate surveying and valuation firms while monitoring residential property performance. To actualise the aforementioned Property characteristic data bank should be develop domiciled with the Nigeria Institution of State Surveyors and Valuers, and continuous upgrade of the data bank will solve the reoccurring issue of lack of an integrated source of quality data for informed decision making by Estate surveyor and valuers.

2. Trend analysis of total returns index depicts that all the category of hereditament (one-bedroom, two-bedrooms' and, three-bedrooms property) their return is volatile with a positive profile across the study neighbourhood. Hence, risk conscious investors that desire to invest in residential property will continue to have rental growth and capital appreciation while risk taker investors can also utilise property with higher income and higher risk profile across the study areas. Therefore, this study recommends that for risk averse investors in residential property. Malali is the ultimate location while for risk takers investors Barnawa is the best location for residential property investment in Kaduna metropolis. Similarly, in Kano metropolis, for same type of property the ultimate destination

for risk averse investors is Badawa whilst Hotoro/GRA is the ultimate location for risk taking investors all things been equal “Ceteris paribus”. In furtherance, the Nigeria institution of estate surveyors and valuers should encourage it members to carry out total returns-risk assessment on every residential property in their portfolio to know the trends of total returns because it is the best measures of residential property performance for local and foreign investor in order to minimise declining rental returns, mortgage default by investors and inadequate exploitation of property tax to the government coffers. This could be achieved by sensitising the practising estate surveyors and valuers on the long run benefit both the firm and client employing total returns trend analysis stand to enjoy during the yearly mandatory continuing professional development seminar and at the national conference usually organise by NIESVs in State and National levels.

3. In this study compliance to residential urban land use planning and physical development control measure are largely not adhered to by the study sample. This study consequently recommends the need for Government at all levels to collaborate with community base associations to increase knowledgeability of the inhabitants and modifying the urban land use residential planning regulations taking into cognisant the extant socio-economic and cultural characteristics of the inhabitant, this will curtail the challenge of unfamiliar laws. This could be achieved through continually incorporating the inhabitant in sensitisation programs to keep them abreast with implication of non-adherence to physical residential development regulations in terms of value capture uplift (betterment) while government will have access to more revenue generation through improve property tax regime (betterment tax) and other receipts through regular transactions as a result of competition to occupy more habitable Neighbourhoods.

4. The study also systematically developed a model on the relationship between RPIRs and ULUPRs that is intuitively mentioned in literature and after that empirically tested the model in context of property market in Nigeria. Evidence on the relationships between SRA, NRA and LRA and RPIRs was established. Therefore, this study recommends that in order to have a more practical significance the Nigeria institution of estate surveyors and valuers should encourage it members to utilise this residential investment returns model capturing ULUPRs so developed, in assessing RPIRs for both local and international investors. Identifying specific clientele housing requirement and improving on it provision will have positive implication on the clientele willingness to pay for the housing as a whole product. This could be achieved by encouraging and enlightening the government on the benefit of providing the user specific amenities that are its core responsibilities and monitoring development control in line with research findings while investors also need to making provision for it user specific requirement in the residential ULUPRs manual that are discovered to be users specifics in the yearly mandatory continuing professional development seminar and at National conferences usually organise by NIESVs in State and National levels.

5. In conclusion, this research recommends NIESV's to encourage it members to utilise this predictive model for residential property prediction to unearth regional peculiarity. This could be achieved by the yearly mandatory continuing professional development seminar at conferences usually organise by NIESVs in State and National levels.

5.4 Contribution/Implication to Knowledge

From previous studies only Hedonic model was employed in studies involving ULUPRs and rental or capital value. The model is perceived to provide a better understanding of the main research question because the models are anchored on the assumption that all the attributes of housing have non constant effect on rental or housing price, this aided in explaining the contribution of isolated ULUPRs construct on RPIRs construct in the study area.

Basically, the originality in this study contributes to the larger body of knowledge in the property market particularly the residential investment market by empirically establishing contextual specific ULUPRs that is considered as important attributes for achieving optimal investment returns. The role of contextual neighbourhood regulation attributes, structural regulation attributes and location regulation attributes in the achievement of higher residential investment returns have not been emphasised. The contribution of this study embraces three perspectives: the theoretical aspect, empirical aspect and practical aspect.

From the theoretical aspect, the current study enriches the, understanding of Nigeria sub-property investment in the global property market within the context of urban land use planning regulations. It has identified the specific neighbourhood regulations attributes, structural regulations attributes and location regulations attributes required for optimal investment returns in the property market. The regulations attributes enumerated will enable investors to maximise outright sales/rental returns in the Kano and Kaduna metropolitan property market. Consequently, this study suggested that one of the critical issue in order to minimised voids in occupancy and attain maximum investment returns is through enhancing the identified user specific need requirement in residential building.

From the empirical aspect, methodologically in terms of new instrument (CB-SEM "AMOS"), this study is among the earliest attempts to evaluate the significance of ULUPRs on RPIRs within the property market. Hence, the findings of the relationship revealed the formative construct variables of ULUPRs (Neighbourhood regulation attributes, structural regulation attributes and location regulation attributes) that are more user satisfying positively influence RPIRs realisation strategy. This is important to Estate surveyors and valuers who seeks to improve returns from their residential property and, voids minimisation in occupancy of residential property. This study offers a reasonably structured approach to land economy/urban studies that solve the problem of void in residential occupancy due to planning risk in a more contextual pattern as a form of generative study setting.

Practically, this study proffers new insights for stakeholders of residential property investment in the Nigeria property market to steer firm towards a more effective multidimensional practice to realising optimal investment returns. Also, this study serves as a podium for residential investor/developers to identify residential property market with specific neighbourhood regulation attributes, structural regulation attributes and location regulation attributes so as to explore the full potential of the residential property market toward optimal returns based on using the analytical predictive model. This will serve as a facilitator towards predicting investment returns from the perspective of returns maximisations. This research aid in addressing the gap identified in this study, as the orthodox practice of client not being able to realise maximum returns; and valuers not being able to predict full capture returns for investor in the property market by evaluating the extant ULUPRs.

5.5 Areas for Future Research

To corroborate this study, triangulation using the quantitative and qualitative research strategy/approach can be adopted, direct access to occupant of resident property under investigation could thus enable access to detailed and rich source of data.

The study research framework provides empirical evidence of the influence of neighbourhood regulation attributes, structural regulation attributes and location regulation attributes on RPIRs in the context of developing economy such as Nigeria. It is reasonable that developing countries are diverse from developed countries in terms of socio-political and economic characteristics, level of technology (Almeida *et al*., 2016). These peculiarities may have significant difference on the research model findings. To advance the generalisation of the outcome and validation, the repetition of the research framework in the context of the level of the development of a country and even comparative study between countries will no doubt contribute to the understanding and generalisation of the research findings.

Also, the utilisation of non-probability sampling technique is used in this research. Because of the limitation of access to residential property data that are not domicile with estate surveying and valuation firms, this limitation was enforced. Thus, the utilisation of non-probability sampling depicted that the sampling did not capture all the elements of the targeted population. It is hence difficult to ascertain to what extent the sample size represents the whole population (Lorh, 2010). Future research should overcome this huddle by early cooperation between the industry and the academia ab initio in the research.

Finally, the RPIRs predictive model developed in this study can be advanced in order to incorporate more investment return specific parameters as it relate to ULUPRs. Such parameters may include additional independent variables or incorporating moderating (level of education, socio-economic status) and mediating (socio-demographic) variables. This predictive model is developed for broad range of residential property investment returns, as such specific investment returns features can be merge/intergretd into the model to guarantee a particular investment in terms of returns for residential real estate investment market.

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Appendix A
Summary of Previous Empirical Studies Relating to this Research
Empirical Studies on the Effect of Urban Land Use Planning Regulations on Rental Values

SN	Author/year & location	Issues	Variable & method of Analysis	Findings	Comment
1	Jaeger Williams (2007) USA	Effect of land use regulations on property value	Data on price levels, market value and zone OLS regression used for analysis (location attributes)	Land with most stringent restriction rise in value parallel to those without restriction	The property market in Oregan is designed according to the urban land use planning. Total return was not captured
2	Michael & Palmquist (2010) USA	Environmental land use restriction and property values	Content analysis	Legal restrictions have a mixture of negative and positive effects on land values, and accurately determining the net effect of any particular restriction requires careful empirical research	Rigorous economic analysis of variables used have a vital role in determining the effect of externalities on property values. Total returns was overlooked. Only capital returns was considered
3	Adebayo & Olawande (2011) Nigeria	Effect of sustainable industrial land use on residential property values	Data on rental values, socio-economic features, perception of security & health issues. Percentages and tables (neighbourhood attributes)	Positive change in property rental values due to the industrial concerns arising from sustainable industrial practices	Sustainable industrial practice that propels residential property investment in the neighbourhood. The study ignored total return
4	Donovan and Butry (2011) USA	Effect of urban trees on the rental price of single-family homes	Data on rental values, characteristic of the house, neighbourhood. Hedonic regression (neighbourhood & structural attributes)	Additional tree on a house's lot increased monthly rent and a tree in the public right of way increased rent.	Tree add positive amenity effect to the monthly rent and annual rental value. The study only considered income return.

Continued Summary of Empirical Studies on the Effect of Urban Land Use Planning Regulations on Rental Values

SN	Author year & location	Issues	Variable & method of Analysis	Findings	Comment
5	Jaeger, *et al.* (2011). USA	Urban land use planning affecting property values.	Data on Rental levels, zoning, setback. Simple difference-in-difference DD estimator (location attributes)	Property values have increased at comparable rates both inside and outside urban growth boundaries, and across parcels zoned for different uses and across state lines	The planning system is all-inclusive, taking into consideration of supply of land at an interval. Each land has a different effect. Total return was not isolated
6	Ajibola *et al.* (2012) Nigeria	Effects of urban planning on residential property values	Data on soio-demographic feature from real estate specialists and residents. Descriptive statistics and linear regression used for analysis.	Residential Properties situated in planned areas had higher rental values than those situated in less planned areas.	The environment that is orderly, functional and aesthetically pleasing add positive externality to property values. Total return was ignored.
7	Bello & Yacim (2014) Nigeria	Impact of Tree Shade on Rental Value of Residential Property in Maiduguri, North – Eastern, Nigeria	Data on rental levels and the structural component, available tree. Hedonic regression (structural & neighborhood attributes)	Tree shade has a positive impact on the rental value, as a result, the amenity effect they enjoy.	Tree shade provide a positive amenity effect because of the tropical climate nature of the study area. Total return was ignored.
8	Salihu, (2015)	Comparative study of residential property rental values in planned and unplanned neighbourhoods	Data on rental values, buiding codes, setbacks, zoning, density	A significant variation in rental value between planned and unplanned location	Development control have a positive impact on rental values
9	Sun, Wang, and Li1 (2016) china	Impact of Subway Lines on Residential Property Values	Data on rental levels, accessibility, neighbourhood, and structure. Hedonic pricing model (neighbourhood and structural)	Subway plays a significant role in enhancing increases in the surrounding land prices. Already built areas have a greater influence on surrounding residential housing than lines that are being planned.	The range of influence of rail transportation is positively linked with the distance from the city centres, but it does not consistently increase with it.only income return was considered in the study

Summary of Empirical Studies on the Effect of Urban Land Use Planning Regulations on Rental Values

SN	Author year & location	Issues	Variable & method	Findings	Comment
10	Guo and Peeta (2017) Australia	Impact of walkable environment on single-family residential property values	Data on capital value, census data, road network data, land-use data, and the walking time: Regression (neighbourhood attributes)	Single-family residential property value per square meter is higher in homogeneous residential neighbourhoods with higher property walk accessibility. It also indicates that larger or intense uses can have a negative effect.	Neighbourhood that is well planned has a positive effect on rental values as compared to lesser planned areas. The study centred on income return.
11					

Summary Previous Empirical Studies on the Effect of Urban Land Use Planning Regulations on Housing Price

SN	**Author/year & location**	**Issue**	**Variable & method of Analysis**	**Findings**	**Comment**
1	Ihlanfeldt (2007) USA	Effects of land use regulation restrictiveness on house and vacant land prices	Data collected include sales price, structural characteristics. Regression (structural attributes)	Land use regulation has important effects on the prices of housing and vacant land	Increases house price and reduces land prices provides further evidence that greater regulation restrictiveness increases developers' costs and also that the increase in-house price fails to offset these higher costs. The study ignore total return
2	Yusuf & Resosudarmo (2008) Indonesian	A hedonic price analysis of the Jakarta housing market, Indonesia	Data collected are monthly house rent), structural characteristics, and neighbourhood characteristics, Air pollution(structural, neighborhood and air pollution)	Better air quality is associated with higher property value, hence tenant pay more to the investor	Planning regulation that is strict on air quality can have amenity effect on residence hence higher pecuniary benefit to the investor. The study over looked total return only covered capital return.
3	Tang & Yiu (2010) Hong Kong	Relationship between development intensity and housing price in Hong Kong	Data collected include selling price, property features &neighbourhood characteristics. Regression	Buyers tend to pay more for a larger amount of internal and external housing space, there is an "ideal range" of development scale measured in terms of the total number of dwelling units in a housing estate	Adhering to regulations on development characteristics of housing estates may also affect the price of an individual dwelling unit. Housing prices tend to increase with the average unit share of public space (spaciousness). Providing a positive amenity effect. Total return was ignored

Summary Previous Empirical Studies on the Effect of the Urban Land Use Planning Regulations on Housing Price

SN	Author/ year & location	Issue	Variable & method of Analysis	Findings	Comment
4	Huang & Tang (2011) USA	Residential land use regulation, geographic land scarcity, and subprime mortgage credit expansion were related to the amplitude of the housing price cycle	Data collected include housing price, regulatory process, household income, open space requirement, density restrictions employment rate WRLURI, Regression(structural attributes)	Cities that are more regulated and have less developable land experienced greater price gains between January 2000 and June 2006, and greater price declines between June 2006 and July 2009	Regulation has a positive effect on a property but it depends on the level of compliance by the occupant to this planning laws. The study over looked total return
5	Zhang, *et al*. (2013) China	Effect of various educational facilities on housing prices	Data collected include housing price, educational facilities. Regression (neighbourhood attributes)	College institution improves the surrounding housing prices through accessibility	Because of amenity effects, buyers and investors are willing to pay for education quality or accessibility. The study overview total return
6	Monkkonen & Ronconi 2013 (Argentina)	Impact of land use regulations, compliance on the land market	Data gather on survey parcel price, features of vacant lots, land use regulations & constraint to low-cost housing. Econometric analysis using multiple regression(structural attributes)	Rigid land use regulations are associated with lower compliance rate and at minimum property right rule and lesser land price,	At the macro level, the result has contradicting theory and evidence from the developing countries intuitive land use regulation has a negative relationship with the land price at the micro level. Total return was not captured

Summary of Previous Empirical Studies on the Effect of the Urban Land Use Planning Regulations on Housing Price

SN	Author/ year & location	Issue	Variable and method of Analysis	Findings	Comment
7	Awauh, *et al*. (2013) Ghana	Benefits of urban land use planning in Ghana	Data collected include selling price, amenities within the neighbourhoods, formalize title.(neighbourhattributes)	Except for worship centres, all the individual planned development attributes generate benefits with respect to the specified property in the study community, albeit in different magnitudes	Much of the value of land use planning in residential neighbourhoods hinged on tarred roads and concrete drains, electricity, formalized titles and pipe-borne water. Total return was ignored.
8	Monkkenam (2013) Indonesia	Relationship between land use regulations and housing markets in Indonesia through various analyses;	Data collected includes construction permit, time & cost of registering land. (structural attributes)	Regulations do impact the production of housing in Indonesia, but they do not affect housing markets in the predicted way because of their flexible enforcement and a widespread and dynamic informal housing-production system.	Case of Indonesia demonstrates the importance of regulatory enforcement and local context in the analysis of land use regulations. Total return was not captured
9	Du_and Zhang (2014) China	Home-Purchase Restriction, Property Tax, and Housing Price in China	Data collected include housing price, property tax (sstructural attributes)	Purchase restrictions reduced the annual growth rate of housing prices by 7.69 percent; the trial property tax reduced the annual growth rate of housing prices; the trial property tax of Shanghai had no significant effect on housing prices	In order to curb the soaring housing prices home, purchase restrictions should be left, at least in the short run, replaced by property taxes to have a perfect market. Total return was overlook in the study.

Summary on Previous Empirical Studies on the Effect of the Urban Land Use Planning Regulations on Housing Price

SN	Author/year & location	Issue	Variable analysis method of Analysis	Findings	Comment
10	Qin, *et al*. (2014) China	Spatial effect of lake landscape on housing price	Data collected on housing price, public facilities, ppty mgt quality, living facility, surrounding environment. Hedonic Regression (structural attributes)	West Lake has a significant positive external effect on housing prices	The amenity effect of the West-Lake on housing prices exhibits the directional and distance heterogeneities, total return was not isolated
11	Zhang, *et al*. (2015) China	Amenity effect of various landscapes on housing price	Data collected on Building component, neighbourhood and landscape. Hedonic regression (structural & neighbourhood attributes)	The four lakes have significant effects on the housing prices.	Urban residents are evidently willing to pay an additional price on environmental amenities. Effect on total return was not isolated
12	Zou, (2015) China	Effect of Central Business District on House Prices	Data collected on housing prices, floor space, bedroom, bathroom, age, floor level, Hedonic regression (structural attributes)	House prices decrease with distance from CBD and walking distance to the nearest underground station	Negative price gradient from the CBD. Total return was not isolated
13	Raji & Gomez (2015) Malaysia	Effect of spatial post occupancy charges and spatial modification in low-cost terrace housing	Data collected on housing prices, age, kitchen, plot area, bedroom, floor areas. Hedonic regression (structural attributes)	The critical factor influencing residential property rental value of spatially modify terrace house are age, bedroom, plot area, gross floor area.	The restriction on the intrinsic quality of the building has raised the amenity effect hence increased value to the housing prices. Total return was not captured

Summary of Previous Empirical Studies on the Effect of the Urban Land Use Planning Regulations on Housing Price

SN	Author/year & location	Issue	Variable and method of Analysis	Findings	Comment
14	Daams, Sijtsma, & Vlist (2016) Netherlands	The Effect of Natural Space on Nearby Property Prices	Data collected include selling price, date as well as a number of structural characteristics: living area, parcel size, number of rooms, period of construction, type of heating, type of structure,and the presence of insulation materials (structural attributes)	Economic benefits of living near natural space extend over a larger distance	Dutch property buyers pay higher prices for properties located at a a distance of up to 7 km from attractive natural space. The relative size of attractive natural space effects on property prices decreases with distance; total return was not captured in the study.
15	Zhang, *et al*. (2017) China	Spatial effect of river landscape on housing price	Data collected include housing price, Hedonic regression	Accessibility of the Grand Canal significantly affects housing prices because of its implicit amenity value	Grand Canal affects housing prices in Hangzhou significantly. Many middle and high-end real estate projects have been recently developed along the Grand Canal. Only capital return was captured
16	Zhang *et al*. (2017) China	Measuring the Stringency of Land-Use Regulation on housing price	Data collection from land sales, longitude-latitude coordinates. GIS for distance to employment centres, local infrastructure, and various amenities. Regression(neighbourhood & location attributes)	Regulations affect housing prices which are based on the immediate feature of the environment and economic efficiency of the state.	Regulations across Chinese cities vary with site characteristics and the effect is based on the site attributes (planning regulation). Total return was not isolated.

Continuation of Summary of Previous Empirical Studies on the Effect of the Urban Land Use Planning Regulations on Housing Price

SN	Author/year & location	Issue	Variable and method of Analysis	Findings	Comment
17	Greenaway-Mcgrevy, *et* . (2018) New Zealand	Effect of policy change on housing price	Data collected include transaction data(sale price, date of sale, land area, floor area, site footprint, latitude and longitude, bath and bedroom among others). Regression (structural attributes)	Low site intensity properties located in areas that were upzoned, experienced a significant increase in value when compared to properties that were not upzoned	Restriction can have any of the three effects on investment return, this is dependent on the micro characteristic of the property. Only capital returns was captured
18	Brueckner & Singh (2018) USA	Relationship between the value of vacant land and the extent of a particular regulation to gauge the regulations stringency	Data collected on land sale, zoning maps, latitude, and longitude code Regression	The elasticity of the land price with respect to floor area ratio is a proper stringency measure	The result obtained for most of the areas under study area base on the micro-features of the locale, given divergent result base on the stringency of the regulation across the study area. Total return was ignored
19	Severen & Plantinga (2018) USA	Land-Use Regulations, Property Values, and Rental income	Data collected on rental income, age at the time of sale, lot size, number of the unit, build sqft: Regression (structural attributes)	Restriction Act raises the price and rental income of multifamily housing units situated within the Coastal Zone	Local benefits generated from restrictions on immediate neighbours and from amenities the effect created spatially increases the price and rental income. The study ignored total return
20	Kim, Leung & Wagman (2018) USA	Effect of regulation restricting short-term rentals on property values	Data collated on sale prices, rental income, city, subdivision, lot size, residential zoning, flood zoning, and current owner's name. The latitude and longitude information, building features-year built, living area, number of bedrooms, and number of bathrooms(structural attributes)	As rental-restricting regulations increased (decreased) property values in areas where the density of nonresident-owned homes is high (low). Across neighbourhoods, sale prices were most negatively affected by the rental-restricting regulation. .	The rental restricting regulation may hurt property sale prices; but, the ability to rent properties at short-term with fewer restrictions may enhance property sale prices. The study only captured income returns

Appendix B

Morgan table for sample size

Population size	Confidence =95%				Confidence 99%			
	Margin of Error				Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	75	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1000	278	440	606	906	399	575	727	943
1200	291	474	674	1067	427	636	827	1119
1500	306	515	759	1297	460	712	959	1376
2000	322	563	869	1655	498	808	1141	1785
2500	333	597	952	1984	524	879	1288	2173
3500	346	641	1068	2565	558	977	1510	2890
5000	357	678	1176	3288	586	1066	1734	3842
7500	365	710	1275	4211	610	1147	1960	5165
10000	370	727	1332	4899	622	1193	2098	6239
25000	378	760	1448	6939	646	1285	2399	9972
50000	381	772	1491	8056	655	1318	2520	12455
75000	382	776	1506	8514	658	1330	2563	13583
100000	383	778	1513	8762	659	1336	2585	14227
250000	384	782	1527	9248	662	1347	2626	15555
500000	384	783	1532	9423	663	1350	2640	16055
1000000	**384**	783	1534	9512	663	1352	2647	16317
2500000	384	784	1536	9567	663	1353	2651	16478
10000000	384	784	1536	9594	663	1354	2653	16560
100000000	384	784	1537	9603	663	1354	2654	16584
300000000	384	784	1537	9603	663	1354	2654	16586

Source: the research advisor (2006)

Appendix C

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

RESEARCH QUESTIONNAIRE

RESEARCH TITLE:

EFFECT OF URBAN LAND USE PLANNING REGULATIONS ON RESIDENTIAL PROPERTY INVESTMENT RETURNS IN NORTH-WEST, NIGERIA.

Dear Sir/Madam,

The aim of this research is to study the effect of urban land use planning regulations on residential property investment returns with a view to developing a model to predict residential property investment returns in North –West Nigeria. The study is part of the requirements needed to complete the Doctor of Philosophy (PhD) in Estate Management at the Department of Estate Management and Valuation.

Please endeavour to answer all questions to reflect your true opinion. Your co-operation will contribute to the success of this study. You are highly assured that your responses will be kept confidential.

Thank you for your time and anticipated co-operation.

STUDENT'S NAME:
Salihu Nasiru
Snasiru.esm@buk.edu.ng.

Appendix D

PART "A": ESTATE SURVEYORS SOCIO- DEMOGRAPHIC DATA (*Questionnaire to ESV's*)

Please tick only one box as appropriate, or specify (where applicable) in this section.

1.	**Gender**:	Male	[ ]	Female	[ ]
2.	**Educational level Of Registered members**	PhD	[ ]	B.Tech/B.sc	[ ]
		M.Tech/M.sc	[ ]	HND	[ ]
3.	**What position do you occupy in the firm?**	Principal partner	[ ]	Senior Est Surveyor	[ ]
		Branch Manager	[ ]	Estate Surveyor	[ ]
4.	**Category of organization**	Practitioner Public Servant	[ ]	Practitioner Private practice	[ ]

PART "A1" : ESTATE MANAGEMENT & VALUATION PRACTICE

5.	**What is your length of time In service or practice**	Less than 1 years	[ ]	B/W 11-15 Years	[ ]
		B/W 1-5 Yrs	[ ]	Above 15 yrs	[ ]
		B/W 6-10	[ ]		
6.	**What is your professional status**?	FNIVS/FNITP	[ ]	ANIVS/ANITP	[ ]
		MRICS	[ ]	FRICS	[ ]

7. Location of your office? …………………………………………………………………….

8. What aspect of the profession does your firm specialized in most?

   a) Property management [ ] b) property valuation [ ] c) Agency (sales & letting) [ ]

   d) Feasibility & viability appraisal [ ] e) All of the above [ ] f) Other's specify…………….

9. What type of residential property do you have under your portfolio?

   a) Tenement [ ] b) Blocks of flats [ ] c) Maisonette [ ] d) Bungalow [ ]

   e) All of the above [ ] f) Other's specify ………………..

PART "B": EXPERT's OPINION

(*Questionnaire to* E*state surveyors, Property developer, Investors and Town planners***)**

Please kindly respond by ticking {√ } one evaluation option box per question regarding **What are the Factors that may cause variations in rental and capital values of residential property within neighbourhoods in Kano metropolis?**

Key: SD- Strongly Disagree; D- Disagree; M- Moderate; A- Agree; SA- Strongly Agree.

S/N	FACTORS	Strongly Disagree	Disagree	Moderate	Agree	Strongly Agree
1	**Education qualification**?					
2	**Supply for a rental apartment**?					
3	**Income level**?					
4	**Population?**					
5	**Demand for a rental apartment**?					
6	**Vacancy rate?**					
7	**Structural facilities**?					
8	**Location?**					
9	**Security of neighbourhood**?					
10	**Neighbourhood facilities**?					
11	**Owner/ renter mix**?					
12	**Ethnic mix**?					
13	**Land use density design**?					
14	**Government housing policy**?					
15	**Cultural affiliation of the inhabitant**?					

16. Suggest any **other factors** not listed above

i. ………………………………………………………………………….

ii. ………………………………………………………………………….

iii. ………………………………………………………………………….

iv. ………………………………………………………………………….

v. ………………………………………………………………………….

S/no						
18	Investors/clients are aware of location investment performance data in your confer?	Not aware	Slightly aware	Somewhat aware	Moderately aware	Extremely aware
19	Investors/clients utilize investment performance data in your confer?	Never us	Almost never	Sometimes	Almost every time	Frequently us

PART “C”: Information on capital and rental values of residential property

Please provide detailed information as applicable in the question on **ONE, TWO & THREE BEDROOM** rental apartment situated in ……………………….under your firm portfolio from year to year.

S/no	Date	1bedroom		2-bedroom		3-bedroom	
		Rental value	Sales price	Rental value	Sales price	Rental value	Sales price
1	2009						
2	2010						
3	2011						
4	2012						
5	2013						
6	2014						
7	2015						
8	2016						
9	2017						
10	2018						
11	2019						

(Questions for Estate Surveyor/ Town Planners)

PART "D1": NEIGHBOURHOOD REGULATIONS ATTRIBUTES

Please tick {√ } only one evaluation option box per question on **Neighbourhood attributes that may influence rental and capital income of residential properties** in ………… metropolis.

Key: SD- Strongly Disagree; D- Disagree; M- Moderate; A- Agree; SA- Strongly Agree.

S/N	Neighbourhoods regulations attributes that may affect rental or capital value includes	Strongly disagree	Disagree	Moderate Agree	Agree	Strongly Agree
1	Proximity to Schools?					
2	Proximity to waste disposal points?					
3	Proximity to commercial centre?					
4	Proximity to hospital?					
5	Proximity to Recreational centre?					
6	Proximity to arterial road network?					
7	Proximity to police post?					
8	Proximity to fire fighters?					
9	Adherence to Zoning?					
10	Paved street / Tarred road?					
11	Sport facilities?					
12	Drainage system?					
13	Electricity?					
14	Security?					
15	Telecommunication?					

PART "D2": STRUCTURAL REGULATIONS ATTRIBUTES

Please tick {√ } only one evaluation option box per question on **structural regulations attributes that may influence rental and capital values of residential properties** in ………… metropolis.

Key: SD- Strongly Disagree; D- Disagree; M- Moderate; A- Agree; SA- Strongly Agree.

S/N	Structural regulations attributes that increase rental or capital values includes	Strongly Disagree	Disagree	Moderate Agree	Agree	Strongly Agree
1	Age of building?					
2	Living room size?					
3	Numbers of Bedroom?					
4	Plot size?					
5	Cross ventilation?					
6	Roofing material?					
7	Floor material?					
8	Inner environmental quality?					
9	Traffic within a residential neighbourhood?					
10	Number of bathroom?					
11	Residential height?					
12	Building set-back?					
13	Open space designation?					
14	Volume of development?					
15	Certificate of occupancy?					
16	Walling material?					
17	Security?					
18	Construction material?					
19	Available trees?					

PART “D3”: LOCATION REGULATIONS ATTRIBUTES

Please tick {√ } only one evaluation option box per question **location regulations attributes that influence rental and capital values of residential properties** in ………… metropolis.

Key: SD- Strongly Disagree; D- Disagree; M- Moderate; A- Agree; SA- Strongly Agree.

S/N	Location regulations attributes that increase rental and capital value includes	Strongly Disagree	Disagree	Moderate Agree	Agree	Strongly Agree
1	Distance from park?					
2	Distance from city Centre?					
3	Street trees?					
4	Distance from garbage dump?					
5	Distance from slum area?					
6	Distance from hospital?					

SECTION “D4”: URBAN LAND USE PLANNING REGULATIONS

Please tick {√ } only one evaluation option box per question **urban land use planning regulations is INFLUENCED by which of the following factor** in ………..metropolis.

Key: SD- Strongly Disagree; D- Disagree; M- Moderate; A- Agree; SA- Strongly Agree.

S/N	ULUPR is influence by	Strongly Disagree	Disagree	Moderate Agree	Agree	Strongly Agree
1	Political will?					
2	Man power?					
3	Training and retraining?					
4	Neighbourhood regulations attributes?					
5	Location regulations attributes?					
6	Structural regulations attributes?					
7	Housing supply?					
8	Price paid by compulsory purchase?					
9	Density regulations?					
10	Awareness?					

SECTION “D4”: RESIDENTIAL PROPERTY INVESTMENT PERFORMANCE

Please tick {√ } only one evaluation option box per question **Residential property investment performance (capital appreciation and rental growth) is INFLUENCED by which of the following factor** in ……….. metropolis.

Key: SD- Strongly Disagree; D- Disagree; M- Moderate; A- Agree; SA- Strongly Agree.

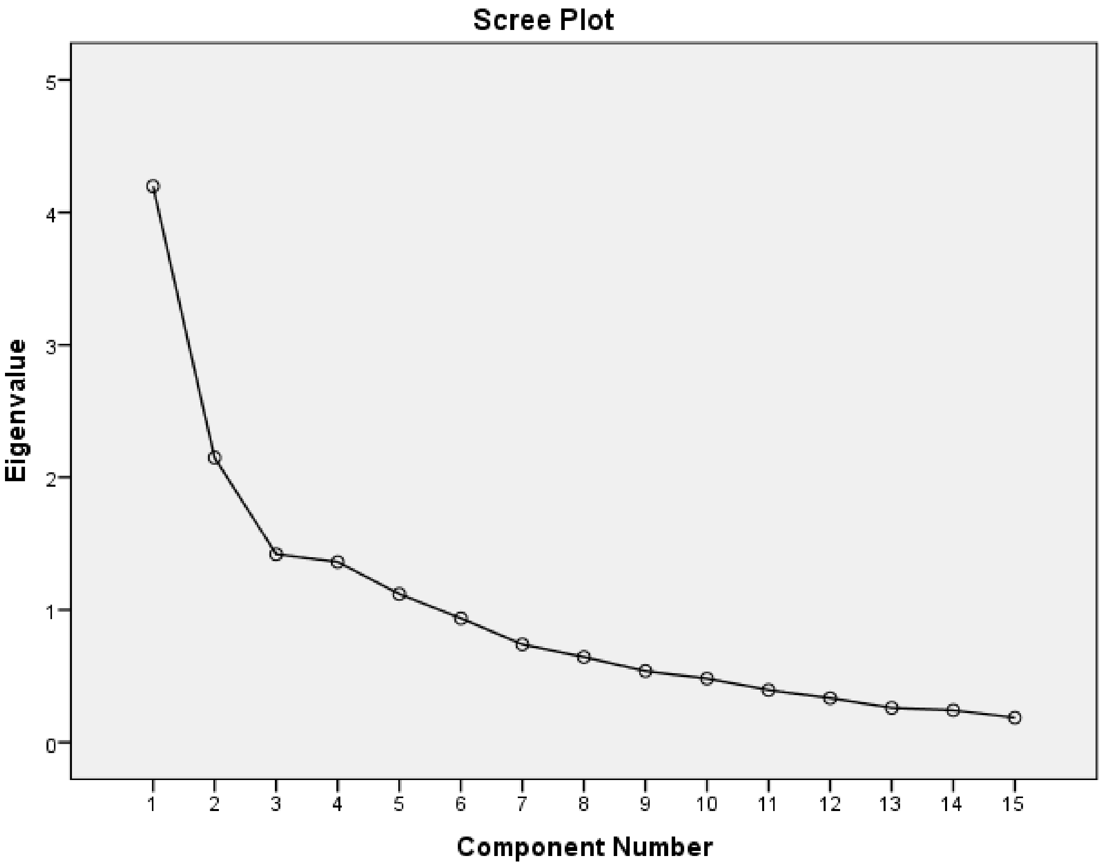
S/N	Rental and capital value are influence by	Strongly Disagree	Disagree	Moderate Agree	Agree	Strongly Agree
1	Structural facilities?					
2	Neighbourhood facilities?					
3	Location utilities?					
4	Taste/preference?					
5	Property tax?					
6	Security?					
7	Supply factors?					
8	Income?					
9	Population?					
10	Deregulation of the property market?					

Appendix E

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.790
Bartlett's Test of Sphericity	Approx. Chi-Square	1717.295
	df	105
	Sig.	.000

Appendix F



Scree Plot
Eigenvalue
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Component Number

Appendix G

Table 1 **Average Rental Value** of 1, 2, and three bedroom residential properties in Kaduna (2009-2019)

Type of property	Property location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Parlour & bedroom	Anguwan rimi	103333	115833	123333	134166	141666	155833	162500	175000	192500	200000	204266
	Malali	73333	85555	91111	96667	106667	121111	141111	154444	170000	185556	194444
	Barnawa	87222	96111	97222	101666	118333	122778	131667	143889	158333	166111	178333
	Sabon tasha	67500	73750	83750	84688	88438	109375	113125	115625	120000	126250	127450
	Average	**82847**	**92812**	**98854**	**104297**	**113776**	**127274**	**137101**	**147240**	**160208**	**169479**	**176123**
2 bedroom	Anguwan rimi	212167	217500	230000	256667	271667	302500	315833	345000	370833	390000	390000
	Malali	161111	178889	186667	196667	226667	232223	243334	276667	298889	320000	331111
	Barnawa	170000	181778	194444	205556	215556	225556	251111	265556	283333	316667	335556
	Sabon tasha	118750	132500	135000	145750	158750	165000	175750	180000	181250	182500	181500
	Average	**165507**	**177667**	**186528**	**201160**	**218160**	**231320**	**246507**	**266806**	**283576**	**302292**	**309542**
3 bedroom	Anguwan rimi	445833	469166	508333	570833	587500	658333	666667	725000	750000	766729	808333
	Malali	370000	410000	432222	460000	508889	538889	594444	633333	644444	688888	727778
	Barnawa	285556	307778	343333	358889	397777	428889	445333	470000	511111	533333	550000
	Sabon tasha	182500	191250	210000	225000	242500	258750	263750	275000	257500	325000	287500
	Average	**320972**	**344549**	**373472**	**403681**	**434167**	**471215**	**492549**	**525833**	**540764**	**578486**	**593403**

Table 1 **Average Capital Values** of 1, 2, and three bedroom residential properties in Kaduna (2009-2019)

Type of property	Property location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Parlour & bedroom	Anguwan rimi	2316692	2654204	2737537	2836704	3016711	3316667	3350045	3663393	3841727	3916741	3975075
	Malali	2372278	2766132	2866132	2899466	3155020	3566131	3666131	3966145	4221701	4393939	4505051
	Barnawa	1533387	1766700	1833366	1922256	2027821	2172266	2450043	2733393	2822282	3055623	3111267
	Sabon tasha	1365019	1525026	1743776	1843776	1906284	2196284	2218784	2231291	2312341	2350041	2360041
	Average	**1896844**	**2178016**	**2295203**	**2375551**	**2526459**	**2812837**	**2921251**	**3148556**	**3299513**	**3429086**	**3487859**
2 bedroom	Anguwan rimi	5208378	5838388	6316722	6591721	6916741	7041742	7708408	8145921	8312588	8583433	8808433
	Malali	5072272	5600060	5911171	6055616	6611191	6888969	7344547	7716789	8550100	9100111	9355667
	Barnawa	3477824	3811171	3866727	4455616	4633407	5522296	6100073	7011211	7200100	7527894	7383450
	Sabon tasha	2365545	2550055	2700085	2737555	2900070	3087570	3250070	3350078	3370078	3412585	3475085
	Average	**4031005**	**4449919**	**4698676**	**4960127**	**5265352**	**5635144**	**6100775**	**6556000**	**6858217**	**7156006**	**7255659**
3 bedroom	Anguwan rimi	8708413	10470921	10937588	11727254	12129279	13312612	14089613	14962638	15712637	16445996	16362663
	Malali	10883400	12250067	12353417	13186750	13636767	14358989	15431034	15719923	16025494	15747717	15831067
	Barnawa	5955629	6838972	7005661	7338994	7711211	7772322	8266767	8850150	9905706	10077728	10577944
	Sabon tasha	3412568	2612575	3825075	4075075	4231344	4693844	4768844	4962605	4998787	5042132	5140432
	Average	**7240003**	**8043134**	**8530435**	**9082018**	**9427150**	**10034442**	**10639065**	**11123829**	**11660656**	**11828393**	**11978027**

Table 3 **Average Rental Values** of 1, 2, and three bedroom residential properties in Kano (2009-2019)

Type of property	Property location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Parlour & bedroom	Hotoro	101847	112966	119444	131255	140846	153744	162200	174890	193000	201000	202644
	Badawa	69600	84444	90221	94687	103668	120200	139800	151233	165000	182244	192665
	Rijiyar- zaki	77400	81676	83324	84000	85428	105285	111024	112630	115100	116200	120000
	Naibawa	67222	76222	78233	80633	98211	102423	110677	115891	116322	118478	121000
	Average	**79017**	**88827**	**92806**	**97644**	**107038**	**120413**	**130925**	**138639**	**147356**	**154481**	**159077**
2 bedroom	Hotoro	199267	210000	226384	248079	210547	300000	312400	341000	365321	380000	381000
	Badawa	155241	171693	181653	184187	217685	223241	234319	269789	289741	301890	311990
	Rijiyar- zaki	116840	128500	136000	141650	159650	164010	174400	176000	181200	182300	183200
	Naibawa	151230	167886	173443	182656	189250	191123	193347	197256	201451	217149	219178
	Average	**155645**	**169520**	**179370**	**189143**	**194283**	**219594**	**228617**	**246011**	**259428**	**270335**	**273842**
3 bedroom	Hotoro	430877	452364	501810	568241	581324	640311	649821	719481	742000	755612	790421
	Badawa	362411	401230	416345	445900	501200	528200	574500	620300	633600	670900	710230
	Rijiyar- zaki	190200	191050	192100	205000	220400	238650	245800	265000	269000	320000	322000
	Naibawa	265338	291561	294147	301189	317350	350010	351493	355219	359295	361124	263144
	Average	**312207**	**334051**	**351100**	**380082**	**405069**	**439293**	**455404**	**490000**	**500974**	**526909**	**521449**

Table 4 **Average Capital Values** of 1, 2, and three bedroom residential properties in Kano (2009-2019)

Type of property	Property location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Parlour & bedroom	Hotoro	2226000	2553290	2635400	2742904	3000000	3227800	3300640	3440640	3780000	4000761	4020481
	Badawa	2182379	2481132	2755152	2910064	3243120	3517124	3590990	3865124	4121621	4321928	4500021
	Rijiyar- zaki	1410019	1600214	1625026	1743776	1806341	2094264	2118776	2121181	2221251	2250052	2340021
	Naibawa	1216699	1346000	1522663	1620311	1800000	2091321	2250471	2311332	2501000	2736144	2976130
	Average	**1758774**	**1995159**	**2134560**	**2254263**	**2462365**	**2732627**	**2815197**	**2934569**	**3155968**	**3327221**	**3459163**
2 bedroom	Hotoro	5001314	5660420	6117322	6482632	6806854	7000000	7509526	7990001	8214820	8483222	8606922
	Badawa	4990980	5502184	5820711	6000211	6450181	6708969	7454548	7506800	8420000	8900213	9200000
	Rijiyar- zaki	2165322	2450055	2600075	2626555	2980000	3077570	3240000	3340062	3360075	3401565	3465085
	Naibawa	3277815	3350567	3490866	3700632	3960147	4112640	4312111	4340276	4440130	4569129	4691119
	Average	**3858858**	**4240807**	**4507244**	**4702508**	**5049295**	**5224795**	**5629046**	**5794285**	**6108756**	**6338532**	**6490782**
3 bedroom	Hotoro	8103120	9999990	10419000	11110274	12002187	13214521	14008761	14520763	15660776	16340899	16351990
	Badawa	11680883	12101076	12253300	12900186	13450767	14190980	15243103	15550900	15952000	15990717	16000132
	Rijiyar- zaki	3212457	3503636	3626075	3960075	4075040	4383844	4568744	4762605	4808737	4837613	4867714
	Naibawa	4560147	4806139	4990135	5244910	5500934	6100148	6200140	6301413	6350196	6450146	6551134
	Average	**6889152**	**7602710**	**7822128**	**8303861**	**7840357**	**9472373**	**10005187**	**10283920**	**10692927**	**10904844**	**10942743**

Appendix H

Table 1 presenting trend on income, capital and total return of a parlour & bedroom, 2 & 3 bedroom residential real estate within the study period in Naibawa/Yar-akwa, Kano State

Type of property	Year/ return	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Weighted return
Parlour & bedroom	**IR**	5.66	5.14	4.95	5.46	4.90	4.92	5.01	4.65	4.33	4.07	
	CR	10.63	13.13	6.41	11.09	16.18	8.65	2.70	8.21	9.40	8.77	
	TR	**16.29**	**18.27**	**11.36**	**16.55**	**21.08**	**13.77**	**7.71**	**12.86**	**13.73**	**12.84**	
2bedroom	**IR**	5.04	4.97	4.94	4.78	4.65	4.48	4.54	4.54	4.75	4.67	
	CR	1.61	4.81	5.99	7.03	3.85	4.85	0.65	2.30	2.41	2.68	
	TR	**6.65**	**9.78**	**10.93**	**11.81**	**8.50**	**9.33**	**5.19**	**6.84**	**7.16**	**7.35**	
3bedroom	**IR**	5.65	5.89	3.83	3.95	4.09	4.06	4.05	4.08	4.05	4.02	
	CR	5.39	3.83	5.11	4.88	10.89	1.82	1.63	0.77	1.57	1.57	
	TR	**11.04**	**9.72**	**8.94**	**8.83**	**14.98**	**5.88**	**5.68**	**4.85**	**5.62**	**5.59**	

Table 2 presenting trend on income, capital and total return of a parlour & bedroom, 2 & 3 bedroom residential real estate within the study period in Hotoro GRA, Kano State

Type of property	Year/ return	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Weighted return
Parlour & bedroom	**IR**	4.42	4.53	4.79	4.69	4.76	4.91	5.08	5.11	5.02	5.04	
	CR	14.70	3.22	4.08	9.37	7.59	2.26	4.24	5.84	5.82	0.49	
	TR	**19.12**	**7.75**	**8.87**	**14.06**	**12.35**	**7.17**	**9.32**	**10.95**	**10.84**	**5.53**	
2 bedroom	**IR**	3.71	3.70	0.38	3.94	4.29	4.16	4.27	4.45	4.48	4.49	
	CR	11.84	9.23	5.97	5.00	2.84	7.28	6.40	2.81	3.27	1.46	
	TR	**15.55**	**12.93**	**6.35**	**8.94**	**7.13**	**11.44**	**10.67**	**7.26**	**7.75**	**5.95**	
3 bedroom	**IR**	4.52	4.82	5.11	4.84	4.85	4.64	4.95	4.74	4.62	4.83	
	CR	23.41	4.19	6.22	8.03	10.10	6.01	3.65	7.85	4.38	0.07	
	TR	**27.93**	**9.01**	**11.33**	**12.87**	**14.95**	**10.65**	**8.60**	**12.59**	**9.00**	**4.90**	

Table 3 presenting trend on income, capital and total return of a parlour & bedroom, 2 & 3 bedroom residential real estate within the study period in Rijiyar-zaki, Kano State

Type of property	Year/ return	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Weighted return
Parlour & bedroom	**IR**	5.10	5.13	4.82	4.73	5.03	5.24	5.31	5.18	5.12	5.13	
	CR	13.49	1.55	7.31	3.59	15.94	1.17	0.11	4.72	1.30	4.00	
	TR	**18.59**	**6.68**	**12.13**	**8.32**	**20.97**	**6.41**	**5.42**	**9.90**	**6.42**	**9.13**	
2bedroom	**IR**	5.24	5.23	5.39	5.36	5.33	5.38	5.27	5.39	5.36	5.29	
	CR	13.15	6.21	1.02	13.46	3.27	5.28	3.09	0.60	1.23	1.87	
	TR	**18.39**	**11.44**	**6.41**	**18.82**	**8.60**	**10.66**	**8.36**	**5.99**	**6.59**	**7.16**	
3bedroom	**IR**	5.45	5.30	5.18	5.41	5.44	5.38	5.56	5.59	6.61	6.62	
	CR	9.06	3.49	9.21	2.90	7.56	4.23	4.24	0.97	0.60	0.50	
	TR	**14.51**	**8.79**	**14.39**	**8.31**	**13.00**	**9.61**	**9.80**	**6.56**	**7.21**	**7.12**	

Table 4 presenting trend on income, capital and total return of a parlour & bedroom, 2 & 3 bedroom residential real estate within the study period in Badawa,Kano State

Type of property	Year/ return	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Weighted return
Parlour & bedroom	**IR**	3.40	3.27	3.25	3.15	3.42	3.89	3.91	4.00	4.22	4.28	
	CR	13.68	11.04	5.62	11.44	8.45	2.10	7.63	6.64	4.86	4.12	
	TR	**17.08**	**14.31**	**8.87**	**14.59**	**11.87**	**5.99**	**11.54**	**10.64**	**9.08**	**8.40**	
2bedroom	**IR**	3.12	3.12	3.07	3.37	3.33	3.16	3.59	3.44	3.39	3.37	
	CR	10.24	5.79	3.08	7.67	4.01	11.11	0.70	12.16	5.70	3.37	
	TR	**13.36**	**8.91**	**6.15**	**11.04**	**7.34**	**14.27**	**4.29**	**15.60**	**9.09**	**6.74**	
3bedroom	**IR**	3.32	3.40	3.40	3.46	3.72	3.77	3.97	3.97	4.20	4.44	
	CR	3.59	1.28	5.28	4.27	5.50	7.41	2.02	2.58	0.24	0.06	
	TR	**6.91**	**4.68**	**8.68**	**7.73**	**9.22**	**11.18**	**5.99**	**6.55**	**4.44**	**4.50**	

Table 4 presenting trend on income, capital and total return of a parlour & bedroom, 2 & 3 bedroom residential real estate within the study period in Barnawa,Kaduna State

Type of property	Year/ return	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Weighted return
Parlour & bedroom	**IR**	5.69	5.44	5.30	5.29	5.84	5.65	5.37	5.26	5.61	5.44	5.73
	CR	2.98	15.22	3.79	4.85	5.49	7.12	12.56	11.57	3.25	8.27	1.82
	TR	**8.69**	**20.66**	**9.09**	**10.04**	**10.31**	**12.77**	**17.93**	**16.83**	**8.86**	**13.71**	**6.55**
2bedroom	**IR**	4.89	4.93	5.03	4.61	4.65	4.08	4.12	3.79	3.94	4.40	0.45
	CR	2.12	9.58	1.46	15.23	3.99	19.18	10.46	14.94	2.69	4.55	1.92
	TR	**7.01**	**14.51**	**6.49**	**19.84**	**8.64**	**23.26**	**14.48**	**18.73**	**6.63**	**8.95**	**2.37**
3bedroom	**IR**	4.79	4.50	4.90	4.89	5.15	5.52	5.39	5.31	5.16	5.29	5.20
	CR	3.47	14.82	2.44	4.76	5.07	0.79	6.36	7.06	11.92	1.77	0.94
	TR	**8.26**	**19.32**	**7.34**	**9.65**	**10.22**	**6.31**	**12.75**	**12.37**	**17.08**	**7.06**	6.14

Table 4 presenting trend on income, capital and total return of a parlour & bedroom, 2 & 3 bedroom residential real estate within the study period in Malali,Kaduna state

Type of property	Year/ return	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Parlour & bedroom	**IR**	3.09	3.09	3.18	3.33	3.35	3.40	3.85	3.89	4.03	4.22	4.32
	CR	2.64	17.04	3.62	1.16	8.81	13.04	12.80	8.18	6.44	4.34	2.53
	TR	**5.73**	**20.13**	**6.80**	**4.49**	**12.16**	**16.44**	**16.65**	**12.07**	**10.47**	**8.56**	6.85
2bedroom	**IR**	3.16	3.16	3.16	3.18	3.43	3.37	3.31	3.59	3.50	3.52	3.54
	CR	7.79	10.41	5.56	2.44	9.18	4.20	6.61	5.07	10.80	6.45	2.81
	TR	**10.95**	**13.57**	**8.72**	**5.52**	**12.61**	**7.57**	**9.92**	**8.66**	**14.30**	**9.97**	6.35
3bedroom	**IR**	3.40	3.35	3.50	3.49	3.73	3.75	3.85	4.03	4.02	4.37	4.60
	CR	0.10	12.56	0.84	6.75	3.41	5.30	7.47	1.87	1.74	0.02	0.53
	TR	**3.50**	**15.91**	**4.34**	**10.24**	**7.13**	**9.05**	**11.32**	**5.83**	**5.96**	**4.39**	5.13

Table 4 presenting trend on income, capital and total return of a parlour & bedroom, 2 & 3 bedroom residential real estate within the study period in Sabon Tasha,Kaduna state

Type of property	Year/ return	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Parlour & bedroom	**IR**	4.95	4.84	4.80	4.59	4.64	4.98	5.10	5.43	5.19	5.37	5.47
	CR	7.91	11.72	14.34	5.73	3.39	9.97	5.84	0.56	3.63	1.63	1.63
	TR	**12.86**	**16.56**	**19.14**	**10.32**	**8.03**	**14.95**	**10.94**	**5.99**	**8.82**	**7.00**	**7.10**
2bedroom	**IR**	5.02	5.20	5.00	5.25	5.47	5.34	5.40	5.37	5.41	5.35	5.22
	CR	3.98	7.10	5.88	1.39	5.94	6.47	5.26	3.08	0.90	1.87	1.83
	TR	**9.00**	**13.00**	**10.88**	**7.64**	**11.41**	**11.81**	**10.66**	**8.45**	**6.31**	**7.22**	**7.05**
3bedroom	**IR**	5.35	5.29	5.23	5.52	5.73	5.54	5.53	5.54	5.19	6.73	5.96
	CR	10.08	5.86	5.88	6.52	3.83	10.94	1.90	4.20	0.73	0.86	1.95
	TR	**15.43**	**11.15**	**11.11**	**12.04**	**9.56**	**16.48**	**7.43**	**9.74**	**5.92**	**7.58**	**7.91**

Table 4 presenting trend on income, capital and total return of a parlour & bedroom, 2 & 3 bedroom residential real estate within the study period in Anguwan Rimi,Kaduna state

Type of property	Year/ return	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Parlour & bedroom	**IR**	4.46	4.36	4.51	5.09	4.70	4.71	4.85	4.78	5.01	5.11	5.15
	CR	9.85	14.57	3.13	3.62	6.34	9.94	1.07	9.35	4.86	1.95	1.49
	TR	**14.31**	**18.93**	**7.64**	**8.61**	**11.04**	**14.65**	**5.92**	**14.13**	**9.87**	**7.06**	**6.64**
2bedroom	**IR**	4.07	3.71	3.64	3.89	3.93	4.20	4.10	4.24	4.46	4.54	4.43
	CR	5.57	12.48	7.82	4.35	4.93	1.81	9.47	5.68	2.05	3.26	2.62
	TR	**9.64**	**16.19**	**11.46**	**8.24**	**8.86**	**6.01**	**13.57**	**9.92**	**9.51**	**7.80**	**7.05**
3bedroom	**IR**	5.12	4.48	4.65	4.87	4.84	4.95	4.73	4.85	4.77	4.66	4.94
	CR	1.86	20.23	4.46	7.23	3.41	9.76	5.83	6.20	5.01	4.67	0.28
	TR	**6.98**	**24.71**	**9.11**	**12.11**	**13.25**	**14.71**	**10.57**	**10.05**	**9.77**	**9.33**	5.22

Appendix I

Total return index of 1, 2 & 3 bedroom residential real estate within the study period in Kaduna metropolis

Location	pptytype	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Barnawa	one	100	109.09	120.0426	132.4189	149.3288	176.0885	205.7236	223.9507	254.6543	271.3342
	two	100	106.49	127.6176	138.6438	170.8923	195.6375	232.2804	247.6806	269.8480	276.2434
	three	100	107.34	117.6983	129.7271	137.9129	155.4968	174.7318	204.5760	219.0191	232.4668
ATRI		**300**	**322.98**	**259.3585**	**400.7898**	**458.134**	**527.2228**	**612.7358**	**676.2073**	**743.5214**	**780.0444**
Malali	one	100	106.8	111.5953	125.1653	145.7425	170.0086	190.5286	210.4770	228.4938	244.1449
	two	100	108.72	114.7213	129.1877	138.9672	152.7527	165.9811	189.7164	208.6311	221.8792
	three	100	104.34	115.0244	123.2256	134.3775	149.5890	158.3100	167.7453	175.1093	184.0924
ATRI		**300**	**319.86**	**341.341**	**377.5786**	**419.0872**	**472.3503**	**514.8197**	**567.9387**	**612.2342**	**650.1165**
Sabon tasha	one	100	119.14	131.4352	141.9894	163.2168	181.0727	191.9190	208.8463	223.4655	239.3316
	two	100	110.88	119.3512	132.9692	148.6728	166.2311	180.2776	209.6809	224.8199	240.6697
	three	100	111.11	124.4876	136.3887	158.8655	170.6692	187.2924	198.3801	213.4173	230.2986
ATRI		**300**	**341.13**	**375.274**	**411.0571**	**470.7551**	**517.973**	**559.489**	**616.9073**	**661.7027**	**710.2999**
Ang/ Rimi	one	100	107.64	116.9078	129.8144	148.8322	157.6431	179.9180	197.6760	211.6319	225.6842
	two	100	111.46	120.6443	131.3334	140.0145	159.0145	174.7887	191.4111	206.3412	220.8883
	three	100	109.11	122.3232	138.6534	159.0493	175.8608	193.5348	212.4432	232.2641	244.3883
ATRI		**300**	**328.21**	**359.8753**	**399.8012**	**447.896**	**492.5184**	**548.2415**	**601.5303**	**650.2372**	**690.5765**

Total return indexes of 1, 2 & 3 bedroom residential real estate within the study period in Kano metropolis

location	pptytype	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Naibawa/Yar-akwa	one	100	111.36	129.7901	157.1498	178.7894	192.5740	217.3390	247.1797	278.9175	324.3531
	two	100	110.93	131.0194	142.1561	155.4192	163.4855	174.6679	187.1741	200.9314	214.2933
	three	100	108.94	118.5594	136.3196	144.3352	152.5334	159.9313	168.9194	178.3620	198.0532
AATRI		**300**	**331.23**	**379.3689**	**435.6255**	**478.5438**	**508.5929**	**551.9382**	**603.2732**	**658.2109**	**736.6996**
Hotoro/GRA	one	100	108.87	124.1771	139.5130	149.5161	163.4510	181.3489	201.0071	212.1228	252.6807
	two	100	106.35	115.8577	124.1183	138.3183	153.0760	164.1893	176.9139	187.4403	216.5873
	three	100	111.33	125.6460	144.4185	159.7990	173.5418	195.3907	212.9558	223.4116	285.8105
AATRI		**300**	**326.55**	**365.6808**	**408.0498**	**447.6334**	**490.0688**	**540.9289**	**590.8768**	**622.9747**	**755.0785**
Rijiyarzaki	one	100	112.13	121.4592	146.9292	156.3474	164.8214	181.1387	192.7678	210.3675	249.4748
	two	100	106.41	126.4364	137.3099	151.9471	164.6499	174.5124	184.0128	199.3313	235.9883
	three	100	114.39	123.8958	140.0023	153.4565	168.4952	179.5485	192.4939	206.3728	236.3175
AATRI		**300**	**332.93**	**371.7914**	**424.2414**	**461.751**	**497.9665**	**535.1996**	**569.2745**	**616.0716**	**721.7806**
Badawa	one	100	108.87	124.7541	139.5624	147.9222	164.9925	182.5477	199.1230	215.8493	252.7164
	two	100	106.15	117.8690	126.5205	144.5750	150.7773	174.2985	190.1423	202.9579	230.0731
	three	100	108.68	177.0810	127.8758	142.1723	150.6885	160.5586	167.6874	175.2333	187.3419
AATRI		**300**	**323.7**	**419.7041**	**393.9587**	**434.6695**	**466.4583**	**517.4048**	**556.9527**	**594.0405**	**670.1314**

Appendix J

Table 4.18 total variance explained for the various items

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	**11.269**	17.337	17.337	**11.269**	17.337	17.337
2	**4.353**	6.697	24.034	**4.353**	6.697	24.034
3	**3.425**	5.269	29.303	**3.425**	5.269	29.303
4	**3.078**	4.736	34.038	**3.078**	4.736	34.038
5	**2.631**	4.048	38.086	**2.631**	4.048	38.086
6	**2.156**	3.318	41.404	**2.156**	3.318	41.404
7	**2.036**	3.132	44.535	**2.036**	3.132	44.535
8	**1.788**	2.751	47.287	**1.788**	2.751	47.287
9	**1.590**	2.446	49.733	**1.590**	2.446	49.733
10	**1.578**	2.427	52.160	**1.578**	2.427	52.160
11	**1.480**	2.276	54.436	**1.480**	2.276	54.436
12	**1.347**	2.072	56.509	**1.347**	2.072	56.509
13	**1.336**	2.055	58.564	**1.336**	2.055	58.564
14	**1.204**	1.852	60.416	**1.204**	1.852	60.416
15	**1.141**	1.755	62.171	**1.141**	1.755	62.171
16	**1.119**	1.722	63.893	**1.119**	1.722	63.893
17	**1.081**	1.663	65.557	**1.081**	1.663	65.557
18	**1.054**	1.622	**67.179**	**1.054**	1.622	**67.179**
19	.971	1.493	68.672			
20	.920	1.416	70.087			
21	.891	1.371	71.459			
22	.877	1.349	72.808			
23	.851	1.309	74.117			
24	.831	1.279	75.396			
25	.820	1.261	76.657			
26	.777	1.195	77.852			
27	.744	1.144	78.996			
28	.715	1.100	80.096			
29	.680	1.045	81.141			
30	.663	1.020	82.162			
31	.630	.970	83.131			
32	.614	.945	84.077			
33	.602	.927	85.003			
34	.578	.890	85.893			
35	.544	.837	86.730			
36	.525	.808	87.537			
37	.502	.773	88.310			

Extraction Method: Principal Component Analysis.

Table 4.19 total variance explained for the various items (continues)

component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
38	.487	.749	89.059			
39	.473	.727	89.787			
40	.459	.707	90.493			
41	.431	.663	91.156			
42	.410	.631	91.787			
43	.384	.591	92.378			
44	.376	.578	92.956			
45	.349	.537	93.493			
46	.348	.536	94.029			
47	.324	.498	94.527			
48	.317	.487	95.014			
49	.289	.444	95.458			
50	.281	.432	95.890			
51	.204	.314	98.035			
52	.189	.291	98.326			
53	.177	.272	98.598			
54	.156	.240	98.838			
55	.147	.226	99.064			
55	.144	.221	99.285			
57	.131	.201	99.486			
58	.130	.200	99.532			
59	.128	.197	99.683			
60	.108	.166	99.850			

Extraction Method: Principal Component Analysis.

Table 4.20 Depicts the values of communalities for the whole items

Communalities

Items	Initial	Extraction
NRA1	1.000	.688
NRA2	1.000	.678
NRA 3	1.000	.621
NRA 4	1.000	.649
NRA 5	1.000	.631
NRA 6	1.000	.844
NRA 7	1.000	.794
NRA 8	1.000	.750
NRA 9	1.000	.649
NRA 10	1.000	.738
NRA 11	1.000	.757
NRA 12	1.000	.699
NRA 13	1.000	.717
NRA 14	1.000	.717
NRA 15	1.000	.794
SRA 1	1.000	.757
SRA 2	1.000	.581
SRA3	1.000	.722
SRA4	1.000	.748
SRA5	1.000	.674
SRA6	1.000	.706
SRA7	1.000	.660
SRA8	1.000	.736
SRA9	1.000	.689
SRA10	1.000	.595
SRA11	1.000	.752
SRA12	1.000	.608
SRA13	1.000	.592
SRA14	1.000	.611
SRA15	1.000	.578
SRA16	1.000	.632
SRA17	1.000	.676
SRA18	1.000	.684
SRA19	1.000	.567
LRA1	1.000	.707

Extraction Method: Principal Component Analysis.

Table 4.21 Depicts the values of communalities for the whole items Communalities

Items	Initial	Extraction
LRA2	1.000	.645
LRA3	1.000	.670
LRA4	1.000	.696
LRA5	1.000	.716
LRA6	1.000	.645
ULUPR1	1.000	.651
ULUPR 2	1.000	.692
ULUPR 3	1.000	.764
ULUPR 4	1.000	.682
ULUPR 5	1.000	.699
ULUPR 6	1.000	.718
ULUPR 7	1.000	.751
ULUPR 8	1.000	.696
ULUPR 9	1.000	.683
ULUPR10	1.000	.744
RPIR1	1.000	.780
RPIR2	1.000	.719
RPIR3	1.000	.656
RPIR4	1.000	.662
RPIR5	1.000	.615
RPIR6	1.000	.749
RPIR7	1.000	.619
RPIR8	1.000	.505
RPIR9	1.000	.559
RPIR10	1.000	.625

Extraction Method: Principal Component Analysis.

Appendix K

Component Matrix[a]																		
	Component																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SRA5	**.690**																	
LRA4	**.631**																	
LAR2	**.618**								-.318									
SRA6	**.611**					-.328				-.313								
ULUPR3	**.585**					.348	-.321											
SRA19	**.564**				-.375					.326								
NRA10	**.547**										.376							
NRA9	**.535**																	
ULUPR10	**.534**							.333				-.345						
NRA12	**.527**										-.398							
ULUPR27	**.526**																	
SRA16	**.524**				-.324					.339					-.328			
LRA1	**.522**						-.325											
NRA13	**.513**					-.357					.309							
NRA3	**.507**						.395											
LRA6	**.504**						-.369											
NRA2	**.493**	-.341			-.308								.328					
NRA6	**.491**	-.367			.302				.429									
ULUPR7	**.487**		-.376					.375										
SRA18	**.477**				-.366													
NRA14	**.461**		.415			-.322												
LRA5	**.454**																	
ULUPR4	**.453**												-.359					
SRA15	.446																	
NRA8	.444							-.430				-.350						
ULUPR9	.435		-.300							-.391								
SRA2	.425																	
NRA5	.392										-.322							

SRA3	.382	.327			-.313	-.361												
SRA11	.307	**.677**																
SRA10		**.664**																
LRA2		**.599**				.304												
LRA3	.302	**.595**																
SRA13	.372	**.543**																
SRA9		**.542**				-.444												
SRA12		**.519**				.316												
SRA14	.356	**.479**																
SRA4			**.713**															
SRA8	.353		**.682**															
SRA7			**.569**								-.319							
ULUPR5			-.446		.316												.307	
RPIR7				**.645**														
RPIR9				**.617**														
RPIR3				**.585**														
RPIR8				**.575**														
RPIR10				**.485**										.331				
RPIR1				**.478**														
RPIR2				**.458**														
RPIR6				**.451**														
RPIR4				.448			.332											
RPIR5				.434					.324					-.323				
NRA1	.306				-.408						.337							
ULUPR6	.350		.340			.384												
ULUPR5																		
NRA7	**.454**	-.403							**.488**									
NRA4	.383	-.369							**.457**									
NRA11	.379				.338									.422				
NRA15												.354	.348			-.359		
SRA1	.338		.405														.423	

Extraction Method: Principal Component Analysis.

a. 18 components extracted.

Appendix L

Component matrix for the items.

Component Matrix[a]

	Component					
	1	2	3	4	5	6
CVRP3	.750		.473			
CVRP6	.645		.441		-.505	
CVRP10	.629	.577				
CVRP4	.576	.669		-.348		
CVRP7	.574	.461			.398	.435
CVRP9	.527			.514	-.370	
CVRP13	.339					
CVRP11	.368	-.577			.431	
CVRP15	.392	-.528			.345	
CVRP5	.362	-.525	-.344	.317		
CVRP14	.396	-.507				
CVRP12	.381		.302			
CVRP8	-.385		.396	-.343		
CVRP2	-.558		-.591			
CVRP1				.649		.476

Extraction Method: Principal Component Analysis.

a. 6 components extracted.

Appendix M

Table Multiple comparison table for a parlour and room (self-contain), residential investment total returns (POST HOC Tukey HSD) KANO

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Naibawa/Yar-akwa	Hotoro/GRA	3.85000*	1.86390	.046	.0698	7.6302
	Rijiyarzaki	3.20900	1.86390	.094	-.5712	6.9892
	Badawa	4.04900*	1.86390	.036	.2688	7.8292
Hotoro/GRA	Naibawa/Yar-akwa	-3.85000*	1.86390	.046	-7.6302	-.0698
	Rijiyarzaki	.19900	1.86390	.916	-3.5812	3.9792
	Badawa	-.64100	1.86390	.733	-4.4212	3.1392
Rijiyarzaki	Naibawa/Yar-akwa	-3.20900	1.86390	.094	-6.9892	.5712
	Hotoro/GRA	-.19900	1.86390	.916	-3.9792	3.5812
	Badawa	-.84000	1.86390	.655	-4.6202	2.9402
Badawa	Naibawa/Yar-akwa	-4.04900*	1.86390	.036	-7.8292	-.2688
	Hotoro/GRA	.64100	1.86390	.733	-3.1392	4.4212
	Rijiyarzaki	.84000	1.86390	.655	-2.9402	4.6202

Computed from table 2 *. The mean difference is significant at the 0.05 level.

Table Multiple comparison table for two bedroom investment (Tukey HSD)

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Naibawa/Yar-akwa	Hotoro/GRA	-1.04300	1.59975	.519	-4.2874	2.2014
	Rijiyarzaki	-1.88800	1.59975	.246	-5.1324	1.3564
	Badawa	-1.32500	1.59975	.413	-4.5694	1.9194
Hotoro/GRA	Naibawa/Yar-akwa	1.04300	1.59975	.519	-2.2014	4.2874
	Rijiyarzaki	-.84500	1.59975	.601	-4.0894	2.3994
	Badawa	-.28200	1.59975	.861	-3.5264	2.9624
Rijiyarzaki	Naibawa/Yar-akwa	1.88800	1.59975	.246	-1.3564	5.1324
	Hotoro/GRA	.84500	1.59975	.601	-2.3994	4.0894
	Badawa	.56300	1.59975	.727	-2.6814	3.8074
Badawa	Naibawa/Yar-akwa	1.32500	1.59975	.413	-1.9194	4.5694
	Hotoro/GRA	.28200	1.59975	.861	-2.9624	3.5264
	Rijiyarzaki	-.56300	1.59975	.727	-3.8074	2.6814

Computed from table 2 *. The mean difference is significant at the 0.05 level.

Table Multiple comparison table for three bedroom investment (Tukey HSD)

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Naibawa/Yar-akwa	Hotoro/GRA	-4.07000*	1.77203	.028	-7.6638	-.4762
	Rijiyarzaki	-1.81700	1.77203	.312	-5.4108	1.7768
	Badawa	-5.19500*	1.77203	.006	-8.7888	-1.6012
Hotoro/GRA	Naibawa/Yar-akwa	4.07000*	1.77203	.028	.4762	7.6638
	Rijiyarzaki	2.25300	1.77203	.212	-1.3408	5.8468
	Badawa	1.12500	1.77203	.530	-2.4688	4.7188
Rijiyarzaki	Naibawa/Yar-akwa	1.81700	1.77203	.312	-1.7768	5.4108
	Hotoro/GRA	-2.25300	1.77203	.212	-5.8468	1.3408
	Badawa	2.94200	1.77203	.106	-.6518	6.5358
Badawa	Naibawa/Yar-akwa	5.19500*	1.77203	.006	1.6012	8.7888
	Hotoro/GRA	-1.12500	1.77203	.530	-4.7188	2.4688
	Rijiyarzaki	-2.94200	1.77203	.106	-6.5358	.6518

*. The mean difference is significant at the 0.05 level.

Multiple comparison table (Tukey HSD) for parlour and room (self-contain) Investment returns for Kaduna metropolis.

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Barnawa	Malali	1.21300	2.05543	.559	-2.9556	5.3816
	Sabon tasha	1.79000	2.05543	.390	-2.3786	5.9586
	Unguwan Rimi	2.22600	2.05543	.286	-1.9426	6.3946
Malali	Barnawa	-1.21300	2.05543	.559	-5.3816	2.9556
	Sabon tasha	.57700	2.05543	.781	-3.5916	4.7456
	Ung.Rimi	1.01300	2.05543	.625	-3.1556	5.1816
Sabontasha	Barnawa	-1.79000	2.05543	.390	-5.9586	2.3786
	Malali	-.57700	2.05543	.781	-4.7456	3.5916
	Ung.Rimi	.43600	2.05543	.833	-3.7326	4.6046
Ung. Rimi	Barnawa	-2.22600	2.05543	.286	-6.3946	1.9426
	Malali	-1.01300	2.05543	.625	-5.1816	3.1556
	Sabon tasha	-.43600	2.05543	.833	-4.6046	3.7326

Computed Appendix E *. The mean difference is significant at the 0.05 level.

Multiple comparison table (Tukey HSD) for two bedroom residential investment total return for Kaduna metropolis

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Barnawa	Malali	2.67100	1.87749	.163	-1.1367	6.4787
	Sabon tasha	2.94700	1.87749	.125	-.8607	6.7547
	Ung. Rimi	2.52900	1.87749	.186	-1.2787	6.3367
Malali	Barnawa	-2.67100	1.87749	.163	-6.4787	1.1367
	Sabon tasha	.27600	1.87749	.884	-3.5317	4.0837
	Ung.Rimi	-.14200	1.87749	.940	-3.9497	3.6657
Sabontasha	Barnawa	-2.94700	1.87749	.125	-6.7547	.8607
	Malali	-.27600	1.87749	.884	-4.0837	3.5317
	Ung.Rimi	-.41800	1.87749	.825	-4.2257	3.3897
Ung. Rimi	Barnawa	-2.52900	1.87749	.186	-6.3367	1.2787
	Malali	.14200	1.87749	.940	-3.6657	3.9497
	Sabon tasha	.41800	1.87749	.825	-3.3897	4.2257

Computed from APPENDIX E   *. The mean difference is significant at the 0.05 level.

Table Multiple comparison table (Tukey HSD) for three bedroom residential investment investment total returns

(I) Location	(J) Location	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Barnawa	Malali	2.89400	1.88069	.133	-.9202	6.7082
	Sabon tasha	.93200	1.88069	.623	-2.8822	4.7462
	Ung.Rimi	-1.05900	1.88069	.577	-4.8732	2.7552
Malali	Barnawa	-2.89400	1.88069	.133	-6.7082	.9202
	Sabon tasha	-1.96200	1.88069	.304	-5.7762	1.8522
	Ung.Rimi	-3.95300*	1.88069	.043	-7.7672	-.1388
Sabontasha	Barnawa	-.93200	1.88069	.623	-4.7462	2.8822
	Malali	1.96200	1.88069	.304	-1.8522	5.7762
	Ung.Rimi	-1.99100	1.88069	.297	-5.8052	1.8232
Ung.Rimi	Barnawa	1.05900	1.88069	.577	-2.7552	4.8732
	Malali	3.95300*	1.88069	.043	.1388	7.7672
	Sabontasha	1.99100	1.88069	.297	-1.8232	5.8052

*. The mean difference is significant at the 0.05 level.

Standardized Residual Covariances of final structural model (Appendix N)

	Q5.5	Q5.4	Q5.3	Q5.2	Q4.5	Q4.4	Q4.3	Q4.2	Q3.5	Q3.4	Q3.3	Q3.2	Q3.1	Q2.6	Q2.5	Q2.4	Q2.3	Q2.2	Q2.1	Q1.6	Q1.5	Q1.4	Q1.3	Q1.2	Q1.1
Q5.5	.519																								
Q5.4	.354	.457																							
Q5.3	.305	.299	.530																						
Q5.2	.330	.317	.348	.555																					
Q4.5	.058	.008	-.010	.045	.587																				
Q4.4	-.010	-.001	.036	.024	.220	.602																			
Q4.3	.011	.037	.055	.000	.146	.112	.689																		
Q4.2	.120	.089	.016	.077	.154	.253	.154	.812																	
Q3.5	-.009	.031	.013	-.030	.040	.045	-.033	.067	.400																
Q3.4	-.018	.012	-.074	-.080	**2.040**	.014	.020	.104	.249	.498															
Q3.3	-.019	-.024	-.073	-.079	.057	.029	.071	.091	.239	.325	.449														
Q3.2	-.012	-.006	-.061	-.091	.085	.043	-.024	.110	.256	.354	.341	.537													
Q3.1	-.050	-.036	-.012	-.061	.079	.027	.061	.093	.242	.252	.285	.299	.469												
Q2.6	.050	.026	1.026	.026	.097	.039	.154	.195	.118	.149	.137	.177	.093	.471											
Q2.5	.041	.026	-.017	.013	.060	.027	.076	.079	.124	.145	.130	.152	.106	.250	.406										
Q2.4	.036	-.012	.007	-.012	.072	.053	.078	.144	.142	.197	.163	.238	.157	.255	.204	.554									
Q2.3	-.017	-.012	.000	-.012	.057	.092	**2.072**	.146	.157	.207	.202	.201	.170	.187	.166	.263	.435								
Q2.2	.004	-.018	-.006	-.049	.025	.022	.073	.073	.155	.234	.211	.256	.213	.188	.183	.308	.260	.469							
Q2.1	.002	.000	.006	-.067	.070	.058	.043	.179	.186	.248	.197	.293	.214	.207	.175	.368	.325	.360	.573						
Q1.6	.060	.074	.062	.049	.088	.011	.096	.055	.080	.124	.107	.116	.059	.125	.069	.047	1.074	.046	**2.069**	.473					
Q1.5	.086	.092	.080	.062	.063	.037	.095	.136	.103	.130	.071	.116	.064	.171	.148	.102	.088	.087	.132	.248	.487				
Q1.4	.013	.009	.015	.002	.031	-.069	.084	.022	.054	.098	.060	.073	.035	.174	.066	.136	.103	.091	.095	.182	.216	.400			
Q1.3	.029	.033	.008	-.004	.055	.029	.054	.100	.127	.124	.095	.104	.109	.167	.117	.116	.094	.080	.106	.199	.248	.188	.401		
Q1.2	.027	.039	1.015	-.009	.004	-.001	.071	.031	.065	.079	.067	.061	.040	.118	.092	.082	.063	**2.059**	.066	.202	.195	.189	.217	.358	
Q1.1	.019	.015	.033	-.021	.018	.008	.095	.019	.086	**2.070**	.071	.085	.082	.093	.074	.031	.049	.052	.061	.162	.178	.152	.176	.192	.311

	Q5.5	Q5.4	Q5.3	Q5.2	Q4.5	Q4.4	Q4.3	Q4.2	Q3.5	Q3.4	Q3.3	Q3.2	Q3.1	Q2.6	Q2.5	Q2.4	Q2.3	Q2.2	Q2.1	Q1.6	Q1.5	Q1.4	Q1.3	Q1.2	Q1.1
Q5.5	1.000																								
Q5.4	.727	1.000																							
Q5.3	.582	.607	1.000																						
Q5.2	.614	.629	.641	1.000																					
Q4.5	.105	**2.016**	-.018	.079	1.000																				
Q4.4	-.018	-.001	.063	.041	.370	1.000																			
Q4.3	.018	.065	.091	.000	.229	.174	1.000																		
Q4.2	.186	.146	.024	.114	.222	.361	.205	1.000																	
Q3.5	-.020	.073	.028	-.063	.083	.091	-.062	.117	1.000																
Q3.4	-.035	.024	-.143	-.152	.074	.025	.034	.164	.558	1.000															
Q3.3	-.039	-.053	-.149	-.158	.112	.056	.129	.151	.564	.688	1.000														
Q3.2	-.023	-.012	-.114	-.168	.152	.075	-.040	.166	.553	.684	.696	1.000													
Q3.1	-.102	-.079	-.024	-.119	.150	.050	.107	.150	.558	.521	.621	.595	1.000												
Q2.6	.101	.056	**2.052**	.050	.184	.073	.271	.316	.272	.308	.299	.352	.199	1.000											
Q2.5	.090	.059	-.037	.028	.123	.055	.144	.137	.308	.322	.304	.327	.244	.573	1.000										
Q2.4	.068	-.023	.012	-.021	.126	.091	.126	.214	.302	.375	.327	.436	.308	.499	.430	1.000									
Q2.3	-.035	-.027	.001	-.024	.112	.180	.132	.246	.377	.444	.456	.416	.375	.413	.394	.536	1.000								
Q2.2	.008	-.039	-.012	-.095	.048	.041	.128	.118	.358	.486	.459	.511	.454	.400	.421	.605	.576	1.000							
Q2.1	.003	.000	.011	-.119	.121	.099	.069	.263	.389	.464	.389	.528	.413	.398	.364	.653	.650	.696	1.000						
Q1.6	.122	.158	.123	.096	.167	.020	.168	.088	.185	.256	.233	.230	.126	.265	.157	.092	.162	.098	.133	1.000					
Q1.5	.171	.196	.158	.119	.118	.068	.163	.216	.233	.265	.152	.227	1.134	.356	.333	.197	**3.191**	.181	.250	.516	1.000				
Q1.4	.028	.020	.032	.005	.064	-.140	.160	.038	.135	.220	.142	.158	.081	.400	.163	.289	.247	.211	.199	.419	.489	1.000			
Q1.3	.063	.076	.018	-.008	.114	.060	**2.103**	.175	.317	.278	.224	.223	.252	.384	.290	.245	.225	.186	.222	.456	.561	.470	1.000		
Q1.2	.063	.097	.034	-.021	.010	-.003	.142	.058	.173	.187	.168	.139	.098	.288	.241	.185	.160	.144	.146	.489	.466	.498	.573	1.000	
Q1.1	.047	.040	.082	-.051	.041	.020	.204	.038	.244	.177	.189	.209	.216	.243	.209	.075	.134	.136	.144	.423	.457	.431	.498	.575	1.000

	Q5.5	Q5.4	Q5.3	Q5.2	Q4.5	Q4.4	Q4.3	Q4.2	Q3.5	Q3.4	Q3.3	Q3.2	Q3.1	Q2.6	Q2.5	Q2.4	Q2.3	Q2.2	Q2.1	Q1.6	Q1.5	Q1.4	Q1.3	Q1.2	Q1.1
Q5.5	.519																								
Q5.4	.340	.457																							
Q5.3	.321	.308	.530																						
Q5.2	.341	.328	.309	.555																					
Q4.5	.032	.031	.029	.031	.587																				
Q4.4	.037	.036	.034	.036	.182	.602																			
Q4.3	.025	.024	.023	.024	.124	.143	.689																		
Q4.2	.042	.041	.038	.041	.206	.238	.162	.812																	
Q3.5	.007	.007	.007	.007	.035	.041	.028	.046	.400																
Q3.4	.010	.009	.009	.009	.048	.055	.038	.063	.249	.498															
Q3.3	.009	.009	.008	.009	.045	.052	.036	.059	.235	.321	.449														
Q3.2	.010	.010	.009	.010	.051	.059	.040	.066	.263	.359	.339	.537													
Q3.1	.010	**2.010**	.009	.010	.049	.057	.039	.064	.115	.157	.149	.166	.469												
Q2.6	.010	.010	.009	.010	.048	.056	.038	.063	.114	.155	.146	.164	.138	.471											
Q2.5	.009	.008	.008	.008	.043	.049	.034	.056	.100	.136	.129	.144	.122	.250	.406										
Q2.4	.015	.014	.013	.014	.072	**2.084**	.057	.095	.170	.232	.219	.245	.207	.204	.179	.554									
Q2.3	.013	.013	.012	.013	.064	.074	.051	.084	.151	.206	.195	.218	.184	**2.181**	.159	.271	.435								
Q2.2	.015	.014	.013	.014	.072	.084	.057	.095	.170	.231	.219	.245	.206	.203	.179	.304	.270	.469							
Q2.1	.017	.016	.015	.016	.083	.096	.065	.109	.195	.266	.251	.281	.237	.233	.206	.350	.311	.349	.573						
Q1.6	.008	.008	.007	.008	.038	.044	.030	.050	.069	.094	.089	.100	.060	.059	.052	.088	.078	.088	.101	.473					
Q1.5	.009	.008	.008	.008	.042	.049	.033	.056	.077	.105	.099	.111	.066	.065	.058	.098	.087	.098	.112	.223	.487				
Q1.4	.007	.007	.007	.007	.035	.041	.028	.046	.064	.087	.082	.092	.055	.054	.048	.081	.072	.081	.093	.184	.205	.400			
Q1.3	.008	.008	.008	.008	.041	.047	.032	.053	**3.074**	.100	.095	.106	.064	.063	.055	.094	.083	.094	.108	.213	.237	.196	.401		
Q1.2	.008	.007	.007	.007	.038	.044	.030	.050	.069	.094	.089	.099	.060	.059	.052	.088	.078	.088	.101	.200	.222	.184	.213	.358	
Q1.1	.007	.006	.006	.006	.032	.037	.025	.042	.059	.080	.076	.084	.051	.050	.044	.075	.066	.074	.086	.170	.189	.156	.181	.169	.311

	Q5.5	Q5.4	Q5.3	Q5.2	Q4.5	Q4.4	Q4.3	Q4.2	Q3.5	Q3.4	Q3.3	Q3.2	Q3.1	Q2.6	Q2.5	Q2.4	Q2.3	Q2.2	Q2.1	Q1.6	Q1.5	Q1.4	Q1.3	Q1.2	Q1.1
Q5.5	1.000																								
Q5.4	.699	1.000																							
Q5.3	.611	.626	1.000																						
Q5.2	.635	.651	.569	1.000																					
Q4.5	.058	.060	.052	.054	1.000																				
Q4.4	.067	.068	.060	.062	.305	1.000																			
Q4.3	.042	.043	.038	.039	.194	.222	1.000																		
Q4.2	.065	.067	.058	.061	.298	.340	.217	1.000																	
Q3.5	.016	.016	.014	.015	.072	.083	.053	.081	1.000																
Q3.4	.019	.020	**2.017**	.018	.088	.101	.064	.099	.558	1.000															
Q3.3	.019	.020	.017	.018	.088	.101	.064	.098	.556	.678	1.000														
Q3.2	.020	.020	.018	.018	.090	.103	.065	.100	.569	.694	.691	1.000													
Q3.1	.020	.021	.018	.019	.093	.107	.068	.104	.267	.326	.324	.332	1.000												
Q2.6	.020	.021	.018	.019	.092	.105	.067	.102	.262	.320	.319	.326	.294	1.000											
Q2.5	.019	.020	.017	.018	.087	.100	.063	.097	.249	.304	.302	.309	.279	.573	1.000										
Q2.4	.028	.028	.025	.026	.127	.145	.092	.141	.362	.442	.440	.450	.406	.399	.378	1.000									
Q2.3	.028	.028	.025	.026	**2.127**	.145	.093	.142	.363	.443	.441	.451	.407	.400	.379	.552	1.000								
Q2.2	.030	.031	.027	.028	.137	.157	.100	.153	.392	.479	.477	.488	.439	.432	.410	.597	.598	1.000							
Q2.1	.031	.032	.028	.029	.143	.164	.104	.159	.408	.498	.496	.508	.457	.450	.427	.621	.623	.673	1.000						
Q1.6	.016	.016	.014	.015	.072	.083	.052	.080	.159	.194	.193	.198	.127	.125	.118	.172	.173	.186	.194	1.000					
Q1.5	.017	.018	.015	.016	.079	.091	.058	.088	.175	.213	.212	.217	.139	.137	.130	.189	.189	.205	.213	.464	1.000				
Q1.4	.016	.016	.014	.015	.072	.083	.052	**2.080**	.159	.194	.193	.198	.127	.125	.118	.172	.173	.187	.194	.423	.464	1.000			
Q1.3	.018	.019	.016	.017	.084	.095	.061	.093	.184	.225	.224	.229	.147	.144	.137	.199	.200	.216	.225	.490	.537	.490	1.000		
Q1.2	.018	.019	.016	.017	.083	.095	.060	.092	.182	.223	.222	.227	.145	.143	.136	.197	.198	.214	.222	.485	.532	.485	.561	1.000	
Q1.1	.016	.017	.015	.015	.075	.086	.055	.084	.166	.203	.202	.207	.133	.130	.124	.180	.180	.195	.203	.442	.485	.442	.512	.507	1.000

Appendix O

Assessment multivariate normality of the structural model

Variable	min	max	skew	c.r.	kurtosis	c.r.
RPIR4	2.000	5.000	-.795	-4.156	1.109	2.898
RPIR3	1.000	5.000	-.584	-3.054	.915	2.392
RPIR2	2.000	5.000	-.464	-2.427	.170	.443
RPIR1	1.000	5.000	-.610	-3.188	.446	1.166
ULUPR8	2.000	5.000	-.012	-.064	-.432	-1.128
ULUPR6	2.000	5.000	.595	3.108	-.074	-.194
ULUPR5	2.000	5.000	-.546	-2.856	-.268	-.700
ULUPR4	1.000	5.000	.014	.071	-.820	-2.144
LRA5	2.000	5.000	-.103	-.540	-.550	-1.439
LRA4	2.000	5.000	-.182	-.951	-.267	-.697
LRA2	1.000	5.000	-.230	-1.201	-.355	-.928
LRA1	2.000	5.000	-.279	-1.460	-.374	-.978
SRA18	2.000	5.000	-.251	-1.312	-.180	-.470
SRA15	2.000	5.000	-.561	-2.932	.088	.229
SRA8	2.000	5.000	-.460	-2.407	.586	1.532
SRA7	2.000	5.000	-.316	-1.653	-.627	-1.639
SRA6	2.000	5.000	-.321	-1.676	.156	.409
SRA4	2.000	5.000	-.267	-1.395	-.160	-.417
SRA1	2.000	5.000	-.213	-1.113	-.616	-1.610
NRA14	2.000	5.000	-.233	-1.216	-.506	-1.323
NRA13	2.000	5.000	-.227	-1.186	-.947	-2.476
NAR12	2.000	5.000	-.593	-3.100	-.603	-1.578
NRA11	1.000	5.000	-.471	-2.463	-.672	-1.756
NRA10	2.000	5.000	-.626	-3.274	-.553	-1.446
NRA9	2.000	5.000	-.504	-2.632	-.800	-2.090
Multivariate					48.707	4.011

Appendix O

Extract from **Kano State urban planning and development (Building) regulations 1987**

a) Part II section 4(1) all land within the urban centres must seek approval before building commences.

b) Part II section 5 (3) stipulates that without seeking for approval and consequently flouting or contravening planning shall be liable to payment of levy.

c) Part III section 7 (a), (b) states that where the building is not situated in a layout, it should be part of an established settlement and should not encroach any drainage, road or public land. And any natural feature like a stream, pit, hill, among other things which may render the site dangerous, unsafe and create nuisance to the general public

d) Part III section 8 (1) and (2) allow for approval of large-scale residential layout in the former while residential development not covered by existing layout or isolated from other settlement will not be tolerated in the later section.

e) Part III section 9 and 10 (1), (2), (3) categories housing into Low density with minimum area 180.00m^2; medium density with minimum area 330.00 m^2; High density with minimum area 900.00 m^2

f) Part III section 11 (1), (2) allows for the building of row housing subject that the room size must meet the minimum size standard, with ventilation, drainage, and sanitation but it relaxes stringency on set-back and plot development ratio.

g) Section 12 stipulates that Building in high and medium density shall not exceed two storeys building (height limitations) except approved otherwise by the board.

h) Section 13 (1),(2) compels the applicant to screen (cover) adjoining corridors, verandars, and open relaxing space located upstairs and for low-density layout building space should not exceed 50% of the total area coverage.

i) Section 14 (2) building in close proximity to the airport above 33.3 metres is required to paint it in RED and WHITE colours, using the red lamp at the top as a warning light.

j) Section 15(a), (b) in case of organically developed urban area, renovation, renewal and high building shall be allowed by the board, a maximum of one storey building with no opening at the top to adjoining lands; and 7 metres building height shall be allowed.

k) Section 16 (1) a, b, constrains distance between two building on the same plot to a minimum of 3 meters for a bungalow and 4.5 meters for storeys building. (2) states the minimum distance from boundary line to be (a) for front boundary or building facing adjoining road to 1.50 meters, (b) for Bungalow minimum side and the back boundary line is 1.50 metres, constrains storey building side and back is 1.80 metres.

l) Section 17 (1) a, b, c, d compels a single dwelling to have a minimum of a single living room for dining and sitting, one bedroom, one kitchen plus store and toilet/ablution room.

m) Section 18 (1) demands that level of the ground floor shall not be lower than 0.15 metre in relation to surface road level of the area level and a net room height exceeding 2.85 metres. (2) Largely the height of any building shall:- for a bungalow, not exceed 5 metres; for high rise building not less than 6 metres or more than 8 metres; for two storey building and above its height shall not be more than 6-8 metres.

n) Section 19 requires where a proposal encompass boys quarters, provision must be made for a combined shower and toilet convenience.

o) Section 20 (a), (b) requires for high rise building, the stairways and landings for two storey building should not to be below 0.90 metres, and 1.20 metres for building above 2 storeys.

p) Section 21 stresses that where the closed courtyard is provided, it shall not be less than 3.0 metres wide (minimum size) with a floor area of 10.80 square metres.

q) Section 22 demands that for a high rise building, projection above 90 centimetres shall be added and limited to the overall plot coverage allowable for the high rise building from either the front, rear and side distances of the high rise building.

r) Section 23 demands for, 1.80 metres for the height of gate and fence, but on the contrary for organically settlement or high-density neighbourhoods, the board may allow a gate and fence wall height of up to 3 metres.

s) Section 24 states that it might allow for use of pit latrine taking into cognizance the peculiar nature of the neighbourhood and health regulations and sanitary condition of the locale.

t) Section 25 (a) and (b) stipulate that applicant must at least plant 2 trees for vegetation and provide drainage at the front, by the side, and behind his premise in a way that is acceptable by the board.

u) Part IV section 26 (c) did not actually specify but states that the board can allow for the development to commence in an area it finds suitable, commercial land use provides ancillary services to residential land use so it is worthy of note to situated commercial land uses at a reasonable distance from residential neighbourhoods.

v) Part VI section 34 (1) requires the situation of health institution reasonably close to residential areas.

w) Part VI section 38 (1) stipulates the location of an educational institution to be reasonably close to residential areas.

x) Part VIII section 44 (1), (2) and (3) mandate that all habitable space shall be provided with open window (ventilation) to be constructed on the outside wall covering at least one-tenth of the room floor space/area; all inhabitable room shall be provided with cross vent from courtyard or external wall.

y) Section 45 obligates the provision of opening for kitchen equivalent to one-tenth of the gross floor area of the kitchen and a top window to eliminate heat, moisture and cooking odour along with an extractor fan.

z) Section 46 coerces the provision of an opening window for vent not less than 1.2 square metres.

aa) Section 47 obligates the provision of vents for the staircase of high rise residential buildings.

bb) Section 49 (3) compels the provision of vent window for every air condition room for natural light not less than one-tenth of the gross floor space of the room, and equally not less than 0.37 square metre.

cc) Part IX section 50 (a) mandates that wherever public sewer is proposed or available within a vicinity each building shall be provided with sufficient sewer for the disposal of soil water.

dd) Section 51 (a) obligates that wherever there is no proposed or available public sewer within the vicinity, soil water shall be conveyed by a sewer pipe to a septic tank within the vicinity or an access pit with the permission of the urban planning authority to a soak-away pit.

Appendix P

Extract from KASUPDA MANUAL OF 2017

Part II Section 2.2.1.1 coerces that for land in high density neighbourhoods of $<450m^2$ building coverage, restriction should not be above 60%; building type: block of flat, studio apartment; building line for front is 4 metres, side left and right is 2:2 metres while back is also 2 metres; inter-building set back is the average height of the building; for 4-6 floor high rise building, a lift is required plus a functional alternative source of power, 2 boys quarters and gatehouse is required, for ancillary facilities 4 trees to be planted, parking space for 16 cars ramp to the first floor, Number of families is 2-8.

For high-density neighbourhoods adjoining commercial districts, for land $>450\ m^2$ building coverage should be restricted to 60%; building types are majorly blocked of flats, studio apartment; setback front side is 6 metres, 2 sides is 4.5 metres and back side is 3 metres, inter-building set back is the average height of the building; high rise building of 4-6 floors, lift shall be provided plus a functional alternative source of power, basement park for 4 cars for each additional floor,8-12 family size is required.

For medium density neighbourhoods total land of $> 750\ m^2$ $<1500m^2$ in building coverage, restriction should not be more than 50%, building types mainly block of flat, studio apartment; setback in front should be 6 metres, the 2 sides and back 3 metres each, inter-building setback is the average height of the building, numbers of high rise floor is required to be 3 and 2 structures within the premise, 12 numbers for car ramp to the first floor is required and 6 trees to be planted for vegetation. Numbers of the family in the dwelling should be six.

For low density neighbourhoods, land of gross >1500m^2 < 2500m^2 building restriction should not be above 40%; the types of building to include bungalow, maisonette and duplex; for front setback 6 metres is required, the 2 sides 3.5 each, for back side is 3 metres; height restriction is a maximum of 2 suspended floors without a penthouse, number of structure on the plot is one principle and one ancillary; parking lot for 6 cars, 20% of total space for swimming pool; generator house plus a game court and 10 trees.

For comprehensive development/ mass housing of >5000m^2 land building restriction is 40%; building types: include condominium, mixed development and terrace; front setback 15 metres, 2 sides 8 metres each and back is 6 metres; numbers of floor 4 requires to lift , facilities to be provided includes crèche, day-care, retail shop, soft landscaping, fire-fighting equipment, clinic, power plant.

Part II Section 2.2.1.2 mandates that residential property must meet the following architectural standards.

Table 2.1: Building component and basic minimum and side dimension

S/N	Building component	Basic minimum(m^2)	Minimum side dimension (m)
A	Living room	12	3.0
B	Dining room	7.5	2.4
C	Bedroom	10	3.0
D	Toilet (bath/WC)	3.6	1.5
E	Toilet (WC only)	1.5	0.9
F	Garage	16.5	3.0
G	Car park	12.5	2.4
H	Kitchenette	4	1.5
I	Kitchen	6.0	1.8

J	Store	3.0	1.2
K	Corridor worth	1.5	1.2
L	Headroom (height)	2.85	
M	Balcony width	1.2	0.9
N	Staircase width, riser, and thread	1.2m, 150mm and 250 mm	

Source: KASUPDA, 2017.

Section 2.1.6 of the manual coerces that each residential neighbourhood must have a maximum of two crèche with not more than six (6) classroom each.

Section 2.2.8 of the manual demands the fencing 0.5-20 metres metal grill above 300mm-2 metres height solid on the facade are allowed, largely front is 1.5, side and back 2 metres each.

Section 2.2.9 (c) of the manual stipulates the connection of each household to the water main.

Section 3.2.1.2 of the manual categories lands according to Density in terms of share size as a) High density <450-650m^2 ; b) Medium density >650- 950 m^2; c) Low density >950 m^2 and Mixed density 5000 m^2 and above.

Section 2.1.2.3 of the manual considers the subdivision of real plot or site into a smaller allotment, detached dual occupancy as inconsistent with the KASUPDA manual and, they vehemently discourage it because it will not be approved by the board.

Section 3.2.2.1 of the KASUPDA manual requires that for each unit of dwelling water meter should be provided and readily accessible by Kaduna State Water Board market reader.

Section 3.2.2.2 of the manual demands for the provision of garbage receptacle situated along the fence line and with material that depicts the character of the development.

Section 3.2.2.3 of the manual mandates that building should not be situated close to the sewer main.

Section 3.2.3.1 of the manual requires the provision of stormwater/off-site infrastructure (drainage).

Section 3.2.3.2 of the KASUPDA manual demands for provision of a mailbox to be situated as compact and close to the front borderline entrance.

Section 3.2.3.3 of the KASUPDA manual stipulates for the adaptation of colour code (Brown).

Section 3.2.3.4 demands for provision of house numbering with square plague to be placed on the right-hand point of entry, at a height above 1.7 m.

Section 3.2.3.5 of the KASUPDA manual requires for street naming located at T-junctions and road intersection.

Section 3.2.3.6 of the KASUPDA manual demands the use of street litter-bin.

Section 3.2.3.6 of the KASUPDA manual requires the provision of roadwork (road shoulder sealing, footpath or street tree planting).

Section 3.2.3.9 of the manual demands for use of a signage in a residential area in with section 3.2.3.18.

Section 3.2.3.9 of the manual requires for landscaping in parking and rear setback visible to residential development.

Section 3.2.3.24 of the KASUPDA manual requires developers to provide the following infrastructure sealed road pavement; concrete kerb and gutters; concrete footpath to the closest street; pipe storm water drainage; access through laneway should be full width.

All these building regulations for residential property are in line with the provision of the Land Use Act of 1978, the URP Act 1992/ (Amended) 1999 and the NUDP, 2012 in order to guide, regulate the pattern of urban growth and development for sustainability.