



## Occupants' Satisfaction and Rent Paid for Residential Properties Close to Waste Dump Sites in Nigeria

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### Abstract

The paper examined occupants' satisfaction and rent paid for residential properties within three neighbourhoods (Olusosun, Abule – Egba, and Solous) close to waste dump sites and Ketu neighbourhood (not close to dump site) in Lagos Metropolis. Relative Satisfaction Index, Analysis of Variance and Correlation Coefficient are used to analyse the data based on the System Unit, Dwelling and Environmental Subsystems. The results show that the occupants of properties close to dump sites have a minimum level of satisfaction of 37.22, 40.48 and 27.09 percent in the system unit and subsystems; while Ketu is 60.00, 60.71 and 56.25 percent. Also, a weak linear relationship between rental value and the satisfaction of occupants in the neighbourhoods (Olusosun, 0.056 ( $p > 0.05$ ); Solous, 0.026 ( $p > 0.05$ ); Abule-Egba, 0.062 ( $p > 0.05$ ); and Ketu, 0.108 ( $p > 0.05$ ) exist.

The paper recommends that property investors should avoid building around dump sites to enhance property values

**Keywords:** Occupants Satisfaction, Rent, Residential Properties, Waste Dump Sites

### 1. Introduction

The value of properties can be attributable to the nature of property as a package of goods and services (Bello and Bello, 2008). Therefore, property extends beyond shelter to include environmental characteristics or attributes. Bello and Bello (2008) noted that their influences on value are difficult to assess. This is more so in Nigeria considering the wide range of negative and positive externalities that the environment impacts on the property market.

The negative externalities are characterized by proliferation of squatter settlements, air and water pollution, squalid condition of environmental sanitation, and breakdown of waste disposal arrangement to mention a few. On the other side are positive externalities such as good roads, schools, shopping facilities, and accessibility to good health care facilities etc. These immediate influences of environmental characteristics are therefore, manifested in the form of pull and push effect of the neighbourhood on the prospective buyer or occupant. A push effect like the presence of waste dump site may affect property value and the satisfaction the occupants derive from the environment and the property they occupy (Jackson, 2001c). Hence, occupant's satisfaction of their dwellings and environment is influenced not only by the engineering elements, but also by the social, behavioural, cultural, and environmental variables (Michelson, 1970; Philips, 1967; Onibokun, 1974).

Economic theory tells us that "all things being equal", buyers would avoid purchasing a property that is contaminated or close to a dangerous facility because of potential health risk, difficulty in selling the property, uncertainty, nuisance associated with environmental damages and stigma (Patchin, 1994). Occupants of property may seek to approach or obtain properties towards which they hold positive attitudes and avoid those for which they hold negative ones in order to be satisfied. Satisfaction according to McCormick and Ilgen (1985) is the "hedonic response of liking or disliking the attitude object" which may be property. As a result, occupants' satisfaction is frequently associated with their

behaviours. The question is, are the occupants satisfied with an environment close to waste dump site and hence the rent paid for properties in such environment? Several studies have addressed the effect of waste dump sites on property values in many countries among which include studies on landfills by Thayer et al, 1992 (in Baltimore, Maryland), Reichert et al, 1992 (in Cleveland, Ohio), Arimah and Adinnu, 1995 (Lagos); Adewusi and Onifade, 2006 (Surulere, Lagos); Bello, 2007 (Lagos); Udo and Egbenta, 2007 (in Enugu) and proposed radio active waste sites by Michaels and Smith 1990 (Boston area). Results from these studies generally support the notion that waste dump sites have negative effects on property values. Specifically property values decreases with closeness to the dump sites. These studies however did not address whether the occupant’s are satisfied with the environment and the low rent paid. It is in the light of this that this study is undertaken to make contribution. Therefore, the effect of waste dump sites on property values on the level of satisfaction of the occupants of these properties is examined. The intention is to identify any correlation between the rent paid and the occupants’ level of satisfaction.

**2. Data and Research Methods**

*2.1 The Data*

The data for this study was collected from a sample of occupiers of residential properties located within 1000 meters to waste dump sites (Olusosun, Abule –Egba, and Solous dump sites). Since no information was given as to the number of properties within the region of 1000 meters in the Census Bureau office, house counts of properties were undertaken. Therefore, a survey of 105 residential properties in Olusosun, 109 in Solous and 112 in Abule - Egba that fall within the 1000 meters was taken. These constitute the sample frame for the properties studied. For a comparative analysis, 113 properties were also taken from Ketu, the neighbourhood not close to waste dump site. Ketu was chosen because of its similar characteristics in terms of property types and socio economic characteristics of the residents. In all, a sample of 439 residential houses was made in the neighbourhoods. Questionnaires were administered to occupants of these properties to elicit information on how satisfied they are with the physical and environmental characteristics of their properties and the rent paid for the properties. Of these, 373 (Olusosun, 95, Abule – Egba 93, Solous 92 and 93 in Ketu) completed questionnaires were returned and analyzed representing 85% response rate.

*2.2 Research methods for the analysis*

The tools for data analysis involve Relative Satisfaction Index, Analysis of Variance and Correlation Coefficient. Onibokun (1974) defined the Relative satisfaction index as a type of tenants – dwelling – environment and management interaction system. According to Onibokun (1974), the system produces a type of dwelling, which is regarded by the tenant component of the system as relatively acceptable or adequate. Therefore, the Relative Satisfaction of an occupant with a system is the sum of the occupants actual scores (on a four point scale drawn from the respondents assessment of each attribute or variables) expressed as a percentage of the sum of the occupants potential scores (or the maximum scores possible) on all the variables selected for weighing under the subsystem.

Mathematically Onibokun gave the index of relative satisfaction as:

$$RSI_s = \left\{ \frac{\sum_{i=1}^{N_1} d_1 + \sum_{i=1}^{N_2} e_1 + \sum_{i=1}^{N_3} m_1}{\sum_{i=1}^{N_1} D_1 + \sum_{i=1}^{N_2} E_1 + \sum_{i=1}^{N_3} M_1} \right\} X100 \dots\dots\dots (1)$$

Where RSI s = the index of relative satisfaction of an occupant with the total system.

N<sub>1</sub>, N<sub>2</sub>, N<sub>3</sub> = are the variables selected for scaling under the dwelling (D), environment (E) and management (M) subsystems

d<sub>1</sub>, e<sub>1</sub>, m<sub>1</sub> = the actual scores by an occupant on the ith variable in the dwelling, environment and management subsystems

D<sub>i</sub>, E<sub>i</sub>, M<sub>i</sub> = the maximum scores that variable “i” in the dwelling, environment or management subsystem could have on the scale of habitability.

However, this study adopts the form of equation (1) but ignoring the management subsystem, since management subsystem is not within the scope of this work. The equation for this study therefore, is

$$RSI_{DE} = \frac{\sum_{i=1}^{N_1} d_1 + \sum_{i=1}^{N_2} e_1}{\sum_{i=1}^{N_1} D_1 + \sum_{i=1}^{N_2} E_1} X100 \dots\dots\dots (2)$$

Where RSI<sub>DE</sub> = the Index of Relative Satisfaction of an occupant with the total system.

$N_1, N_2,$  = are the variables selected for scaling under the dwelling (D) and environment (E) subsystems respectively.

$d_i, e_i,$  = the actual scores by an occupant on the  $i$ th variable in the dwelling and environment subsystems

$D_i, E_i,$  = the maximum scores that variable “ $i$ ” in the dwelling and environment subsystem could have on the scale of habitability.

The maximum satisfactions index that could be obtained is 100 percent while the minimum is 25 percent. According to Onibokun (1974) maximum satisfaction rarely exists therefore; this is not likely to exist in the study areas. In spite of this, the closer to 100 percent the Relative Satisfaction Indices, the higher the degree of satisfaction of the occupant. Onibokun (1974) adopted three levels of satisfaction as the framework of interpreting the observed levels of satisfaction in his study. The levels included:

- (i) Less than 70 percent RSI = region of low level satisfaction
- (ii) 70 – 79 percent RSI = region of medium level satisfaction
- (iii) 80 percent and over = region of high level of satisfaction

These levels of satisfaction are the ones adopted for this study with slight modification. This is because 70 percent taken by Onibokun (1974) as a medium level satisfaction could be regarded as too high for a study like this since in a normal life situation 70 percent is often judged to be of a good performance. Therefore, for this study below 50 percent was taken as a region of no satisfaction while 70 percent and above was taken as region of high level satisfaction as against that of Onibokun (1974). In this wise, four levels (region) of satisfaction were used as a framework for interpreting the observed levels of satisfaction in the study areas.

- (i) Less than 50 percent RSI = region of no satisfaction
- (ii) 50 – 59 percent RSI = region of fair satisfaction
- (iii) 60 - 69 percent RSI = region of satisfaction
- (iv) 70 percent RSI and above = region of high level of satisfaction.

RSI were computed for each of the four neighbourhoods while Analysis of Variance was used to test if there are any significance differences in the satisfaction levels in these neighbourhoods (Olusosun, Solous, Abule-Egba and Ketu).

Correlation coefficient was used to analyse the relationship between satisfaction levels of the occupants and the rent paid for the property occupied.

### 3. Results

#### 3.1 Relative Satisfaction Index

In Table 1, the Average mean Relative Satisfaction Index (the three neighbourhoods combined) in the System unit, Dwelling and Environmental Subsystem in the neighbourhoods (Olusosun, Solous and Abule – Egba) close to waste dump sites were given as 56.82 percent, 69.02 percent and 46.16 percent respectively. The result indicated that the occupants in these neighbourhoods are not satisfied with the System Unit (Dwelling and Environmental Subsystems combined) and Environmental Subsystem but are satisfied with the dwelling subsystem. This is contrary to the situation in Ketu neighbourhood that is not close to waste dump site where the mean Relative Satisfaction Index in the System unit, Dwelling and Environmental subsystems are 70.77 percent, 74.92 percent and 67.14 percent respectively. Also, it is evidence from Table 1, that the occupants in the neighbourhoods close to dump sites have a lower level of Satisfaction of 37.22 percent in the System unit, 40.48 percent in the Dwelling subsystem and 27.09 percent in the Environmental subsystem. In Ketu neighbourhood (not close to waste dump site) the minimum level of satisfaction by the occupants in the System Unit, Dwelling and Environmental Subsystems are 60, 60.71 and 56.25 percent respectively. The implication here is that why some occupants in the three neighbourhoods (Olusosun, Abule – Egba and Solous) may not be satisfied with their neighbourhood, the result is different in Ketu neighbourhood where none of the occupants fell below 50 percent level of satisfaction.

#### 3.2 Analysis of Variance (ANOVA)

The second stage was to test whether the observed difference across the neighbourhoods (Olusosun, Abule – Egba, Solous and Ketu) was statistically significant using Analysis of Variance (ANOVA). Tables 2, 3 and 4 show the Analysis of Variance for the System unit, Dwelling and Environmental Subsystems in the three neighbourhoods (Olusosun, Abule – Egba and Solous) close to dump site and Ketu neighbourhood that is not close to a dump site. The significant values of the F – test in the ANOVA Table for the Systems unit, Dwelling and Environmental subsystems are 0.000, 0.001 and 0.000 respectively. This implies that at 5% level, there is a significant difference between the mean levels of satisfaction across the four neighbourhoods (Olusosun, Abule – Egba, Solous and Ketu) for the Systems unit, Dwelling and Environmental subsystems. While Olusosun, Abule – Egba, and Solous has the same physical and environmental characteristics, Ketu is entirely different. This result might probably be due to the reasons that owners of

properties close to the dump sites in Olusosun, Abule – Egba, and Solous are not favourably disposed towards investing substantially on the properties hence, these properties are not well maintained. Consequently, the occupants have lower Relative Satisfaction Index (RSI). On the contrary, majority of the properties in Ketu are well maintained hence, higher Relative Satisfaction Index (RSI) exist.

### 3.3 Correlation Coefficient.

The relationship that exists between the satisfaction of the occupants in the neighbourhoods and the rent paid for the property occupied was examined using the Correlation Coefficient.

In Olusosun neighbourhood, the correlation coefficient between rental value and satisfaction level is 0.056 ( $p > 0.05$ ); Solous is 0.026 ( $p > 0.05$ ), Abule – Egba is 0.062 ( $p > 0.05$ ) while Ketu is 0.108 ( $p > 0.05$ ) as shown in Table 5. These results however, show the correlation coefficient to be close to zero indicating that there is a weak linear relationship between rental value and the satisfaction of occupants in the neighbourhood. The results, although not significant are however, not contrary to expectation in an environment where demand is higher than supply. For instance, the quantity of housing units in Nigeria cities has been reported to be grossly inadequate compared to her population size (F.O.S. (1992); NHP, (1992); Onyike, (2007). In such a situation irrespective of what the occupiers are paying, there are tendency for them not to get adequate satisfaction since it is a sellers market.

## 4. Conclusion

The Relative Satisfaction Index of the occupants living close to the dump sites (Olusosun, Abule – Egba and Solus) shows lower level of satisfaction. A comparison of the three neighbourhoods with Ketu, a neighbourhood far away from any dumpsite in its vicinity shows that the three neighbourhoods close to waste dump sites are significantly different from it. This shows that the closer the property to the dumpsite, the lower the satisfaction derived. The satisfaction derived from properties is expected to influence the value of the property; although, the general property rental levels is lower in the properties close to waste dump sites, however, this study revealed that there is a weak but not significant linear relationship between rental values and satisfaction levels.

The study recommended that the Town Planning Authority should enforce strictly building regulation of setting back. This will forestall situations where people build close to and even over landfills without taking necessary precautions. Also, government and non – governmental organisations should embark on programmes to enlighten the public on the danger of living close to waste dumpsites. Property investors should avoid investment in properties close to waste dump sites.

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Table 1. The Average Relative Satisfaction Scores of the System Unit, Dwelling and Environmental Subsystems in the three neighbourhoods close to dump sites compared with Ketu not close to waste.

Statistics	System Unit		Dwelling Subsystem		Environmental subsystem	
	Area close to dump sites	Area not close to dump site	Area close to dump sites	Area not close to dump sites	Area close to dump sites	Area not close to dump site
Mean	56.82	70.77	69.02	74.92	46.16	67.14
Median	56.11	70.00	67.86	71.43	44.79	65.68
Mode	51.67	71.67	67.86	71.43	32.30	71.88
Standard Deviation	± 9.15	± 5.164	± 12.50	± 9.27	± 12.40	± 6.192
Minimum	37.22	60.00	40.48	60.71	27.09	56.25
Maximum	80.67	85.00	92.86	92.86	75	78.13
Variance	83.78	26.664	157.42	85.946	154.81	38.345
Kurtosis	- 0.005	- 0.092	- 0.18	- 0.722	- 0.67	- 1.053
Skewness	0.307	0.292	- 0.08	0.527	0.37	0.040

Note: Below 50 percent is not satisfied, 50 percent – 59 percent fairly satisfied, 60 percent – 69 percent satisfied, 70 percent and above highly satisfied.

Table 2. Analysis of Variance for the System unit in the four neighbourhoods

	Sum of Squares	Df	Mean Squares	F	Sig
Between groups	14303.868	3	4767.956	68.329	0.000
Within groups	25748.695	369	69.780		
Total	40052.563	372			

Significant level of the F – test is 0.000 at 5 percent significant level.

Table 3. Analysis of Variance for the dwelling subsystem in the four neighbourhood

	Sum of Squares	Df	Mean Squares	F	Sig
Between groups	2437.375	3	812.458	5.851	0.001
Within groups	51241.358	369	138.865		
Total	53678.732	372			

Significant level of the F – test is 0.001 at 5 percent significant level.

Table 4. Analysis of Variance for the environmental subsystem in the four neighbourhoods

	Sum of Squares	Df	Mean Squares	F	Sig
Between groups	33275.205	3	11091.735	88.675	0.000
Within groups	46155.503	369	125.083		
Total	79430.708	372			

Significant level of the F – test is 0.000 at 5 percent significant level.

Table 5. Correlation Matrix between Rental Value and Satisfaction levels of occupants in the neighbourhoods

	<b>EnvOlu</b>	<b>EnvSolous</b>	<b>EnvAbule</b>	<b>EnvKetu</b>
RentOlu	0.056* (0.592)**			
RentAbule			0.062* (0.563)**	
RentSolous		0.026* (0.808)**		
RentKetu				0.108* (0.313)**

\* Pearson Correlation Coefficient is significant at the 0.05 level (2 – tailed)

\*\* P – Value.