

A Comparative Analysis of Rental Values in Slums and Adjoining Neighbourhoods: The Case of Ijora, Nigeria

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Abstract

Slum has been associated with lots of societal ills such as poor housing condition and environmental degradation which has been reported to reflect in the negative effect it has on property values. This study however criticizes the methodological approach of earlier studies where only a single locality (slum) was studied and in other studies neighbourhoods to slum were studied without the study of the slum itself. The approach in this study was by extending the comparison of property values both in slums and within other adjoining neighbourhoods. Data on rental values of self-contained apartment and one bedroom flat located in Ijora Badia and Ijora Oloye, two of the well-known slums in Lagos State Nigeria, and other neighbouring Ijora communities, Ijora Olopa and Ijora 7up was collected. The rental values between the years 2010 and 2019 of these two prevalent residential property types in the communities were gotten from local estate agents practicing in the locality. Data retrieved from a response rate of about 83% was analysed using mean score and the Analysis of Variance (ANOVA) at both the 95% and 99% confidence level. A calculated F ratio of 0.0574 and 0.0262 for the self-contained apartment and one bedroom flat respectively was derived which was far below the minimum of 2.60 or 3.78 required to make the result significant at the 95% and 99% confidence level respectively. Hence, it was discovered that there exist no significant difference in the rental values in the communities thereby negating the adverse effect of the slum on property values. The researchers hereby recommended that investors can embark on erecting decent smaller units of residential property types mostly prevalent in slums as occupants in such communities are more concerned with geographical access to better economic opportunities.

Keywords: *Slum, Rental Values, Properties, Neighbourhood, Nigeria*

Reduced Abstract

Slum has been associated with lots of societal ills such as poor housing condition and environmental degradation which has been reported to reflect in the negative effect it has on property values. This study criticizes the methodological approach of earlier studies where only a single locality (slum) was studied. The approach in this study extended the comparison of property values both in slums and within other adjoining neighbourhoods. Data on rental values of self-contained apartment and one bedroom flat located in Ijora Badia and Ijora Oloye, two of the well-known slums in Lagos State, Nigeria, and other neighbouring communities, was collected. The rental values between the years 2010 and 2019 of these two prevalent residential property types in the communities were obtained. Data retrieved from a response rate of about 83% was analysed using mean score and the Analysis of Variance (ANOVA) at both the 95% and 99% confidence level. A calculated F ratio of 0.0574 and 0.0262 was derived which was far below the minimum of 2.60 or 3.78 required to make the result significant at the 95% and 99% confidence level respectively. Hence, it was discovered that there exist no significant difference in the rental values in the communities thereby negating the adverse effect of the slum on property values. The researchers hereby recommended that investors can embark on

erecting decent smaller units of residential property types mostly prevalent in slums as occupants in such communities are more concerned with geographical access to better economic opportunities.

Introduction

Slum is a word derived from ‘slumber’ meaning sleepy and is traced to appear first in the Veux’s Flash Dictionary in 1812. It is a ‘wet mire’ built with working class housing for proximity to factories during the British Industrial Revolution. Presently there appears to be no country where certain form of slum is not in existence in the world. This is prompted by rural-urban migration, ill-conceived policies, rapid and uncontrolled urbanization, acute poverty, inappropriate urban planning and weak institutional capacity amongst others (Singh and Raj, 2014). According to the Global Report on Human Settlement 2003, slum manifest when majority of the dwelling units in such areas exhibit features of inadequate drinking water supply, inadequate sanitation, location near or around hazardous sites, evidence of temporary and or dilapidated structures, overcrowding and insecurity of tenure. Notwithstanding these features attributed to slum they are still considered as integral part of urban society and make significant contribution to its economy through their contribution from the labour market and informal production activities. This is considering the fact that with the high growth in urban space, slum is inevitable as about nine hundred million persons in the world live in slum (Friesen, Taubenböck, Wurm, and Pelz, 2019). It has also been projected that an estimated two billion of the world’s population is expected to live in slum in the year 2030 (UN-HABITAT, 2003; Kraas & Schlacke, 2016). Sub-Saharan Africa is believed to have the greatest number of her population (61.7%) living in slum followed by Southern Asia (35%), then Eastern Asia (28.2%) and the Latin America and the Caribbean (23.5%) with estimated rise in proportion for all regions in the future (UN-HABITAT, 2008-09). This conspicuous presence of slum in any urban setting has resulted to various research carried out with varied focus on this dwelling enclave (Peter, Fateye, Oloke, and Praise (2018). Much of such literature particularly with respect to the description and analysis of slums, their morphology, size and structure have been well summarized in the works of Mahabir, Croitoru, Crooks, Agouris, & Stefanidis (2018) and Mahabir, Crooks, Croitoru, & Agouris (2016). Some other literature tend to analyse slum using remote sensing data and Geographic Information System (Kuffer, Pfeffer, & Sliuzas, 2016; Anurogo, Lubis, Pamungkas, and Ibrahim, 2017); slum have been empirically distinguished from normal city settings (Taubenböck and Kraff, 2014; Bird, Monteburano, and Regan, 2017), while Wurm and Taubenböck (2018) tried to locate the social strata in an urban setting through insights in slum. Cardinali, Simonelli, Rodríguez, Espínola, Salvia, Pérez Chada, and Vigo, (2014) discovered a positive relationship between the presence of slum and sleep disorder while Zaman, Goswami, and Hassan, (2018) linked low health awareness and access to slum. Nuissl and Heinrichs (2013) while detailing the challenges associated with this form of settlement also profiles solutions to overcoming problems associated with the slum phenomenon. A solution to slum problems particularly in Africa, Asia and Latin America is advocated in the twin track approach of improving living conditions of existing slums while also preventing the formation of new slums (El-hadj, Faye, and Geh, 2018). The state of the environment in slum area was the focus of a research conducted by Tanni, Hasan, Azad, and Bakali, (2014), with the aim of evaluating the existing housing condition, viz-viz provision of water quality, noise level,

sanitary and drainage facilities. Deterioration of general health was also discovered in slum particularly those resulting from rural-urban migration due to paucity in health knowledge, excessive smoking, poor mental health and housing condition (Khan and Kraemer, 2014). Slum dwellers who mainly reside in municipalities don't mind the poor housing condition associated with their dwelling but are eager to trade-off housing quality for geographical access to better economic opportunities (Celhay, and Undurruga, 2019). There has also been the study of slum policies in relation to welfare of households (Cadavid, 2011). In Nigeria slum has also been attributed to defacing the aesthetic value of environmental landscape as findings from a survey research focusing on three (3) South-eastern cities of Nigeria - Owerri, Aba and Onitsha (Pat-Mbano, and Nwadiaro, 2012). Iwuagwu, Onyegiri, and Iwuagwu, (2016) examined slum development and its effect in Aba South Local Government area. Findings revealed rural-urban migration, over-population, unplanned-neighbourhood and non-compliance with laid down rules and literacy as the predisposing factors. These have resulted to overcrowding, poor housing, encroachment on government land, poor sanitation, insecurity of life, outbreak of diseases and decline in property values amongst others.

Notwithstanding, the literature on slum it appears there is dearth of literature relating such enclaves with property values. Hussain, Abbas, Wei, and Nurunnabi, (2019) studied amongst others the effect of slum area on property valuation in sub urban and posh areas of the Islamabad Region, Pakistan. The survey method was to obtain feedback from inhabitants thereby incorporated the hedonic pricing model to assess rental values within a range of one kilometre from selected slum areas. It was discovered that rental values increased as the neighbourhood got farther from the slum depicting a negative effect on rental values caused by the slum. Literatures in Nigeria considered the slum and values of properties located in such areas only. For instance, Dabara, Okunola, Odewande, and Okorie, (2012). Assessed the rental values of urban slum in Oja-Oba, Osogbo Nigeria. The survey which entailed collecting data from both tenants and estate surveyors in the study area was analysed with the use of both descriptive and inferential statistics. It was revealed that the urban slum indicators prevalent in the study area had an adverse effect on its rental values. In Onitsha, Anambra State Nigeria, Okafor and Onuoha (2016a) evaluated the effects of slum on property values in the metropolis. The findings indicated that slum occurrence in the area was as a result of rural-urban migration and lack of original planning culminating to the low property values in the area. This findings is also similar to a related research conducted in Asaba, Delta State Nigeria where the resultant low rental values in the study area was as a result of slum initiated by poor implementation of environmental programmes amongst others (Okafor and Onuoha, 2016b). The findings of Ikenna (2018) is likewise similar as slum in Agoha, Enugu State Nigeria has a remarkable influence on the low rental values in the area. Okafor and Nwike (2017) analysed the effect of land price inflation in the management of slum in Onitsha, Anambra State Nigeria. The survey which entailed physical observation, questionnaire distribution and conduction of interviews had three kinds of respondents. The inhabitants of the slum, professionals' in general environmental sciences and relevant professional bodies formed the respondents for the study. The Chi-square test of significance was adopted in the analysis and it was revealed that land price inflation had a remarkable effect on slum generation. All researches concerning slums globally can be summarised based on three construct. These include exploring the socio-

economic and policy issues; exploring the physical characteristics; and, lastly, a kind of modelling associated with slum (Mahabir, Crooks, Croitoru & Agouris, 2016).

Hence, issues related to slum has received lots of attention by policy makers, government, academicians, researchers, and in fact all and sundry being a stakeholder one way or the other. Considering the forecast in the increase of slum in the urban centres globally and the highest prevalence of slum in Sub-Saharan Africa with Nigeria being the most populated country in the continent, the presence of slum cannot be underplayed. According to UN-HABITAT (2010), Nigeria is amongst the three countries in the developing economics with high slum growth. Lagos State the commercial nerve centre with the highest population in the country has been unable to cope with the challenges of urbanisation thereby resulting to several inadequate housing and proliferation of slums (Amakihe, 2017). Such slum have been associated with unhygienic conditions of living and highly dense population as revealed in a study carried out in three major slums in the state (Akinwale, Adeneye, Musa, Oyedeji, Sulyman, Oyefara, & Adeneye, 2013). Even though there are efforts by the government of the state in creating a 21st century mega-city by demolition of slum in the name of regeneration just as experienced in places such as Makoko, there still exist slums in the state of which includes Ijora Badia and Ijora Oloye. This present study as against the methodological approach of earlier studies will hereby analyse the rental values in Ijora Badia and Ijora Oloye and compare with the other neighbouring Ijora community, Ijora Olopa and Ijora 7up to examine whether the slum has any remarkable impact on the properties values located in the vicinities.

Methods

The present study is a cross-sectional survey that involved the distribution of fifty-two (52) questionnaires to the practicing local real estate agents in Ijora Community. The community comprises of Ijora Badia, Ijora Oloye, Ijora Olopa and Ijora 7up. Ijora Badia and Ijora Oloye has been regarded as slum and said to have slum features according to the UNDP Report as cited in Agbola, and Agunbiade, (2009). Lagos was chosen as a case of study due to the preponderance of slum amongst every other part of the country (Ayuba, 2017). This is not farfetched considering its high population mass compared to the other parts of the country and one of the most buoyant real estate markets together with Port-Harcourt and Abuja (Iroham, Durodola, Oluwatobi, and Peter, 2015). Notable slums in the metropolis have been Ajegunle, Makoko, Gbegulori (Agege), Ijora Badia Ijeshade/Itire, Iwaya, Amukoko amongst others. The choice for the study areas, Ijora Badia and Ijora Oloye is due to its proximity to other adjoining Ijora Neighbourhoods, Ijora Olopa and Ijora 7up that will aid in the comparative analysis which this study intends to achieve. The Ijora communities lies on the geographical coordinates of N6° 27' 59" and E3° 22' 36". Data collected in the communities was the rental values of self-contain apartments and one bedroom flats which are the prevalent residential units particularly in the slums. The rental values collected for robust analysis was between the years 2010 and 2019. This was analysed using the mean score for the rental values for each year and compared using the Analysis of Variance (ANOVA) test of significance at both the 95% and 99% confidence level.

Data Analysis and Results

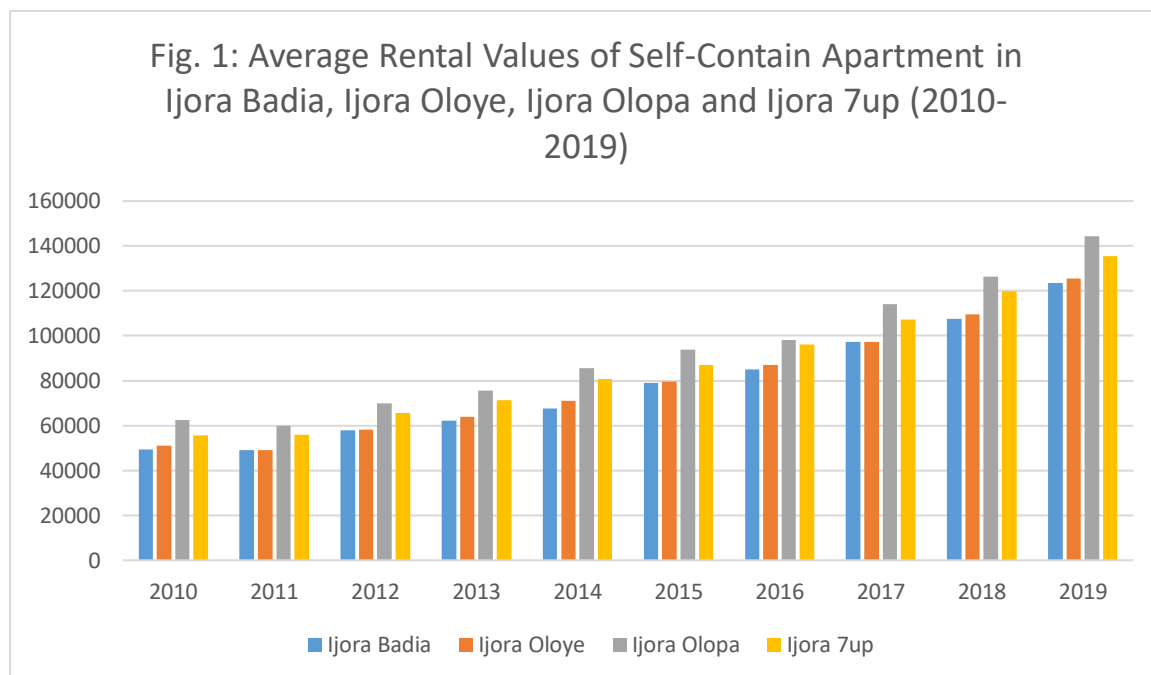
Questionnaires were distributed to the fifty-two (52) registered and practicing estate agents in Ijora axis of Lagos Metropolis. This axis includes Ijora Badia, Ijora Oloye, Ijora Olopa and Ijora 7up. Out of the fifty-two (52) estate agents issued questionnaires, forty-three of them were quite corporative by filling and duly returning the questionnaires. This gave a response rate of about 82.69% which the researchers saw as encouraging to give a conclusive findings. Majority of the respondents were between the ages of 31years to 60 years (65%) who are learned and educated. They all have working knowledge of the entire community of study with at least a minimum of five (5) years working experience. These were considered as good demographic characteristics of the respondents to divulge information on data required.

The core essence of this research was to examine the rental values in the Ijora Communities. The rental values were confined to self-contain apartments and one bedroom flats due to their preponderance in the communities. This is geared towards determining if any statistical significant difference exist amongst the values so as to either accept or refute the averred submission that slum had an effect on rental values. The entire rental values gotten for the two property types (self-contain apartments and one bedroom flats) between the years under review (2010 – 2019) were gotten from the entire respondents. The data gotten in the same community in some cases varied slightly based on certain conditions peculiar to the subject property under the preview of each agent. These include size, accessibility, decorative ambiance, age amongst others. However, the average rental values of each property types was calculated for each of the year under review.

Table 1 and Figure 1 gives a graphic view of the average rental values of self-contain apartment in the four communities in the years under review in the four Ijora communities

Table 1 Average rental value of self-contain apartment in Ijora Badia, Ijora Oloye, Ijora Olopa and Ijora 7up (2010-2019)

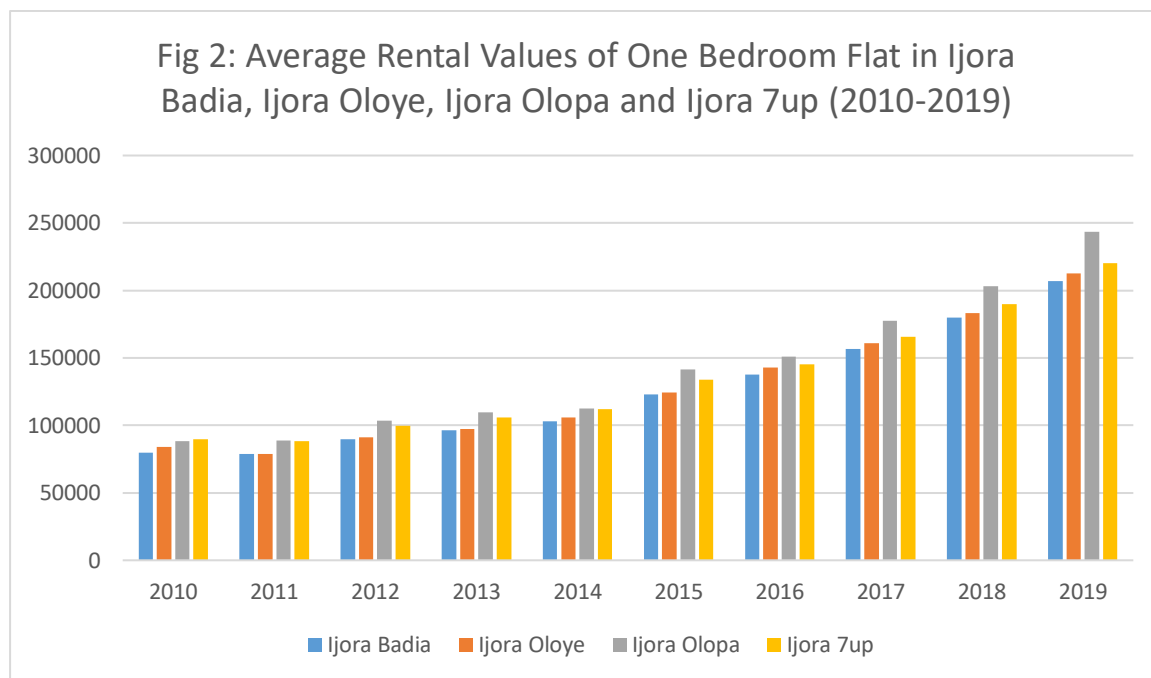
Year	Average Rental Value in Ijora Badia (₦)	Average Rental Value in Ijora Oloye (₦)	Average Rental Value in Ijora Olopa (₦)	Average Rental Value in Ijora 7up (₦)
2010	49, 242	51, 212	62, 500	55, 770
2011	49, 167	49, 000	60,000	56, 000
2012	58, 000	58, 333	70, 000	65, 600
2013	62, 333	63, 833	75, 455	71, 200
2014	67, 500	71, 167	85, 455	80, 800
2015	79, 054	79, 730	93, 846	87, 097
2016	84, 872	86, 923	98, 148	96, 250
2017	97, 250	97, 250	114, 074	107, 188
2018	107, 500	109, 500	126, 429	119, 688
2019	123, 488	125, 476	144, 444	135, 455



Likewise Table 2 and Figure 2 gives a graphic view of the average rental values of one bedroom flat in the four communities in the years under review in the four Ijora communities

Table 2 Average rental value of one bedroom flat in Ijora Badia, Ijora Oloye, Ijora Olopa and Ijora 7up (2010-2019)

Year	Average Rental Value in Ijora Badia (₦)	Average Rental Value in Ijora Oloye (₦)	Average Rental Value in Ijora Olopa (₦)	Average Rental Value in Ijora 7up (₦)
2010	79,688	83,939	88,182	89,600
2011	78,710	79,000	88,571	88,333
2012	89,677	91,000	103,333	99,583
2013	96,452	97,333	109,524	105,833
2014	103,226	106,000	112,381	112,083
2015	122,895	124,595	141,600	133,667
2016	137,750	143,077	150,769	145,161
2017	156,585	161,000	177,308	165,806
2018	180,000	183,000	203,077	190,000
2019	206,744	212,558	243,448	220,000



From Tables 1 and Tables 2 also as depicted from Figures 1 and 2 it appears that the average rental values in the slums of Ijora Badia and that of Ijora Oloye are quite lower than the neighbourhood communities of Ijora Olopa and Ijora 7up. However, in order to ascertain the significance in these difference at both the 95% and 99% confidence level the Analysis of Vaiance (ANOVA) test of significance will be employed.

Determination of significant difference in rental values of self-contain apartment

Using the formula in determining any significant difference amongst means of the various rental values of the self-contain apartments in the four communities will entail the Sum of Squares Between (SS_B) and Sum of Squares Within (SS_W) of the raw data given. The four groups in this scenario are the rental values of the various communities in the Ijora Axis. Rental Values in Ijora Badia, Ijora Oloye, Ijora Olopa and Ijora 7up can be given the appellation of Groups A, B, C, and D respectively. Thus, Table 1 will be expanded to reproduce Table 3 to aid the required analysis

Table 3 Rental Values of Self-Contain Apartment in the Ijora Communities of Lagos State (2010-2019 for ANOVA Analysis

A Badia (N'000)	A ²	B Oloye (N'000)	B ²	C Olopa (N'000)	C ²	D 7up (N'000)	D ²
270	72900	330	108900	120	14400	180	32400
35	1225	920	846400	520	270400	600	360000
960	921600	90	8100	650	422500	850	722500
180	32400	1650	2722500	1560	2433600	1740	3027600
1850	3422500	2580	6656400	1470	2160900	2310	5336100
110	12100	2800	7840000	2720	7398400	3840	14745600
2400	5760000	4560	20793600	1890	3572100	1440	2073600

65	4225	2250	5062500	4400	19360000	4900	24010000
2800	7840000	5400	29160000	330	108900	330	108900
4640	21529600	330	108900	3000	9000000	3480	12110400
2250	5062500	3720	13838400	910	828100	1430	2044900
5500	30250000	1170	1368900	280	78400	560	313600
3720	13838400	140	19600	2700	7290000	2700	7290000
910	828100	2400	5760000	340	115600	160	25600
140	19600	160	25600	1080	1166400	680	462400
2100	4410000	340	115600	1400	1960000	600	360000
160	25600						
340	115600						
Σ28430	Σ94146350	Σ28840	Σ94435400	Σ23370	Σ56179700	Σ25800	Σ73023600
N=352		N=351		N=247		N=280	

Calculating Sum of Squares Between the groups (SS_B)

$$SS_B = \sum \frac{(\sum X)^2}{N_g} - \frac{(\sum X)^2}{N}$$

$$\frac{(\sum X)^2}{N_g} \text{ for Group A} = \frac{28430^2}{352} = \frac{808,264,900}{352} = 2,296,207$$

$$\frac{(\sum X)^2}{N_g} \text{ for Group B} = \frac{28840^2}{351} = \frac{831,745,600}{351} = 2,369,646$$

$$\frac{(\sum X)^2}{N_g} \text{ for Group C} = \frac{23370^2}{247} = \frac{546,156,900}{247} = 2,211,162$$

$$\frac{(\sum X)^2}{N_g} \text{ for Group D} = \frac{25800^2}{280} = \frac{665,640,000}{280} = 2,377,286$$

$$\sum \frac{(\sum X)^2}{N_g} = 2,296,207 + 2,369,646 + 2,211,162 + 2,377,286 = 9,254,301$$

$$\frac{(\sum X)^2}{N} = \frac{(28430 + 28840 + 23370 + 25800)^2}{352 + 351 + 247 + 280} = \frac{(106,440)^2}{1230}$$

$$= \frac{11,329,473,600}{1230} = 9,210,954$$

$$SS_B = 9,254,301 - 9,210,954 = 43,347$$

Calculating Sum of Squares Within the groups (SS_w)

The next is to calculate the Sum of Square Within (SS_w). This is regarded as the portion of the Total Sum of Square (SS_T) not already attributed to a given source. To compute the Within Sum of Square or Sum of Square Within (SS_w), the formula

$$SS_w = \sum \sum X^2 - \frac{(\sum X)^2}{N_g}$$

Group A = 94146350 - 2, 296, 207 = 91, 850, 143

Group B = 94435400 - 2, 369, 646 = 92, 065, 754

Group C = 56179700 - 2, 211, 162 = 53, 968, 538

Group D = 73023600 - 2, 377, 286 = 70, 646, 314

$$SS_W = \sum \sum X^2 - \frac{(\sum X)^2}{N_g} = 91, 850, 143 + 92, 065, 754 + 53, 968, 538 + 70, 646, 314$$

$$SS_W = 308, 530, 749$$

Degree of Freedom (df)

The next process is to calculate the degree of freedom (df). For the whole group the df is the total number of observation less one = $(352 + 351 + 247 + 280) - 1 = 1229$. The degree of freedom for between group (SS_B df) is number of groups less one = $(4 - 1) = 3$. The degree of freedom for within group (SS_W df) is number of groups taken away from number of subjects = $(1230 - 4) = 1226$.

Mean Squares

In computing the Between Mean Squares, the SS_B is divided by its degree of freedom (df). Thus, Mean Square of $SS_B = 43, 347/3 = 14, 449$

In computing the Within Mean Squares, the SS_W is divided by its degree of freedom (df). Thus, Mean Square of $SS_W = 308, 530, 749/1226 = 251, 656$

Computation and Interpretation of F-Values

Having determined the Mean Squares of the Sum of Squares Between (SS_B) and the Mean Squares of the Sum of Squares Within (SS_W), a Null Hypothesis of no significance difference amongst the mean values of the groups is set. This is achieved through the computation of the F-Ratio. In the computation of the F-Ratio, the Between Mean Square is placed as the numerator while the Within Mean Square is placed as the denominator. Hence, in testing if no significant difference exists amongst the rental values in these four communities, the F-Ratio will be computed as:

$$14, 449/251, 656 = 0.0574$$

Consulting the F-Table it is discovered that the three (3) degree of freedom (df) for the numerator Mean Square and 1226 (tending towards infinity, being quite a high figure) degree of freedom (df) for the denominator Mean Square an F-Ratio of at least **2.60 or 3.78** at the 95% or 99% confidence level is respectively required for the differences in the rental values in the four communities to be significant. Hence, it can be interpreted that there are no significant differences in the rental values of self-contain apartments in Ijora Badia, Ijora Oloye, Ijora Olopa and Ijora 7up. Therefore, the slum in Ijora Badia and Ijora Oloye cannot be said to have any effect on the rental values in Ijora Badia and Ijora Oloye.

Determination of significant difference in rental values of one bedroom flat

The same approach in analysing the self-contained apartments will also be applied in the analysis of the one bedroom flat. The same formula in determining any significant difference amongst means of the various rental values of the one bedroom flat in the four communities will be examined. This will also entail the discovery of the Sum of Squares Between the groups (SS_B) and Sum of Squares Within the groups (SS_w) of the data given. Likewise the four groups which will represent the rental values in Ijora Badia, Ijora Oloye, Ijora Olopa and Ijora 7up will be given the appellation of Groups A, B, C, and D respectively. Thus, Table 4.2 will be expanded to reproduce Table 4.4 in order to aid the required analysis.

Table 4.4 Rental Values of One Bedroom Flat in the Ijora Communities of Lagos State (2010-2019 for ANOVA Analysis)

A Badia (N'000)	A²	B Oloye (N'000)	B²	C Olopa (N'000)	C²	D 7up (N'000)	D²
300	90000	300	90000	50	2500	300	90000
660	435600	600	360000	540	291600	840	705600
1260	1587600	1400	1960000	420	176400	2000	4000000
3280	10758400	3200	10240000	1680	2822400	360	129600
1260	1587600	1080	1166400	630	396900	5100	26010000
6300	39690000	6000	36000000	4300	18490000	3960	15681600
5160	26625600	110	12100	110	12100	1690	2856100
1430	2044900	4200	17640000	2640	6969600	560	313600
1680	2822400	1430	2044900	910	828100	6900	47610000
7050	49702500	1260	1587600	560	313600	680	462400
320	102400	6600	43560000	5550	30802500	5040	25401600
1190	1416100	1530	2340900	340	115600	190	36100
5400	29160000	6300	39690000	2880	8294400	5800	33640000
190	36100	6200	38440000	380	144400	210	44100
6800	46240000	2640	6969600	4800	23040000	1100	1210000
1540	2371600	690	476100	1980	3920400	230	52900
230	52900	3250	10562500	2500	6250000	2750	7562500
2250	5062500	270	72900	1350	1822500	270	72900
260	67600			1120	1254400	280	78400
270	72900			1500	2250000	300	90000
				700	490000		
∑46830	∑219926700	∑47060	∑213213000	∑34940	∑108687400	∑38560	∑166047400
N=359		N=352		N=238		N=276	

The analysis for the one bedroom flat will be approached just as that of the self-contained apartment.

The Sum of Squares Between the Groups (SS_B) is calculated as follows:

$$SS_B = \sum \frac{(\sum X)^2}{N_g} - \frac{(\sum X)^2}{N}$$

$$(\sum X)^2 \text{ for Group A} = \frac{46830^2}{359} = \frac{2,193,048,900}{359} = 6,108,771$$

$$N_g \quad 359 \quad 359$$

$$\frac{(\sum X)^2}{N_g} \text{ for Group B} = \frac{47060^2}{352} = \frac{2,214,643,600}{352} = 6,291,601$$

$$\frac{(\sum X)^2}{N_g} \text{ for Group C} = \frac{34940^2}{238} = \frac{1,220,803,600}{238} = 5,129,427$$

$$\frac{(\sum X)^2}{N_g} \text{ for Group D} = \frac{38560^2}{276} = \frac{1,486,873,600}{276} = 5,387,223$$

$$\sum \frac{(\sum X)^2}{N_g} = 6,108,771 + 6,291,601 + 5,129,427 + 5,387,223 = 22,917,022$$

$$\frac{(\sum X)^2}{N_g} = \frac{(46830 + 47060 + 34940 + 38560)^2}{359 + 352 + 238 + 276} = \frac{(167,390)^2}{1225}$$

$$= \frac{28,019,412,100}{1225} = 22,872,989$$

$$SS_B = 22,917,022 - 22,872,989 = 44,033$$

Calculating Sum of Squares Within the groups (SS_w)

The next is to calculate the Sum of Square Within (SS_w). This is regarded as the portion of the Total Sum of Square (SS_T) not already attributed to a given source. To compute the Within Sum of Square or Sum of Square Within (SS_w), the formula

$$SS_w = \sum \sum X^2 - \frac{(\sum X)^2}{N_g}$$

$$\text{Group A} = 219926700 - 6,108,771 = 213,817,929$$

$$\text{Group B} = 213213000 - 6,291,601 = 206,921,399$$

$$\text{Group C} = 108687400 - 5,129,427 = 103,557,973$$

$$\text{Group D} = 166047400 - 5,387,223 = 160,660,177$$

$$SS_w = \sum \sum X^2 - \frac{(\sum X)^2}{N_g} = 213,817,929 + 206,921,399 + 103,557,973 + 160,660,177$$

$$SS_w = 684,957,478$$

Degree of Freedom (df)

The next process is to calculate the degree of freedom (df). For the whole group the df is the total number of observation less one = (359 + 352 + 238 + 276) – 1 = **1224**. The degree of freedom for between group (SS_B df) is number of groups less one = (4 – 1) = **3**. The degree of

freedom for within group (SS_W df) is number of groups taken away from number of subjects = $(1225 - 4) = 1221$.

Mean Squares

In computing the Between Mean Squares, the SS_B is divided by its degree of freedom (df). Thus, Mean Square of $SS_B = 44, 033/3 = 14, 678$

In computing the Within Mean Squares, the SS_W is divided by its degree of freedom (df). Thus, Mean Square of $SS_W = 684, 957, 478/1221 = 560, 981$

Computation and Interpretation of F-Values

Having determined the Mean Squares of the Sum of Squares Between (SS_B) and the Mean Squares of the Sum of Squares Within (SS_W), a Null Hypothesis of no significance difference amongst the mean values of the groups is set. This is achieved through the computation of the F-Ratio. In the computation of the F-Ratio, the Between Mean Square is placed as the numerator while the Within Mean Square is placed as the denominator. Hence, in testing if no significant difference exists amongst the rental values in these four communities, the F-Ratio will be computed as:

$$14, 678/560, 981 = 0.0262$$

Consulting the F-Table it is discovered that the three (3) degree of freedom (df) for the numerator Mean Square and 1221 (tending towards infinity, being quite a high figure) degree of freedom (df) for the denominator Mean Square an F-Ratio of at least **2.60 or 3.78** at the 95% or 99% confidence level is respectively required for the differences in the rental values in the four communities to be significant. Hence, it can be interpreted that there are no significant differences in the rental values of one bedroom flat in Ijora Badia, Ijora Oloye, Ijora Olopa and Ijora 7up. Therefore, the slum in Ijora Badia and Ijora Oloye cannot be said to have any effect on the rental values in the communities.

It is obvious that the rental values both for the self-contained apartment and the one bedroom flat in Ijora Badia and Ijora Oloye have not been affected by the slum in the area. This is because over the years there have been no significant difference in the rental values of these property types compared to what is obtainable in the neighbourhoods where there are no slum.

Discussion

The findings from this study has depicted that slum has no significant effect on rental values. This is in line with the findings of Igbinosa (2011) that neighbourhood attractiveness has a remarkable impact on the values of properties. Wickramaarachchi (2016) also opined that neighbourhood characteristics has a significant role to play in determining values of properties. Hence, this could explain why since the four communities are practically in the same neighbourhood no significant difference has been seen in rental values of the properties situated there. The result gotten from this research is however at variance with findings from studies conducted by (Dabara, Okunola, Odewande, and Okorie, 2012; Okafor and Onuoha, 2016a; Okafor and Onuoha, 2016b; Ikenna, 2018) where it was revealed that the existence of slum will result to the drastic reduction in property values. The resultant no significant effect on rental values as revealed from the findings of this study can also be attributed to the inelastic demand

which is exhibited by rental housing in respect with price (rent) and income particularly in slum (Gupta, and Gupta, 2017). This research has spurred certain implications in real estate research and practice. The divergent results gotten with respect to effect of slum on property values shows that for property values to be regarded as being affected by slum research must be conducted in the given area of focus. This is because beyond the presence of slum certain other features could be attributed to any distortion of property values in any given slum. Ijora community has not been focus of any given real estate research as most researches have focused on Ikeja and other commercial and administrative hub in Lagos State. Subsequent research will begin to emanate in this study area being brought in the limelight of research focus. Ijora community is well located in Lagos State having proximity to Apapa, Lagos Island and even Lagos Mainland, that could also explain why the property values in the area are not affected by the slum in the community. As a result it can be seen as a profitable space of practice for real estate practitioners as demand for property types in such area will always be assured.

Conclusion

This research has been able to reveal that slum has no remarkable effect on rental values in the study areas. This is from findings of calculated F-Ratio of 0.0574 and 0.0262 for the self-contained apartment and one bedroom flat respectively was derived. The values were far below the minimum of 2.60 or 3.78 required to make the result significant at the 95% and 99% confidence level respectively. The researchers hereby recommended that investors can embark on erecting decent low residential property types mostly prevalent in slums as occupants in such communities are more concerned with geographical access to better economic opportunities. However, basic amenities that make life worth living should not be sparse in slum so as not to result in derelict space as evident in spaces prevalent with building collapse and degradation (Okagbue, Iroham, Peter, Owolabi, Adamu and Opanuga, 2018). Further researches can be therefore be conducted in all slums in the country to understand the peculiarities of each slum in a bid to ameliorating any of its adverse effects.

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