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INFLUENCE OF ENVIRONMENTAL FACILITIES ON RESIDENTS' SATISFACTION IN PRIVATE HOUSING ESTATES IN ENUGU, NIGERIA

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ABSTRACT

This study was inspired by an aspiration to examine the private housing developers' commitment to design and construct estates in environments that have necessary facilities. The paper aims to assess the relative satisfaction level conveyed by the residents of private housing estates in Enugu, in the hope that the results would advance the design of such environments. The results of hypothesis tested show that environmental facilities have a significant effect on residents' satisfaction. Analysis model of spearman rho correlation analysis showed a correlation coefficient value of 0.085 with a significance probability point of 0.023. This implies a weak relationship exists between the environmental facilities and residents' satisfaction. Furthermore, the significance probability point of 0.023 shows it is significant. This finding shows that these environmental variables- mode of refuse disposal, state of roads within the estate, sanitization level, Recreation Park indeed represent the important factors that influence overall residents' satisfaction. The paper concluded that by integrating the subjective assessments of the residents with developers/planner's objective criteria, the shortcomings that produce dissatisfaction be annihilated. Residents' satisfaction in private housing estates in the study area and future private housing projects, can be enhanced through the provision of environmental facilities and the facilities functioning well in the housing estates.

Index Terms*: *Environment, Estates, facilities, private housing, residents' satisfaction

1. INTRODUCTION

The level of resident's satisfaction in housing is a factor of its environment such that an environment with good and functional facilities is far more supportive than another with better housing units but lacks these facilities. Measuring residents' satisfaction has gone past the confines of common norms which are limited to physical and structural adequacy of housing units to include the environment (Jiboye, 2009). Previous research (Gans, 1969 and Macpherson, 1979) indicated that residents are more concerned with his residential environment than with the housing unit per se. This could possibly be linked because the environment determines the accessibility or availability of some communal services and facilities many of which affect the body and mental health. Muoghalu (1984) posited that the housing

environment over the years has been considered as a medium for meeting the fundamental needs of family life of the residents.

Environment influences the nature of human interaction and activity patterns which generates either satisfaction or dissatisfaction. The environment remains the most basic unit in which social lives occur; it affects the quality of life of residents and as such, the environment should be given more attention than it is given (Hur & Morrow-Jones, 2008). Ojo and Oloruntoba (2012) as well as Frank and Enkawa (2009) noted that poor planning, non-functional or non-existence of these environmental facilities in housing estates leads to dissatisfaction of residents in public housing estates. The nature of residential environment impacts the form of human interactions and movement in the area, which in turn reflects the nature of the functional effectiveness, the social behaviour and psychological stresses. The social dimension of the environment evaluates the social ties and relationship among residents in an estate which include; friendship and communal activities in an estate for the interest of the residents. Lawanson and Onifade (2015) in a study assessed the housing satisfaction in medium income estate in Lagos found that the residents are dissatisfied with the level of communal interactions and recreational facilities within the estate. The absence of these communal areas may be attributed to the severed associations among the residents within the estate. Eni (2014) studied adequacy of environmental factors in public housing estates in Anambra state and found that infrastructural amenities did not meet the residents' expectations.

Although the usefulness of citizen evaluation of urban services has been questioned and still an open as well as important question, empirical evidence points to its numerous merits. Fitzgerald and Durant (1980) as cited in Muoghalu (1984) argued that it constitutes a forum for communication between citizens, planners and urban administrators. This is because administrative policy formulations and subsequent performance evaluations cannot rely entirely on objective criteria. Often, evaluations based on objective criteria only merely restate view of public policy and are remote from the user preferences (Daneke & Klobus-Edwards, 1979). Enlisting subjective evaluations will enable planners to refocus limited resources to consider user priorities and provide useful tools for social assessment of the policy process. Calls for combining objective and subjective criteria in formulating housing policy, objective criteria can have no invariant and will have no meaning when isolated from their implications for people's life (Ibem, Adeboye & Alagbe, 2015). These arguments motivated the research.

There have been series of private housing estate developments in Enugu since the state was created, but evaluation of residents' satisfaction in the estates has not been done. Indications are that housing efforts in Enugu and Nigeria are often directed more to the housing units than the environment, yet the housing environment cannot be divorced from the housing unit. It is then these considerations that motivated this research. The aim of this paper is to examine the influence of environmental facilities on level of residents' satisfaction in private housing estates in Enugu, Nigeria with a view to provide a feedback criteria for planners and designers to improve the provision of private housing. The objective of this study is to investigate the performance of environmental facilities in the neighbourhood of the private housing estates and its effect on residents' satisfaction in Enugu metropolis. To further guide the research, the null hypothesis is put forward: there is no significant relationship between the performance of environmental facilities in the neighbourhood and residents' satisfaction in the private housing estates in Enugu metropolis

2. METHODOLOGY

The research design adopted for this study was survey method which is a quantitative approach. The survey method was done through use of questionnaire to elicit data from respondents in the study area. The research population for this study focuses on completed private housing estates within Enugu city built and inhabited not beyond year 2016, these are: Bethel Estate, Central Bank Staff Quarters, Cosco Estates, Elim Estate, Goshen Estate, Refiners Estate, Nwanne di na Mba Housing Estate and Vita Gratia Estate.

Stratified sampling of the estates based on building type was adopted as sampling method for this study. The stratification of the estates are: 1-bedroom and 2-bedroom bungalows combined, 2-bedroom blocks of flats and 3-bedroom blocks of flats combined, 1-bedroom, 2-bedroom and 3-bedroom bungalows combined. Following the stratification, random sampling by balloting was carried out and the following estates were picked to represent the various building types:

1. 1bedroom and 2bedroom bungalows combined:- Nwanne di na mba estate

2. 1bedroom, 2bedroom and 3bedroom bungalows combined:- Bethel estate and Elim estate
3. 1-bedroom and 2-bedroom terrace flats:- Elim estate
4. 2-bedroom and 3-bedroom flats combined:- Central Bank quarters

Table 1: Numbers of housing units in sampled estates

	Nwanne di na mba estate	Bethel estate	Elim estate	CBN Quarters	Total
Number of Housing units	50	131	324	261	766

Source: Field work, 2018; Goshen, 2011

The data was then used to determine sample size.
Sampling size

To obtain the sampling size, this formula would be used

$$n = \frac{Z^2 \times \sigma^2_p \times N}{(N-1)\, e^2 + Z^2 \times \sigma^2_p} \quad (1)$$

Where:
n = size of sample for finite population
N = research population = 766 housing units
σ_p = standard deviation of population assumed = 0.5
e = significance level (precision/acceptable error) chosen = 0.05
Z = standard variate at a given confidence level = 1.96 for a confidence level of 95% (Kothari, 2004)

Sample size of 256 respondents was derived and distributed to the estates as shown in Table 2. The questionnaire, based on some indicators of environmental well-being, elicited responses about some aspects of the environment. The respondents were also required to rate their level of satisfaction based on a five-point Likert scale corresponding to- 1. Very dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very satisfied.

Table 2: Respondents Population in Sampled Estates

Number	**Nwanne D.N.M**	**Bethel**	**Elim**	**CBN quarters**	**TOTAL**
Existing	50	131	324	261	766
Sampled	17	44	108	87	256

Source: Fieldwork, (2018)

The questionnaires were administered to randomly selected household heads, though women were preferably chosen. Muoghalu (1984) noted that women are better selected as respondents because women are more critical of housing than the husbands because women are home-makers, stay at home and interact with the housing environment. This view is further supported by Rapoport (1980) which stated that women are more affected by inappropriate environments and are much more identified with the home.

Table 3: Definition of Variables

	Variables for infrastructural facilities in the neighbourhood	Measure	Values	Categories
V1	Mode of Refuse Disposal	Nominal	1-5	1. Refuse dumping 2. Burning 3. Contractors 4. Waste management board 5. others
V2	Frequency of refuse disposal	Ordinal	1-5	1. Everyday 2. Twice a week 3. 3times 4.4times 5.more than 4 times
V3	Sanitation of environment within the estate	Nominal	1-3	1. Estate managers 2. Private contractors 3. Residents
V4	Mode of waste water evacuation	Nominal	1-3	1. No drains 2. Drains 3. Soak away pits
V5	Play Ground /Recreation park	Nominal	1-2	1. Yes 2. No
V6	Security posts/guards	Nominal	1-2	1. Yes 2. No
V7	Street light and signage	Nominal	1-2	1. Yes 2. No
V8	Characteristics of road	Ordinal	1-5	1. Untarred but in good condition 2. Untarred and dilapidated 3. Tarred but in disrepair 4. Tarred without drainage 5.Tarred with drainage
V9	Satisfaction with mode of refuse disposal	Ordinal	1-5	1. Very dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very satisfied
V10	Satisfaction with state of repair of the recreation park	Ordinal	1-5	1. Very dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very satisfied
V11	Satisfaction with state of repair of roads within the estate	Ordinal	1-5	1. Very dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very satisfied
V12	Satisfaction with Sanitation level	Ordinal	1-5	1. Very dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very satisfied
V13	Satisfaction with performance of street lights	Ordinal	1-5	1. Very dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very satisfied

Source: Field work, 2018

3. RESULTS AND DISCUSSION

This section discusses the some of the results of analysis of the data derived from the fieldwork for the study.

a) Analysis of mode of refuse disposal (variable 1)

The data obtained showed that refuse dumping is the most prominent mode of refuse disposal in the area of study. Refuse is usually dumped by the residents in a place within the estate before carting away. This sometimes accumulate so much that it pollutes the environment and breeds disease causing organisms.This is shown in Table 4

Table 4: Data on mode of refuse disposal

Value label		Valid Percent	Cumulative Percent
	Refuse dumping	55.1	55.1
	Contractors	1.7	56.8
	Waste management board	39.3	96.2
	others	3.8	100.0
	Total	100.0	

Source: Field work, 2018

b) Analysis of frequency of refuse disposal evacuation in a week (variable 2)

The result on the frequency of refuse disposal evacuation from the estates showed that most of the respondents indicated that the refuse is carted away in the estates twice a week. Given, the number of housing units in the estates, the refuse accumulates so much before the days the refuse are carted away. This is illustrated in Figure 1.

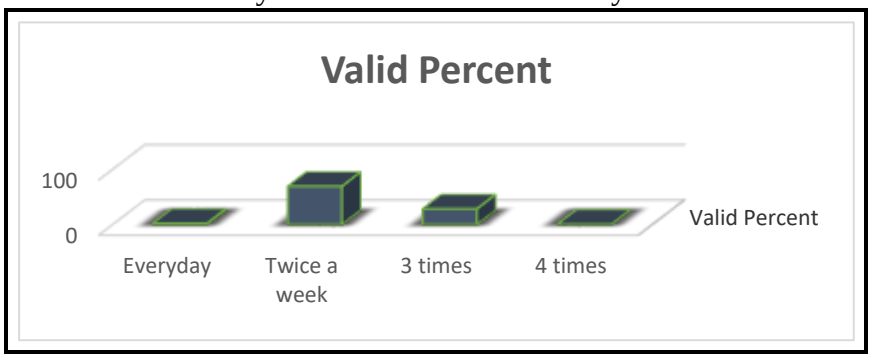

Figure 1: Appraisal of frequency of refuse disposal evacuation
Source: Field work, 2018

c) Analysis of sanitation of the environment (variable 3)
The analysis of data obtained showed that most all the respondents indicated that residents clean up the estate. This implies that residents make regular efforts to clean up the estates without waiting for the estate managers. They do this by organising ways to sweep the estates regularly to make sure dirt are littered everywhere within the estates. This is illustrated by Table 5.

Table 5: Data on sanitation of the environment within the estate

Value label		Valid Percent	Cumulative Percent
	Estate managers	0.8	0.8
	Residents	99.2	100.0
	Total	100.0	

Source: Field work, 2018

d) Analysis of mode of evacuation of waste water (variable 4)
Data analysed which is illustrated in Table 6, showed that most of the waste water evacuation is done through drains. This means that waste water from buildings are channelled to the drains which is not proper which leads to environmental pollution because the drains are not covered. This sometimes breeds mosquitoes and other insects that cause diseases to man.

Table 6: Data on mode of waste water evacuation

Value label		Valid Percent	Cumulative Percent
	No drains	22.0	22.0
	Drains	48.3	70.3
	Soak away pits	29.7	100.0
	Total	100.0	

Source: Field work, 2018

e) Analysis of characteristics of roads within the estate (variable 8)
The analysis of the data on characteristics of roads within the estate showed that majority of the roads are tarred but in disrepair. A small percentage (7.6%) of roads are not tarred but in good condition. During the rainy season, some of the roads become unpassable to pedestrians as the places are covered with muddy water. This is illustrated in Table 7.

Table 7: Data on characteristics of roads within the estate

Value label		Valid Percent	Cumulative Percent
	Untarred and failed	22.0	29.7
	Untarred but in good condition	7.6	7.6
	Tarred but in disrepair	48.3	78.0
	Tarred without drainage	10.6	88.6
	Tarred with drainage	11.4	100.0
	Total	100.0	

Source: Field work, 2018

f) Analysis of level of resident's satisfaction with mode of refuse disposal (variable 9)
Bulk of the respondents in all housing estates sampled indicated they were dissatisfied with the mode of refuse disposal facilities. This is illustrated in Table 8

Table 8: Data on level of resident's satisfaction with mode of refuse disposal

Value label		Valid Percent	Cumulative Percent
	Very dissatisfied	19.5	19.5
	Dissatisfied	48.3	67.8
	Neutral	12.3	80.1
	Satisfied	16.1	96.2
	Very satisfied	3.8	100.0
	Total	100.0	

Source: Field work, 2018

g) Analysis of level of satisfaction with performance of street lights in the estate (variable 13)
The results of responses had the greatest portion of respondents, dissatisfied with 50.2% in this variable. 26.1% of the respondents were undecided and 21.3% very dissatisfied. This is shown in Table 9.

Table 9: Data on level of resident's satisfaction with performance of street lights in the estate

Value label		Valid Percent	Cumulative Percent
	Very dissatisfied	21.3	21.3
	Dissatisfied	50.2	71.6
	Neutral	26.1	97.6
	Satisfied	1.4	99.1
	Very satisfied	.9	100.0
	Total	100.0	

Source: Field work, 2018

3.1 Test of Hypotheses

A null hypotheses was put forward to establish the relationship between several research variable: thus, *there is no significant relationship between the performance of environmental facilities in the neighbourhood and residents' satisfaction in the private housing estates in Enugu metropolis.*
The objective which is 'to investigate the performance of environmental facilities in the neighbourhood of the private housing estates and its effect on level of residents' satisfaction in Enugu metropolis. The relationship between'Frequency of refuse disposal' (performance of environmental facilities) and 'Satisfaction with Sanitation level' was examined. This was of importance because it relates cleanliness of the environment within the estate. The two variables in focus were ordinal variables, hence, Spearman's rho correlation analysis tool was used to test the nature of the relationship. The result of the analysis showed a correlation coefficient value of 0.085 with a significance

probability point of 0.023. This implies that a weak relationship exists between the two variables and the significance probability point of 0.023 shows it is significant. Consequently, it means that the relationship is weak but significant. The null hypothesis is therefore rejected and alternate hypothesis accepted. This is that *'there is significant relationship between the performance of environmental facilities in the neighbourhood and residents' satisfaction in the private housing estates in Enugu metropolis'.* The results are shown in Table 10.

Table 10: Spearman's Rho correlation analysis result of relationship between frequency of refuse disposal and residents' satisfaction with sanitation level

			Satisfaction with Sanitation level
	Frequency of refuse disposal	Correlation Coefficient	.085
		Sig. (2-tailed)	.023
		N	228

Source: Fieldwork, 2018

4. CONCLUSION

The aim of this paper is to establish that environmental designers of housing should derive information from people using the environment or affected by it. This study has shown that most of the residents in private housing estates studied were dissatisfied with the performance of environmental facilities. Private housing developers should realize that every aspect of housing rotates around qualitative social assessments, value decisions about resident's preferences and communal functions. By incorporating the subjective assessments of the residents with planner's objective criteria, the defects that produce dissatisfaction be removed. The policy implications of the study suggest that residents' satisfaction and by addition the quality of life of residents of private housing estates in the study area and certainly future housing projects, can be boosted through the provision of environmental facilities and the facilities functioning well in the housing estates. To accomplish this, it is important to underscore that future private housing projects should be designed to have functional recreational facilities and public infrastructure (such as quality roads, refuse disposal facilities, street lights) to enable the residents enjoy these vital services, which are necessary for decent living and hygienic environment.

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