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Effect of Petrol Filling Stations on Rental Values of Proximate Residential Properties in Ilorin

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ABSTRACT
The spread and proliferation of petrol stations across Nigeria has resulted in rapid increase over the years because of the dependency of the country's economy on crude oil and other petroleum resources. As a result, there have been proliferations of petrol stations that are located close to residential areas. This study assessed the effect of petrol filling stations on rental values of proximate residential properties in Ilorin between 2010 and 2020 with a view to achieving the best use of residential land.Employing a case study methodology, the study utilized a sample size of 273 residents by physically counting leasable residential properties within a 500m radius of petrol filling stations, as well as 38 Estate Surveyors and Valuers sourced from the 2021 Nigerian Institution of Estate Surveyors and Valuers Directory, Kwara State Branch. Respondents were chosen randomly, resulting in 265 out of the 273 completed questionnaires being deemed suitable for data analysis. Utilizing descriptive statistics such as frequency and percentage distribution, weighted mean score, and trend analysis, the study was conducted.The investigation revealed that most properties, typically situated near petrol filling stations, consist of bungalows and three-bedroom flats. Moreover, these properties are susceptible to noise pollution, traffic congestion - particularly during fuel scarcity when vehicles queue, and the potential hazard of fire outbreaks from petrol stations. Subsequent examination demonstrated that properties positioned 201-300m away from PFS exhibit higher rental value compared to those within 1-100m, 101-200m, 301-400m, and 401-500m radius from PFS. Consequently, the study advocates against the construction of petrol filling stations near residential areas due to their adverse impact on residential property value that escalates over time. Additionally, property investors are advised to consider the intended land use, especially in areas where a petrol filling station already exists.

Keywords: Proximate, petrol filing station, rental value, residential.

I. INTRODUCTION

Petrol Stations are establishments that sell fuel for general use, including gasoline (PMS, or Premium Motor Spirit), diesel (AGO, or Automobile Gas Oil), and kerosene (DPK, or Domestic/Dual Purpose Kerosene). In Nigeria, gas station operations began before independence; however, the production and distribution of petroleum products did not become widely popular until after independence in 1960 because of the sparse use of these roads and the limited number of vehicles that could travel them [1]. However, after Nigeria gained its independence in 1960, more highways, factories, and schools were built, and petroleum products were consumed more frequently [2]. After the civil war, the demand for all grades of petroleum products began to outpace the supply, and this trend became increasingly pronounced [3]. As a result, several gas stations were opened throughout the nation.

Nigeria's dependence on crude oil and other petroleum resources has resulted in an increase in the spread and proliferation of petrol stations over time, along with other factors like population growth driving up demand for automobile use, unstable electricity driving up demand for gasoline-fueled generators, and the use of petroleum products like dual-purpose kerosene (DPK) and liquefied petroleum gas (LPG) for cooking has also promoted the construction of petrol stations at every corner of the country and at close proximities to the end users [4][2][5][6].

Previous research by [2], [5], [7], and others attested to the fact that petrol station siting is drastically increasing in Nigerian towns, and there

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are several irregularities in its location regarding habitations and other infrastructures. According to [8], Petrol Filling Stations (PFSs) have been installed in every nook and cranny of Nigerian cities and towns, causing congestion. PFSs are constructed on the little available space between residential structures, even in residential zones. Residential properties make up a significant portion of real estate, and their value will typically increase or decline depending on the persistence of other complementary land uses. Because housing is a heterogeneous commodity, prior studies have discovered that the value of residential properties depended on a variety of variables such as physical, environmental, locational, etc. [9] [10].

Various housing factors that are related to neighbourhood, location, and dwelling qualities have an impact on the rental values of residential properties [11] [12]. Since housing is a heterogeneous good, previous studies have found that the value of residential properties depended on a variety of features [10][9]. According to [9], some criteria that are frequently included in property appraisal studies include elements that affect accessibility, neighbourhood-level components, overtly harmful externalities, open administrations, fees, and concentration considerations. Different housing qualities associated with neighbourhood, location, and apartment characteristics have an impact on the rental values of residential properties [11][12]. In their examination into the effects of neighbourhood characteristics on home values, [11] identified two categories of neighbourhood features that could significantly or negatively affect the value of residential properties.

In recent years, the construction of gas stations has grown to be an important component of various residential neighbourhoods in Ilorin, Kwara State. The main component of fuels is a hydrocarbon called a hydrocarbon that contains volatile organic chemicals like benzene, some of which are dangerous and damaging if they encounter the skin and pose modest dosages when exposed to them [13]. Therefore, the safety of people and property as well as environmental protection are top priorities when it comes to gas stations. This study is required to analyze the impact of gasoline filling stations on the rental value of nearby residential properties because the value of properties might be influenced by the nearby current land uses.

II. STUDY AREA

Ilorin is the capital of Kwara State, North-Central, Nigeria. It lies within Latitude 8° 24'N to 8° 34'N and Longitude 4° 28'E to 4° 39'E respectively as shown in figure 2 below. Ilorin is a fast-growing town that is geographically divided into three Local government areas namely Ilorin East, Ilorin South and Ilorin West, with populations at 204,310, 208,691, 364,666 respectively given a total of 777,667 as at the 2006 nationwide census, and geopolitically subdivided into 35 wards. The population of Ilorinis projected to be 1,049,168 by 2013 [14]. Rapid socio-economic growth and physical development have encouraged the inflow of people from different parts of the country. The population of Ilorin Community is mixed, which explains why the city is often described as a melting pot for many Nigerian linguistic groups. In Ilorin, there are Yoruba, Hausa, Fulani, Nupe, Kanuri, and the Gobawas. It is these and other cultural groups that makes up the population of Ilorin.

As a result, there has been proliferation of petrol stations that are located close to residential areas. This might have constituted serious hazards to residentsnear such petrol stations. Hence the need for this research in the study area. Figure 1 below shows the map of the study area.

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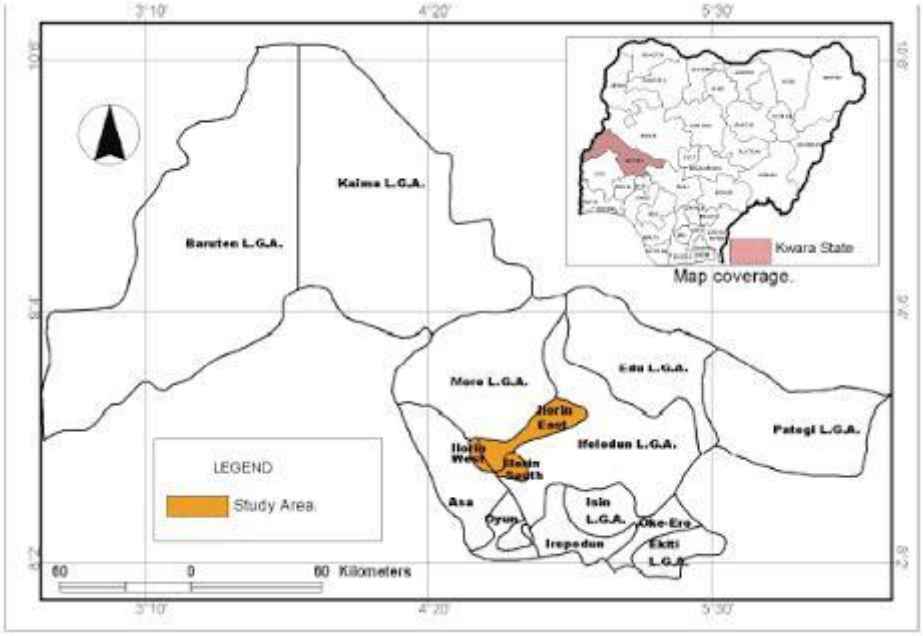

Figure 1: Map of Ilorin.

III. LITERATURE REVIEW

3.1. Characteristics of Residential Properties

A region or location is referred to as a residential area if all the properties on its land are residential and people live there. A residential area may be in opposition to a school zone, industrial zone, or other sort of zoning. Residential properties can be defined in terms of housing to include the entirety of the surroundings and infrastructure facilities that provide human comfort, enhance human health and productivity, as well as allow them to maintain their psycho-social or psycho-pathological balance in the environment in which they are found.

Housing was viewed by [15] as a multi-dimensional bundle of services as well as a bundle of inconsistencies and paradoxes. As a result, housing plays important functions in urban growth since it helps to house and safeguard both human and material resources. Any effort to improve housing conditions is seen as a step in the right direction because it is one of the main variables influencing a country's long-term progress.The connections between housing and rental property are numerous and intricate. Housing quality has several direct and indirect externalities in addition to impacting residents' quality of life and rental prices. Residential properties' characteristics include the type of structure (in terms of design), the number of rooms (self-contained, one bedroom, etc.), and others.

According to conventional theory, which [16] operationalized using hedonic regression, a house's worth is influenced by a variety of factors, including the neighbourhood's amenities and lack thereof. Keeping everything else the same, proximity to an unwanted facility should be represented by a price that is lower than that of an identical residence that is not close to such a facility. Hedonic price models have been used for a long time to assess not only the physical characteristics of housing units (such as square footage, the quantity of bathrooms, and air conditioning), but also the neighbourhood and locational amenities (such as the caliber of the neighbourhood schools, the crime rate, and the air quality).

Numerous studies have assessed the impact of hazardous or undesirable facilities on nearby real estate; examples of these studies include landfills [17], waste sites [18][19], and petroleum/gasoline storage and transportation.

3.2. Environmental Impacts of Petrol Filling Stations on ResidentialNeighbourhood

Because petroleum products are extremely combustible, their exploration, shipping, dumping, storing, and sale locations and facilities shouldn't be taken for granted like they are with other products. Filling stations have been identified as a source of volatile organic compound emission, raising concerns and discussions about groundwater contamination in the United States and Europe due to recently discovered evidence of fuel spills and

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leaks that have been occurring from these locations for several decades [20].

The World Health Organization (WHO) reported in 2004 [21] that fire outbreaks linked to improper handling of petroleum products claimed the lives of more than 2.3 million people and destroyed property worth more than 4.5 billion. There were 243 reported occurrences of fire outbreak at gas stations between 1993 and 2004, according to the Australian Transportation Safety Bureau (ATSB 2005). Spain has recently seen growth, which has led to the construction of several gas stations inside of densely populated urban areas.

To estimate a hedonic model for property values in Atlanta, Georgia, and Cleveland, [22] used the OLS method. They discover that contamination brought on by gas stations depreciates not only the value of houses nearby but also the value of the gas stations themselves. However, the proximity to the gas station and whether the specific site has been remedied or not affects how much of a negative influence the nearby properties have. In line with earlier assumptions, the analysis demonstrates that while parks have the opposite impact from gas stations on residential property values. Numerous issues with the granting of licenses and the careless placement of gas stations and oil refineries have come up recently [22].

These fuels pose a high danger of explosion if an ignition source is nearby because they can release flammable vapour at extremely low temperatures[1]. Millions of dollars and thousands of lives have been lost annually in the Republic of Ghana because of wildfires and explosions at gas and oil filling stations, according to the literature [23][24][25][26].

An earlier study carried out in Spain by [27] revealed an innovative way for determining how much gas stations influence the area around them.

The technique was based on the observation that the ratio of aliphatic to aromatic hydrocarbon pollutant concentrations in the air of gas stations and the area around them (which is primarily determined by vapor emissions from unburned gasoline) differs from the ratio found in urban air, which is primarily influenced by traffic emissions. Considering this, the first location, moving away from the station, where the ratio equals the urban background ratio, would represent the geographical limit of influence of gas stations in any direction. The methodology is put into practice by conducting multiple-point air quality measurement campaigns at the investigated gas station and built-up region, then processing the data using software that can produce ISO-concentration contours.

[28] did more research in Nigeria on the contaminants emitted by gas stations and their effects on the quality of the air. The study used gas monitors to determine the various pollutants present in the ambient air, and the findings revealed that volatile organic compounds, methane, and carbon monoxide are the three most prevalent contaminants there. According to [29] study on the effects of petroleum stations in Nigeria, PFSs could have either a beneficial or detrimental impact on the environment. According to the report, the presence of PFSs provides the area with job opportunities both during and after development. It will directly provide temporary work while development is underway. The building phase is anticipated to engage at least 20 people. Additionally, a significant number of people will have permanent jobs upon project completion.

[30] posited that the position of gas stations, particularly in metropolitan areas, frequently exposes adjacent towns to significant risks, particularly when environmental regulations intended for their sites are not adequately observed. According to [29], PFSs have a negative influence on the environment, which includes exhaust emissions, noise pollution, surface water pollution, and many other things including traffic jams, accidents on the road, and fire hazards.

Traffic congestion:proximity to one another, near a market, or next to a crossroads are all characteristics of gas stations that frequently experience traffic congestion. Additionally, there is a chance for a traffic gridlock to form as people and products are loaded and unloaded at gas stations. Most of the time, this will be very bad for residential properties, but good for commercial properties, which will probably see an increase in their service or product sales, depending on the situation.

Road accidents: During times of fuel shortage, it appears that a lot of cars are being transported (both commercial and private), which could result in an unanticipated collision with people and other vehicles.

Fire hazard: the storage of petrol may lead to fuel spillage which can cause fire outbreak if not properly handled. During the inferno, a lot of lives could be lost, and valuable properties destroyed.

Fire hazard: Storing gasoline may result in fuel spills, which, if not handled properly, may start fires. Numerous lives could be lost, and priceless assets could be destroyed during the conflagration.

Environmental pollution: is the introduction of contaminants that have a negative impact on the environment. Chemical substances or energy, such as sound, heat, or light, can also be considered forms

of pollution. Aquatic life may be at risk in regions where gasoline filling stations are located extremely close to rivers. Additionally, it's likely that these hazardous chemicals will react with paint and other building materials, harming the appearance of any nearby residential buildings.

In Maiduguri and Jere, Borno State, Nigeria, [30] investigated the environmental effects of gas stations that were close to residential buildings. Even though some of these gas stations were built much earlier than the nearby residential homes, the study found that most of them did not strictly abide by the rules for gas station siting, posing serious risks to the homes nearby.

Another study by [30] on the suitability of gas station locations and its effects on Maiduguri Urban Settlements in Borno State, Nigeria, reveals that many of the residences and businesses that coexist with gas stations did not follow the requirements for standard urban planning set forth by DPR. To pursue and safeguard their individual and collective rights to an environment that is safe for them to live in, the residents were urged to establish a central, officially recognized association or union.

According to the reviewed literature, this study is necessary to evaluate the environmental impact of gas stations on their neighbourhood since everyone is concerned about the health, safety, and protection of people.

3.3. Residential Property Values

According to [31], rent is understood to be the regular payment paid to a landlord as well as a fee for the use of the property. Since it entails examining the rental property, area factors, and market conditions, determining the rental value of residential properties is a complex and difficult process, according to [32]. The word "rent" can signify several things.

Without standardization, each property is t hought of as unique and is therefore priced differen tly [33].

However, from the perspective of an economist, re nt is the return to the land. Because each piece of pr operty is unique, it is frequently challenging to iden tify the appropriate variables that will explain the r ental prices. Housing being a heterogeneous commodity, previous studies had discovered that the value of residential buildings depended on several criteria [9],[10]. The following criteria were listed by [9] as being frequently employed in property valuation studies: neighbourhood-level factors, specific negative externalities, public services, taxes, and density factors. Various housing factors that are related to neighbourhood, location, and dwelling qualities have an impact on the rental values of residential properties [11][12]. [11] identified two categories of neighbourhood variables that could either favourably or negatively affect residential property value in their investigation of the effects of neighbourhood characteristics on house value.

Schools, playgrounds, hospitals, health centres, police stations, gas stations, parks and recreational facilities, sporting facilities, places of worship, shopping centres, community services, and other environmental factors like good drainage and waste disposal management tools are among the neighbourhood amenities that are positive neighbourhood factors. [34] [12], access to locations that support related uses, such as proximity to workplaces, shopping centres, distance to schools, closeness to recreational facilities, accessibility to public transportation, open space, closeness to places of entertainment and worship, distance to the CBD, and other related community services, has a significant impact on the value of residential property.

However, the factors are advantageous locational characteristics that might enhance the value of real estate. Industrial noise, religious centre noise, neighbourhood crime rate, air pollution, high traffic on the streets, and a polluted environment are some of the undesirable neighbourhood characteristics referred to as disamenities. Furthermore, [35] homes near hazardous waste sites, gas stations with flammable products, high-voltage power transmission lines, or flood zones are likely to see a decline in value. These localized negative externalities can also negatively affect home prices.

3.4. Effect of Petrol Filling Stations on rental values of neighbourhood residential properties.

Many studies have evaluated the effect of petrol filling station on nearby residential property value; such studies include the following:

[16], in [36], "the value of a house is determined by its characteristics, including neighbourhood amenities and disamenities." Keeping everything else the same, proximity to an unwanted facility should be represented by a price that is lower than that of an identical residence that is not close to such a facility. Hedonic price models have been used for a long time to assess not only the physical characteristics of housing units (such as square footage, the quantity of bathrooms, and air conditioning), but also the neighbourhood and locational amenities (such as the calibre of the neighbourhood schools, the crime rate, and the air quality).

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According to [7], who referenced Gunterman opinion on the designation of filling stations as an environmental dis-amenity, filling stations are anticipated to have detrimental effects on residential property prices. These results were supported by [37] for commercial properties in Baltimore, Maryland. Additionally, they discover that the proximity to a location with a history of contamination brought on by the existence of gas stations has varied effects on commercial properties. More particular, the authors discover that commercial premises incur an external cost because of being close to a contaminated site; this cost does not go away even after the site has been cleaned up or declared to be safe.

[38] estimated the impact of proximity to two significant fuel pipelines running parallel through suburban areas in Bellingham, Washington, using a hedonic price model. According to the findings, being close to a pipeline is not statistically significant. [39] looked at the impact on the sales prices of single-family homes in Clackamas and Washington counties in Oregon of the announcement to build the pipeline and its completion in 2004. The investigation didn't find evidence that the gas pipeline had a detrimental impact on property values nearby. In neither research was the hypothesis that a pipeline's proximity would lower property prices supported.

[7] investigated the impact of gas stations on the values of nearby residential properties and discovered that over time, the average rental value of all classes of properties close to gas stations in the area significantly increased. The authors attribute this increase in rental value to the nature of the situation (citing of filling stations next to residential properties).

This study is necessary to compare the rental values of residential properties close to the filling station and those far from it because the literature has shown some of the effects of gasoline filling stations on surrounding neighbourhood residential property value in different countries around the world.

IV. METHODOLOGY

This study used a case study approach with a sample size of 273 residents, determined through physically counting residential properties within a 500m radius of petrol filling stations. Additionally, 38 Estate Surveyors and Valuers were selected from the Nigerian Institution of Estate Surveyors and Valuers Directory of 2021 Kwara State Branch. Respondents were randomly chosen, and 265 completed questionnaires were deemed valid for data analysis. The study employed descriptive statistics including frequency, percentage, weighted mean score, and trend analysis. Frequency and percentage were used to determine the types of lettable residential properties typically located near petrol filling stations. A weighted mean score was used to assess the weighted responses of the participants using a five-point Likert scale: "Always," "Most of the time," "Sometimes," "Rarely," and "Never." Trend analysis was utilized to examine the change in rent patterns between 2010 and 2020.

[40] the evaluation scale was adopted in this study. This is applied to rate the mean score. Figure 2 showed the evaluation scale used in the study.

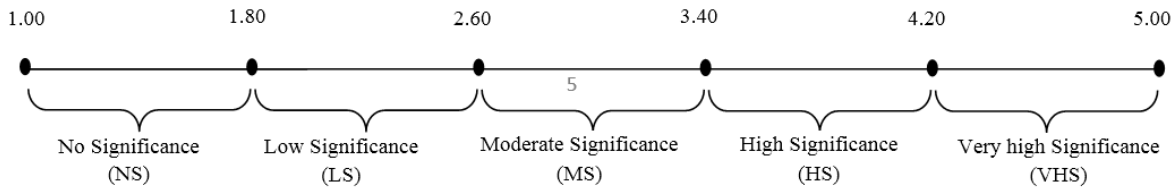

Figure 2: Evaluation scale

V. RESULT AND DISCUSSION

5.1. Types of lettable residential properties near petrol stations

The types of lettable residential property were considered an important variableto know the types of residential properties proximate to petrol filling station in Ilorin. The same was investigated and data was presented in table 1 and 2.

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Table 1: Types of Lettable Residential Properties Proximate to Petrol Filling Stations

S/N	Building type	Freq	Per (%)
1.	Detached building	16	6.0
2.	Semi-detached building	24	9.1
3.	Duplex	31	11.7
4.	Bungalow	71	**26.8**
5.	Block of flat	58	21.9
6.	Terrace/Brazilian style	49	18.5
7.	Storey building	16	6.0
	Total	**265**	**100**

Source: Author's Field Survey, (2021).

Table 2: Types of Lettable Residential Properties Proximate to Petrol Filling Stations

S/N	No. of Rooms	Freq	Per (%)
1.	A single room	71	26.8
2.	A room self-contain	14	5.3
3.	1 bedroom flat	28	10.6
4.	2-bedroom flat	42	15.8
5.	3bedroom flat	110	**41.5**
	Total	**265**	**100**

Source: Author's Field Survey, (2021).

Tables 1 and 2 provide information about the types of properties near petrol filling stations. The data indicates that bungalow buildings make up the highest percentage at 26.8%, suggesting that bungalow buildings are most found near petrol stations. The next most common property type is block of flats at 21.9%, followed by terrace/Brazilian buildings, duplexes, and semi-detached buildings at 18.5%, 11.7%, and 9.1% respectively. Detached buildings and storey buildings have a lower percentage at 6%, indicating that they are less common near petrol filling stations.

In terms of the number of rooms, the data shows that three-bedroom flats are the most prevalent near petrol stations, accounting for 41.5% of the properties, followed by single rooms at 26.8% and two-bedroom flats at 15.8%. Two-bedroom flats and single room self-contained units are less common. This suggests that the most common type of residential property near petrol stations are three-bedroom bungalows.

5.2. Perceptions of Residents on the Effect of Siting Petrol Filling Station in Residential Neighbourhood

Already, literature have revealed the danger associated with petrol filling stations and these are examined on the residents in the study area to determine their perception towards the siting of petrol filling stations in residential neighbourhood. Their responses are examined on a five-point Likert scale of "Always - (5)", "Most of the time- (4)" "Sometimes-(3)", "Rarely-(2)"and "Never- (1)", and the result of this is presented in table 3.

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Table 3: Perceptions of Residents in Danger of Siting PFS in Residential Neighbourhood.

S/N	Measures	St.D	Mean	Rank	
1	Noise pollution	1.479	3.92	1st	(HS)
2	Traffic congestion	1.083	3.60	2nd	
3	Traffic accident	1.279	3.09	3rd	(MS)
4	Air pollution	1.121	3.06	4th	
5	Soil pollution	1.430	2.49	5th	(LS)
6	Fire outbreak	1.001	2.42	6th	
7	Felling of trees	1.392	2.30	7th	

Source: Author's Field Survey, (2021).

Table 3 presents the results of the weighted average responses showing how residents perceive the hazards of having a petrol station in a residential area. Noise pollution received the highest ranking with a mean value of 3.92, followed by traffic congestion with a mean score of 3.60. Traffic accidents and air pollution were ranked third and fourth with mean scores of 3.09 and 3.06, respectively. Fire outbreaks and deforestation were ranked the lowest, recording mean scores of 2.42 and 2.30, respectively.

The evaluation scale adapted by [40] in Figure 5 illustrates the level of significance of siting a petrol filling station in a residential neighbourhood. It uses the following categories: VHS (very high significance) with an average score between 4.20 and 5.00, HS (high significance) with an average score between 3.40 and 4.20, MS (moderate significance) with an average score between 2.60 and 3.40, LS (low significance) with an average score between 1.80 and 2.60, and NS (no significance) with a mean score between 1.00 and 1.80.

The implications of the findings from Table 8 show that noise pollution and traffic congestion from petrol filling stations have a "high significant" effect on the residential neighbourhood. Traffic accidents and air pollution were also considered to have a "moderate significant" effect on the residential neighbourhood. In contrast, soil pollution, fire outbreaks, and tree felling were found to have a "low significant" effect on the residential neighbourhood in the study area.

This study contradicts the findings of [30], who suggested that noise pollution has a lesser effect on residential neighbourhoods.

5.3. Rental Values of Residential Properties Proximate, and Far to Petrol Filling Stations

This section elucidated the rental value of residential properties in the different locations where petrol stations were situated. Nevertheless, the mean rental value of said residential properties was employed to determine the pattern in rental value based on proximity to the petrol filling station from 2010 to 2020 (Refer to Appendix 1). The findings are depicted in Figure 3-7.

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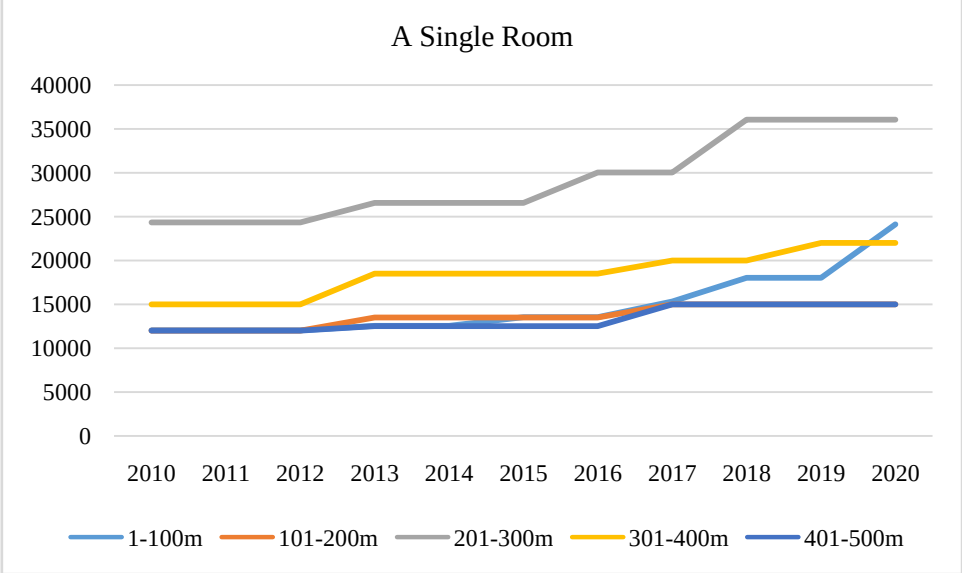
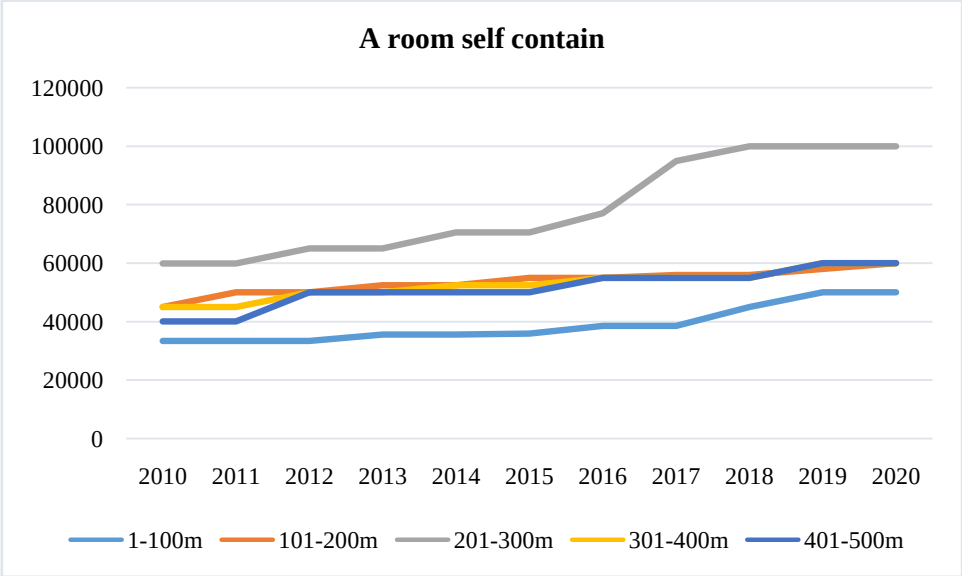


Source: Author's Field Survey, 2021
Figure 3: Single room rental value across distance from PFS

Figure 3 depicted above illustrates the rental value trend for a single room accommodation unit from 2010 to 2020 based on the proximity to PFS. As indicated in figure 2, dwelling units located within a 100-meter radius from PFS demonstrate a decreased rental value, with a relatively stable rent from 2010 to 2016, followed by significant increments in 2017 and 2019. Similarly, properties situated within 401-500 meters exhibit a lower rental value with minimal growth. Conversely, accommodations within 201-300 meters from PFS showcase comparatively higher rental values than their counterparts.



Source: Author's Field Survey, 2021
Figure 4: A room self-contain rental value across distance from PFS

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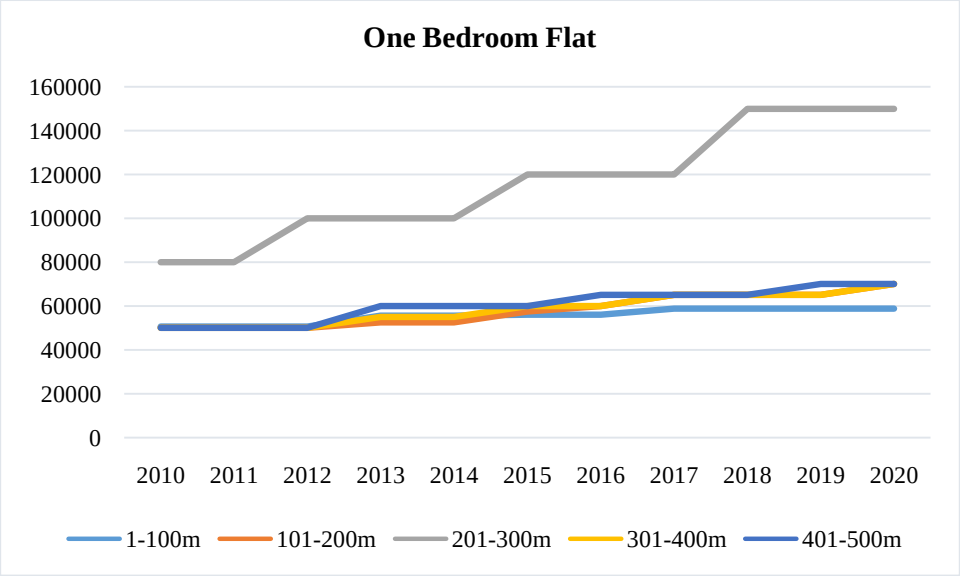
Figure 4 illustrates the rental value trend of a self-contain dwelling from 2010 to 2020 based on the proximity to PFS. Properties located within a 100m radius of PFS demonstrate a comparatively lower rental value, experiencing minimal fluctuations in rent from 2010 to 2016, followed by a significant upsurge in 2017. Similarly, properties falling within the 401-500m radius exhibit a lower rental value, albeit with modest growth. In contrast, properties situated between 201-300m from PFS showcase a higher rental value than their counterparts, displaying a consistent rental increment throughout the years. Nonetheless, a slight decline in rental rates across all distances was noted between 2019 and 2020, possibly attributed to the impact of the COVID-19 pandemic on rental prices.



Source: Author's Field Survey, 2021

Figure 5: One bedroom flat rental value across distance from PFS

The data presented in figure 5 depicts the rental value trends for one-bedroom flats in relation to their proximity to PFS between 2010 and 2020. It is evident that properties within the 1-100m, 101-200m, 301-400m, and 401-500m radius consistently demonstrate lower rental values, below eighty thousand naira (N80,000), with marginal increases over the years. Conversely, properties within the 201-300m radius exhibit significantly higher rents, which have shown a consistent upward trend over the years. This indicates that properties located within the 201-300m radius command higher rent compared to those closer or farther away from PFS.

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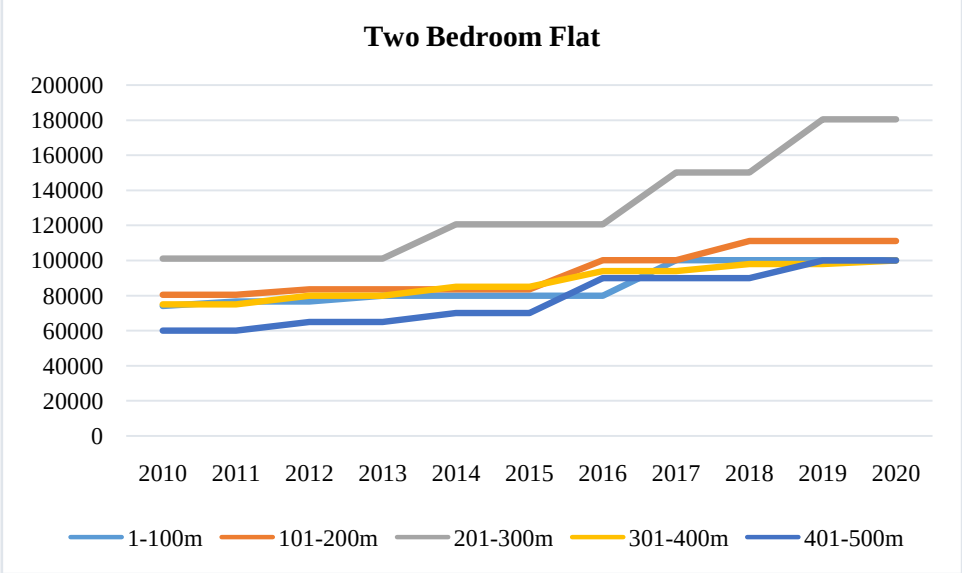
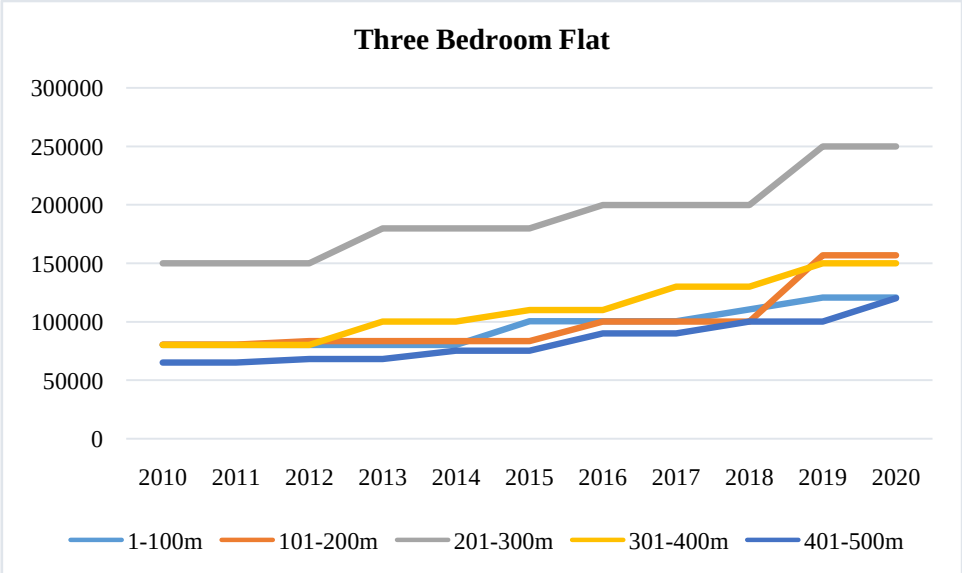


Source: Author's Field Survey, 2021

Figure 6: Two-bedroom flat rental value across distance from PFS

The data from Figure 6 reveals the rental value trends for two-bedroom flats based on their proximity to PFS between the years 2010 and 2020. It is evident that the rental value behaviour for two-bedroom properties mirrors that of one-bedroom flats, with slight variations. Within the 1-100m radius, 101-200m radius, 301-400m radius, and 401-500m radius, the rental values remained below eighty thousand naira (N80,000) between 2010 and 2015, signalling a slight increase in 2016. Conversely, properties within the 201-300m radius commanded higher rents, with a consistent increase over the years. This result implies that properties located within the 201-300m radius, away from PFS, attract higher rents compared to those situated too close or too far from PFS.



Source: Author's Field Survey, 2021

Figure 7: Three-bedroom flat rental value across distance from PFS

Figure 7 illustrates a similar trend in rent as seen with two-bedroom flats, but with slight variations.

A notable observation from the rental trends of all property types located 201-300 meters from PFS is their higher rental value compared to those situated closer or farther away. This pattern can be attributed to their ideal location(neither too close nor too far from the PFS) avoiding any negative impacts while benefiting from proximity.[34][10], tenants are willing to pay for a better environment, so long it satisfies their need, and they can afford it. These properties show a tendency for rental increases over time. Another factor influencing this trend is the typical placement of PFS near major roads for accessibility. Prospective tenants often prefer properties not too far away from major roads, reflecting in higher rental values for these ideally positioned properties. Conversely, properties farther from both major roads and PFS tend to have lower rental values, as tenants are less willing to pay higher rents due to the inconvenience of the distance.

VI. CONCLUSION AND RECOMMENDATION.

The study has successfully investigated the impact of petrol filling stations on the rental values of nearby residential properties in Ilorin, as well as its effect on the trend of residential rental values. The findings revealed that properties within 201-300m of a petrol filling station exhibited higher rental values compared to those located farther away. This study is unique in that it presents real-time data on rental patterns between 2010 and 2020, based on tenant attitudes towards proximity to major roads and the perceived effects of petrol filling stations on nearby residential properties. However, the results also indicated that the closer a petrol station is to residential areas, the more likely the residents will be affected by noise pollution and traffic congestion, especially during fuel scarcity. Vehicles queuing for fuel can cause obstructions and hazards to nearby houses, as well as increase the risk of fire outbreaks and accidents. The study recommends discouraging the construction of petrol filling stations within and around residential neighbourhoods, as their cumulative impact on residential property values is significant over time. Property investors should also consider the existing presence of petrol filling stations when making decisions about land use.

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APPENDIX II: Average Rental Value of Properties (₦/Yearly)

S/N	Distance (Meters)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1.	**1-100m Radius**											
	A single room	12034	12034	12034	12556	12556	13540	13540	15333	18040	18040	24120
	A room self-contain	33320	33320	33320	35550	35550	35870	38450	38450	45000	50000	50000
	One bedroom flat	50670	50670	50670	55556	55556	56000	56000	58760	58760	58760	58760
	Two-bedroom flat	74111	76670	76670	80011	80011	80011	80011	100212	100212	100212	100212
	Three-bedroom flat	80011	80011	80011	80011	80011	100212	100212	100212	110500	120522	120522
2.	**101-200m Radius**											
	A single room	12000	12000	12000	13500	13500	13500	13500	15000	15000	15000	15000
	A room self-contain	45000	50000	50000	52500	52500	55000	55000	56000	56000	58000	60000
	One bedroom flat	50033	50033	50033	52500	52500	57500	60000	65000	65000	65000	70000
	Two-bedroom flat	80350	80350	83444	83444	83444	83444	100056	100056	111108	111108	111108
	Three-bedroom flat	80030	80030	80030	80030	80030	80030	100060	100060	100060	156785	156785
3.	**201-300m Radius**											
	A single room	24333	24333	24333	26570	26570	26570	30020	30020	36050	36050	36050
	A room self-contain	59888	59888	65034	65034	70500	70500	77078	95000	100000	100000	100000
	One bedroom flat	80000	80000	100000	100000	100000	120000	120000	120000	150000	150000	150000
	Two-bedroom flat	101050	101050	101050	101050	120521	120521	120521	150067	150067	180444	180444
	Three-bedroom flat	150000	150000	150000	180000	180000	180000	200000	200000	200000	250000	250000
4.	**301-400m Radius**											
	A single room	15000	15000	15000	18500	18500	18500	18500	20000	20000	22000	22000
	A room self-contain	45000	45000	50000	50000	52500	52500	55000	55000	55000	60000	60000
	One bedroom flat	50000	50000	50000	55000	55000	60000	60000	65000	65000	65000	70000
	Two-bedroom flat	75000	75000	80000	80000	85000	85000	94000	94000	98000	98000	100000
	Three-bedroom flat	80000	80000	80000	100000	100000	110000	110000	130000	130000	150000	150000
5.	**401-500m Radius**											
	A single room	12000	12000	12000	12500	12500	12500	12500	15000	15000	15000	15000
	A room self-contain	40000	40000	50000	50000	50000	50000	55000	55000	55000	60000	60000
	One bedroom flat	50000	50000	50000	60000	60000	60000	65000	65000	65000	70000	70000
	Two-bedroom flat	60000	60000	65000	65000	70000	70000	90000	90000	90000	100000	100000
	Three-bedroom flat	65000	65000	68000	68000	75000	75000	90000	90000	100000	100000	120000

Source: Author's Field Survey, 2021