ASSESSMENT OF THE FACTORS RESPONSIBLE FOR NEGLECTED RESIDENTIAL PROPERTIES IN GWAGWALADA, ABUJA

BY

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MTech/SET/2017/7560

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A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF TECHNOLOGY IN URBAN AND REGIONAL PLANNING (HOUSING AND URBAN RENEWAL).

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ABSTRACT

Neglected residential properties is rapidly increasing in many towns and cities of developed and developing nations of the world, and Nigeria is not an exception. In recent years, housing vacancy has become a major attribute of the housing market in Abuja, the capital seat of Nigeria, and other satellite towns like Gwagwalada. However, little is known about the causes of housing vacancy in Abuja, Nigeria, and Gwagwalada to be specific. Based on this premise, this study examined the factors responsible for neglected residential properties in eight residential neighbourhoods in Gwagwalada, Abuja. Descriptive research design approach was adopted for the study while quantitative data were gathered through field survey using observation schedule and checklist. As a result, 207 vacant houses were assessed while purposive sampling technique was used to identify the vacant houses in the respective neighbourhoods. Data collected were analysed using descriptive (frequency and percentage), and inferential (t-test) statistical method. The study established that 70.53% of vacant houses have been empty for at least a period of 6 months, 57.01% of the vacant houses were buildings above 15 years of age. physical housing condition of these buildings had at least one major underlining problem associated with it roof tops (85.99%), walling members (83.57%) and windows (51.21%). Finally, the lack of prepaid electric meter in the house (71.50%), lack of organised mode of refuse collection and disposal (71.01%), lack of portable water in the houses (64.73%), proximity to health care facilities (59.42%) as well as proximity to shopping facilities (55.55%) were found also to factors responsible for housing vacancy in the study area. The study concluded that, the high property value of residential structures and lack of adequate infrastructure is the primary driver of housing vacancy in Gwagwalada, Abuja. The study therefore recommends that housing tax should be legislated and implemented to discourage the inflation of rent by developers and estate agent.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Housing is a key component of man's existence which is an essential need for his survival only second to food (Ajilowo and Olujimy, 2010; Igwe and Imbee, 2015). However, adequate supply of housing for the populace still remain an issue of concern in most developing countries of the world such as Nigeria (National Bureau of Statistics Nigeria, 2018). Amid this crisis that bedevils the housing sector, evidence suggests high rates of neglected residential properties in major cities across the country. Thus a number of units in the available housing stock are unoccupied with virtually nobody living in them and identified as vacant houses. Such neglected residential properties are among a plethora of problems responsible for inner-city decay as they undermine the physical outlook of the neighbourhoods (Huuhka, 2016).

High rates of housing vacancy is domicile within big cities and towns in Nigeria with Lagos, Port Harcourt and Abuja having the highest rates (Vanguard, 2015). In 2019 Ikoyi and Katampe in Abuja had the highest vacancy rates with 41% and 37% respectively. Similarly, Victoria Island had 23% vacancy rate, followed closely by Lekki with 22%. More so, Oniru, and Apo in Abuja also had 15% and 14% respectively, while vacancy rates in Port Harcourt moved slightly downwards when compared with the situation at the end of 2018 (Nwannekanma, 2020). The purchasing power of properties experienced a decline and tenants preferred the option of negotiating favourable rents in a bid to maintain their current locations rather than move to other places.

Despite the gloomy situation in these cities including the Federal Capital Territory (FCT), Abuja. Certain visual signs suggest a high rate of housing vacancy in some of its satellite towns such as Gwagwalada. Within the residential neighbourhood in Gwagwalada the Capital of the FCT, Abuja. Neglected residential properties can be seen in the neighbourhoods with virtually no signs of occupancy and performing no primary or secondary purpose despite being fully built and ready to be occupied. These buildings are usually up for sale or meant for lease, with banners, sign posts or inscriptions indicating that these buildings are available for occupancy as the owners wait on for prospective buyers or tenants. To Let boards are fast becoming a major feature within these residential neighbourhoods as some of this buildings are also neglected and abandoned and left to gradually run into decay while others have been taken over by miscreants and used to perpetuate all kinds of social vices.

Though, the variables that causes changes in housing vacancy may vary from one particular location to another (Wang and Immergluck, 2018). Identifying this driving factors peculiar to Gwagwalada is the first step to be taken in tackling this problem to bring about a feasible solution. As such, this study assesses the factors responsible for neglected residential properties in Gwagwalada, Abuja with primary consideration to the physical environmental characteristics as factors of housing vacancy which pertains to attributes of the house as well as attributes of the neighbourhoods.

1.2 Statement of the Research Problem

Housing vacancy is a growing phenomenon in both advanced and third world countries of the world. While studies in advanced nations revealed that housing vacancy occur majorly

due to urban shrinkage in places with high ratio of elderly residents as well as areas experiencing population decline (Teixeira and Wallace, 2013; Fuentes and Hernandez, 2014; Radzimski, 2016; Baba and Asami, 2017; Castro *et al*., 2019; Park, 2019; Akiyama *et al*., 2019), not much is known about the situation in developing nations despite an increasing population that far exceeds housing supply (Moreno and Blanco, 2014). More so, these studies have examined changes in housing vacancies while focusing on the physical environmental characteristics, housing market characteristics and socio-economic characteristics of the vacant houses (Hepp, 2013; Nassauer and Raskin, 2014; Immergluck, 2016; Newman *et al*., 2016; Wang and Immergluck, 2018).

Furthermore, most of the studies that analysed this driving factor of neglected residential properties had a regional level perspective while neglecting basic house and neighbourhood characteristics. Thus, obtaining information about the house and neighbourhood from population and housing census data related to housing vacancy (Noh and Yoo, 2016, Nam *et al*., 2016). The information obtainable at specific administrative agencies of a particular region are more often than not limited when compared to what is obtainable through field survey. Hence, this study adopts empirical observation as the methodology and approach to achieve its stated objective as it assesses the factors responsible for housing vacancy in the Gwagwalada, Abuja.

1.3 Aim and Objectives of the Study

The aim of the study is to assess the factors that are responsible for neglected residential properties in Gwagwalada with a view to suggesting feasible measures that will return vacant houses back to use in the study area.

The objectives of this study are to:

i. Examine the physical characteristics of the neglected residential properties in the study area.
ii. Assess the physical condition of the neglected residential properties in the study area.
iii. Evaluate the availability of housing facilities in neglected residential properties within the study area.
iv. Determine distance of neglected residential properties to neighbourhood facilities in the study area.

1.4 Research Hypothesis

The study conducted a test to know if there is any form of association that exists between the property value of occupied residential properties and the property value of neglected residential properties in the study area.

H_0: There is no statistically significant relationship between property value of occupied residential properties and property value of neglected residential properties in the study area.

H_1: There is a statistically significant relationship between property value of occupied residential properties and property value of neglected residential properties in the study area.

1.5 Limitation of the Research

Data on the population of vacant houses in Gwagwalada were not obtainable from the Federal Capital Development Authority (FCDA) as well as its affiliate body the Federal Ministry of Works and Housing, Abuja. Thus, the researcher determined the population for the study

through an inventory of the abandoned properties in each of the eight selected neighbourhood that makeup the study area.

1.6 Scope of the Study

This study spotlights both single and multi-family residential dwellings that are privately owned and empty as at April, 2021 when the inventory was conducted. The geographic scope of the study was determined based on the rate of abandonment in the neighbourhoods in Gwagwalada. Thus, eight neighbourhoods were selected which includes Phase III, Phase I, Agwandodo, Agwan-shanu, New kutunku, Dagiri, Old kutunku, and Kasuwa-ndere residential neighbourhoods.

1.7 Justification of the Study

Presently with over 50% of the world's population now urban dwellers and an estimation that this number will increase to 68% by the year 2050 with 90% of this increase predicted to take place in towns and cities located in Asia and Africa (UNDESA, 2016). It is therefore eminent not to jeopardise efforts to improve housing supply by the prevalence of high rate housing vacancies in towns and cities within the country. Solving this problem associated with neglected residential properties can contribute significantly by making optimal use of the existing housing stock in Gwagwalada.

Housing vacancy represents a new challenge for planners, policy makers and government official as one out of many discipline to be managed. Reviving the use of these houses is a more cost effective approach compared to redevelopment (Seriki, 2018). Thus, bringing vacant houses back to use is important in improving the quality of housing not only in

Gwagwalada but in the nation at large. This document will aid respective urban housing agencies and real estate developers with ample information about the factors that promotes neglected residential properties in Gwagwalada as well as possible measures in addressing this problem. This study will also contribute significantly to the limited data on housing vacancy in African towns and cities while serving as a material of reference for students, scholars and other researchers on neglected residential properties in Gwagwalada.

1.8 The Study Area

1.8.1 Locational characteristics of the study area

The Federal Republic of Nigeria is located in the western part of the African continent, as it shares its borders with Niger Republic, Cameroon, Benin Republic and Chad. It is a country that is home to over 200 million people in population and covers a land area of 923,768km^2 with its capital in Abuja (Dauda, 2010). Abuja is made up of six area council which includes Abaji, Kuje, Bwari, Kwali, Abuja Municipal Area Council (AMAC) and Gwagwalada where the study area is situated. Gwagwalada is the headquarters of Gwagwalada area council which is geographically located between latitude 08°55'N and 09°00'N and longitude 07°00'E and 07°05'E (Mundi and Chups, 2000). The relocation of the nation's capital from Lagos to Abuja and the pulling down of illegal structures within the capital city brought about massive influx of people into the town making it one of the top developing urban centres in Abuja. As a result, Gwagwalada also experienced a boom in development and urbanisation which also lead to temperature increase and loss of vegetal cover (Ejaro and Abdullahi, 2013).

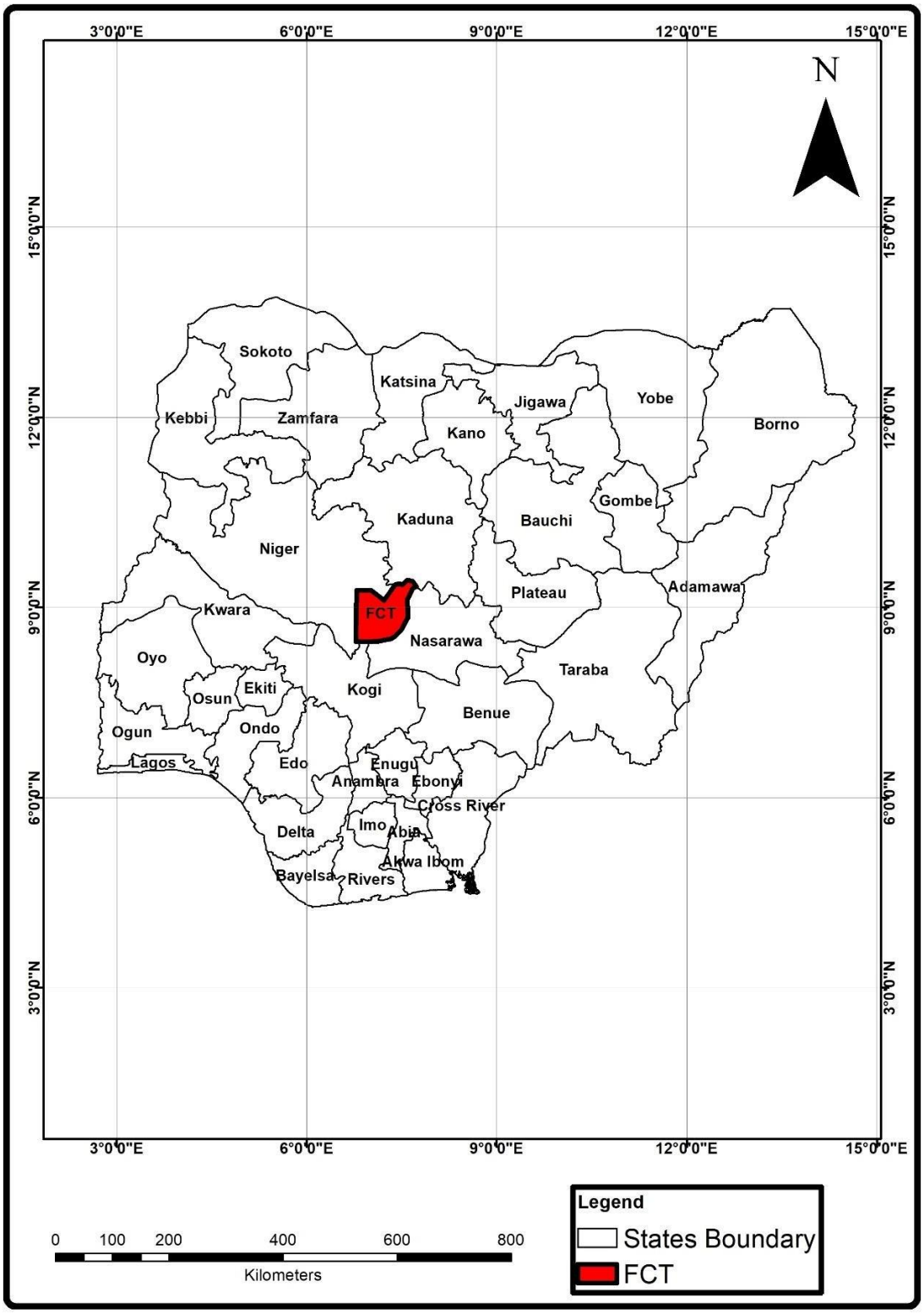

Figure 1.1: Nigeria Showing Abuja
Source: Department of Land Use Administration, Gwagwalada Area Council (2018).

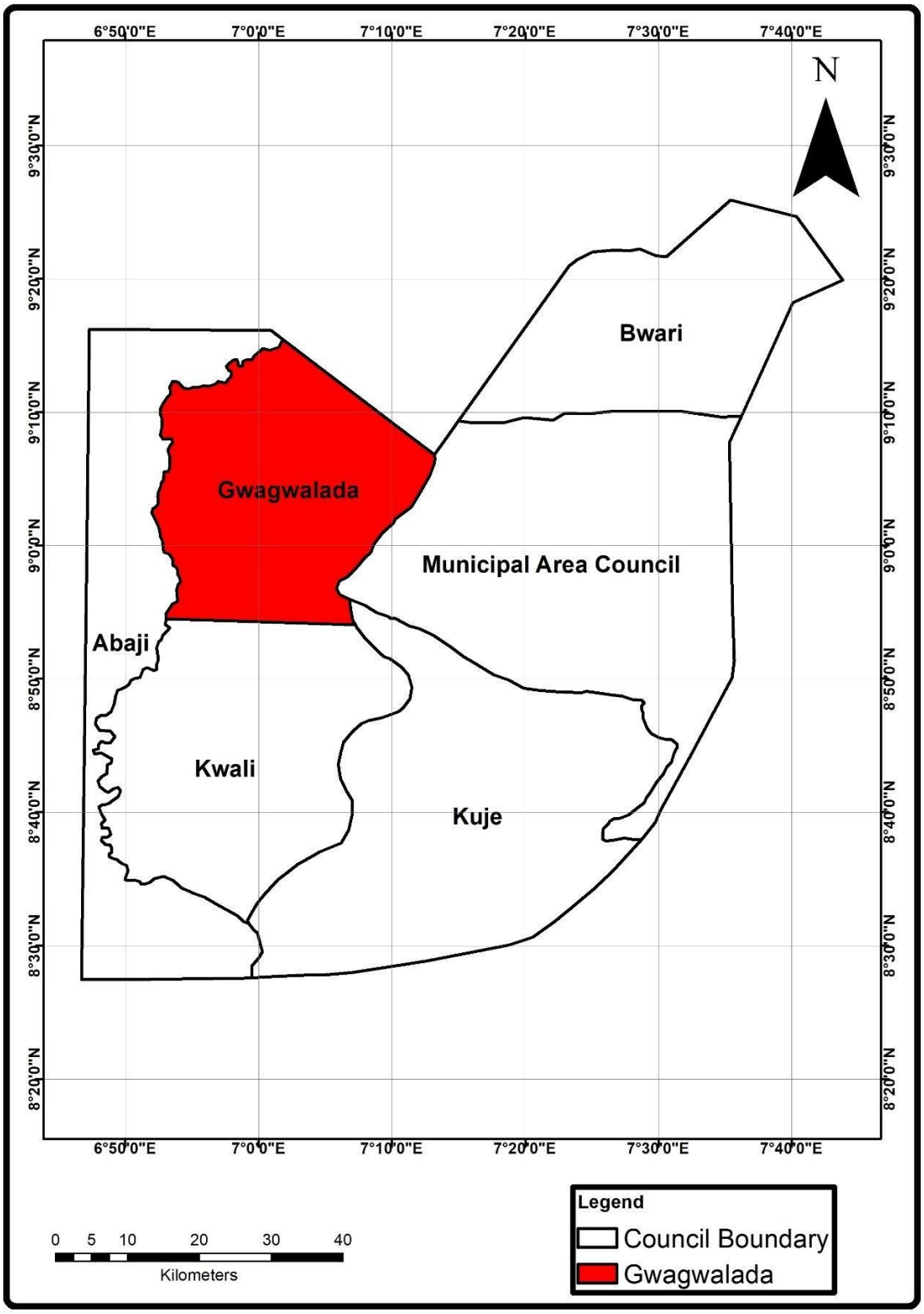

Figure 1.2: Abuja Showing Gwagwalada
Source: Department of Land Use Administration, Gwagwalada Area Council (2018).

The town is majorly made up of eleven residential neighbourhoods which includes Phase III, phase II, Phase I, Agwandodo, Agwan-shanu, New kutunku, Dagiri, Old kutunku, Kasuwa-ndere, Kotangora and New extension residential neighbourhoods. However, only eight locations were selected for the study as shown in Figure 1.3. This is due to the estimated high rates of vacancy in the neighbluorhoods.

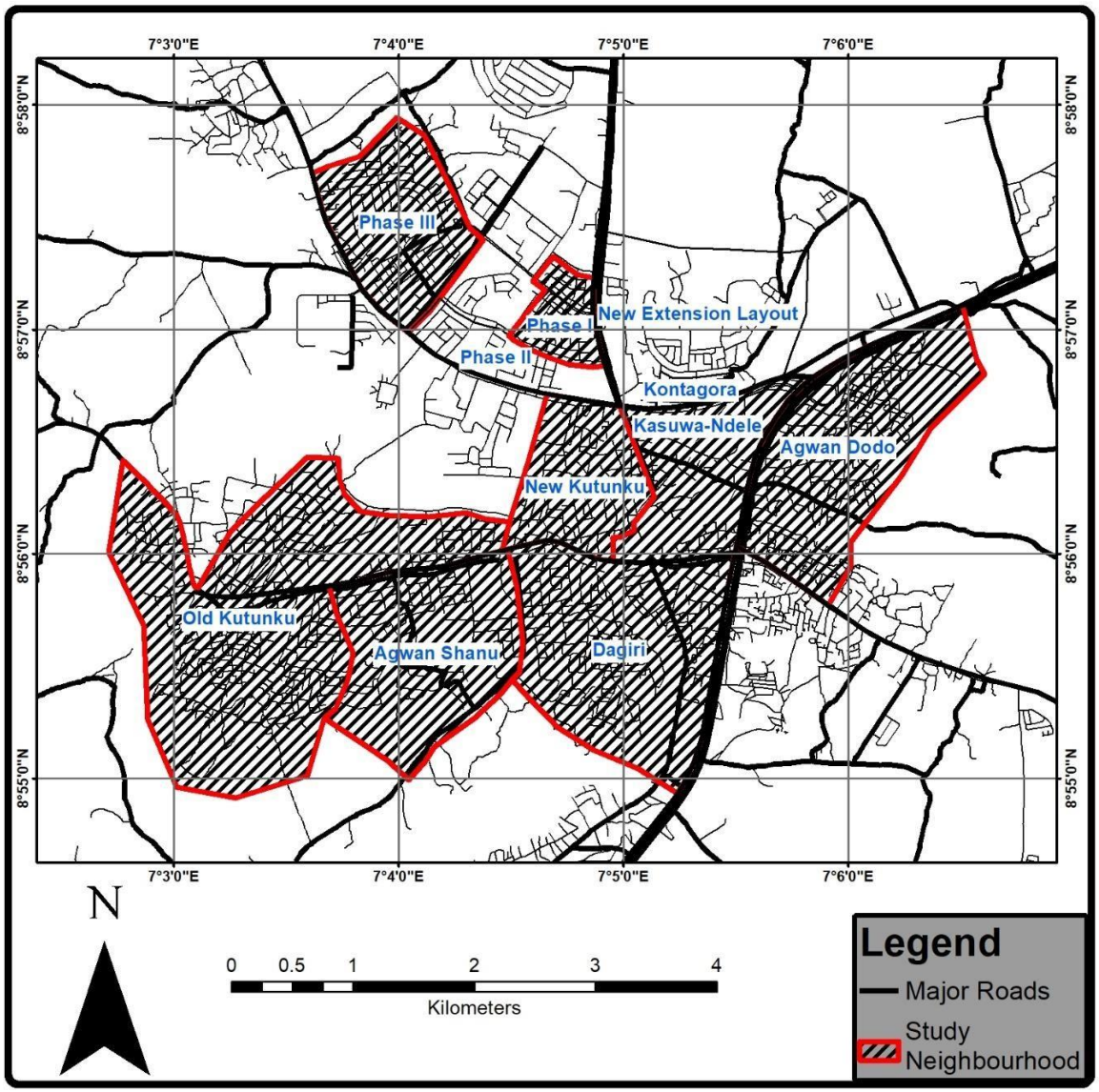

Figure 1.3: Street Map of Gwagwalada Showing Selected Neighbourhoods
Source: Department of Land Use Administration, Gwagwalada Area Council (2018).

1.8.2 Brief history of Gwagwalada

Before the creation of the Federal Capital Territory (FCT), Gwagwalada was under the Kwali district of the former Abuja Emirate now Suleja Emirate. Gwagwalada Area Council was created on 15th October, 1984. The area council is governed by an Executive Chairman and comprises of ten elected councillors as representative of the ten wards in the council, which are Zuba, Ibwa, Dobi, Kutunku, Tunga-maje, Gwako, Paikon, Kore, Ikwa, Giri and Quarters ward.

1.8.3 Population and size of Gwagwalada

Gwagwalada is one of the largest satellite towns and the third largest urban centre in the FCT. It is also one of the most densely populated areas and the headquarters of one of the oldest councils in the FCT, Abuja (Ejaro and Abdullahi, 2013). The 2006 census figure recorded the population of the town to be 158,618 people which is now obsolete, with the town spanning over an area of 1069.589km² (Nicholas and Patrick, 2015).

1.8.4 Housing development and land marks

Gwagwalada consist of the older traditional and new planned sections. The old is the pre-1976 section, while the latter results from the development of the Federal Capital Development Authority (FCDA) in accordance with its planned role in the spatial development of the FCT. Its two parts internal structure is quite similar to the pre-colonial urban centres in western and northern parts of Nigeria (Duada, 2010). The urban or planned areas are places in Quarters Ward, where the development of the town is intended to spread out from hence acting as growth pole of Gwagwalada town such places are phase I, II, and III (Ejaro and Abdullahi, 2013). Other central public facilities and major land marks in the

town includes University of Abuja Mini Campus, University of Abuja Specialist Teaching Hospital and most recently City Mart Boulevard. The Area Council is also blessed with the presence of vital Federal establishment like Custom, Immigration and Prison pension board, Sharia court of Appeal, FCT School of Nursing, FCT College of Education etc. Also, there are over ten arms of economic banks functioning inside the Area Council.

1.8.5 Socio-economic activities and tourism in Gwagwalada

Prominent amongst economic activities carried out by the indigenes includes subsistent agriculture and as such the main plants fully grown within the town are sorghum, maize, yam, millet, cassava, rice, beni seed etc. It abundance of fertile land for grazing also makes it favourable for rearing of livestock and production. Gwagwalada is enriched with unique symbols and artefact that make it an attraction to tourists and travellers alike. Such symbols include the Dadabiri hills, Tsauni hills, Wumi Natural forest, Giri pottery centre, Traditional weaving centres at Angwa Teshi and Calabash centres at Zuba (Aliyu, 2016).

1.8.6 Transportation and communication in Gwagwalada

Gwagwalada is located strategically and this makes it easily accessible to other neighbouring area councils such as Kuje, Abaji, Kwali, Bwari, AMAC and even Suleja in Niger State. It requires only 25 minutes' drive from the Nnamdi Azikiwe International Airport and around 45 minutes to get to the city centre (Aliyu, 2016). The town is sited about 55 kilometres away from the Federal Capital City (FCC) within the FCT and it is perfectly linked by a dual carriage road. Various automobiles ranging from motor cycles to large buses are operational within the town as major bus stops are located at SDP junction, Park road and El-Rufai Park bus stop opposite Government Day Secondary School.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Conceptual Framework

There exists no unanimously acceptable definition of the term housing vacancy as what is identified as vacancy in a particular geographical location may vary from another and a series of alternative names such as empty, neglected, abandoned, and unoccupied are also frequently used interchangeably (Cohen, 2001; Sternlieb *et al*., 1974). The polarity of this definition often make it difficult for researchers or government officials to precisely quantify the rate of vacancy in towns and cities (Pagano and Bowman, 2000). Thus, most cities identify a building to be vacant as a result of its physical state and the time lag a building has stayed vacant in other words the period of vacancy (Cohen, 2001). More so, Pagano and Bowman (2000), in a survey conducted which assessed housing vacancy in 60 cities situated in the United States of America, discovered that some cities consider a building to be vacant, and therefore a threat to the general safety or health of other, if it has been left with no body living in it for 60 days. However, some other scholars recommend 120 or more days as a yard stick to determine the validity of housing vacancy (Cohen, 2001; Pagano and Bowman, 2000).

Various institutions around the globe have come up with their own definition of a vacant house as they vary from place to place. One of this definition of the term was put through by the Ministry of Internal Affairs and Communications in Japan. It defined vacant housing units as buildings having no records of electricity power supply, water supply as well as gas supply for a period of one year and identified through field survey. Another definition was put

through by the legislative system in Korea which defined a vacant house as a building that has been empty since its initial occupants moved to an alternative location or place of residence, leaving the building empty with nobody residing in it over a prolonged time range. Notwithstanding, other scholars have also defined the term with respect to their study. Sternlieb *et al*. (1974) defined the term housing vacancy as a habitable building that the owner has practically taking away or eliminated from the housing stock by virtue of his negligence to his primary responsibility as regards its functional, financial and physical maintenance. This view was further buttressed by Hillier *et al*. (2003) which identified three distinct aspects of housing vacancy namely functional vacancy, financial vacancy and physical vacancy. Firstly, functional vacancy refers a building being vacant as a result of it not being habitable enough. Secondly, financial vacancy is said to exist when the occupant/owner truncates his or her financial responsibility which involves payments of the taxes, mortgages or utility bills. Thirdly, Physical vacancy is evident when a vacant building is no more suitable for habitation as a result of neglect by the owner to maintain the interior or exterior of the building.

In view of these, Mallach (2006) considers a residential structure to be a vacant building when the owner/occupant fails to meets any one of the noteworthy responsibilities outlined by Sternlieb *et al*. (1974) thereby causing the housing unit to be empty. Many scholars have identified neglected duty of owner/occupants as a pointer of housing vacancy. ‘‘Harding *et al*. (2009) buttress this by stating that the technical know-how by which a vacant unit impacts neighbouring housing value is to a great extent visible,’’ with respect to the result in their investigation measuring the contagion effect of foreclosed homes on the value of nearby

housing units. Thus, this study considers a property as vacant on the basis of its functionality when nobody is residing in them as at the time of the survey. Physical aspects, when the building is showing the signs of neglect and financially, when it has been disconnected from the electric power grid in the study area.

2.2 Types of Housing Vacancy

There are broadly two main types of housing vacancy which are transactional (or transitional) housing vacancy and long-term housing vacancy. Transactional housing vacancy can be identified as empty houses for a period less than six months which is usually as a result of change of tenancy or ownership as the case may be, which involves people relocating from one house to another. While houses that have been ascertained to be empty for a period of six months and exceeding that time frame but remain inactive in the housing market are classified as long-term housing vacancy (London Borough of Ealing, 2017). Although transactional housing vacancy is less of a concern for authorities, they can still be problematic if their physical condition is not being looked after thereby resulting in a poor street scene. Additionally, a house may be unoccupied or seem vacant but then again it is not classified as a vacant building. Such properties occupied occasionally includes, a vacation home that more or less serves as a secondary home for the occupant and will surely be empty for a while (London Borough of Ealing, 2017).

2.3 Motives for Housing Vacancy

There are many reasons for housing vacancy, while some are simply classified others are puzzling with people having various motives for their homes being unoccupied. Although some of the noteworthy obstacles encountered by owners of long-term housing vacancy

which are keeping them from bringing back their homes into use include, inheritance issues, delays with obtaining a certificate of occupancy, unavailability of funds to undertake certain renovation, poor health condition of the owner which may result in spending some time in the hospital or residential care, the owner also might be financially incapacitated to deal with the property, following the passing on of an occupant the ownership of the property may be unclear in terms of decision making, problems with achieving a sale, apparent issues linked with selling of housing as well as sheer reluctance of the owner to return the housing back into functionality (Shelter, 2009; Empty Homes Policy, 2017).

2.4 Approach to Restoring Vacant Housing

Through media campaigns in the local press, taking part in local landlord meetings, promotion on the council website and newsletters as well as paying close attention and acting on the enquiries made by the community. Ealing Council in London works to truncate the prevalence of long term housing vacancy in the city (Empty Property Strategy, 2017). Where a housing unit have been vacated by the initial occupant, Ealing Council come in to action by contacting the owners in an informal manner working hand in hand in an attempt to put the housing unit back into use. This partnership will however take the shape of the council giving advice, guidance and financial incentives to the owners. Where cooperation to this is guaranteed no enforcement action is taking by the council. At the other hand, where that is not the case the council will activate an enforcement process against the owner in a bid to forcefully return the housing unit back into use. This process employed by Ealing council in tackling long term housing vacancy is summarised in Figure 2.1 (Empty Property Strategy, 2017).

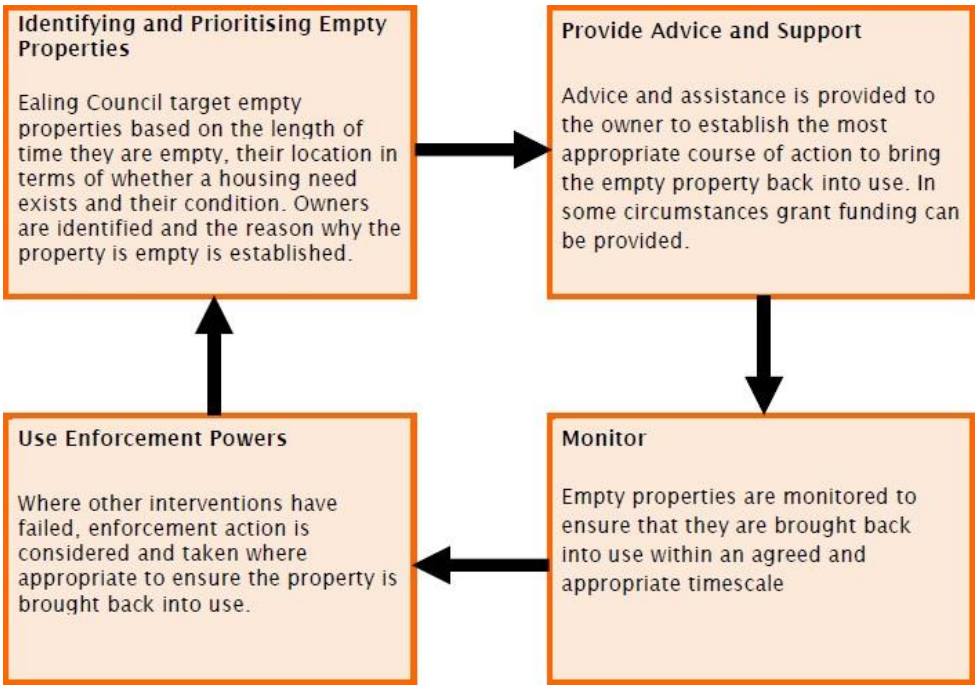

Figure 2.1: Sequence of Activities to Bringing Vacant Houses Back into Use
Source: Empty Property Strategy, 2017.

2.5 Pros and Cons of Introducing Vacant Property Tax (VPT) in Nigeria.

Countries such as Ireland and other European countries are in the process of introducing increments in property tax on vacant properties and using the proceeds to facilitate the construction of new houses (The Business Times, 2018). While high success rates of this policy have been recorded in other countries such as Columbia, Korea, Philippines, Ireland, USA (Kim and Nam, 2016), findings from the empirical study carried out by Seriki (2018) which posed the question if the introduction of vacant property tax (VPT) will solve the housing crisis in Nigeria leaves us in limbo with respect to its application in the Nigerian context. Thus, some of the respondents argue for saying that revenue generated from VPT can be channelled into the construction of affordable housing as well as the potential to drive down prices of houses due to increased availability others argue against the introduction of

same by saying that corruption is widespread within the government led agencies hesitant the funds generated from the VPT will be channelled into increasing housing supply and also VPT would portray the government as controlling the market, rather than regulating it. One of the respondents who agreed added that VPT should be made voluntary or based on the size of the house left vacant, its location and its overall worth.

2.6 Drivers Associated with Changes in Housing Vacancy

Previous researches on declining urban environment suggests that falling fertility rate and an increasing elderly population (Pallagst *et al*., 2013; Koo *et al*., 2016), deindustrialization (McDonald, 2008; Pallagst *et al*., 2013), sprawl or suburbanization (Martinez-Fernandez *et al*., 2012; Lee and Han, 2014; Koo *et al*., 2016) and natural disasters (Vale and Campanella, 2005; Pallagst *et al*., 2013) are responsible for these decline, which in turn results in declining population of the citizens and abandoned buildings represented by idle land and housing vacancy in the long run (Morckel, 2013; Lee and Han, 2014; Koo *et al*., 2016). However, the causes of housing vacancy can be broadly categorised into the housing market characteristics, socio-economic characteristics and physical environmental characteristics.

2.6.1 Effects of Housing Market Characteristics on Housing Vacancy

Housing market characteristics are closely related to factors that impact housing demand or supply curves of the region. The foremost issue that results in a decrease in housing demand is population decline. Therefore, the population modification of a specific region is thought to be the modification in housing demand. In locations wherever the population declines, there's a decrease in housing demand, which can cause a decrease in rent of housing likewise a rise in housing vacancy (Mallach, 2006). The relationship between declining population

and the growth of housing vacancy has been revealed by a number of studies (Mallach, 2006; Noh and Yoo, 2016; Park and Oh, 2018). Furthermore, in regards to population structure, housing vacancy could be on the rise in locations wherever there are several aged residents (Culhane and Hillier, 2001; Mallach, 2006; Nam, 2016). The youthful population have a habit of avoiding a move to a neighbourhood where the older population is focused, and therefore in these neighbourhoods, it's seemingly that housing demand can reduce and housing vacancy can be on the rise (Mallach, 2006).

As regards supply, excessive supply of housing that surpasses housing demand of a locality could lead to housing vacancy. A study in South Korea found that housing vacancy will increase in places wherever they are several constructions permits or an enormous supply of new housing units (Noh and Yoo, 2016; Nam, 2016, Kwon *et al*., 2017). Notwithstanding, as new housing supply characteristically are found in locations with a robust housing market and latent demand instead of declining regions (Glaeser and Gyourko, 2005), the rise in housing vacancy due to excess supply of new housing units may be a short lived situation such as housing that has not yet been bought by anybody or where the inhabitants are yet to occupy the building. The cost of land is also a significant factor of housing market conditions. Low land price is a sign that signifies a reduction or a rise in housing vacancy (Hillier *et al*., 2003). Besides, low land prices may prevent owners of housing from carrying out housing repairs, and houses that are not well taken care of might gradually become old and neglected and empty (Kim and Son, 2017; You and Lee, 2017). Places wherever there's a lot of housing demand than supply are popular areas where most people want to reside. House costs in these

places are expected to rise, however there's very little probability of housing vacancy as a result of high demand (Morckel, 2013).

A study by Sun *et al*. (2011) was concerned with the importance of reducing vacant houses at the expense of implementing green buildings in China. The purpose of the study was to showcase the many dangers associated with housing vacancy. After analysis of the relevant data on housing vacancy, the study revealed that China's urban and city housing isn't collectively in limited supply and therefore the difference between housing supply and demand is as a result of the housing market assumption and investment that have paved the way for the prevalence of housing vacancy. The study revealed that housing vacancy are underutilised assets that impact negatively on other citizens, retard the growth pattern of the city's liveability, alter the affiliation between the supply and demand in the housing market as well as lead to an increase in rent. Thus, the study concludes that a drop in the number of housing vacancy is a lot necessary than the construction of green buildings in China.

Subsequently, a study carried out by Nam *et al*. (2016) examined drivers responsible for housing vacancy as well as the approach to manage them in Gyeonggi Province, Korea. The study aimed to uncover major casual factors behind the upswing in vacant houses in Gyeonggi Province. Investigations were carried out concerning physical nature vacant houses, relative policies ae well as the types of vacant houses in Korea's Gyeonggi province. Using data from the national statistical office of Korea and population census data of 2010 in Gyeonggi Province. The study analysed the factors responsible for housing vacancy, their types, and the methods required to bring them back to use with respect to the unique conditions in the locality so as to know what strategy is best fit for utilization. Findings

revealed that too many building construction permits especially the newly authorized once, the number of aged population as well as the number of recipients of the national basic livelihood scheme had more impact on housing vacancy.

2.6.2 Effect of Socio-economic Characteristics on Housing Vacancy

As regards socio-economic factors, the number of high density households, level of joblessness as well as racial demography of a place represent key factors affecting housing vacancy. High density households experience challenges in acquiring housing talk less of having enough money to pay rent. At the other hand, homeowners with low income may also face problems of funding maintenance projects or paying property taxes (Mallach, 2006; Morckel, 2013). Thus, many studies in developed nations have made it known that housing vacancy have a tendency to rise in locations with a greater percentage of households with low income (Mallach, 2006; Bassett *et al*., 2006; Immergluck, 2015).

Consequently, a case study in the United States indicated a rise in housing vacancy in places with high percentage of coloured population (Bassett *et al*., 2006; Immergluck, 2015). This study was carried out by Immergluck (2016) utilizing information from the U.S. postal service to examine variations in housing vacancy. It therefore identified the degree to which neighbourhood characteristics affect alterations in long-term vacancy for the 50 most sizeable metropolitan regions from the year 2011 to 2014. Finding revealed that low income neighbourhoods experienced a significant rise, or minimal reduction, in vacancy when compared to neighbourhoods occupied by the rich and affluent. The results of the study indicate that extreme levels of concentrated housing vacancy rates were evident in major U.S. cities during the broader, national-level housing market recovery. Thus, the study concludes

that neighbourhoods with a higher degree of housing vacancy not only had higher population of coloured race as earlier stated but also higher degree of impoverish population, low average income, higher degree of joblessness and low average property value.

Similarly, Wang and Immergluck (2018) studied housing vacancy and urban development while expounding variations in long-term housing vacancy after the foreclosure crisis in the United States. By adopting multivariate analysis with housing vacancy data obtained via the United States postal service, the study examined the patterns and factors linked with variations in neighbourhood, long-term vacancies in three different types of urban areas within the country during the United States housing recovery from 2011 to 2014. The findings show that neighbourhood characteristics related with variation in vacancies exceeding six months differ from one urban area to another and that the unique neighbourhood features are related with vacancy rates exceeding six months in weak-growth and hard-hit metros. The results also suggest that housing markets are unbalanced once a varieties of assumption are more noticeable. The study also suggests that caution must be exercised while generalizing their findings when making comparison from one particular urban area to another. Where possible, housing studies should make use of urban area typologies to examine the different change in neighbourhood across such typologies as this will make way for improved understanding of how urban environment shapes neighbourhood differences and so enlighten policy making and further studies.

Castro *et al*. (2019) studied the changeability in spatial density of housing vacancy to background lead (Pb) exposure in young people living in Syracuse, New York. The study aimed to consider distribution of buildings in the neighbourhood while considering individual

characteristics of the young people. Thus, using established biomonitoring methods, blood lead was examined in a multiracial sample of young people between the ages of 9 – 11 in the neighbourhood. The geographical relationship of housing vacancy was modelled from publicly accessible georeferenced datasets. Furthermore, regression models were utilized to know the extent of this spatial density variable on young people's blood lead levels. While the study considered a sample size of 221 young people, with a mean blood lead levels of 1.06 μg/dL (SD = 0.68), results indicated a rise in spatial density of housing vacancy and forecast a rise in average blood-PB levels, b=0.14 (0.06–0.21), $p < .001$. This affiliation was sustained even in the wake of accounting for demographic covariates, and live span of housing units.

Further analysis indicated a spatial auto-relationship of the residuals transformed from a clustered pattern to a random pattern once the spatial density variable was acquainted with the model. The study thus concludes that the spatial density patterns of housing vacancy are a notable factor of background Pb exposure among Syracuse occupants. However, the parcel dataset acquired didn't contain data on the length of housing vacancy. Almost certainly, the more drawn out housing lies unoccupied, the more prominent measure of Pb that is disturbed.

2.6.3 Effects of Physical Environmental Characteristics on Housing Vacancy

In terms of physical environmental characteristics, foremost amongst factors include age of housing, crime and demolitions or urban revitalisation in relation to housing vacancy. However, studies have shown a huge connection between the proportion of rundown buildings and an upward trajectory in housing vacancy (Noh and Yoo, 2016; Park and Oh, 2018). Houses that are obsolete have a poor outlook and in this way may require more

noteworthy maintenance cost (Clark and Herrin, 1997). In the event that older houses are not appropriately maintained, they are probably going to be neglected by prospective buyers or occupants, accordingly turning out to be vacant house (Morckel, 2013). A few studies also found an increment in housing vacancy in areas with a high recurrence of wrongdoings or pyro-crime (Mallach, 2006; Schilling, 2002).

A local where crime or incendiarism happens much of the time gives the feeling that the area isn't good for habitation which will at that point scare possible purchasers or occupants, in this way bringing about more neglect and structural deterioration (Morckel, 2013). House demolition or metropolitan redevelopment may likewise cause housing vacancy. A research in South Korea, Kim *et al*. (2018) established that a metropolitan redevelopment area is a key variable that lead to a rise in housing vacancy. Nonetheless, house demolition might not impact heavily on housing vacancy since it is scattered and done exclusively, accordingly not influencing a whole locale (Morckel, 2013). Thus, metropolitan redevelopment that is planned and done seriously delivers various results.

A study carried out by Park (2019) assessed the effects of physical environmental characteristics on housing vacancy in Daegu, South Korea using a multilevel model approach. The study aimed to recognize the spatial nearness of housing vacancy by looking at single household houses in Daegu, South Korea. This investigation carried out a hot spot examination to determine the spatial nearness pattern of housing vacancy in single household houses in Daegu. The housing vacancy data set created gives precise locational data of housing vacancy, making it likely to analyse the nearness pattern of housing vacancy in a more particular spatial unit.

Findings revealed that the individual attributes of house and neighbourhood were factors that highly affected housing vacancy. More modest houses, houses with less floors, houses with longer live span, and houses built with block/wood/stone were expected to be empty. Houses situated on a smooth inclination of 15 degrees or lower, irregular shaped lots, and houses nearby a narrow or closed street were more prone to be empty. These outcomes indicated that neighbourhood characteristics are noteworthy elements influencing housing vacancy. Additionally, the outcome acquired from the hot spot analysis indicated that housing vacancy were spatially concentrated in the downtown area. Hence, the investigation proposed policies expected to improve the house and neighbourhood characteristic that contribute to housing vacancy.

2.7 Effects of Housing Vacancy on Frequency of Crime

Researchers have buttressed the fact that any form of social disorder either physical or social undermines neighbourhood stability and contributes significantly to neighbourhood decline (Sampson and Raudenbush, 1999; Skogan, 1990). While theories on social disorder centres around the connection between neighbourhood social patterns, social control and crime. Scholars have found a link between urban crime and social disorder as estimated by the presence of public intoxication, lingering and doping (Sampson and Raudenbush, 1999). They likewise have found a link between public crime and physical disorder as estimated by the presence of deserted vehicles, spray painting and litters (Sampson and Raudenbush, 1999). Skogan (1990) also agrees that physical disorder such as vacant housing not just raises dread of crime among neighbourhood occupants yet additionally may cause a genuine expansion in crime rate. However, a large part of the interest in disorder has originated from

Wilson and Kelling's broken windows theory which states that as long as a window of a vacant building is broken and not repaired or replaced it is eminent that such building will be invaded in the short run having more broken windows as a result of property neglect (Wilson and Kelling, 1982).

Nonetheless, general examinations indicate that the direct connection between disorder and crime may not be just about as solid as the broken window theory proposes, and that disorder might be anticipated by similar attributes as crime itself (Sampson *et al*., 2002). For instance, various investigations challenged Wilson and Kelling's broken windows theory, contending that their examination tracked down no huge proof to support their claim (Harcourt and Ludwig, 2006). Taylor (2001) as cited by Gau and Pratt (2010), in his longitudinal examination on the link between disorder and crime or dread of crime in Baltimore areas, discovered that although observed mayhem bye and large predicts a few violent crimes, there are other more grounded indicators for change in crime such as neighbourhood exchange value, home ownership as well as racial synthesis.

A number of studies have explored the impact of housing vacancy on crime, one of such studies was carried out by Spelman (1993) who discovered that in Austin, Texas, the frequency of crime on blocks with available housing vacancy was twice as high as it might have been in matched blocks without available vacant units. Raleigh and Galster (2014) as cited by Regan and Myers (2020), uncovered that in Detroit, Michigan, the cycles of housing vacancy had all the earmarks of being a nonlinear pattern in the rise of the frequency of crime in neighbourhood, expanding quickly during the initial phase of neighbourhood decline, retarding slowly in the intermediate stage, and again quickly expanding in the final stage. Cui

and Walsh (2015) indicated that violent crime inside 75 meters of a foreclosed home in Pittsburgh, Pennsylvania, raised by 19% after the foreclosed home became empty, with lower impacts (3.5–5%) on vandalism. This collection of works proposes that long-term housing vacancy have a lot more negative consequence for neighbourhoods. After the US foreclosure crisis, an investigation carried out examined housing vacancy exceeding six-month and above across numerous US metros and realized that census tracts with higher extents of lower pay families would in general have smaller decline in the quantity of housing vacancies exceeding six months and above (Immergluck, 2016).

In another research Fuentes and Hernandez (2014) studied the effect of housing vacancy on property crime. The study plainly examined the correlation between the frequency of housing vacancy and heights of property crime in Ciudad Juarez, Chihuahua, Mexico. Using relevant information gotten from the population and housing census and data on property crimes (2008 - 2009 period) from the public security office of the state. Findings reveals that increased frequency of housing vacancy results in increased levels of property crime. Thus, a 0.01% rise in housing vacancy is projected to raise the property crime in a tract by 0.84%, all other things remaining the same. These findings strongly link an over flow of housing supply with the frequency of housing vacancy and crime while suggesting that organised private sector home builders and the mortgage allocation system regulatory body should be improved upon in Mexico.

In a similar case, Jones and Pridemore (2016) carried out a research on the longitudinal effect of housing vacancy on robbery and burglary rates in the course of the U.S. housing crisis from 2005-2009 in the United States. The study utilised a sample size of 126 major urban

areas in the United States for the time frame of 2005-2009 and projected random and fixed effects models. The consequences of this investigation shows a positive and substantial relationship amid the frequency of housing vacancy and the frequency of burglary both inside and between urban communities, yet no relationship amid the frequency of housing vacancy and the frequency of robbery. However, the study suggests that other researchers should keep on assessing the effect of housing vacancy on crime to decide whether the impacts persist in other time spans and should keep on looking for other explicit parts of abandonment that might be identified with crime or other negative results.

Similarly, Porter *et al*. (2019) studied the criminogenic properties of housing vacancy, using a mixed methods approach. The study aimed at better understanding the link between vacant housing and crime by concentrating on a neighbourhood with high level of crime in Ohio. To that effect, the study made use of spatial video and calls for service (CFS) to study crime variation on streets where vacant housing was removed. It likewise revealed on the experiences of 35 ex-outlaws, cops, and inhabitants to inspect how and why empty houses are associated with wrongdoing in the vicinity. The results of this study showed that streets where vacant houses were destroyed accounted for a reduced quantity of neighbourhood crime prior to its removal. More so, a reduced quantity of total CFS from these streets associated to severe crime. However, the study suggests that prospective studies ought to scrutinise this likelihood with rigorous designs.

Not so far in time, Chen and Rafail (2019) carried out a study that questions the induction of crime by the presence of housing vacancies. Using spatiotemporal regression analysis, the study aimed at investigating the longitudinal associations amid patterns of housing vacancies,

neighbourhood social problems and crime in the city of New Orleans. Alongside large scale administrative and contextual information gathered from the year 2012 to 2018, the spatiotemporal regression analysis gives exact proof to the remarkable impacts of housing vacancy on neighbourhood level of vandalism and brutality. Furthermore, the spill over impact of housing vacancy is seen on the neighbourhood level of drug abuse, vandalism, and savagery. These outcomes actually recognize housing vacancy as a modifiable objective for intercession to lessen metropolitan crime and propose that local area based projects aiming to improve informal social control and aggregate adequacy might be just about as significant as broken window policing programs.

2.8 Effects of Housing Vacancy on Rent and Property Value

Housing vacancy can weaken neighbourhood strength by bringing down the values of adjacent housing in the locality. Various studies on the adverse externalities and related issues of housing vacancy have utilized neighbourhood information such as housing records for one city district or metro. A few have discovered proof of the adverse spill over effects of housing vacancy on adjoining housing value. Griswold and Norris (2007) realized that each empty, deserted building inside 150 meter (1.5km) of a home in Flint, Michigan, decreased the value of that home by over 2%. These was further buttressed through the investigation carried out in Cuyahoga County, Ohio, Whitaker and Fitzpatrick (2013) realized that an extra empty housing unit inside 150 meter (1.5km) discounted housing costs by 1.1%. However, this adverse externality rose to 4.6% when vacant units were additionally taxed delinquent.

In another investigation of Baltimore, Maryland, Han (2014) realized that more extended spans of housing vacancy adversely affected home values. Sadayuki *et al*. (2019) was concern with appraising the externality of housing vacancy in Japan: A case study of Toshima municipality, Tokyo. The purpose of the study was to estimate the externality of vacant houses and to evaluate the advantages of tending to various kinds of vacant houses relying upon the states of the property. Using a hedonic approach, the study investigated one of twenty-three wards in Tokyo prefecture. To study the externality of vacant houses, the researchers made use of two cross-sectional datasets, which included data on the positions and states of vacant houses and the other included information on the rents, locations and structural characteristics of rental housing units around empty houses. The information was acquired from an enormous scope of fieldwork carried out between September 2016 and March 2017. Findings of this research reflected that a vacant house reduce the values of adjoining rental prices by 1-2% on average and vacant houses with some shortfalls in the housing brings about increased externalities. Furthermore, it was estimated, that dealing with vacant houses built with flammable materials would bring about an increment in housing tax of around 120 million yen altogether, or 1.3 million yen for each empty house. Given the considerable number of empty houses present, the study recommended that local governments ought to recognise the sorts of vacant houses that are causing a severe adverse externality so as to take efficient countermeasures to address the issue.

In view of housing vacancy across North America, Monkkonen (2019) carried out a research on housing finance and Mexico's vacancy crisis. The study aimed to depict the responsibility of government funding in housing vacancy rates, across and inside urban communities in

Mexico. Utilizing information from the 2010 enumeration populace and housing for the 100 biggest urban areas in the country. Findings from the study showed that urban communities with many housing constructed under the Federal Housing Finance System have greater frequency of housing vacancy by and large, and the relationship is strong in the down towns of urban areas as well as the outskirts of the metropolis. This authenticates different investigations that show how a strong predisposition in loaning for new housing in the metropolitan outskirts has added to loss of populace in downtown areas (Monkkonen and Comandon, 2016). These discovery infers that policymakers ought not exclusively be worried about housing vacancy in recently developed rural environment, yet they ought to likewise consider how the development of credit for new rural housing has contributed in the emptying out of down town regions (Wachter, 2005).

However, in a bid to recapture the value of vacant properties in neighbourhoods with numerous empty lots and a declining populace, prompt rebuilding may not be an alternative. Tidying up empty lots and cultivating them with plantings can help raise up neighbourhood property values. A new report by Susan Wachter, of the Wharton School of the University of Pennsylvania acknowledges what "clean and green" advocates have known for quite a while, that interest in greening makes an interpretation not only into expanded personal satisfaction and benefits, yet in addition into higher property values. The Pennsylvania Horticultural Society facilitated an empty land management system with the New Kensington Community Development Corporation that incorporates getting empty lots free from garbage’s, planting crops and trees, time to time cleaning and cutting of bushes as well as transferring empty lots to adjoining property holders as temporary private side yards.

Before now, a considerable number of the lots in the New Kensington neighbourhood had been sanctuaries for criminal behaviour. Wachter's study, which investigated in excess of 3,000 home seals from 1980 to 2003, found that planting trees inside 50 feet of houses raised the home costs by 9% which is around $3,400 and that business costs raised however much 30% when homes were situated close to empty lots that had been ‘‘cleaned and greened’’. In the New Kensington territory this means a $4 million addition in property estimation through tree plantings and a $12 million increase through lots improvements (Wachter, 2005).

Philadelphia has seen in excess of monetary terms from their endeavours. By planting crops in many empty lots in a similar region, the lots have been changed over into "green corridors." To improve the neighbourhood advantages, the Pennsylvania Horticultural Society has introduced a storm water management system, which has been identified by the United States Environmental Protection Agency as a good example for other to follow in recovering as well as managing empty lots (Son *et al*., 2015).

2.9 Effects of Policy on Housing Vacancy

Consequently, many researchers have studied the causes of housing vacancy in European cities. One of such research, includes the works of Couch and Cocks (2013) in their study of Housing Vacancy and the Shrinking City while focusing at the patterns and policies in the UK and the city of Liverpool. This investigation aimed to more readily comprehend and separate the different sorts and reasons for housing vacancy which have influenced Liverpool, set inside a more extensive analysis of housing vacancy rates in the UK. It likewise looks to know whether the reactions towards policies, including planning policies suitably reflect this variety. The technique utilized depended upon the quantitative examination of

auxiliary information and the subjective analysis of policy response. Accordingly, the study uncovered that housing vacancy has not been common all through the city however amassed in specific regions, especially the inward urban wards encompassing the downtown area and in some fringe rural wards containing high extents of social housing. It concludes that there is a fairly weak association between shrinkage and housing vacancy in the city of Liverpool.

In another study, Jensen (2016) focused on the Problems, localization and initiatives of vacant houses in Denmark. The study reflects a situation of single household vacancy which has become a focal policy driven issue lately. Using the "Village renewal pool" (VR pool) as a method in understanding how to manage vacant buildings as a new emerging planning practice in peripheral regions in Denmark. The study revealed that 68% of the municipalities have prepared a strategy for the management of vacant houses. It therefore concludes that there is a large room to call for a bottom-up approach at the peripheral regions, where resources are scarce. It also suggests collaboration with the civil society that plays a large role in the practical formulation and implementation of the policies for managing vacant housing.

More so, Radzimski (2016) conducted a study on the topic; Changing policy responses to shrinkage. The study practically looked at the execution of policies under shrinkage conditions utilizing the case of one of the biggest governmental upheld urban strategies in Germany. The Urban Restructuring Program was started in the year 2001 as a reaction to the issue of phenomenally high housing vacancies in the eastern part of the country. While prior studies undertaken on the subject matter recommended that this approach was dominatingly directed towards destruction of empty housing. The study hence showed that both the issue

of housing vacancy and implementation of policies were considerably separated locally. Besides, it emphasized on how the policy has steadily changed over the long haul, as its focus moved from demolition towards another technique which looks to adjust the mechanisms of urban recovery to the states of shrinkage.

Most of these researchers has focused on the issue of housing vacancy in association with policy response. With (Jensen, 2016) revealing that 68% of the municipalities have prepared a strategy for the management of vacant houses in peripheral regions in Denmark. While Couch and Cocks (2013) concludes that there is a fairly weak relationship between shrinkage and housing vacancy in the city of Liverpool. These statistics thus reflects the success of government agencies in their respective states towards addressing the issue of housing vacancy and urban shrinkage in European cities. However, researchers still proffer other approaches that can further address issues of housing vacancy.

2.10 Overview of Housing Vacancy in Developed Nations

Housing vacancy is commonly obvious to a great degree in locations where the housing market had over exploded. In other words, where the financial crisis has had the most noticeably but terrible impact after a time of remarkable monetary growth matched with an exceptional push of the local real estate market. In Western Europe, such is the case in Spain and Ireland having the highest rates of housing tenure with 82% and 79% respectively (UN-HABITAT, 2011). Conversely, Spain had more unoccupied residences than all other country in Europe. The country has far fewer households for rent than empty with 1.8 million or 6-7% of the aggregate, as per the outcome of the rental housing survey carried out by the

Ministry of Housing in 2006. However, in europe the average rental housing stock falls somewhere in the range of 40% and 50% of the total housing stock (Inurrieta, 2007).

At the other hand, Ireland has above 10% of its housing stock unoccupied, with this figure reaching 14.7% in the 2011 enumeration (Central Statistics Office Ireland, 2012 as cited in Moreno and Blanco, 2014). This implies that one out of six housing units in the nation are empty. In Ireland by and large the purported "Celtic Tiger" has given up more than 2800 supposed "ghost estate" where urban advancements of at least ten abodes in which over 50% of the houses are empty or incomplete (Kitchin *et al*., 2010). Furthermore, in the United States of America, 8.4% of residences were vacant in 2011, which in outright terms implies that there are in excess of 11 million vacant housing across the nation (Blanco, 2011). Just one third of these houses would be needed to cover the housing needs of about 3.5 million individuals in the US, who do not have a home at a particular point at any given time of the year. The problem of housing vacancy is widespread in European cities, this is evident with 11 million identified vacant housing within the continent (Bogataj *et al*., 2016). However, large variations occur in vacancy rates with 2-7% in Northwest England, 34% in southern Italy, and 50% in eastern Germany (Schetke and Haase, 2008). This large variation is caused by a number of factors such as population decline, neglected real estate due to low fertility, high elderly population, deindustrialization, suburbanization and natural disasters (Vale and Campanella, 2005; McDonald, 2008; Hollander *et al*., 2009; Martinez-Fernandez *et al*., 2012; Pallagst *et al*., 2013).

In another study, Lee and Sung (2017) worked on the conflicts of interest and change in original intent: A case study of vacant and abandoned housing converted to be used as public

gardens in a shrinking city, Daegu, South Korea. The reason for this investigation was to comprehend the wonder of the private occupation of public assets and its conflict factors. Subsequently, a case study technique was used by choosing certain cases that could uncover such attributes through surveys. Information were gotten from the Daegu city hall website, books, journals, newspapers and specific housing offices as well as interviews conducted amid March and August 2016 during seven site visits. Workers and individuals from significant municipal authorities and non-profit organisations (NPOs) and town inhabitants were chosen through purposive sampling for interviews while information was examined by means of an open coding system.

The outcomes demonstrated that the competition that emerges among inhabitants during the utilization of vacated territories is related to the conflict among implementers that show up during project advancement as well as to the subsequent changes in the nature of the project. Likewise adding to conflict are the spatial attributes of the evacuated area, being situated close to older inhabitants, and policy measures, like the transitory change into public land. The investigation revealed that constant management and administration are required to keep up public opinion. To this extent, an adjustment in insight, moving from an aesthetic improvement project to a city revitalization project, is fundamental, notwithstanding governance and co-operation endeavours concerning private and public opinions as well as the community. More so, the study also proposes that empty land use decision making on a scope that is big enough (for example, in a whole city) or in another country, which would uncover the impacts of varying culture could be considered for further studies.

Much more recently, Akiyama *et al*. (2019) undertook a study on assessing the spatial distribution of vacant houses using public municipal data in Japan. The study was aimed at developing a novel technique with the use of municipal public information and a fieldwork of the sample rather than an encompassing fieldwork about the entire municipality, which is said to reduce the financial burden, save time and labour required in carrying out housing vacancy surveys. For this reason, a housing vacancy database to coordinate different public big data with fieldwork was developed and the outcome were gathered from various location of Japanese municipality (Kagoshima and Asakura).

The study reveals that in Kagoshima, the quantity of housing vacancy is specifically huge in residential locations around the down town region, residential areas on a mountainous slope, old downtown areas, and Sakurajima region influenced by active fountain of liquid magma (volcano). Additionally, the frequency of housing vacancy was specifically high in the mountainous regions around the downtown area. Besides, the mountainous regions are broadly spread in the northern part of the municipality, and the grids are dotted with high frequency of housing vacancy in these areas. The outcomes help to understand a technique for carrying out studies of housing vacancy distribution in wide zones in a speedy, economical, and consistent way, which has not yet been accomplished by past examinations. As a requirement for further research the study suggests that it is essential to make use of this technique in more municipalities while studying its potentials and shortcomings.

Numerous studies have been carried out in the north American cities. One of which includes the works of Teixeira and Wallace (2013) who researched on the description of a community college partnership that consolidated a multimethod information gathering technique with a

new community based participatory intercession research model to address the vacancy problem in Pittsburgh, Pennsylvania. Using Data-Driven Organizing (DDO) as the methodology for this study. The research evaluated the states of more than 1,500 housing in a monetarily hindered, primarily racially coloured neighbourhood in Pittsburgh, Pennsylvania, and encouraged occupants to utilize a current strategy to improve the effect of housing vacancy in the community.

The analysis of Neighbourhood and Community Information System (PNCIS) information affirmed the inhabitants and researcher's impressions that housing vacancy was a critical issue in Homewood. Indeed, as per information from the PNCIS, the average home in Homewood was more than 90 years of age 28% of its residential housing were vacant, while 57% of the 4,364 housing were tax delinquent and 44% of the available site which comprised of land and housing in the vicinity were empty and the average non-vacant housing cost in 2009 was $9,152 in contrast with $90,491 for the remainder of the city (The Irish Times, 2018). Consistent with the discoveries of the few available research of previous studies in this section, the study discovered that inhabitants could be enabled to address physical housing issues using available, justifiable information (Howell *et al*., 2003; Zachary *et al*., 2010). The result of this research proposes that the DDO technique can be valuable as a way to gather and analyse observational information to approve inhabitant concerns. More so, the study also proposes that further research ought to increase the quantity of communities wherein a particular DDO project when carried out and use a more thorough experimental or quasi-experimental design. These includes different support and area control, to better

regulate the degree to which the detected changes are caused by the mediation or due simply to chance.

Benediktsson (2014) focused on housing vacancy and perceived disorder on three suburban blocks. The study made use of a relative approach, studying responses to growths in housing vacancy on three squares that differed in average income, physical racial appearance and other context oriented factors important to experts of disorder. Drawing upon 69 semi-structured meetings and subjective survey carried out in 2010 and 2011. The researcher discovered two sorts of interpretive frames that begin from block-level social collaboration and influence impression of disorder. By guiding attention toward explicit regions of the block, active neighbours and establishments build territories of concern that shape the meaning of social and physical disorder. By crediting disorder to an ethically tricky out-group, inhabitants on all blocks build disorderly collectivises that outline methods of public reaction as far as collective identity and culpability.

2.11 Related Literature on Housing Vacancy in Developed Nations

In Mexico, nearly five million houses went uninhabited in 2010, comparable to 14% of the available housing supply and 4.6 million of them were situated in metropolitan regions (BBVA, 2011; INFONAVIT, 2011). This quantity of housing is sufficient to cover over 50% of housing shortfall in Mexico around the same time (Sociedad Hipotecaria Federal, 2011). More than 50% of the housing vacancy is situated in the periphery of the nation and in locations with high frequency of out migration. In a portion of these states the frequency of housing vacancy surpasses 18% like Baja California, Chihuahua, Zacatecas and Tamaulipas (BBVA, 2011). The director of the Institute of the National Housing Fund for workers made

it known that over one third of the housing in the nation have been deserted and vacant (CNN EXPANSION, 2011; Institute of Brazilian Geographic Establishment, 2011). On account of Brazil, 6.1 million homes are unoccupied as per the most recent enumeration carried out in 2010 (Institute of Brazilian Geographic Establishment, 2011), this comprises 9.02% of Brazilian housing units, a quantity that surpasses by 700,000 units the housing shortfall of 5.4 million residences and 85% of them in metropolitan territories (Institute of Applied Economic Research, 2013). The percentage of housing vacancy and the general housing shortage contrasts in relation to the social capacity of property as defended by the Brazilian Constitution and the Statute of the Cities.

Nadalin (2014) conducted a study on residential vacancy in down town of São Paulo city. The study was carried out in an attempt to add substance to the discussion through an experimental examination of the determinants of the frequency of housing vacancy in São Paulo's metropolitan region. Utilizing a board of census tract level information for the years 2000 and 2010 consolidating standard spatial econometric strategies with hedonic modelling. The outcomes uncovered two primary sets of determinants: one identified with neighbourhood attributes of the real estate markets and another comprised by individual structural features. These discoveries are in accordance with the past writing on the frequency of vacancy and on urban economics. It likewise discovers proof that historic down towns is a submarket and its determinants work in an alternate manner from the entire market. All the more along the study proposes the incorporation of significant controls for additional exploration in this area, like the age of housing, cost and lease levels changes and neighbour amenities.

Another study was carried out by Nadalin and Igliori (2016) on residential vacancy in Sao Paulo's down town region subtitled empty spaces in the crowd. The aim of the study was to make addition to the experimental analysis of the factors leading to the occurrence of housing vacancy, with attention on a certain historic down town and using Sao Paulo urban area as the case study. The unit of analysis were the district, a sub municipality area with at least 200 housing units. This observed analysis relied on district-level data for the years 2000 and 2010, totalling 21,594 observations while combining standard spatial econometric strategies with hedonic modelling. The outcome of this study put forward three major sets of factors which are the individual housing attributes, mobility of families and neighbourhood quality. It likewise uncovered proof that the historic down town region is a distinctive submarket, requiring exceptional urban approaches. Its determinants work diversely when contrasted with the real estate markets of different regions across the city.

Other Latin American nations, for example, Chile and Venezuela have high and average levels of housing vacancy with 9.6% and 7.7% of housing vacancy respectively. There are 424,000 vacant residences in Chile, most of these situated in the metropolis. The metropolitan zone of Valparaiso has the most amount of housing vacancy, almost one out of each five homes are vacant (Giner and Guija, 2014). With respect to the most recent enumeration, Peru and Nicaragua have the smallest amount of housing vacancy, with 4% and 2% of homes identified as vacant housing. These statistics don't represent the quantity of transitional housing vacancy (National Institute of Information and Development, 2005).

The statistical information provided are more frightening in nations such as Egypt or China. In these nations, the magnitude of housing vacancy is on another level as a whole. where over

50% of an entire city is proliferated with housing vacancy where some of the time over 80% of the available housing supply is vacant (Asia News, 2010). As indicated by the Ministry of Housing, the frequency of vacancy in metropolitan zones is 9% in India, the solitary noticed situation wherein the metropolitan frequency of housing vacancy surpasses that of the country side. The statistics for India exclusively incorporates residential buildings as well as other structures with a wide range of functionality. India has 15.8 million vacant houses, which, despite being a moderate rate in absolute terms, is truth be told enough to cover a greater portion of the nation's housing shortfall.

However, the continent of African has no ascertained record of studies as regards housing vacancy in the nations within it, but a familiar situation of an empty city can be seen in Egypt. The frequency of housing vacancy is exceptionally high in metropolitan zones, accounting for 20-30% of the available housing supply. Making new urban communities in the arid zone around Cairo was recognised at the initially stages in the master plan of 1975. The Government's aim was to decentralize the populace inside the city of Cairo and limiting the magnitude in the congestion of human settlements around the Nile valley, forcing the populace out of the city and presenting alternative to informal and squatter settlements (UN-HABITAT, 2011).

2.12 Summary of Reviewed Literature

This chapter presents the underpinning idea of this study by clarifying the purpose of the study, and at the same time establishing the framework for the research design, data collection and analysis as well as discussing the result. Housing vacancy are a major concern to the local governments, housing developers and individuals alike. The literature reviewed shows

that housing vacancy occurred more in places where the total number of people residing in a particular location tend to fall, where the ratio of older inhabitants is higher and also in households with a low income mostly identified with neighbourhoods in Asia. It was also discovered that housing vacancy has more potential to happen in places where run-down housing, illegal burning and other related offenses are concentrated. Other studies also revealed that housing vacancy is caused by a number of factors such as population decline, neglected real estate due to low fertility rates, higher elderly population, deindustrialization, suburbanization and natural disasters as it relates to other continents with little or no data available about African cities. More so, this drivers of housing vacancy were broadly categorised into three main groups namely housing market characteristic, socio-economic characteristics and the physical environmental characteristics.

Notwithstanding, cities and towns across the globe are in a continues search for strategies that will help them return long-term vacant units back to use. While some cities have made positive moves in this regards, others are establishing their own programs to different degrees of success. This study contributes a quota by identifying the major drivers of housing vacancy in Gwagwalada in a bid to proffer unique solutions to this problem. Thereby providing a template for policymakers with information that can inspire them to take positive actions.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

This research adopted a field survey approach due to the lack of housing vacancy data base in Gwagwalada. As such, the research technique used for this study was quantitative and qualitative in nature, as it required data such as the number of vacant houses for the former as well as data on the physical condition of selected building components for the later. The two main survey tools used were non-participant observation and a checklist. These survey tools were employed to aid the collection of quantitative and qualitative data from the vacant housing units in selected neighbourhoods that make up the study area. More so, this research required a cross-sectional approach which involves collecting data from a sample of the total neglected residential property in selected neighbourhoods.

3.2 Data Type and Sources

This study relied on both primary and secondary data sources. While the former were obtained through field survey conducted by the researcher the later were obtained from already processed information or external sources. How the researcher made use of both sources for this study is broadly discussed in 3.2.1 and 3.2.2.

3.2.1 Primary data

Field survey conducted by the researcher was used to identify the neglected residential properties in the 8 different neighbourhoods that make up the study area. Data were gathered about the physical characteristics of the vacant houses such as type of building, number of rooms, size of rooms and numbers of floors with the aid of an observation schedule. The

length of housing vacancy was determined through the help of real estate agent's operative within the jurisdiction of the study as well as enquiries from people living close to vacant houses in respective neighbourhoods. For the later, a minimum of 3 persons and a maximum of 5 persons were asked about the length of vacancy and the average was used to represent how long each vacant house has been empty. The physical condition of selected components of the vacant houses and the presence of selected house and neighbourhood facilities were also assessed through field survey carried out by the researcher with the aid of a checklist.

3.2.2 Secondary data

Related works of other researchers from multiple sources such as published and unpublished report journals, relevant books, magazines, research works, conference/seminar and working papers on the factors responsible for neglected residential properties were buttressed by the study. Data on the age of vacant buildings were gotten from Gwagwalada Area Council Town Planning Office on the date of building plan approval of the buildings. The property value of both the vacant and occupied houses were obtained from records of the real estate agents operative within the jurisdiction of the study. A total of 20 observations were made, 5 each representing house type (1 bedroom, 2 bedrooms, 3 bedrooms and 4 bedrooms) for both the vacant and occupied houses in the study area. Finally, a satellite imagery (Google Earth Pro 7.3.3.7786) was used in order to determine the distance of vacant houses to selected neighbourhood facilities located in close distance within the study area.

3.3 Instruments for Data Collection

Various instruments were required in order to successfully complete this study. The tools used to obtain primary data for the study includes an observation schedule, a checklist, a

measuring tape and an android phone camera (TECHNO POP3). How the researcher used each instrument to carry out the research exercise is explained in 3.3.1 to 3.3.4.

3.3.1 Observation schedule

An observation schedule was prepared basically to record what was seen during the course of field survey conducted by the researcher (see Appendix A). This data collection instrument was used in the collection of data pertaining to the physical characteristics of the vacant houses in the study area. Among the data this instrument was designed to collect were the types of building, numbers of rooms, size of rooms and numbers of floors.

3.3.2 Checklist

A checklist was designed based on the objectives of the study (see Appendix B) and used basically to record observations made by the researcher about the physical condition of vacant houses, availability of selected house and neighbourhood facilities as well as the distance of selected neighbourhood facilities from vacant houses within the study area. As such, data about the condition of the roofs, walls, floors, doors and windows of the vacant house, the availability of housing electric prepaid meter, portable water, perimeter fencing, drainage system amongst other housing facilities as well as the distance of the vacant houses to selected neighbourhood facilities were all gathered with the use of this instrument.

3.3.3 Measuring tape

A (LIANGJIN 5M/16FT) measuring tape was used to take measurement of the rooms (master bedroom) with respect to the length and breadth of the vacant houses in order to know their area coverage and size. Measurements of the rooms were taking from the inner walls for

houses that could be accessed and the outer walls for houses that were inaccessible. However, the study exploited the advantage of prototype housing especially the medium income neighbourhoods. Thus not all the vacant buildings were physically assessed with respect to room size.

3.3.4 An android phone camera

Clear pictures depicting existing situations of occurrences associated to housing vacancy in the study area was obtained with the help of a camera from a TECNO POP3 handset with a camera resolution of 12 mega pixels. This was used to buttress the physical conditions of the vacant houses in the study area.

3.4 Population and Sample Size

The population for the study was determined through an inventory of the total vacant houses in each of the neighbourhood that make up the study area. As such, 207 vacant houses were identified and assessed by the researcher. This procedure was carried out as a result of the absence of necessary information about the total number of vacant houses in the neighbourhoods from particular administrative agencies such as the FCDA.

Table 3.1: Sample Size Distribution in Selected Neighbourhoods

Neighbourhoods	**Total Houses**	**Occupied Houses**	**Vacant Houses**	**Vacancy Rates (%)**	**Sample Size**
Phase I layout	353	307	46	13.03	22
Phase III layout	476	409	67	14.08	32
Agwandodo	511	453	58	11.35	28
Old kutunku	817	754	63	07.71	30
New kutunku	521	470	51	09.79	25
Kasuwa-ndere	478	443	35	07.32	17
Agwan-shanu	467	418	49	10.49	24
Dagiri	724	664	60	08.29	29
Total	**5,426**	**4,951**	**429**	**08.75**	**207**

3.5 Sampling Procedure

The sampling technique best suited for this study was a purposive sampling technique which requires the researcher to select samples based on his own discretion, judgement or choice and was employed in identifying the sampling elements in the study area. As such, the researcher identified and assessed vacant houses that met the criterial for the study one after another in no particular order until the sample size was reached. This technique was adopted because the researcher lacks enough information regarding the population of neglected residential properties from which the sample was obtained. Thus, this procedure was carried out repeatedly in each of the 8 neighbourhoods that make up the study area.

3.6 Method of Data Analysis

After field survey, data were sorted out in an understandable manner according to related phenomena such as the physical characteristics of the vacant houses, physical condition of the vacant houses, availability of housing facilities in vacant houses and proximity of vacant houses to neighbourhood facilities in the study area while Statistical Package for Social Scientist (SPSS) version 21 was used to analyse the data obtained.

The data about the physical characteristics of the vacant houses with respect to the types of building, numbers of rooms, size of rooms, numbers of floors, age of the building and the length of vacancy were analysed using descriptive statistics. Data on the property value of both neglected residential properties and occupied residential properties were analysed using mean, median, mode and standard deviation while the relationship between neglected residential properties and occupied residential properties were analysed by conducting a two tailed t – test.

Data on the physical condition of vacant houses were therefore analysed using descriptive statistics. As a result, data on the roofing condition, walling condition, flooring condition as well as the condition of windows and doors in the vacant houses were analysed and subjected to descriptive statistics while making inferences about the outcome of the results realized by the study. A measurement scale rating 1 – 5 indicating parameters used to qualify the conditions of the vacant houses with respect to its physical state was employed. Consequently, the parameters used to assess the condition of certain components of the vacant houses can be seen in Table 3.2.

Table 3.2: Parameters for Measuring Housing Vacancy Component in the Study Area

S/N	Components	Parameters for Measurement
1.	Roof	Intact (5); Sign of rusting (4); Rusted and leaking (3); Loose/open (2); Parts blown off (1).
2.	Wall	No crack (5); Sign of crack (4); Somewhat cracked (3); Cracked (2); Open/Falling (1).
3.	Floor	Intact (5); Less than 5% of the area is cracked (4); 6-10% of the area is cracked (3); 11-20% of the area is cracked (2); 21% and beyond is cracked (1).
4.	Doors/Windows	Intact (5); Slightly broken (4); Broken (3); Parts hanging/dangling (2); Parts missing (1).

The data related to the availability of housing facilities in neglected residential properties within the study area were obtained after field survey. Hence, data on the availability of electric prepaid meter, portable drinking water, burglary proof on windows, landscape elements and perimeter fencing within the vacant houses, well-defined drainage system, motorable access roads, sidewalks along the street lanes, street lightening and an organised mode of refuse collection and disposal within the respective neighbourhoods were gathered and analysed using descriptive statistics (see Appendix C).

Finally, prior to data collection on the distance of neglected residential properties in the study area from nearest neighbourhood facilities which includes shopping facilities, educational facilities (primary schools), recreational facilities, open spaces, primary health care centres,

bus stops, places of worship and security post. Descriptive statistics was used to analyse the data obtained while making particular references to (Obateru, 2003) urban space standards for neighbourhood facilities in Nigeria (see Appendix D), this was used to compare the results obtained about the distance to neighbourhood facilities so as to know whether they fall within the stipulated threshold value.

3.7 Method of Data Presentation

Prior to the data analysis conducted, modifications of charts and table were made using Microsoft Excel, version 2010 and Microsoft word, version 2010 respectively. Thus, the processed data were presented using tables and charts. the attributes of the vacant houses were presented in tables and bar charts while the physical condition of the housing vacancy was presented using bar charts. More so, the availability of housing facilities as well as the distance of vacant houses from neighbourhood facilities were presented in tables.

Table 3.3: Summary of Research Procedure

S/N	OBJECTIVES	DATA REQUIRED	SOURCE OF DATA	INSTRUMENT FOR DATA COLLECTION	METHOD OF DATA ANALYSIS
1.	Examine the physical characteristics of the neglected residential properties in the study area.	Type of building, number of rooms, size of rooms etc.	Field Survey	Observation Schedule	Descriptive Statistics and inferential statistics
2.	Assess the physical condition of the neglected residential properties in the study area.	Condition of roofs, walls, floors, windows and doors.	Field Survey	Checklist	Descriptive Statistics
3.	Evaluate the availability of housing facilities in neglected residential properties within the study area.	Availability of water, prepaid meter, drainage, walkways, street lights, fence etc.	Field Survey	Checklist	Descriptive Statistics
4.	Determine distance of neglected residential properties to neighbourhood facilities in the study area.	Distance to shopping centre, health facility, recreational facility, open spaces, bus stops etc.	Satellite Imagery	Checklist	Descriptive Statistics

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Physical Characteristics of the Vacant Houses in the Study Area

This section shows results of assessment made about the physical characteristics of the neglected residential properties in the study area which comprise data on the types of building, number of rooms, size of rooms, number of floors, the age of building and the length of housing vacancy in the study area. Data were collected through field survey with the help of an observation schedule in exception of data on the age of the building as well as the length of housing vacancy which were gotten from Gwagwalada urban board for the former and the people living in the neighbourhood for the later.

4.1.1 Building types of vacant houses in the study area

Study revealed that the majority of neglected residential properties in the study area were semi-detached buildings as regards the building types thus accounting for more than half (52.66%) of the total vacant building assessed. This was followed by detached buildings with 31.88% while terrace buildings scored the least with 15.46%. However, this outcome may be a function of the available building types in the study area as the study area is highly dominated by semi-detached buildings.

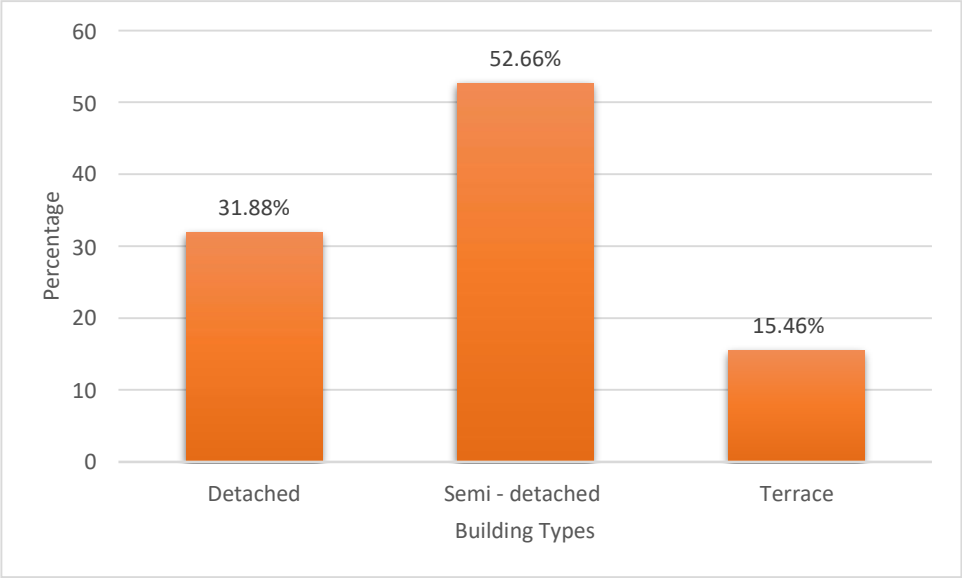

Figure 4.1: Building Types of Vacant Houses in the Study Area

Source: Author's Field Survey (2021)

4.1.2 Number of bedrooms with in vacant houses in the study area

Majority of the neglected residential properties in the study area were found to be buildings having 2 bedrooms which represents 46.38% of the total vacant houses identified in the study area. Vacant houses with 1 bedroom accounted for 31.40%, 3 bedrooms 15.94% and 4 bedrooms 06.28%. This implies that people tend to go for housing units with either more than 2 rooms or less than 2 rooms in the study area. However, it is worthy of note that housing units with only 2 rooms were seen to be more predominant in the study area as well.

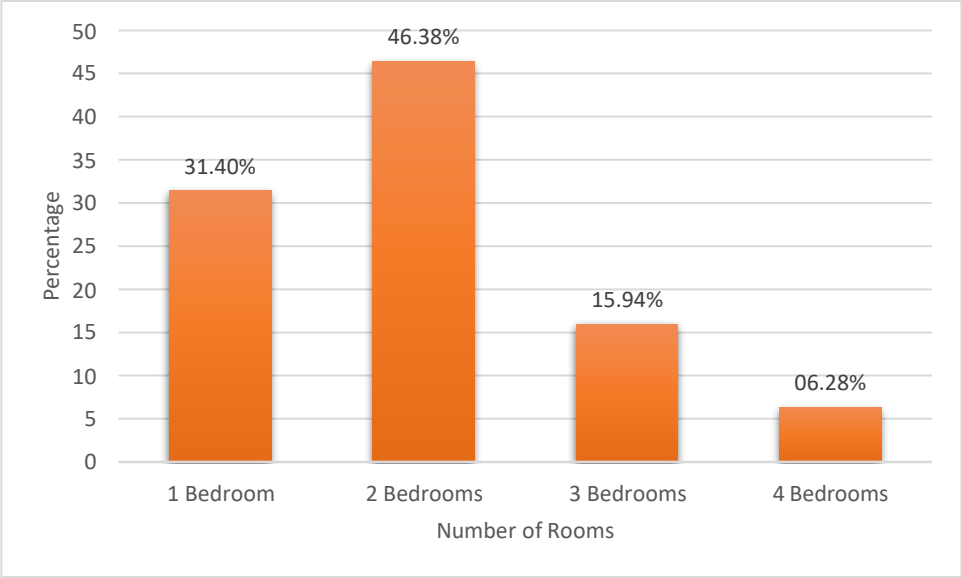

Figure 4.2: Number of Bedrooms of Vacant Houses in the Study Area

Source: Author's Field Survey (2021)

4.1.3 Size of bedrooms in vacant houses within the study area

Prior to field survey, bedrooms of varoius sizes that were identified and classified were further analysed. Vacant houses of bedroom sizes ranging between $9m^2$ – $16m^2$ accounted for the majority with 47.34%. More so, bedrooms with area coverage below $9.0m^2$ had the penaltimate score with 30.44% while bedrooms that had an area coverage of $16.1m^2$ and above scored the least with 22.22%. Atamewan and Olagungu (2017) stated that the basic minimum area required for bedrooms in Nigeria is $9.0m^2$ in terms of fuctional space required, relaxation of development control codes and practicable minimum housing standards. This implies that 69.56% of the vacant houses fall above the threshold reqiured and will act as a strenght to encourage propective tenants and buyers as the case may be to select these buildings as a choice of abode in the future.

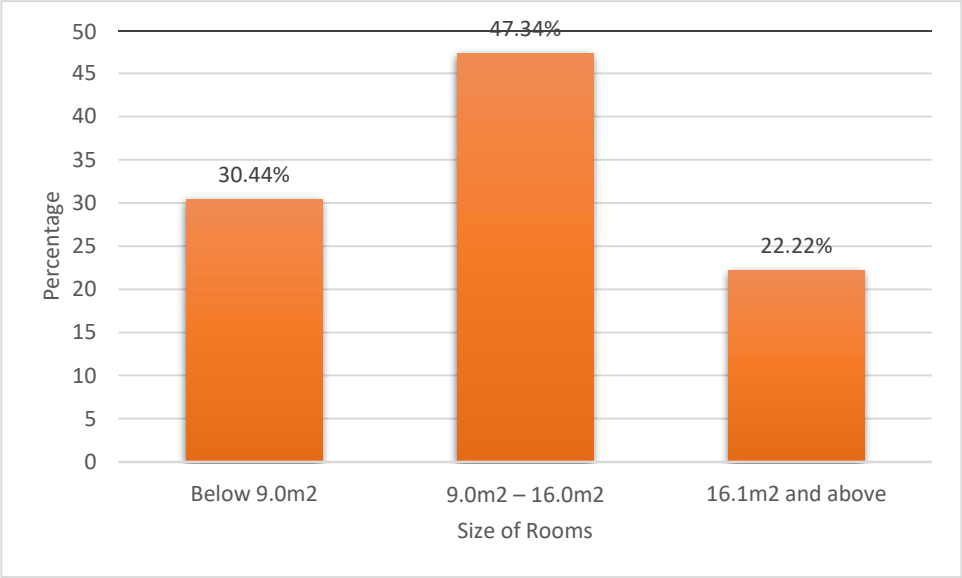

Figure 4.3: Bedroom Size of Vacant Houses in the Study Area

Source: Author's Field Survey (2021)

4.1.4 Number of floors in vacant houses within the study area

Table 4.1: Number of Floors of Vacant Houses in the Study Area

Number of Floors	Frequency	Percentage
1 Floor	198	95.65
2 Floors	9	04.35
Total	**207**	**100.00**

Table 4.1 shows the number of floors in the vacant houses within the study area with 95.65% of this buildings making up the majority representing buildings having just 1 floor. Residential buildings with 2 floors accounted for 04.35% of the grand total of vacant housing units while vacant buildings with 3 floors and 4 floors were anonymous in the study area. It is worthy of note that most of the residential structures in the study area had just one floor which could be a function of the results above.

4.1.5 Age of vacant houses within the study area

The age of the building was gotten through the Gwagwalada Area Council Town Planning Office, which is in charge of granting building approval and supervision of building construction within the study area. The data on the date of supervision of the town planning officer in charge alongside the date of building plan approval was used to estimate the age of the building. It was revealed that 46.38% of the sampled vacant units were between 16 – 30 years of age. More so, 28.02% accounted for vacant units of ages between 6 – 15 years. While vacant houses of ages below 5 years and ages of 31 and above scored the least with 14.97% and 10.63% respectively. This implies that the age of the building of precisely 57.01% of the vacant houses are above 15 years' old. In the event that older houses are not appropriately maintained, they are probably going to be neglected by prospective buyers or occupants, accordingly turning out to be vacant house (Morckel, 2013).

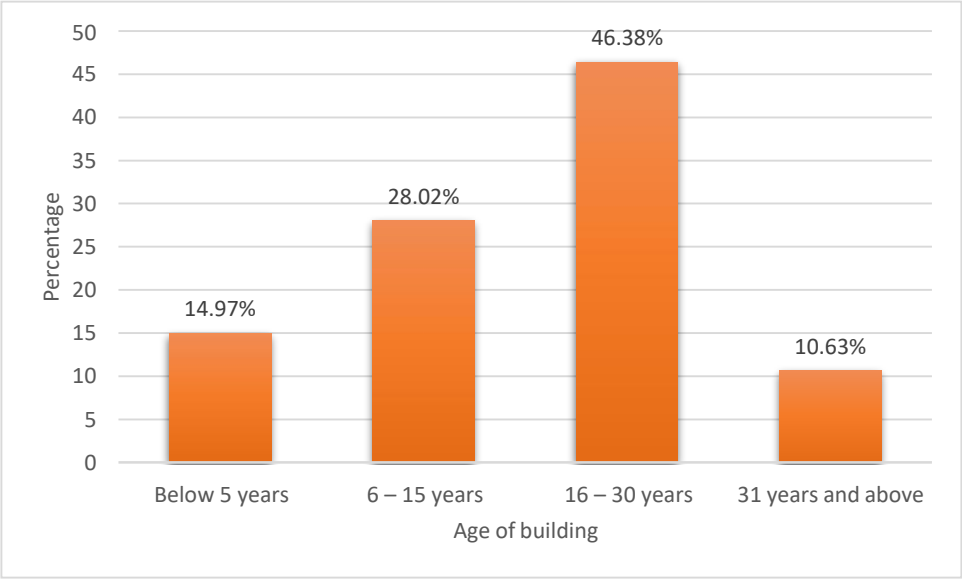

Figure 4.4: Age of Vacant Houses within the Study Area

Source: Author's Field Survey (2021)

4.1.6 Length of housing vacancy in the study area

Data on the length of housing vacancy in the study area was acquired through the help of the real estate agents as well as responds from some of the residents living close to vacant houses in the study area. As such, the study revealed that housing vacancy of less than 6 months accounted for majority with 29.47%. Although transactional housing vacancy is less of a concern for authorities, they can still be problematic if their physical condition is not being looked after thereby resulting in a poor street scene (London Borough of Ealing, 2017). However, housing vacancy between 6 months to 1year accounted for 22.71%. This was followed by housing vacancy between 1 to 2years with 20.77% while housing vacancy between 2 – 5years and above 5years accounted for 16.43% and 10.62% respectively. This result shows that 70.53% of the vacant house identified by the study have been empty for at least 6 months (long-term vacant houses).

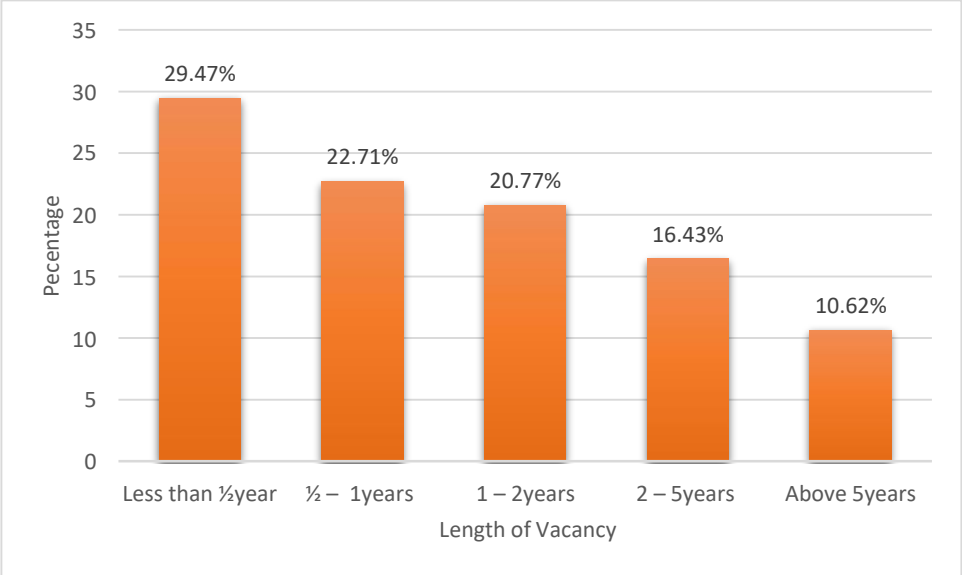

Figure 4.5: Length of Housing Vacancy in the Study Area

Source: Author's Field Survey (2021)

4.1.7 Property value of the vacant houses in the study area

the study obtained data on the property values of twenty randomly selected vacant and occupied houses within the study area, five each representing housing type with respect to number of rooms in which the average property values were determined. Data on the housing type with respect to the number of rooms in the vacant and occupied house were therefore analysed using mean, median, standard deviation, minimum value and maximum value. Tables 4.2 and table 4.3 represents their respective results.

Table 4.2: Property Value of Occupied Houses in the Study Area

Housing Type	**Minimum Value (₦)**	**Maximum Value (₦)**	**Mean Value (₦)**	**Median Value (₦)**	**Std. Deviation**
1 Bedroom	5,000,000	10,800,000	7,620,000	7,300,000	2292814.864
2 Bedroom	6,300,000	13,000,000	10,220,000	11,500,000	2991153.624
3 Bedroom	10,500,000	18,700,000	14,892,000	15,680,000	3535550.876
4 Bedroom	21,000,000	38,500,000	30,114,000	29,580,000	7099533.788

Table 4.10 shows that the occupied houses in the study area have a property value of ₦7,300,000, ₦11,500,000, ₦15,680,000 and ₦29,580,000 for 1 bed room, 2 bed rooms, 3 bedrooms and 4 bedrooms respectively. this result shows that the value of property increases with increasing numbers of rooms in housing units in the study area.

Table 4.3: Property Value of Vacant Houses in the Study Area

Housing Type	Minimum Value (₦)	Maximum Value (₦)	Mean Value (₦)	Median Value (₦)	Std. Deviation
1 Bedroom	3,400,000	7,600,000	5,451,000	5,400,000	1591588.829
2 Bedroom	4,100,000	9,300,000	6,908,000	7,480,000	2175929.686
3 Bedroom	7,650,000	15,500,000	11,897,600	12,658,000	2970834.698
4 Bedroom	16,380,000	29,100,000	22,980,000	23,680,000	5316258.083

Table 4.3 at the other hand, shows that the vacant house in the study area have an average property value of ₦5,451,000, ₦6,908,000, ₦11,897,600 and ₦22,980,000 for 1 bed room, 2 bed rooms, 3 bedrooms and 4 bedrooms respectively. when compared with that of the occupied houses, results show that the property value of occupied houses is larger than the property value of vacant houses at all housing types. This result also shows an increase in housing value with respect to number of rooms in the vacant buildings. It also shows that vacant houses are experiencing a drop in their property value which could be responsible for possible neglect by prospective buyers.

4.1.8 T-test for paired samples

Table 4.4: Result of t-test for Paired Samples

Occupancy	t	df	Sig. (2-tailed)
Occupied -Vacant	6.841	19	0.00

Table 4.4 shows a sig. (2-tailed) value 0.00 which is less than 0.05. Therefore, the null hypothesis initially raised that there is no statistically significant relationship between

property value of occupied residential properties and property value of neglected residential properties in the study area is rejected. Hence, Alternate or research hypothesis is accepted, which states that there is a statistically significant relationship between property value of occupied residential properties and property value of neglected residential properties in the study area.

4.2 Physical Condition of the Vacant Houses in the Study Area

This section shows results about the physical condition of the neglected residential properties prior to data collected in the 8 different neighbourhoods that make up the study area. As such, the roofing condition, walling condition, flooring condition as well as the condition of the windows and doors in the vacant houses were assessed and results presented in 4.2.1 to 4.2.5.

4.2.1 Roofing condition of vacant houses in the study area

After assessing the condition of the roofs in the study area, studies found out that 41.55% of the vacant houses had roof tops showing signs of rusting while 30.43% of the vacant houses had rusted roof tops. More so, 07.73% of vacant houses were identified to have roof tops with loose parts while 06.28% had roof tops with some of its parts already blown away by the prevailing wind and missing. At the other hand, only 14.01% of vacant houses were found to have roof tops that were intact and in good condition. This implies that the roof tops of most vacant buildings in the study area have at least one major underlining problem and it is dilapidating rapidly accounting for 85.99%. This could be a reason for its being empty and unoccupied and why prospective tenants avoid such buildings.

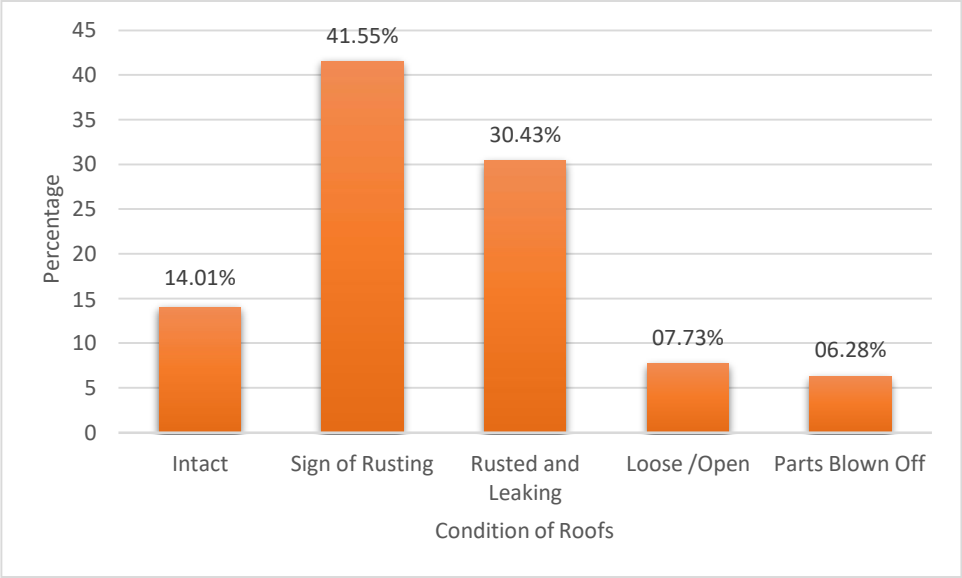

Figure 4.6: Roofing Condition of Vacant Houses in the Study Area

Source: Author's Field Survey (2021)

Plate I: A Vacant Buildings with Loose Roof Parts in Phase III Residential

Source: Author's Field Survey (2021)

4.2.2 Walling condition of vacant houses in the study area

Prior to an assessment of housing condition with respect to vacant houses identified in the study area. Studies reveal that 37.68% of this buildings were found to have walls showing signs of cracks which accounted for majority in the study area. 25.12% of the walls had cracks, 14.01% were somewhat cracked while 06.76% had walls that were at the verge of falling apart. At the other hand, 16.43% of the wall had no cracks and were seen to be in good condition. This implies that 83.57% of vacant houses in the study area were found to be exhibit one problem associated with the walls or the other. Consequently, Kim and Son (2017) states that houses that are not well taken care of might gradually become old and neglected and empty. This underlining walling issues of vacant houses might play a role in preventing them from being attractive to prospective home owners.

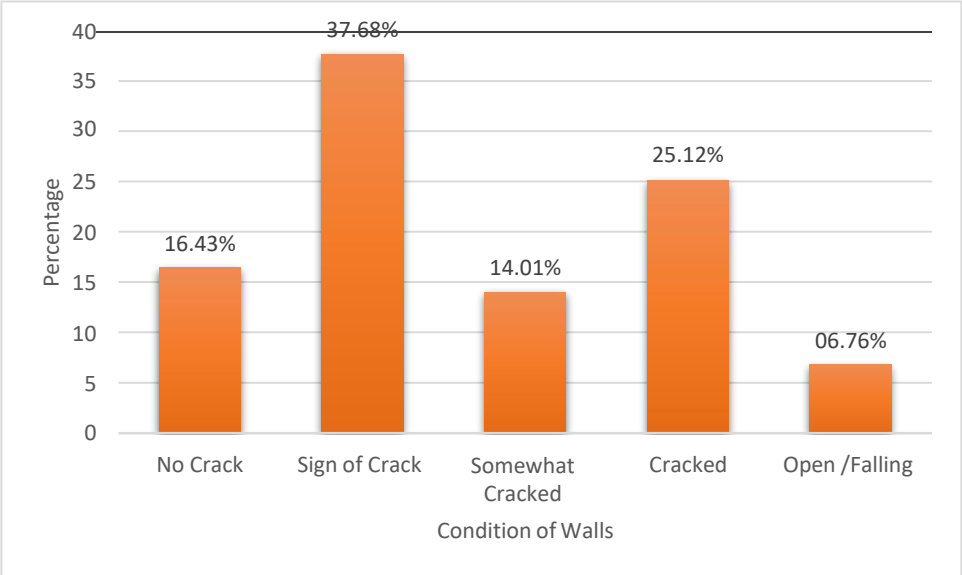

Figure 4.7: Walling Condition of the Vacant Houses in the Study Area

Source: Author's Field Survey (2021)

Plate IV: A Vacant Building with Walls Showing Signs of Cracks in Dagiri

Source: Author's Field Survey (2021)

4.2.3 Flooring condition of the vacant houses in the study area

The floors of the vacant houses were also assessed after which it was revealed that 70.53% of this buildings had floors that were intact or found to be in a good condition. This also accounted for the majority of the vacant houses in the study area. However, less than 5% of the floor area were seen to have cracks in 13.04% of the vacant houses assessed, 6 – 10% of the area were also seen to have cracks in 08.70% of the total vacant building identified, 11 – 20% of the area were seen to have cracks in 04.83% of the grand total and a floor area of 21% and beyond were seen to have cracks in just 02.90% of the vacant houses assessed. This result may be a function of most building being inaccessible by potential vandal as they are under lock and keep. This implies that the general condition of the floors in the vacant

buildings are in a good condition and can be a factor that will attract prospective house owners to acquire them in the future.

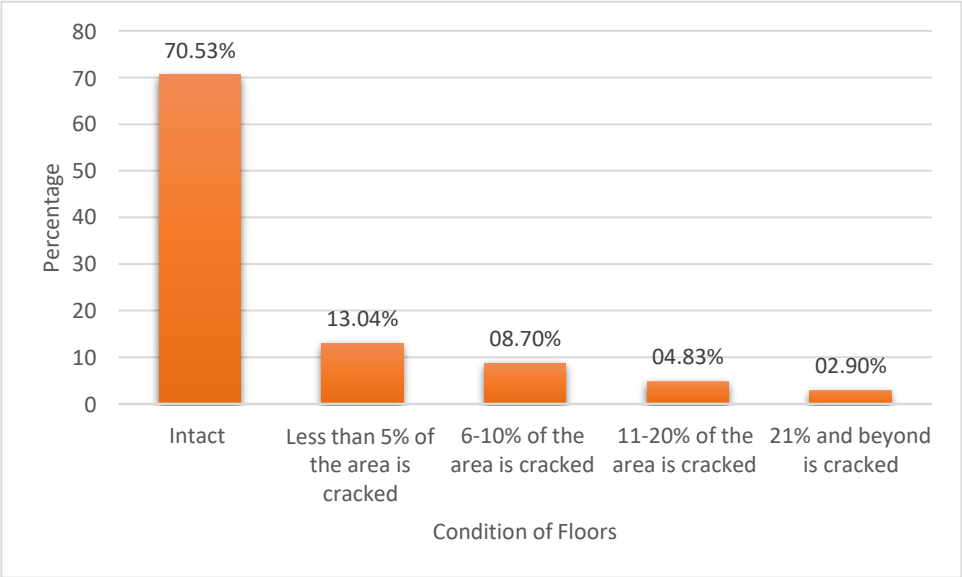

Figure 4.8: Flooring Condition of Housing Vacancy in the Study Area

Source: Author's Field Survey (2021)

4.2.4 Condition of windows in vacant houses within the study area

Studies revealed that 48.79% of the windows in vacant buildings were intact and in a good state having no particular form of damage to it members thus accounting for majority. At the other hand, 19.81% of this buildings had windows were that were found to be broken, 13.04% had windows that were slightly broken, 11.11% had parts that were hanging or dangling and 07.25% had part that were nowhere to be found or missing. This implies that despite the high number of windows that are intact, 51.21% of the vacant houses in the study area seem to be having one issues or the other regarding the condition of the windows thus ranging from slightly broken window to missing parts. This situation could also limit the chances of selecting this building as homes by people how require them.

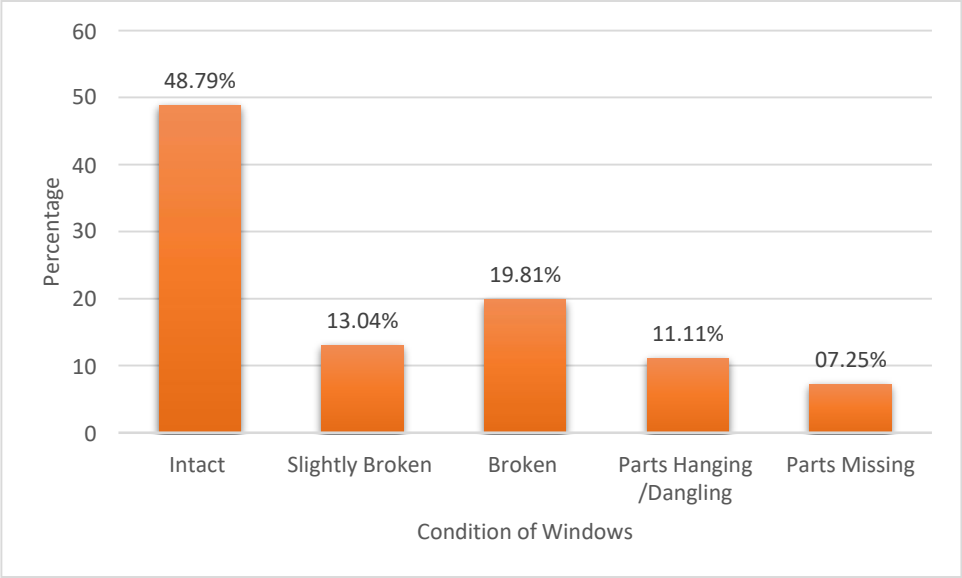

Figure 4.9: Condition of Windows in Vacant Houses within the Study Area

Source: Author's Field Survey (2021)

Plate V: A Vacant Building with Missing Window Parts in Phase III

Source: Author's Field Survey (2021)

4.2.5 Condition of doors in vacant houses within the study area

Prior to the field survey and data analysis, studies revealed that 79.23% of this buildings had doors that were intact as it accounted for majority of the vacant buildings in the study area. However, 07.73% had doors that were slightly broken, 06.76% had doors that was found to be broken, 03.86% had parts that were hanging or dangling and 02.42% had part that were nowhere to be found or missing. Hence, with just a few vacant buildings with doors having one underlining issues with its condition accounting for 20.77%. The doors in the vacant houses would not be a weakness to their marketability and selection when prospective home owner and buyers make their choice of where to live.

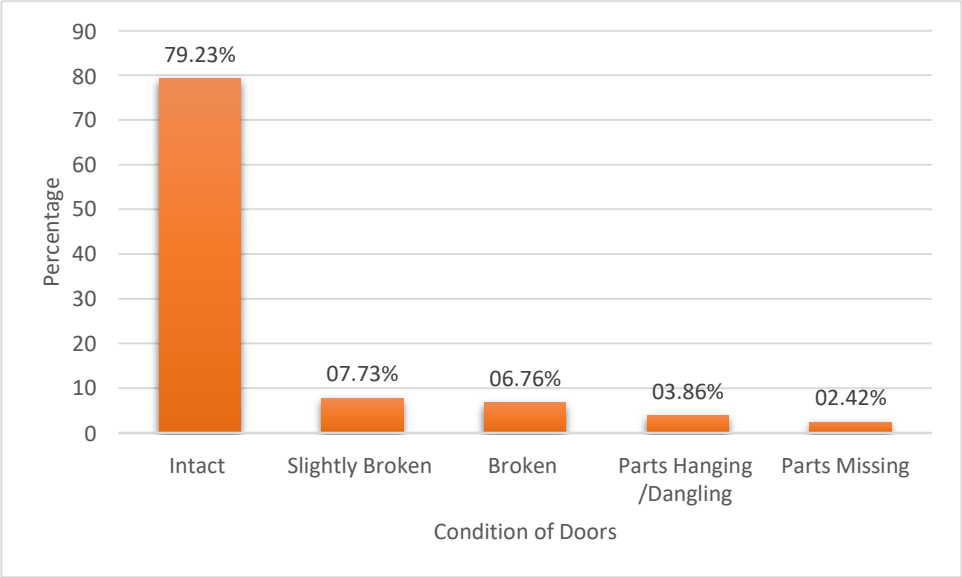

Figure 4.10: Condition of Doors in Vacant Houses within the Study Area

Source: Author's Field Survey (2021)

4.3 Availability of Housing Facilities in Vacant Houses Within the Study Area

This section is divided in to two parts as it presents results about the availability of facilities /infrastructures at the house and neighbourhood levels. Indicators at the house level includes

selected facilities that are either attached to the building or around the building. At the other hand, neighbourhood indicators include shared facilities that are located within respective neighbourhoods in the study area.

4.3.1 Availability of house facilities in vacant houses within the study area

Table 4.5: Availability /Unavailability of House Facilities in the Study Area

House Facilities and Infrastructures	Yes	No	Total
Water within the housing premises	73 (35.27)	134 (64.73)	207 (100.00)
Prepaid electricity meter within the house	59 (28.50)	148 (71.50)	207 (100.00)
Burglary proof on windows	138 (66.67)	69 (33.33)	207 (100.00)
Landscape elements within the premises	105 (50.73)	102 (49.27)	207 (100.00)
Perimeter fencing and gates	84 (40.78)	123 (59.42)	207 (100.00)
Car parking spaces	126 (60.87)	81 (39.13)	207 (100.00)

Numbers outside bracket represent frequencies; Figures in bracket represent percentages

Studies revealed that majority of the vacant houses in the study area lacked direct access to water supply, thus accounting for 64.73% of the total buildings assessed. However, 35.27% of the buildings were seen to possess one form of water supply source in them. This implies that people living in the area prefer to go for houses that have portable water supply. Hence, influencing their choice and possible neglect of vacant buildings in the study area. The study also assessed the availability of prepaid electric meter in the house. studies therefore revealed that only 28.50% of the buildings had prepaid meter in them while 71.50% of the vacant buildings were operated on billing system to make payments for electricity. This implies that people living in the study area prefer to live in houses with prepaid electric meter in them,

thus the lack of prepaid electric meter in vacant houses might have deterred tenants from selecting them.

More so, the study assessed the availability of burglary proofs on windows as a security apparatus fixed to the house. Results showed that majority of the building had burglary proofs on windows accounting for 66.67% of the total vacant houses while the remaining 33.33% had none. This could be a plus to vacant buildings when considered by people in search of potential homes in the study area. Landscape elements such as flowers and hedges (soft Landscape) were also found in 50.73% of the buildings assessed while 49.27% of these buildings had no form of soft landscape around the premises. With both the availability and unavailability of landscape elements in the vacant buildings having very close scores, it thus implies that this result may have occurred by chance.

Furthermore, the availability of a fence and gate in the house was assessed and studies revealed that only 40.78% had fences and gates while 59.42% were exposed or open without this external security measure. This may also be a feature considered by tenants that have contributed in keeping these vacant buildings out of the active housing market as people seek for optimum security of their property. Car parking spaces were seen to be readily available within the lots of vacant houses in the study area with majority of them accounting for 60.87% while 39.13% did not have enough space in the compound that could accommodate a car parked by the occupant of such building without infringing on other persons right to use such space. This implies that prospective home owner and prospective tenants would be encouraged by this feature when selecting a home.

4.3.2 Assessment of neighbourhood facilities in the study area

Table 4.6: Availability/Non-availability of Neighbourhood Facilities in the Study Area

Neighbourhood Facilities	Yes	No	Total
Drainage system in the neighbourhood	92 (44.44)	115 (55.56)	207 (100.00)
Motorable access road to the house	99 (47.83)	108 (52.17)	207 (100.00)
Sidewalks along the street lanes	68 (32.85)	139 (67.15)	207 (100.00)
Security lights in the neighbourhood	130 (62.80)	77 (37.20)	207 (100.00)
Organised mode of refuse disposal	60 (28.99)	147 (71.01)	207 (100.00)

Numbers outside bracket represent frequencies; Figures in bracket represent percentages

Table 4.6 reflects results collated after site inventory by the researcher on the availability of selected facilities in the neighbourhood. To this effect, the study assessed the availability of well-defined drainage system in the neighbourhoods, studies thus revealed that majority of the neighbourhood lacked a well-defined drainage system in the study area with 55.56% accounting for its non-availability while 44.44% were seen to have a well-defined drainage system. This implies that a lack of proper drainage system might have a negative influence on putting homes at a viable position for selection by prospective tenants. Motorable access roads to the neighbourhood accounted for 47.83% availability, whiles the absence of it accounted for 52.15%. This result could be a function of the neighbourhoods selected as most of them were middle and low income neighbourhood with access and without good access respectively.

Consequently, availability of sidewalks along the streets in the neighbourhood were also assessed with 32.85% and 67.61% representing availability and non-availability of this

facilities respectively. this result shows that the absence of sidewalks along the streets may have a negative effect on the chances of the houses being selected as people might prefer other locations that provide these facilities. The presence of street lightening in the neighbourhood accounted for 62.80% while its absence accounted for 37.20%. This implies that people prefer to live in neighbourhoods with external lightening and may influence their choice of residence. The study also discovered that an organised mode of refuse collection and disposal is grossly deficient accounting for 71.01% of its unavailability when compared with 28.99% of its availability in the neighbourhood. This implies that the lack of an organised mode of refuse collection might have a negative impact on the choices made by a prospective tenant as regards selecting a place of residence.

4.4 Proximity to neighbourhood facilities in the study area

Table 4.7: Proximity of Vacant Houses to Neighbourhood Facilities in the Study Area

Facilities	Less than 1km	1km to 3km	3.1km and above	Total
Shopping centres	92 (44.45)	79 (38.16)	36 (17.39)	207 (100.00)
Primary school	124 (59.90)	59 (28.50)	24 (11.60)	207 (100.00)
Recreational facilities	137 (66.18)	54 (26.09)	16 (07.73)	207 (100.00)
Open spaces	131 (63.29)	29 (14.01)	47 (22.71)	207 (100.00)
Health care centre	84 (40.58)	45 (21.74)	78 (37.68)	207 (100.00)
Bus stop	81 (39.13)	68 (32.85)	58 (28.02)	207 (100.00)
Places of worship	157 (75.85)	46 (22.22)	04 (01.93)	207 (100.00)
Security post	117 (56.52)	33 (15.94)	57 (27.54)	207 (100.00)

Numbers outside bracket represent frequencies; Figures in bracket represent percentages

The study assessed the distance of vacant houses to selected neighbourhood facilities in the study area. Results show that majority of the vacant buildings were located within walkable distance of less than 1km (1000m) from the nearest shopping centre in the study area. This score accounted for 44.45% of the total vacant houses assessed. More so, 38.16% and 17.39% were scores representing a distance of 1km to 3km and 3.1km and above to the shopping centres respectively. According to space standards by Obateru (2003) the maximum service radius of a house to shopping facility is 800m (0.8km). However, studies show that 55.55% of the vacant houses were located beyond the stipulated standard. This implies that people tend to live closer to places where they can easily access commercial goods. Thus, the long distance walks to shopping centres might be a contributing feature to the empty state of the vacant buildings.

The study also assessed the distance of vacant houses to primary schools located in the neighbourhood. As such, the study revealed that majority of the vacant houses were within walkable distance of less than 1km (1000m) from these educational facilities thus accounting for 59.90% which is within the threshold (of 400m – 800m) for distance to primary school as stipulated by Obateru (2003). While 28.50% and 11.60% represented the minority with a distance of 1km to 3km and 3.1km and above respectively. This implies that the walkable distance to primary schools from the vacant houses is a strength that would encourage people to select these buildings as a viable choice of residence in the future.

The study assessed the distance of vacant houses to the nearest recreational facilities located in the study area. As such, majority of the buildings were found to be at a walkable distance of less than 1km (1000m) to recreational facilities. This accounted for 66.18% of the total

buildings assessed, while 26.09% of vacant houses were located between 1km to 3km from the recreational facility and 07.73% were located at 3.1km and above from the recreational facilities in the study area. This implies that distance of vacant houses to recreational facilities in the neighbourhood would be a strength to look at in the choice of these buildings as majority fall within the threshold of 400m – 800m (Obateru, 2003). Furthermore, the study assessed distance of vacant houses to open spaces within the neighbourhood. To that effect, the study revealed that majority (63.29%) of the vacant houses were within less than 1km (1000m) distance from open spaces in the study area. This could also be as a result of the location of the buildings at the fringes of the neighbourhood. Other vacant houses were also located between 1km to 3km and less than 1km from open spaces accounting for 14.01% and 22.71% respectively. This implies that vacant houses are well situated in the study area with respect to open spaces.

Amongst parameters measured were also the distance of vacant houses to health care facilities in the study area. Studies revealed that most of this houses were located close to health care centres and identified within a walkable distance of less than 1km (1000m). These buildings were represented by 40.58% of the total vacant houses thus making up the majority. This was followed by 37.68% of vacant houses located between 3.1km and above when compared to the nearest health facilities while only 21.74% were located at a distance of 1km to 3km. Although majority of the vacant houses were located at a suitable distance, a handful of them accounting for 59.42% of them were also identified at a distance beyond the threshold considered for a residential house to the nearest health care centre (800m) in terms of walkable distance. This implies that the long walks to primary health care centres might be a

contributing feature behind the empty nature of these buildings in the study area. The distance to the nearest bus stop was also measured and results show that majority of the buildings were located at a distance of 3.1km and above accounting for 39.13% of them all. 32.85% were located between 1km to 3km while the remaining 28.02% were located less than 1km from the nearest bus stop. As a result, vacant houses were well situated in terms of distance to nearest bus stops in the study area and this could inspire prospective house owners to select them.

The study also measured the distances of vacant houses to the nearest worship centres in the study area. To that effect, studies revealed that majority of the vacant buildings were located at a distance less than 1km from the worship centres in the study area which accounted for 75.85% of the vacant houses. 22.22% and 01.93% were located at a distances of 1km to 3km and more than 3.1km respectively. This informs that most buildings that are vacant are within walkable distance of a worship centre in the study area, thus a positive feature that could convince people to see it as a viable choice of selection in the housing market. Finally, the proximity to security post was also measured and it was identified that most of the vacant houses were located at a distance of less than 1km (1000m) which accounts for 56.52% of them all. While 27.54% and 15.94% were located at distances between 3.1km and above and 1km to 3km respectively in the study area. According to Obateru (2003) the maximum distance to nearest security post within a neighbourhood is 800m which fall within the range value of most vacant houses in the study area. This implies that the distance to security post is suitable and can encourage prospective occupant to selected the vacant buildings as a choice of residence in the future.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The high property value of residential structures and lack of adequate infrastructure are the primary causes of neglected residential properties in Gwagwalada, Abuja. This brings about negative ramifications on the neighbourhoods ranging from low aesthetics value to low property value of housing as they are neglected assets that are left to deteriorate. As regards the characteristics of the vacant houses assessed, studies showed a statistically significant relationship between property value of occupied houses and property value of vacant houses in the study area. It also revealed a higher property value of occupied houses compared to vacant houses at all categories of building types with respect to number of rooms.

More so, the vacant houses in the study area have been empty for at least a period of 6 months (long-term vacant houses) accounting for 70.53% and 57.01% of the vacant houses were buildings above 15 years of age. This shows that most of the vacant buildings were aging which is reflected on the physical housing condition of these buildings with roof tops (85.99%), walling members (83.57%) and windows (51.21%) having at least one major underlining problem associated with it. Furthermore, the absence of prepaid electric meter in the house (71.50%), lack of organised mode of refuse collection and disposal (71.01%) and lack of portable water in the houses (64.73%), distance to health care centres (59.42%) as well as distance to shopping centres (55.55%) were found also to be factors responsible for neglected residential properties in the study area.

5.2 Recommendations

Consequently, with housing in short supply in Gwagwalada and in the FCT and in Nigeria, it is necessary to ensure that vacant houses do not remain empty for a long period of time, thereby falling into blight. In view of returning vacant houses back to use in the study area, the study therefore recommends that housing tax be legislated to discourage the inflation of rent by developers and estate agent that have deterred prospective home owners and tenants from acquiring them. It also recommends the implementation of these tax on long term vacant houses, especially houses experiencing vacancy for a period of 1year and above (47.82%) as identified by the study. The proceeds generated from these process can be used to facilitate the construction of new houses so as to reduce housing short fall in Gwagwalada.

More so, the study recommends that incentives be given in the form of advice to the owners of long-term vacant houses so as to educate them about the need to maintain their properties thus giving it a competitive edge in the housing market in route to bringing it back to use. Hence, major renovation of vacant houses in the study area with particular reference to the condition of the roofs, walls and windows which were reported to be in a poor physical state is advised. It also encourages further maintenance of other components of the vacant building, thus giving it a face lift. In conjunction with the renovation of private vacant houses in the study area, the study recommends the provision of basic social amenities in new buildings such as portable drinking water, access to prepaid electricity meter within the housing premises of vacant houses, an organised mode of refuse disposal method in the residential neighbourhoods and provision of shopping centres and primary health centres within walkable distance from residential neighbourhoods in Gwagwalada.

REFERENCES

Ajilowo, J., & Olujimi, B. (2010). Analysis of the relationships of infrastructural facilities in the determination of rental values of residential properties in Akure, Nigeria. *Arts and Social Sciences Journal*, 10, 1-11.

Akiyama, Y., Ueda, A., Ouchi, K., Ito, N., Ono, Y., Takaoka, H., & Hisadomi, K. (2019). Estimating the spatial distribution of vacant houses using public municipal data. *The Annual International Conference on Geographic Information Science,* 165-183.

Aliyu, R. (2016). Designing for Sustainable Communities: The Abuja Federal Capital Territory of Nigeria. *Arts and Social Sciences Journal*, 8, 11-14.

Asia News. (2010). Property speculation leaves 64.5 million vacant homes in China. *Arts and Social Sciences Journal*, (online) <http://www.asianews.it/newsen/Property-speculation-leaves-64.5-million-vacant-homes-in-China-18895.html> [Web search February 2012]

Atamewan, E. E., & Olagungu, R. E. (2017). Sustainable low income housing and practicable minimum design standards in Bayelsa State, Nigeria. *Journal of Sustainable Architecture and Civil Engineering* 20 (3), 14-24.

Baba, H., & Asami, Y. (2017). Regional differences in the socio-economic and built-environment factors of vacant house ratio as a key indicator for spatial situation of shrinking cities. *In Proceedings of 2017 International Conference of Asian-Pacific Planning Societies*, 69, 61-78.

Bassett, E. M., Schweitzer, J., & Panken, S. (2006). Understanding housing abandonment and owner decision-making in Flint, Michigan, USA: *An Exploratory Analysis; Genesee Career Institute*: 13(8) 45-76.

BBVA (2011). The Property Situation in Mexico Economic analysis. Situación inmobiliaria México. Análisis económico. Julio 2011. *NIRSA - National Institute for Regional and Spatial Analysis*. 16(1), 91-124

Benediktsson, M. O. (2014). Territories of concern: vacant housing and perceived disorder on three suburban blocks. *City & Community*, 13(3), 191-213.

Blanco, Z. G. (2011). Estimations based on U.S. Census Bureau News. *NIRSA - National Institute for Regional and Spatial Analysis*, 14(7), 13-20.

Bogataj, D., McDonnell, D. R., & Bogataj, M. (2016). Management, financing and taxation of housing stock in the shrinking cities of aging societies. *International Journal of Production Economics*, *181*, 2–13. http://doi.org/10.1016/j.ijpe.2016.08.017

Castro, I. E., Larsen, D. A., Hruska, B., Parsons, P. J., Palmer, C. D., & Gump, B. B. (2019). Variability in the spatial density of vacant properties contributes to background lead (Pb) exposure in children. *Environmental research*, *170*, 463-471.

Chen, X., & Rafail, P. (2019). Do Housing Vacancies Induce More Crime? A Spatiotemporal Regression Analysis. *Crime & Delinquency*, doi: 0011128719854347.

Clark, D. E., & Herrin, W. E. (1997). Historical preservation districts and home sale prices: *Evidence from the Sacramento housing market.* Rev. Reg. Stud. 1997, 27, 29–48.

CNN EXPANSION. (2011). Abandaoned dwellings due to unemployment: Abandonan casas pordesempleo: Infonavit, *NIRSA - National Institute for Regional and Spatial Analysis*, http://www.cnnexpansion.com/economia/2011/03/29/el-desempleo-despide-a-la-vivienda

Cohen, J. (2001). Defining identification: A theoretical look at the identification of audiences with media characters. *Mass Communication & Society*, 4(3), 245-264.

Couch, C., & Cocks, M. (2013). Housing Vacancy and the Shrinking City: Trends and Policies in the UK and the City of Liverpool. *Housing Studies*, *28*(3), 499-519.

Cui, L., & Walsh, R. (2015). Foreclosure, vacancy and crime. *Journal of Urban Economics*, 87, 72-84.

Culhane, D. P., & Hillier, A. E. (2001). Comment on James R. Cohen's abandoned housing: Exploring lessons from Baltimore. *International Journal of Housing Policy*, 12, 449–455.

Dauda, R. O. S. (2010). Investment in education and economic growth in Nigeria: An empirical evidence. *International Research Journal of Finance and Economics*, *55*, 158-169.

Department of Land Use Administration, Gwagwalada Area Council (2018). Urban land use and mapping of Gwagwalada, Abuja. *International Journal of Housing Policy, 14*(4), 368-388.

Ejaro, S. P., & Abdullahi, U. (2013). Spatiotemporal analyses of land use and land cover changes in Suleja local government area, Niger State, Nigeria. *Journal of Environment and Earth Science*, 3(9), 72-83.

Empty Homes Policy, (2017). Empty homes and policy in the United States of America. *International Journal of Housing Policy.* For further information, email ehresidential@cambridge.gov.uk or contact the Residential Team Manager on 01223 458050.

Fuentes, C. M., & Hernandez, V. (2014). Housing finance reform in Mexico: The impact of housing vacancy on property crime. *International Journal of Housing Policy, 14*(4), 368-388.

Gau, J. M., & Pratt, T. C. (2010). Revisiting broken windows theory: Examining the sources of the discriminant validity of perceived disorder and crime. *Journal of criminal justice*, 38(4), 758-766.

Giner, L., & Guija, J. A. (2014). Número de suicidios en España: diferencias entre los datos del Instituto Nacional de Estadística y los aportados por los Institutos de Medicina Legal. Revista de Psiquiatría y Salud mental, 7(3), 139-146.

Glaeser, E. L., & Gyourko, J. (2005). Urban decline and durable housing. *J. Political Econ. 2005*, 113, 345–375.

Griswold, N. G., & Norris, P. E. (2007). Economic impacts of residential property abandonment and the Genesee County land bank in Flint. Michigan. USA: *The MSU Land Policy Institute.*18, 154-122

Han, H. S. (2014). The impact of abandoned properties on nearby property values. *House Policy Debate* 2014, 24, 311–334.

Harcourt, B. E., & Ludwig, J. (2006). Broken windows: New evidence from New York City and a five-city social experiment. *U. Chi. L. Rev.*, 73, 271.

Harding, J. P., Rosenblatt, E., & Yao, V. W. (2009). The contagion effect of foreclosed properties. *Journal of Urban Economics*, 66(3), 164-178.

Hepp, S. (2013). Foreclosure and metropolitan spatial structure: Establishing the connection. *Housing Policy Debate, 23*(3), 497–520.

Hillier, A.E.; Culhane, D.P.; Smith, T.E.; Tomlin, C.D. (2003). Predicting housing abandonment with the Philadelphia neighbourhood information system. *Journal of Urban Affairs*, 25, 91–106.

Hollander, J.B.; Pallagst, K.; Schwarz, T.; Popper, F.J. (2009). Planning shrinking cities. Prog. Plan. 2009, 72, 223–232.

Howell, E. M., Pettit, K. L., Ormond, B. A., & Kingsley, G. T. (2003). Using the National Neighbourhood Indicators Partnership to improve public health. *Journal of Public Health Management and Practice*, *9*, 235–242.

Huuhka .S. (2016). Vacant residential buildings as potential reserves: a geographical and statistical study, *Building Research & Information*, 44:8, 816-839, DOI: 10.1080/09613218.2016.1107316

Institute of Brazilian Geographic Establishment, (2011). Sinopse do Censo Demográfico 2010'[Synopsisofthe 2010 Census]. Ministério do Planejamento, Orçamento e Gestão. www.ibge.gov.br/home/estatistica/populacao/censo2010/sinopse. Pdf [Web searchFebruary 2013].

Igwe, C.F., & Mbee, D. M. (2015). Evaluation of the Effect of distance to central business district (CBD) to resident house rent pattern in Port Harcourt, Department of Geography and Environmental Management, University of Port Harcourt. *Journal of Environment and Earth Science*, 5(10).

Immergluck, D. (2015). Examining changes in long-term neighbourhood housing vacancy during the 2011 to 2014 US national recovery. *Journal of Urban Affairs*, 2015, 38, 607–622.

Immergluck, D. (2016). Examining changes in long-term neighborhood housing vacancy during the 2011 to 2014 US national recovery. *Journal of Urban Affairs*, *38*(5), 607-622.

INFONAVIT. (2011). Síntesis INFONAVIT Nacional7 de Julio 2011. [National INFONAVIT Study, 7th July 2011]. http://portal.infonavit.org.mx/pdfs/110707. Pdf [Web search January 2012]

Inurrieta, A. (2007). The rental property market in Spain: more social housing and more professionals on the up take 'Mercado de vivienda en alquiler en España: más vivienda social y más Mercado profesional'. Workng Paper No.113, 2017.

Institute of Applied Economic Research. (2013). Estimating the Brazilian housing deficit.(online)<http://www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=18179 >[Web search February 2013]

Jensen, J. O. (2017). Vacant houses in Denmark: Problems, localization and initiatives. *In ENHR Conference*. 62(13), 134-142

Jones, R. W., & Pridemore, W. A. (2016). A longitudinal study of the impact of home vacancy on robbery and burglary rates during the US housing crisis, 2005-2009. *Crime & Delinquency*, 62(9), 1159-1179.

Kim, J. H., & Nam, J. A. (2016). A study on vacant house distribution and management of urban declining area. *J. KRSA*, 32, 105–122.

Kim, K. H., Han, E. J., & Sohn, S.Y. (2018). Identifying influential factors to residential vacancy in Seoul based on a geographically weighted lasso model. J. *Korean Inst. Ind. Eng.* 44, 54–68.

Kim, K. H., & Son, J.Y. (2017). Real Estate Economics, 2nd ed.; *Konkuk University Press: Seoul*, Korea, 2(10)

Kitchin, R. G., Justin K. O., & Karen, O. C. (2010). A haunted landscape: Housing and ghost Estates in post-Celtic tiger Ireland. *NIRSA - National Institute for Regional and Spatial Analysis*. 59.

Koo, H., Kim, T., & Lee, S. (2016). Urban Shrinkage in Korea: Current Status and Policy Implications, Anyang, Korea. *Korea Research Institute for Human Settlement*,2(11), 11-23.

Kwon, H. S., Kim, H. J., Yoon, J. J., Park, J. K., Kim, H. S., & Park, H. G. (2017). Current status of vacant housing and those utilization: Revitalization strategy for low-rise residential area. *Urban Inf*, 12, 4–18.

Lee, H.Y., & Han, S.K. (2014). Stray Shrinking Cities, where to Go, Anyang, Korea. *Korea Research Institute of Human Settlement*, 2(14).

Lee, J. W., & Sung, J. S. (2017). Conflicts of interest and change in original intent: A case study of vacant and abandoned homes repurposed as community gardens in a shrinking city, Daegu, South Korea. *Sustainability*, *9*(11), 2140.

London Borough of Ealing. (2017). Empty property strategy 2017 – 2022. Property regulation regeneration and housing. *Perceval House*.14–16. Email: EmptyPropertiesTeam@ealing.gov.uk or call 020 8825 6622. Website: www.ealing.gov.uk.

Mallach, A. (2006). Bringing Buildings Back: From abandoned properties to community assets: A guidebook for policymakers and practitioners. New Brunswick, NJ, USA. *Rutgers University Press*. 36, 233–265.

Martinez-Fernandez, C., Audirac, I., & Fol, S. (2012). Shrinking cities: Urban challenges of globalization. Cunningham-Sabot, USA. *Int. J. Urban Reg. Res*, 36, 213–225.

McDonald, K. I. (2008). Growth, Crisis, and Rebirth: M.E. Sharpe: Armonk, NY, USA, *Urban America*, 3(2), 107-118.

Monkkonen, P. & Comandon, A. (2016). Urban expansion, segregation, and spatial structure in Mexico. *Ciudades* 111: 50–59.

Monkkonen, P. (2019). Empty houses across North America: Housing finance and Mexico's vacancy crisis. *Urban Studies*, *56*(10), 2075-2091.

Morckel, V. C. (2013). Empty neighbourhoods: Using constructs to predict the probability of housing abandonment. *House Policy Debate*, 23, 469–496.

Moreno, E. L., & Blanco, Z. G. (2014). Ghost cities and empty houses: Wasted prosperity. *American International Journal of Social Science*, *3*(2), 207-216.

Mundi, R., & Chup, C. D. (2000). Population dynamics and the physical environment in the FCT. The Geography of the Federal Capital Territory, Abuja. *Published by Department of Geography, University of Abuja*. 2(1) 22-25.

Nadalin, V. G. (2014). Residential vacancy in city center: The case of São Paulo. *Urban Studies*, 4(10) 65-69.

Nadalin, V., & Igliori, D. (2016). Empty spaces in the crowd. Residential vacancy in São Paulo's city centre. *Urban Studies*, *54*(13), 3085-3100.

National Institute ofInformation and Development. (2005). Instituto Nacional de Información de Desarrollo. 'Censo 2005'[2005 Census']. Nicaragua http://www.inide.gob.ni/

Nam, J. (2016). Making Activity Core for Local Community Utilizing Urban Vacant Space. In Small Research and Small Seoul, 1st ed.; The *Seoul Institute: Seoul, Korea*, 15–17.

Nam, J., Han, J., & Lee, C. (2016). Factors contributing to residential vacancy and some approaches to management in Gyeonggi Province, Korea. *Sustainability*, 8, 367.

National Bureau of Statistics, Nigeria. (2018). Labour Force Statistics: Employment by Sector Report. 2,75.

Newman, G., Bowman, A., Lee, R., & Kim, B. (2016). A current inventory of vacant urban land in America. *Journal of Urban Design, 21*(3), 302–319.

Nicholas, E. O., & Patrick, D. D. (2015). Impact of Poverty on Housing Condition in Gwagwalada Urban Area of Federal Capital Territory (FCT) of Abuja. *Int'l J. Soc. Sci. Stud.*, 3, 33.

Noh, M. J., & Yoo, S. J. (2016). A study on the cause of abandoned vacant houses. Korea Real Estate Rev. 2016, 26, 7–21.

Nwannekanma, O. S. (2020). A Problem of Vacant Housing in Local Cities: Abuja City, Tochigi Prefecture Case Study. In the rise in vacant housing in post-growth Nigeria *Springer*, 123-146.

Obateru, O. I. (2003). Space standards in urban and regional planning. *Ibadan Penthouse Publication*, 1, 24-25

Pagano, M. A., & Bowman, A. O. M. (2000). Vacant land in cities: An urban resource Washington, DC: Brookings Institution, *Centre on Urban and Metropolitan Policy*, 1-9.

Pallagst, K., Wiechmann, T., & Martinez-Fernandez, C. (2013). Shrinking Cities: International Perspectives and Policy Implications, Routledge: New York, USA, *Sustainability*, 113-131.

Park, J. I. (2019). A Multilevel Model Approach for Assessing the Effects of House and Neighborhood Characteristics on Housing Vacancy: A Case of Daegu, South Korea. *Sustainability*, 11(9), 2515.

Park, J. I., & Oh, S. K. (2018). Spatial pattern and causative factor analysis of vacant housing in Daegu, South Korea using individual-level building DB. *Journal of the Korean Regional Science Association*, 34(2), 35-47.

Porter, L. C., De Biasi, A., Mitchell, S., Curtis, A., & Jefferis, E. (2019). Understanding the criminogenic properties of vacant housing: A mixed methods approach. *Journal of Research in Crime and Delinquency*, 56(3), 378-411.

Radzimski, A. (2016). Changing policy responses to shrinkage: The case of dealing with housing vacancies in Eastern Germany. *Cities*, 50, 197-205.

Regan, J. M., & Myers, D. L. (2020). Enhancing Community Safety through Urban Demolition: An Exploratory Study of Detroit, Michigan. *Centre on Urban and Metropolitan Policy*, 25, 37-39.

Sadayuki, T., Kanayama, Y., & Arimura, T. H. (2019). Evaluating the externality of vacant houses in Japan: The case of Toshima municipality, Tokyo. *Research Institute for Environmental Economics and Management, Waseda University*. 1901(1).

Sampson, R. J., & Raudenbush, S. W. (1999). Systematic social observation of public spaces: A new look at disorder in urban neighborhoods. *American journal of sociology*, 105(3), 603-651.

Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing neighborhood effects, Social processes and new directions in research. *Annual review of sociology*, 28(1), 443-478.

Schetke, S., & Haase, D. (2008). Multi-criteria assessment of socio-environmental aspects in shrinking cities. Experiences from eastern Germany. *Environmental Impact Assessment Review*, *28*(7), 483-503.

Schilling, J. M. (2002). The Revitalization of Vacant Properties: Where Broken Windows Meet Smart Growth; International City Management Association: Washington, DC, USA, *American journal of sociology,* 23(2), 36-45.

Seriki, O. (2018). Can the Introduction of Vacant Property Tax (VPT) Solve the Housing Crisis in Nigeria? Inclusive City Growth and the Poor: Policies, Challenges and Prospects, Nigeria, *Arts and Social Sciences Journal*. 152.

Shelter, (2009). Empty Properties. Making the most of the Existing Stock. A Cih Cymru Policy Briefing Paper. *Journal of Housing Economics*, www.cih.org/cymru Key Information Issue 9.

Skogan, W. G. (1990). Disorder and decline: Crime and the spiral of decay in American cities. *Journal of Housing Economics,* 7(2), 123-158

Sociedad Hipotecaria Federal. (2011). The state of housing in Mexico. 2829. http://www.shf.gob.mx/ESTADISTICAS/EDOACTUALVIVIENDA/Paginas/edoactualviv ex.aspx.

Son, E. J., Maeng, H.Y., & Lee, H.Y. (2015) The spatio-temporal patterns of the vacant homes clusters and their impact on the neighbourhood land price: The case of Busan Metropolitan City. *J. Real Estate Anal.* 1, 71–90.

Spelman, W. (1993). Abandoned buildings: Magnets for crime? *Journal of Criminal Justice*, 21(5), 481-495.

Sternlieb, G., Burchell, R. W., Hughes, J. W., & James, F. J. (1974). Housing abandonment in the urban core. *Journal of the American Institute of Planners*, 40(5), 321-332.

Sun, W. H., Xu, S. C., & Li, L. S. (2011). Reducing vacant houses is more important than the implementation of green buildings. *Trans Tech Publications Ltd*, 280, 250-254.

Teixeira, S., & Wallace, J. M. (2013). Data-driven organizing: A community–university partnership to address vacant and abandoned property. *Journal of Community Practice*, *21*(3), 248-262.

The Business Times. (2018). Nigeria's housing shortage worsening. [online] Available at: http://www.businesstimes.com.sg/real-estate/nigerias-housing-shortage-worsening.

The Irish Times. (2018). Government may raise property tax on vacant homes. [online] Available at: https://www.irishtimes.com/news/politics/government-may-raise-property-tax-on-vacant homes-1.3142154

Undesa, U. (2016). United Nations e-government survey 2016: E-government in support of sustainable development. United Nations, New York. *Journal of Housing and the Built Environment*, 21(2), 51-57.

UN-HABITAT. (2011). Affordable Land and Housing in Europe and North America. UN-Habitat, Nairobi, *Journal of Research in Crime and Delinquency*, 23(4).

Vale, L. J., & Campanella, T. J. (2005) The Resilient City: How Modern Cities Recover from Disaster; Oxford University Press: New York, NY, USA, *Journal of Housing and the Built Environment*, 21(2), 51-57.

Vanguard Newspaper. (2015). Nigeria: Rising Rent, Vacant Houses, Homeless Tenants. 23 March, 2015. [online] Available at: http://allafrica.com/stories/201503230222.html.

Wachter S, (2005). The Determinants of Neighborhood Transformation in Philadelphia, Identification and Analysis: The New Kensington Pilot Study. Philadelphia: The Wharton School, University of Pennsylvania. *Journal of Housing and the Built Environment*, 21(2), 51-57.

Wang, K., & Immergluck, D. (2018). Housing vacancy and urban growth: explaining changes in long-term vacancy after the US foreclosure crisis. *Journal of Housing and the Built Environment*, 34(2), 511-532.

Whitaker, S., & Fitzpatrick IV, T. J. (2013). Deconstructing distressed-property spill overs: The effects of vacant, tax-delinquent, and foreclosed properties in housing submarkets. *Journal of Housing Economics*, 22(2), 79-91.

Wilson, J. Q., & Kelling, G. L. (1982). Broken windows theory. Boston USA. *Atlantic monthly*, 249(3), 29-38.

You, J.S. Lee, D.Y. (2017) Classification of the vacant housing type based on the physical condition and hazard level of vacant houses. *J. Korean Urban Geogr. Soc*, 20, 1–13.

Zachary, D., Brutschy, S., West, S., Keenan, T., & Stevens, A. (2010). Connecting data to action: How the Santa Cruz County Community Assessment Project contributes to better outcomes for youth. *Applied Research in Quality of Life*, 5, 287–308.

APPENDIX A

OBSERVATION SCHEDULE

Name of the Neighbourhood…...……....…… House No …….

SECTION A: Physical Characteristic of the Vacant Houses in the Study Area

1. Type of the vacant building?

   (a) Detached (b) Semi-detached (c) Terrace

2. Number of bedrooms in the vacant building?

   (a) 1 Bedroom (b) 2 Bedrooms (c) 3 Bedrooms (d) 4 Bedrooms

3. Size of bedroom in the vacant building?

   (a) Below $9m^2$ (b) $9m^2 – 16m^2$ (c) 16.1 m^2 and above

4. Numbers of floors in the vacant building?

   (a) 1 Floor (b) 2 Floors (c) 3 Floors (d) 4 Floors

5. Age of the vacant building?

   (a) 5 years and below (b) 6 – 15 years (c) 16 – 30 years (d) 31 years and above

6. Length of housing vacancy?

   (a) 1/2 – 1 year (b) 2 – 4 years (c) 5 – 7 years (d) 8 – 10 years

APPENDIX B

CHECKLIST

Name of the Neighbourhood…...…….....…… House No …….

SECTION A: Physical Condition of the Vacant House

S/N	Components	5	4	3	2	1
1.	Condition of roof in the vacant house					
2.	Condition of wall in the vacant house					
3.	Condition of floor in the vacant house					
4.	Condition of windows in the vacant house					
5.	Condition of doors in the vacant house					

SECTION B (1): Availability of House Facilities in the Vacant Houses

S/N	Attributes	Yes	No
6.	Availability of portable water within the housing premises		
7.	Availability of prepaid electricity meter within the house		
8.	Availability of burglary proof on windows		
9.	Availability landscape elements within the housing premises		
10.	Availability of perimeter fencing and gates		

11.	Availability of car parking spaces		

SECTION B (2): Availability of Neighbourhood Facilities in the Study Area

S/N	Attribute	Yes	No
12.	Availability of well-defined drainage system		
13.	Availability of motorable access road to the house		
14.	Availability of sidewalks along the streets		
15.	Availability of street lights along street lanes		
16.	Availability of a mode of refuse collection and disposal		

SECTION C: Proximity of Neighbourhood Facilities from Vacant Houses

S/N	Attribute	Less than 1km	1.1km to 3km	3.1km and above
17.	Proximity to shopping centre			
18.	Proximity to educational facilities			
19.	Proximity to recreational facilities			
20.	Proximity to open spaces			
21.	Proximity to health care centre			

22.	Proximity to bus stop			
23.	Proximity to places of worship			
24.	Proximity to security post			

APPENDIX C

House Characteristics of Housing Vacancy

Indicators
Availability of water in the housing premises
Availability of prepaid electricity meter
Availability of well-defined drainage system
Availability of motorable road to the house
Availability of sidewalks along the streets
Availability of street lights to the house
Availability of burglary proof on windows
Availability landscape elements
Availability of perimeter fencing and gates
Availability of car parking spaces

Neighbourhood Characteristics of Housing Vacancy

Indicators
Proximity to shopping facilities
Proximity to educational facilities
Proximity to recreational facilities
Proximity to open spaces
Proximity to medical and health care facilities
Proximity to bus stop
Proximity to places of worship
Proximity to security post

APPENDIX D

Site and Maximum Service Radius for Neighbourhood

S/N	Facilities And Services	Site Area (Ha)	Service Radius (m)
1.	Nursery School	0.8 – 1.6	400
2.	Primary School	1.6 – 3.2	400 – 800
3.	Neighbourhood Centre	0.8 – 1.6	800
4.	Shopping Centre	1.6 – 4	800
5.	Retail Shops	0.05 – 0.1	100 – 150
6.	Neighbourhood Playground	1.6 – 2.4	400 – 800
7.	Neighbourhood Park	0.8 – 2.4	400 – 800
8.	Children Playground	0.2 – 0.5	100 – 150
9.	Health Centre	0.4 – 0.6	800
10.	Place Of Worship	0.3 – 0.4	800
11.	Postal Agency	0.1 – 0.2	800
12.	Police Post	0.2 – 0.4	800
13.	Bank	0.3 – 0.4	800
14.	Filling Station	0.3 – 0.4	800
15.	Refuse Depot	0.2 – 0.4	400 – 800
16.	Service Industries	2.0 – 3.0	1600
17.	Library	0.2 – 0.3	800

Source: Obateru (2003)