
IMPACT OF PIPELINE VANDALISM AND EXPLOSION ON RESIDENTIAL PROPERTY VALUES IN ABULE-EGBA, LAGOS STATE

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Abstract

The research analysed the impact of pipe line vandalism and explosion on residential property values at Abule – Egba, in Lagos-State. The data for the study were gathered through questionnaires administered on tenants and Landlords residing within 25km to the pipeline and the resident Estate Firms in Alimosho local government. A total of 55 questionnaires were retrieved from the Estate Surveying and Valuation firms while 333 questionnaires were retrieved from the residents in the study area. The data was collected using a 5 Point Likert Scale and same was analysed via the Relative Importance Index and T-Test analysis. The findings of the study revealed that poor government policies, corruption, unemployment amongst others are the causes of pipeline vandalism and explosion. The study also found out that Estate Surveyors and Valuers found it difficult to market properties for letting and sales within this neighbourhood. The study therefore recommends incorporation of best practices into pipeline management in order to galvanize the residential property market within the proximate of the pipeline.

Keywords: Explosion, Investment, Pipeline, Residential Property Values and Vandalism

1. Introduction

The spate of oil pipeline vandalism across the country has been alarming as it affects the very fabric of life in the country and the economy as a whole (Asu, 2016, Mmeje, Bello and Mohammed, 2017). This criminal act nationwide has been traced majorly to militant activities in Nigeria's Niger-Delta region and willful damage for oil theft. Until of recent, Nigeria was referred to as Africa's biggest oil producer with a generation level of about 2.5 million barrels per day (mbpd). This was the case until the activities of militants and oil pipeline vandals reduced this record to 1.604 mbpd thus relishing the title of the Africa's biggest oil producer to Angola having an output of 1.615 mbpd (Rucky, 2017). Though Nigeria has since regained the title of the largest oil producer in Africa and the eleventh in the world with current statistics estimating her production as 1.987mbpd (Chigozie, 2021), it is indeed worrisome to note that the singular act of oil theft is capable of threatening the revenue generative activity of the country's oil sector.

The severity of this was noted by Benoit (2015), when it became evident that the Italian oil company ENI ended oil exploration operations in Nigeria in 2013 on account of losing 60% of its output to oil thieves. Equally, another study Yusuf (2015), reported that a similar oil exploration firm, had at many times, shut down production after it discovered that it daily lost 60,000 barrels of crude oil to the menace of bunkering. In evaluating the rising scourge of relentless vandalism in the nation, it is disturbing to note that despite the repercussions of oil theft via pipeline vandalism (death sentence or 21-year term imprisonment (Eyekpimi, 2021), this crime has remained unabated. Regardless of the efforts made to control and resolve the related issues, pipeline vandalism has been on the increase as vandals and their supporters appear not to be moved by the efforts of government and different offices to put a stop to their crimes. It has been realized that not just individuals but people within networks are responsible for the increase in vandalism as their activities are hinged on a craving for financial gains. Ibrahim (2021) opined that for pipeline vandalism to be stemmed, the searchlight should be shifted to the sponsors of oil theft who are usually within the high and mighty in society and not just the common man caught in the act. While their numerous activities nationwide try to fill a social need due to the challenging economic hardship, the brain behind this demeanor seems to be solely for personal financial grandeur.

With a pipeline network of approximately 31,000 Sq.km nationwide (Eyekpimi, 2021), it is certain that at some point, the pipelines traverse not only green fields but industrial, commercial, circulatory areas and are exposed to the surface at some point. Inevitably, residential neighbourhoods are not spared especially highly populated areas where the abuse of right of way (ROW) is inevitable, collision of vehicles to exposed pipelines is possible and most importantly, vandalism causing oil spills, fire outbreaks, blow outs leading to the wanton destruction of lives and properties. Sadly, this had been the fate of the interior portions of Abule – Egba, Lagos state in the years 2006, 2018 and 2020. In each of these occurrences, not only were hundreds of lives lost, properties worth millions of naira were destroyed in the blast (Ojewale, 2019; Akpan, Sebastine, Akoni, Bose, Ediri, Esther,

Prince and Joseph, 2020). Not only did properties worth millions go down the drain, hundredths of people were displaced (Omawumi (2020)).

In the face of the risk of incessant oil pipeline explosion to life and property, there is the need to study the impact of pipeline explosion on residential property values along the pipeline corridor of Abule Egba. In attempting to achieve this, the study poses the following questions. First, what are the causes of pipeline vandalism in Abule-Egba? Second, what are the rental values of residential properties in the areas affected by pipeline explosions as against adjoining neighbourhoods not prone to pipeline vandalism? Finally, are rental values in the study area fluctuating compared to neighbouring areas due to the impact of pipeline vandalism? By these exploratory questions, the study hopes to bring to light if there exists, any association between pipeline vandalism / explosion and the rental values of properties along pipeline routes in Abule-Egba area of Lagos state, Nigeria.

2. Literature Review

Within the context of pipeline vandalism in Nigeria, authors such as Vidal (2011), Vidal (2013), Clark (2012), Marks (2019), Odalonu (2015) Okoli (2016), Mmeje, Bello and Mohammed (2017), Ukponahiusi and Famusudo (2019) and Tade and Ayodele (2019) have at one time or the other ascertained that endemic poverty and high unemployment rate (the need factor) especially in the Niger Delta region has been found to be the major cause of pipeline vandalism. Other factors such as the inordinate ambition to amass wealth fostered by a culture of criminal impunity and corruption in Nigeria (the greed factor), the actions of political saboteurs as in the case of the Niger Delta militancy (grievance factor), seasonal scarcity of petroleum products, the existence of a flourishing black market for stolen crude in and around the geographical location of Nigeria as well as poor policing and oil pipeline protection have been severally cited as factors fostering pipeline vandalism. Nevertheless, a dearth of literature on the impact of pipeline vandalism and explosion on property values have exists within the Nigerian online literature.

In the Americas, the CRED (2014), report of the Conversations for Responsible Economic Development based in Vancouver, British Columbia explored the risk of oil pipelines to real estate values utilizing summaries from various academic researches with industry analyst data. The study highlighted on the impacts of eight separate oil spills in the US and Canada. Of the eight spills, seven were pipeline spills while one was an offshore oil rig explosion. In the US, the report noted that within the Maryland suburban area, direct oil spills led to a residential property loss of 11percent and a 40 percent reduction in home sales (Simons, 2001). In Texas, a property value loss of 10.2 percent was recorded and in Ohio, between 25 to 40 percent of residential property was lost to oil spills. This finding which was in line with Barton (1999) was also found to be in tandem with that of Walmer (2016) in Lebanon where between 5 to 40percent loss in value reported. Furthermore Simons (1999) noted that, along the Gulf of Mexico, a loss in property value of between 5 to 15 percent was noted after the Deepwater Horizon Onshore spill of 2009 and in the Washington area, a 4.6 percent loss in property value was noted after an oil spill ravaged the area in 1999 (Smith, Smith and Ashcroft, 2011). The report also noted three occurrences where loss in property value was claimed for but not estimated. The first which happened in 2010 was reported by Skinner

and Sweeney (2013) within the Michigan area where the oil company Enbridge purchased about 150 homes within proximity to the Kalamazoo River spill in a bid to stabilize the local real estate market. This was because residents had expressed concerns about the impact of the oil spill on their property values. Similarly in 2007, the Burnaby Trans Mountain pipeline spill of about 250,000 liters of crude oil polluted the nearby residential area however no research has been recorded to ascertain the impact the occurrence had on either property values or sales volume. Finally in Sundre Alberta, after the major oil spill of 2012 caused by the oil company Plains Midstream Canada, residents launched a class-action lawsuit against the oil firm in a case of devastation in local property values (Toronto Star, 2012). In conclusion, the report ascertained that in both cases of direct contamination (oil spills), directly impacted properties lost 10-40% of their value but based on perception, properties nearby spills will experience a 5-8% reduction in value with the most significant impacts felt in the first year and usually last less than 5 years if a reoccurrence doesn't happen. Finally, groundwater contamination was ascertained to lead to more permanent value losses especially where the affected homes relied on well water.

Beyond the CRED (2014) report, this current research seeks to understand not only the causes of oil theft but goes a step higher by attempting to determine the impact of both oil pipeline vandalism and explosion on rental values of residential properties in close proximity to the pipeline within the ever busy Abule Egba axis of Lagos metropolis.

3. Study Area

Abule Egba is a location within the Alimosho Local Government axis of Lagos state, Nigeria which is the largest local government in Lagos. It is located along longitude 3.30625 and



Figure 1: Ariel View of the Pipeline axis within Abule Egba, Lagos.

Source: Google Maps (Not to scale)

latitude 6.647240 with geographical position system (GPS) coordinates of 6°38' 50.064" N 3°18' 22.032"E. It has a land area of 43 square kilometers (17 sq.miles) and is located on an elevation of approximately 36 meters above sea level. According to the last National

Population Census (2006), Abule-Egba has a population of 174,152 people within the Alimosho area populated with about 1,288,714 inhabitants. It is located at the outskirts of Lagos state and has an extensive border line with the neighbouring Ogun State. Its name was derived from the earliest settlers who were the Egba people from Abeokuta, Ogun State. Crucially, it accommodates an extensive network of about 25km of both surface and sub-surface petroleum pipeline which has been vandalized and characterized with explosions in 2006, 2018 and 2020 respectively. These characteristics make Abule-Egba a choice study area for a robust study.

4. Data Collection and Research Methods

The study adopted the populations of resident estate firms in Alimosho axis, residents along the Abule-Egba pipeline axis as well as a five-year duration for its study period. According to NIESV Directory (2017), there are 381 registered firms in Lagos and of these registered Estate Surveying firms, 85 are located with the Ikeja, Alimosho Axis. The 85 firms constituted the sample size of the study.

For the pipeline axis, the residents (tenants/landlords) were accommodated in the estimated minimum of 1,666 buildings abutting the 25km pipeline (since 30meters is the width of an average plot of land along both sides of the 25km pipeline within Abule-Egba). For the purpose of this study, the number of the residential building types adopted for the study, within 100m catchment (beyond the 50m wide ROW on both sides of the pipeline) of the study area was manually counted and a total of 1,185 residential buildings (703 Nos. of 1 bedroom flats and 482 Nos. of 2 bedroom flats) were counted. This number represented the study's sampling frame. However, 40 percent (474) of the sampling frame was adopted for the study based on the recommendations of Nwana (1981). In ascertaining the appropriate number of each property type in the sample size, the ratio of each property type to the total number of properties manually counted was multiplied by 474 (40% percent minimum sample size). Thus, 281 Nos. of 1bedroom flats and 193 Nos. of 2bedroom flats totaling 474 were derived.

For the study period, a five-year rental data for two residential property types was adopted for the study. The data on rent was retrieved from the residents of the study area by questionnaire survey. This was actualized by distributing structured questionnaires to the residents of the study area during Community Development Association (CDA) meetings held on the last Saturday of each month. After the distribution of questionnaires to both study populations, response rates of 64.7 percent (55) was achieved for estate surveying firms while approximately 68 percent was recorded for residents within the study area. In all, an estimated response rate of 66.4 percent was achieved. The data retrieved from the estate firms and residents was collated and analysed accordingly using a five point Likert scale. The number "5" was assigned Strongly Agree, "4" - Agree, "3" - Indifferent, "2" - Disagree while "1" Strongly Disagree. Afterwards, the mean score was derived and the result was presented in ranked values. Thereafter, the data was subjected to the relative importance index (RII). In ascertaining the relative importance index of the parameters, the formula below was employed:

$$R.I.I. = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{A*N}$$

Where: “n” represents the number of responses for each scale, “A” equals the number of points and “N” was the total number of responses.

Finally, extracts from the responses of both respondents were further analysed using the T – test in a bid to ascertain the existence of any impact in value.

5. Data Presentation and Analysis

In a bid to properly analyze the impact of pipeline vandalism and explosion on residential property rentals within the peripheries of the pipeline axis in Abule-Egba, this section is segmented into six. These subsections are namely; causes of pipeline vandalism in the study area, impact of pipeline vandalism on real estate rents, average annual rent within the study area, rental values of residential properties in the abutting the beyond the perimeter of the pipeline, average annual rent within the neighbouring areas and finally, a comparison of the rental values of residential properties abutting and beyond the pipeline axis. For this to be achieved, data was retrieved from registered estate surveying firms, landlords and tenants of properties within the study area. These responses were analysed using separate tools and then inferences and deductions were made afterwards.

5.1(a) Causes of Pipeline Vandalism triggering Explosions in the Study area (Residents Perspective).

In pipeline areas, several reasons why people take to the criminal act of vandalism prevail. This section narrows down these factors to five in order to achieve the first objective of the research. Responses were recorded from respondents of both estate firms and residents in the study area on their opinion of the listed causes.

Table 1: Residents’ Perception of Factors Triggering Pipeline Vandalism and Explosion.

Causes	Strongly Agree (5)	Agree (4)	Indifferent (3)	Disagree (2)	Strongly Disagree (1)	Total	Weighted Total	A*N	RII	Ranks
Poverty	5 WF = 25	14 WF = 56	11 WF = 33	10 WF = 20	-	40	134	200	0.670	5
Unemployment	6 WF = 30	18 WF = 72	11 WF = 33	5 WF = 10	-	40	145	200	0.725	3
Poor development planning	5 WF = 25	12 WF = 48	17 WF = 51	6 WF = 12	-	40	136	200	0.680	4
Inefficient government policies	13 WF = 65	20 WF = 80	7 WF = 21	-	-	40	166	200	0.830	2
Corruption	18 WF = 90	14 WF = 56	8 WF = 24	-	-	40	170	200	0.850	1

Source: Author’s Analysis, 2021

Table 1 shows the Relative Importance Index (RII) ranking depicts the resident’s level of agreement with the listed causes of pipeline vandalism in the study area. According to the respondents, the most prevalent cause of pipeline vandalism was also “corruption” on the part of criminal elements in government who utilise criminally minded masses in achieving

their objectives. The second most prominent cause of pipeline vandalism was “inefficient government policies” hence, the eventual abuse of such policies is inevitable. “Unemployment” of neighbouring residents within the pipeline axis ranked third most important factor. This factor was perceived as an offshoot of government inadequacies. Thus, sabotaging government provided facilities seems to be the next available option for the criminally minded. Poor developmental planning” of the area and “poverty” ranked fourth and fifth respectively. This is glaring as the absence of transparency on the part of the government and the neglect of these areas irrespective of resident complaints enhanced the efficacy of both societal issues.

5.1(b) Causes of Pipeline Vandalism triggering Explosions in the Study area (Estate Firms Perspective).

As in the section 5.1a where the factors triggering pipeline vandalism and explosion was ascertained from the perception of the residents of the study area, the need to also validate the result of residents with those of the registered property firms within the Alimosho axis was deemed necessary, as it was also analysed using the relative importance index (RII) in Table 2.

Table 2: Estate Surveying firms' Perception of Factors Triggering Pipeline Vandalism and Explosion

Causes	Strongly Agree (5)	Agree (4)	Indifferent (3)	Disagree (2)	Strongly Disagree (1)	Total	Weighted Total	A*N	RII	Ranks
Poverty	5 WF = 25	14 WF = 56	11 WF = 33	10 WF = 20	-	40	134	200	0.670	5
Unemployment	6 WF = 30	18 WF = 72	11 WF = 33	5 WF = 10	-	40	145	200	0.725	3
Poor development planning	5 WF = 25	12 WF = 48	17 WF = 51	6 WF = 12	-	40	136	200	0.680	4
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Corruption	18 WF = 90	14 WF = 56	8 WF = 24	-	-	40	170	200	0.850	1

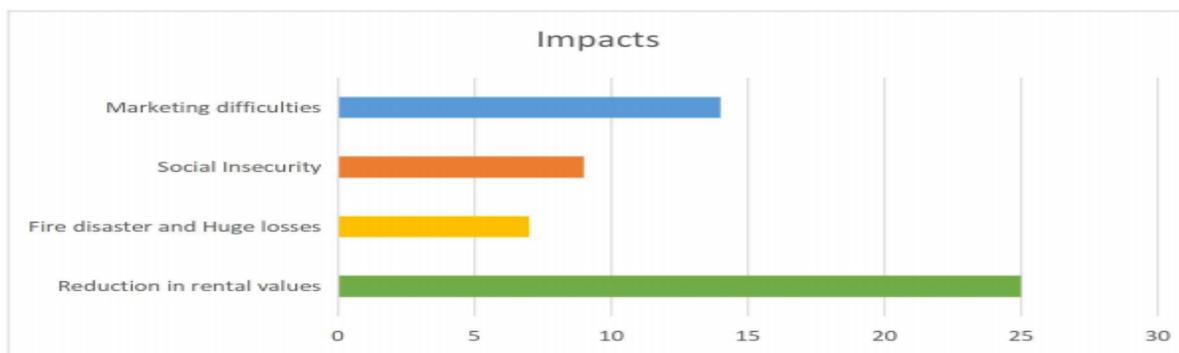
Source: Author's Analysis, 2021

Findings from Table 2 reveal that the most prevalent cause of vandalism from the perspective of Estate Surveyors and Valuers was “corruption” on the part of criminal entities in government who make use citizens to execute this societal evil. Also, “inefficient government policies” was again noted to be second most prominent while in third place was the “unemployment” of residents that engendered them to criminality. The “poverty” factor ranking fourth caused able bodied but poor individuals to attempt creating wealth for themselves. The least most prevalent factor was indicated as “poor developmental planning” of the study area.

5.2 Impact of Pipeline Vandalism and Explosion on Real Estate

In order to ascertain the possible impact of pipeline vandalism and explosion on the rental values of residential properties within the study area, there was the need to question real estate professionals who engaged in the business of property management and agency within the Alimosho axis in order to form an informed opinion on the impact of pipeline vandalism and explosion on rental if there was any. The professionals found within this scope of real estate business were the professional estate surveyors and valuers practicing in estate firms within the Alimosho axis. Thus, only professional estate surveying firms within the study area was found appropriate for this aspect of the study. The retrieved data was thus analysed in Figure 1 via the use of a bar chart and the results interpreted thereafter.

Figure 2: Bar Chart Representation of Estate Firms Responses on the Impact of Pipeline Vandalism and Explosion on Real Estate



Source: Author's Analysis, 2021

Figure 2 represents the opinion of estate surveyors in firms on how pipeline vandalism impacts property values. Based on the bar chart interpretations, 25 respondents (representing 45.5 percent of the sampled population) opined that “reduction in rental values” was the most prominent impact of pipeline vandalism on real estate within close proximity. Another 14 respondents (representing 25.5 percent) opined that “marketing difficulties” were observed for real estate located along the pipeline infrastructure. This was the second most impactful factor. In third place according to 9 respondents (16.4 percent) was social insecurity, while the least influencing impact on real estate was “fire disasters and huge losses” as depicted by 7 respondents (12.7 percent). This was because the realtors noted that according to law, properties build within the stipulated ROW were considered illegal and therefore not within the safe zone should a fire out break occur. Therefore such properties were absent from their management portfolios.

5.3 Average Annual Rent for properties abutting the ROW and beyond the ROW in the Study Area

In a bid to adequately ascertain any found discrepancy between the rents of properties within proximity to the pipeline and those located beyond the ROW, the average annual rent of properties within and outside the pipeline axis as retrieved from estate surveyors and valuers was collated and analysed. These analyses are as presented in this section.

5.3(a) Average Annual Rent within the Pipeline axis of the Study Area

Estimating the monetary impact of pipeline vandalism and explosion in the study area demanded the need to retrieve passing rents over the stipulated study period. In order to derive these values, estate firms managing residential properties on behalf of landlords were quizzed on a five year rental data for the relevant properties considered. This was considered necessary as rent determination and rent review is a core function of estate firms/managers. The collated data is thus presented in Table 3 and further discussed.

Table 3: Average Annual Rent within the Pipeline axis of the Study Area as Retrieved from Estate Surveyors and Valuers

	Years	Range	Average rent
Rental values of Self contain (₦'000)	2016	50-60	55.533
	2017	55-65	60.867
	2018	60-80	80.133
	2019	80-100	86.667
	2020	85-100	93.733
Mean of Averages			75.387
Rental values of Two bedroom (₦'000)	2016	120-150	126.75
	2017	120-150	138.00
	2018	150-180	158.25
	2019	160-180	170.25
	2020	180-200	192.75
Mean of Averages			157.2

Source: Author's Analysis, 2021

Table 3 presents the average rental values of the two property types (self-contained and two bedroom apartments) set for this study between 2016 and 2020. Furthermore, the average annual rents for both property types are deduced and finally, the mean rentage for each property type for the five years chosen for the study is computed. This result would be compared to similar properties within adjacent neighbourhoods where the pipeline is absent as presented in Table 4.

Figure 3: Line Graph showing Average Rental Values of Residential Properties in Abule -Egba Pipeline axis for years 2016 to 2020.

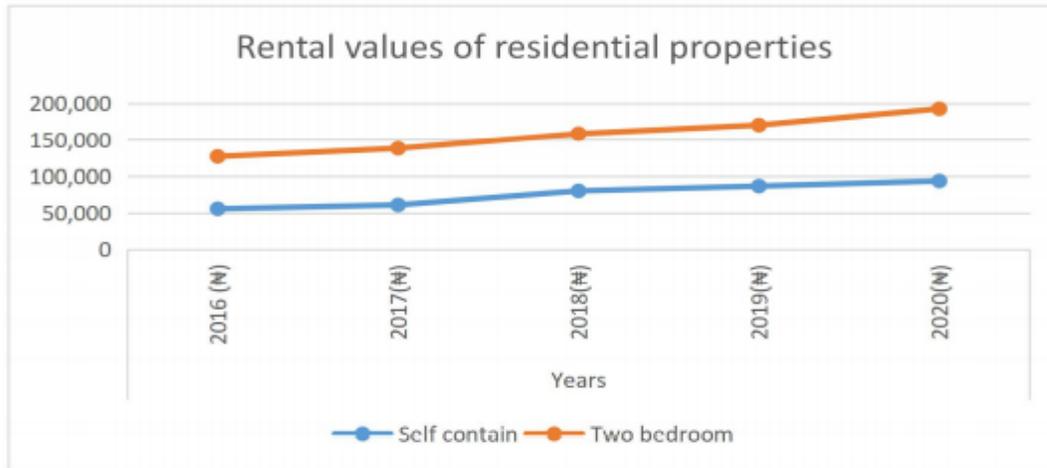


Figure 3 further represents the average rental values for each of the properties (as presented in Table 3) in a line diagram in order to show the annual increment and a trend-like relationship between preceding and current rental values for the five year period. At a glance, the rate of change in rental values from 2016 to 2020 for the two property types is seen to steadily increase albeit, slowly. Ultimately, there is little difference between the renewal rates of both property types. Again, this result would be compared and contrasted with similar property types outside the pipeline area as depicted in Figure 3.

5.3(b) Rental Values of Residential Properties beyond the Direct View of the Pipeline within the same Neighbourhood as Retrieved from Estate Surveyors and Valuers

In an attempt to achieve the third objective of the research, rental values of the property types considered for the study were obtained for the selected study period from Estate surveyors and valuers (ESVs) within the study area. This data was collected in order to achieve a comparison between rental values of properties located just after the ROW and other similar properties outside the range of the pipeline. This formed the core of Table 4.

Table 4: Average Annual Rent of Properties beyond the Direct Glare of the Pipeline (Estate Firms' Perception).

	Years	Range	Average rent
Rental values of Self contain (₦'000)	2016	100-120	110.000
	2017	100-130	118.000
	2018	120-150	137.600
	2019	150-180	165.000
	2020	180-200	189.667
Mean of Averages			144.053
Rental values of Two bedroom (₦'000)	2016	220-250	235.000
	2017	250-280	270.250
	2018	280-300	290.500
	2019	300-320	298.750
	2020	320-350	338.000
Mean of Averages			286.5

Source: Author's Analysis, 2021

The rental values of the two property types between 2016 and 2020 in the study area (but situated) beyond the direct view of the pipeline are shown in Table 4. The average rents per year for the property types were computed and then the average five year rent was determined. The relationship between the successive annual rents for each property type is further corroborated by the line graph of Figure 4 as it displays the movement and rate of change in average rental values over the stated time frame.

Figure 4: Line Graph showing Average Rental Values of Residential Properties in Neighbouring areas.

An analytical look at Figure 3 shows that the rate of change in the average rental values of the two bedroom apartments annually is almost the same as that of the self-contained apartments. It is also clear that when compared to Figure 2, the movement is also similar in both areas. This implies that the impact of “location” is likely factor influencing the growth on the rental values.

5.4 Comparison of the Rental Values of Residential Properties of Affected area and Unaffected Area.

Finally, in a bid to ascertain the impact of pipelines and its potential hazards on residential properties, the average rental values for the property types chosen for the study, within the study area and for the selected years was collated side by side for easy comparison in Table 5.

Table 5: Average Annual Rent within the Study and Neighbouring areas free of pipeline (Estate Surveying Firms Estimate) 2016 – 2020

Years	Property Type	Rental Values of Properties in Abule – Egba		Estimated Diminution Value (₦)	Diminution (%)
		Directly after the Pipeline ROW (₦)	Beyond the Pipeline ROW (₦)		
2016	Self-Contain Apartment	55, 533	110, 000	54, 467	49.52
	2Bedroom Apartment	126, 750	235, 000	108, 250	46.06
2017	Self-Contain Apartment	60, 867	118, 000	57, 133	48.42
	2Bedroom Apartment	138, 000	270, 250	132, 250	48.94
2018	Self-Contain Apartment	80, 133	137, 600	57, 467	41.76*
	2Bedroom Apartment	158, 250	290, 500	132, 250	45.52*
2019	Self-Contain Apartment	86, 667	165, 000	78, 333	47.47
	2Bedroom Apartment	170, 250	298,750	128, 500	43.01
2020	Self-Contain Apartment	93,733	189,667	95, 934	50.58*
	2Bedroom Apartment	192,750	338,000	145, 250	42.97*
Average Diminution (%)					46.4

Source: Author's Analysis, 2021

As illustrated by Table 5, a marked difference in rental values exist for properties in proximity to the pipeline and similar properties outside the view of the pipeline within the same axis in the study area. For the self-contain apartments located by the ROWs established for the pipeline, a reduction in value of 49.5% was noted in 2016. In the following year, an estimated 48.4% in value was lost and in the subsequent years following, diminutions of 41.8%, 47.5% and 50.6% respectively was ascertained. Overall, an average of 46.4 percent in diminution in rental values was estimated for properties in close proximity to pipelines within Abule - Egba axis.

Finally, in further analysing the disparity between the average rental values of the residential properties in both axis of Abule-Egba area, a T-test analysis of both variables was carried out as depicted in Table 6.

Table 6: T-test of Average annual Rental Values of Properties Between the Study Area and the Immediate Adjacent area free of Pipeline.

t-Test: Two-Sample Assuming Unequal Variances		
	Variable 1 (Average rental values in Abule-Egba area (₦))	Variable 2 (Average rental values in Neighbouring areas (₦))
Mean	116293.3	215276.7
Variance	2283997933	6762403362
Observations	10	10
Hypothesized Mean Difference	0	
df	14	
t Stat	-3.290973937	
P(T<=t) one-tail	0.002678823	
t Critical one-tail	1.761310136	
P(T<=t) two-tail	0.005357646	
t Critical two-tail	2.144786688	

Source: Author's Analysis, 2021

Significance Level = 0.05

Table 6 analyses and presents the calculated mean and variances of both variables which are used to compute the T statistics and eventually the P value. The P value from the result of t-test using the data obtained from the estate surveyors is approximately 0.00536 as highlighted in the Table. This value is much lower than the 0.05 significance level. Thus, there is sufficient evidence to stipulate that the average rental value in the pipeline axis of Abule-Egba area suffers diminution in value compared to the rental values of similar properties and neighborhood beyond the immediate vicinity of the pipeline.

6. Research Findings

This current study unearthed the causes of pipeline vandalism in the study area. In order of impact, these were found to be corruption on the part of government bureaucrats, inefficient government policies, unemployment, poor development planning and poverty. It was also found that estate surveyors and valuers found it difficult to market properties for sale and lease within proximity to the pipeline axis and as well discovered a huge disparity in rental value between properties along the 100m pipeline ROW (as stipulated by the Nigerian Pipeline Act, 1990) and properties further away from the pipeline axis. This negative variation (diminution) in rental values was found to be caused by pipeline vandalism and estimated at an average of 46.4 percent for self-contained apartments and two bed room apartments in study area.

7. Conclusion and Recommendation

This study assesses the causes of pipeline vandalism as well as its impact on the rental values of residential properties within the pipeline axis of Abule – Egba, Lagos. This it was able to achieve by comparison with the rental values of similar properties within the neighbouring pipeline area. Though, the establishment of the pipeline transmission systems have been known to edge over trucks and rail environmentally, there is the need to ensure that the entire pipeline network within the country are secured from vandals. Also, this infrastructure should be monitored for early repair, replacement and upgrade in order to avert or reduce to barest minimum, negative outcomes. By incorporating these best practices into pipeline management, the neglect and abuse of our national pipeline asset would become a thing of the past thereby aiding the reduction or total removal of diminutions in property rental values.

Finally, the study recommends that stiffer penalties be made and implemented for pipeline vandals whosoever they may be and regular policing of pipelines should be made more effective in order to dissuade vandals from their nefarious activities. Also, there is the need to stem the erection of illegal structures within the designated ROW and continuous public enlightenment be done to educate the public on the dangers of pipeline vandalism and the inherent diminution vandalism possess to returns from real estate investment.

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