

Appraising Users' Satisfaction in Public Housing: A Case study of Cropsil Housing Estate, Akpabuyo, Cross River State, Nigeria

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ABSTRACT

The paper appraised users' satisfaction with housing units by occupants of the CROSPIL housing estate, Akpabuyo, Cross River State, Nigeria with the aim of improving the housing sector in the State by examining the level of satisfaction with the architectural design of the housing units and neighbourhood facilities in the estate. Methodology of the study was through questionnaire administration, physical observation, measurement of spaces, interviews and review of the literature. The study revealed that apart from road infrastructure, the estate lack neighbourhood facilities such as water, shopping centres, health centres, schools and recreation centres (green areas). Residents were generally satisfied with the design of living rooms, bedrooms and kitchens in all housing unit types but dissatisfied with other spaces like toilet/bath, store and dining which were non-existing in some of the housing units. The study concluded that irrespective of the income level of users, the basic functional spaces required in any housing unit should be provided for all. Also, neighbourhood facilities that make living comfortably should be provided as a matter of urgency.

Keywords: architectural design, functional spaces, neighbourhood facilities, user satisfaction.

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I. INTRODUCTION

The importance of housing in both the physical and psychological development of humans cannot be underestimated. This is because everything around humans revolves around a space within the house. Thus, the overall comfort and satisfaction of humans with any given architectural space in form of housing deserves a certain level of attention in terms of design. The success or otherwise of any building depends to a large extent on the designers' understanding of human needs including comfort, safety, wayfinding, privacy and space flexibility among others. The size of spaces created through architectural design is usually based on human size, furniture size as well as circulation space for human movements which determines occupants' comfort (Lekjep, 2020).

In most cases, designers are not always aware of the consequences of their design solutions. This is due to the absence of a feedback system about the performance of their completed and occupied buildings which the occupants only express through alterations if dissatisfied with the designs. In order to ascertain the feeling of satisfaction or otherwise of occupants of any housing unit, there is a need to carry out an assessment which is only possible through post occupancy evaluation (POE) Afag *et al.* (2011).

Post occupancy evaluation is defined as a process of systematically appraising the performance of buildings after being occupied by persons for some period of time (Nwankwo, 2013). It is a feedback system that provides built environment professionals the opportunity to assess the impact of building or housing performances on the users with regards to their level of comfort and satisfaction. Because it is difficult to satisfy every user of a given space or house, the design of a building that is physical, functional, and symbolic for different categories of users is a complex task with great responsibility. Hence, the designer needs interfaces with several specialized knowledge together with possible alternative propositions to undergo analysis through continuous systematic multi-criteria evaluation and decision-making process so as to achieve the desired objectives of satisfying all stakeholders (Forte, 2013; Forte, 2016).

The concept of residential satisfaction is multifaceted and has attracted diverse interest in housing studies by several researchers. This is because measurement of the user or residential satisfaction is very complicated and subjective depending on the place, period, users involved and the purpose (Bardo & Dokmeci, 1992). Residential satisfaction according to Mohit and Raja (2014) is defined as the feeling of contentment that a person has by achieving his desired needs in a particular house. It is also described as

an indicator of homeowners' opinion of the general quality of their life meaning that the owners' expectation of housing is satisfactorily met (Tan, 2016). The concept of residential satisfaction among other importance is useful in assessing an individual's perceptions of insufficiencies in their current housing environment as well as an evaluation tool for judging the success of housing developments constructed by both public and private sectors respectively (Abidin *et al.*, 2019).

For the purpose of this study, the attempt was made to assess user/residential satisfaction with the architectural design of spaces and with neighbourhood facilities that makes liveability worthwhile. The assessment was based on a case study of an existing housing estate located in Akpabuyo, constructed in phases by Cross River State government of Nigeria.

II. THEORETICAL UNDERPINNING

Several studies by different researchers namely Lekjep (2020), Somiah *et al.* (2017), Forte and Russo (2017), Mohit and Raja (2014), Ibem and Aduwo (2013), Mohit and Azim (2012) and others involving residential satisfaction have been carried out at different places. This is due to the importance of the subject matter of housing in the lives of occupants. The idea of housing satisfaction is concerned primarily with the way in which an end-user of a housing product responds generally to the constituents of such product (dwelling) as dependently determined by their taste in relation to their anticipations. It is how much the occupants through assessment believe that their housing and surrounding environment is useful to them in accomplishing their aspirations (Atamewan, 2017; Jiboye, 2010). In addition, it should be noted therefore that the quality of life of house occupants is a reflection or product of the family's contentment with the general residential surroundings in conformity with their desires and expectation. This is predetermined by intermittent evaluation of the variables that influence housing contentment or discontentment which is a product of post occupancy evaluation (Atamewan, 2017).

Residential satisfaction measurement cannot be carried out without post occupancy evaluation (POE) which actually serves as a feedback process for evaluating the satisfaction or dissatisfaction of residential occupants. Accordingly, Turpin-Brooks and Viccars (2006), defined post occupancy evaluation as 'an examination of built environment efficiency and sufficiency of users' interest considering satisfaction of occupants and functionality of space compared to the physical and hierarchical components'. POE is also described as 'performance assessment of a building throughout its life cycle, but mostly carried out during operational stage and not similar to other assessments approach conducted in particular stages of building life cycle' (Preiser & Nascar, 2008; Vischer, 2008). POE evaluates the performance of buildings from the design perspective, and considers the interest and satisfaction of users in terms of the buildings and the facilities in the surrounding environment. Thus, POE is useful in giving improvements to the benefit of building owners and occupants as well as developing model data on performance indicators in the development of building codes, regulations and guidelines (Hay *et al.*, 2017; Teasdale-St-Hilaire, 2013).

Residential satisfaction is concerned with the description of the quality of life of an occupant or user of a housing product in relation to the satisfaction of the users. It also expresses the degree of intersection between the perceived and expected output and quality, failure in which a gap occurs which results in dissatisfaction. Evaluation of residential satisfaction is complicated and multifaceted and therefore differs from places, housing unit, users and culture. It involves three processes namely cognitive, affective and behavioural (Abidin *et al.*, 2019).

According to Mohit and Azim (2012), two basic types of residential satisfaction come under consideration; namely behaviour-induced residential satisfaction which is based on the assumption that satisfaction with existing housing units determines the behaviour of residents to either make changes to the housing units or decide to move out to another housing units that suit their taste. The second type is housing quality-induced residential satisfaction which is based on the assumption that housing unit features and facilities and housing environment determine the satisfaction level of occupants of any housing unit (Weidemann & Anderson 1985; Amerigo & Aragones, 1990).

From previous studies, there are four basic components and characteristics that must exist in the measurement of residential satisfaction; these are socio-demographic characteristics of residents, housing characteristics, neighbourhood characteristics and behavioural characteristics of residents (Mohit & Raja, 2014). These characteristics formed the bases for the evaluation of user satisfaction in this study.

III. METHODOLOGY

The study area is the Cross River State property and investment limited (CROSPIL) housing estate Akpabuyo, Cross River State, Nigeria.

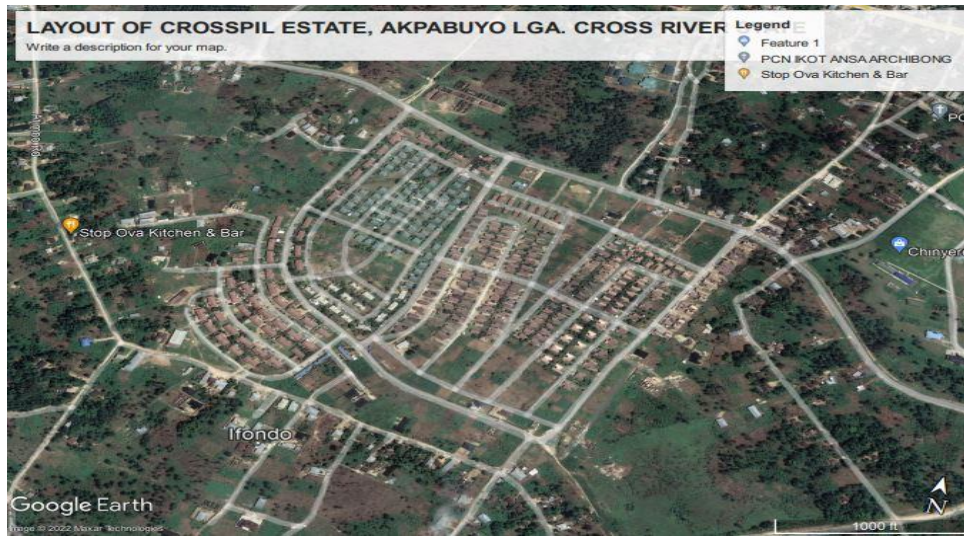


Fig. 1. Layout of CROSPHIL Estate, Akpabuyo, Cross River State. Source: Google map, 2022.

Methodology of the study was through physical observation, measurement of spaces, interviews, questionnaire administration and review of the literature. First, physical observation of the estate was carried out for acquaintances and familiarization with the study area. This was followed immediately by interviews with the Managing Director/ Chief Executive Officer of CROSPIL for updates and useful information on the estate. From the interviews, it was revealed that the housing estate was purely met for civil servants working in the State and that the estate was to accommodate 610 housing units made up of one, two- and three-bedrooms apartments respectively and were to be constructed in three phases. It was gathered that both phases-one (containing 200 housing units) and phase-two (containing 241 housing units) have been completed and fully occupied while the phase-three is ongoing. Also, it was revealed that the architectural designs of the building in phase-one were different from those of phase-two, so also with the project consultants and Mortgage financials. The project was facilitated by the State government during the administration of Senator Liyel Imoke as State Governor (2007-2015), funded by the Federal Mortgage Bank of Nigeria (FMBN) and ownership is by mortgage arrangements through monthly deductions from salaries of civil servant- beneficiaries by the National Housing Funds (NHF) until full payments are made.

The parcel of land for the estate is 52.116 hectares with Certificate of Occupancy no. AY/29/2009 which is dated 30th April 2009 and registered as No.13, page 13, Volume 222 of the Lands Registry, Calabar Cross River State, Nigeria. The construction of the estate projects was later flagged-off that same year 2009. The phase-1 was partially completed in the year 2012 and allocated to the beneficiary the same year while phase-2 was completed in 2013 and allocated the same year before the construction of the drainages and roads was done in both phases (Obongha, 2018).

The next stage was the administration of structured questionnaires to users/occupants of the various housing units and types available in phase-two only through stratified sampling techniques which were adopted for the study. This was to ensure equitable representation of the different housing types in phase-two of the estate. The questionnaire consists of three variables which are socio-demographic characteristics, housing characteristics and neighbourhood characteristics. About 180 questionnaires were distributed and administered but 155 were retrieved for analysis. Some houses were selected purposely for the measurement of spaces for the architectural design sketches and photographs taken since the architectural drawings were not available.

IV. RESULTS AND DISCUSSIONS

In Table I, the socio-economic characteristics of the respondents are presented. The analysis begins with the demographic information of users/occupants namely gender and age. On the age of respondents, male respondents are 62.9% while the female is 37.1%. Also, the age distribution shows that 36.4% are 40years old or less; 49.3% are 60 years or less and 14.3 are over 60 years old.

TABLE I: RESPONDENTS' SOCIO-ECONOMIC CHARACTERISTICS

Gender	Male	Female	Total	
Frequency	88	52	140	
Percentage (%)	62.9	37.1	100	
Age	≤40yrs	≥60yrs	60yrs	Total
Freq.	51	69	20	140
Per (%)	36.4	49.3	14.3	100

Source: Author's fieldwork, 2022.

On housing unit type from Table II, the study shows that 28.6% occupies 1-bedroom apartment, 39.3% occupies 2-bedroom apartments and 32.1% occupies 3-bedroom apartment, respectively. On the occupancy status, 68.6% are owner-occupier, while 31.4% are renter-occupier. However, it is on record that the housing units were allocated to civil and public servants in the State only on owner occupier basis, but some owners had to rent out their houses to other interested persons.

TABLE II: RESPONDENT'S HOUSING CHARACTERISTICS

Housing Type	1 Bdrm.	2 Bdrm	3Bdrm	Total
Freq.	40	55	45	140
Per (%)	28.6	39.3	32.1	100
Occupancy Status	Owner	Rented	Total	
Freq.	94	44	140	
Per (%)	68.6	31.4	100	

Source: Author's fieldwork, 2022.

From Table III, the study shows that users' satisfaction with the size of a living room (lounge) is very good. This is because only 2.1% of respondents were dissatisfied with the size of the living room while 27.1% were very satisfied, 42.2% were satisfied and 28.6% were fairly satisfied. Therefore, the satisfaction level with the living room as expressed by users/respondents is 97.9% which is very high indicating that they were satisfied (Fig. 2).

TABLE III: RESPONDENTS' SATISFACTION WITH A DESIGNED SIZE OF LIVING ROOM

Respondent	Frequency	Percent	Cumulative percent
Very satisfied	38	27.1	27.1
Satisfied	59	42.2	69.3
Fairly Satisfied	40	28.6	97.9
Dissatisfied	3	2.1	100
Very dissatisfied	0	0	100
Total	140	100	

Source: Authors' fieldwork, 2022.

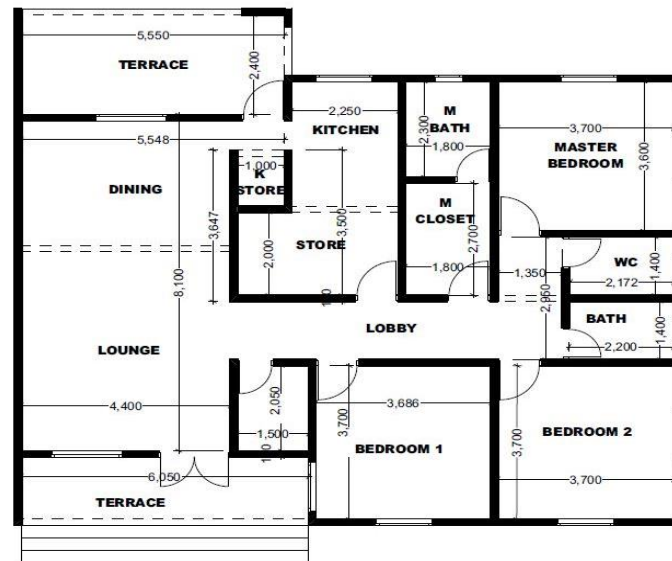


Fig. 2. Sketch of 3-Bedroom detached apartment, CROSPIL Estate. Source: Authors fieldwork, 2022.

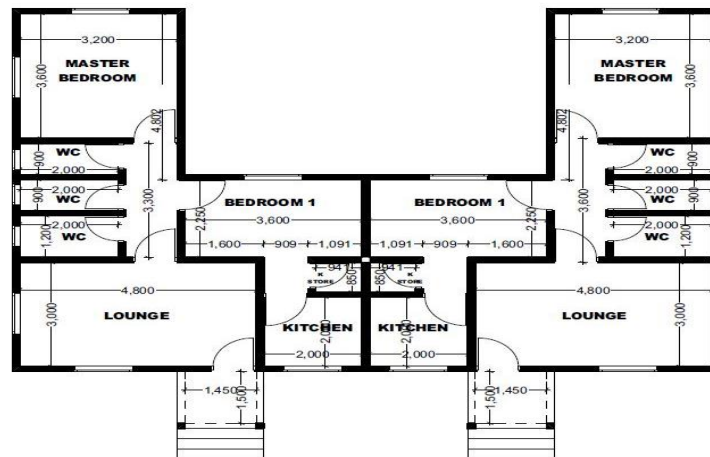


Fig. 3. Sketch of 2-Bedroom semi-detached apartment, CROSPIL Estate. Source: Authors fieldwork, 2022.

For dining space in Table IV, respondents gave their ratings as follows: Only 3.6% were satisfied, none were very satisfied, 14.3% were fairly satisfied while 25% and 57.1% were dissatisfied and very dissatisfied respectively. The study shows the dissatisfaction level of 82.1% was high and therefore respondents were dissatisfied with the dining space (Fig. 3).

TABLE IV: RESPONDENTS' SATISFACTION WITH A DESIGNED SIZE OF DINING

Respondent	Frequency	Percent	Cumulative percent
Very satisfied	0	0	0
Satisfied	5	3.6	3.6
Fairly satisfied	20	14.3	17.9
Dissatisfied	35	25	42.9
Very dissatisfied	80	57.1	100
Total	140	100	

Source: Authors' fieldwork, 2022.

Similarly, for the size of bedrooms as in Table V, respondents gave their views as follows; 7.1% were very satisfied, 39.3% were satisfied and 34.3% were fairly satisfied. On the contrary, 17.9% were dissatisfied while 1.4% were very dissatisfied. This shows that respondents were satisfied with the size of the bedrooms.

Also, for the size of the kitchen in Table VI, the study shows that 2.1% were very satisfied, 34.3% were satisfied and 42.9% were fairly satisfied. On the contrary, 20.7% were dissatisfied while none were very dissatisfied. This shows that respondents were satisfied with the size of the kitchens.

TABLE V: RESPONDENTS' SATISFACTION WITH A DESIGNED SIZE OF BEDROOM

Respondent	Frequency	Percent	Cumulative percent
Very satisfied	10	7.1	7.1
Satisfied	55	39.3	46.4
Fairly Satisfied	48	34.3	80.7
Dissatisfied	25	17.9	88.6
Very dissatisfied	2	1.4	100
Total	140	100	

Source: Authors' fieldwork, 2022.

TABLE VI: RESPONDENTS' SATISFACTION WITH A DESIGNED SIZE OF KITCHEN

Respondent	Frequency	Percent	Cumulative percent
Very satisfied	3	2.1	2.1
Satisfied	48	34.3	36.4
Fairly Satisfied	60	42.9	79.3
Dissatisfied	29	20.7	100
Very dissatisfied	0	0	100
Total	140	100	

Source: Authors' fieldwork, 2022.

Similarly, for the size of toilets/showers as Table VII; the study shows that none was very satisfied, 21.4% were satisfied and 28.6% were fairly satisfied. On the contrary, 30% were dissatisfied while 20% were very dissatisfied. This shows that respondents were dissatisfied with the size of the toilets/showers.

TABLE VII: RESPONDENTS' SATISFACTION WITH A DESIGNED SIZE OF TOILETS/SHOWER

Respondent	Frequency	Percent	Cumulative percent
Very satisfied	0	0	0
Satisfied	30	21.4	21.4
Fairly Satisfied	40	28.6	50
Dissatisfied	42	30	80
Very dissatisfied	28	20	100
Total	140	100	

Source: Authors' fieldwork, 2022.

For the store size in Table VIII, respondents gave their ratings as follows: none was very satisfied, 14.3% were satisfied, 21.4% were fairly satisfied while 30% and 34.3% were dissatisfied and very dissatisfied respectively. The study shows that the dissatisfaction level of 64.3% was high and therefore respondents were dissatisfied with the size of stores.

TABLE VIII: RESPONDENTS' SATISFACTION WITH DESIGN OF STORE

Respondent	Frequency	Percent	Cumulative percent
Very satisfied	0	0	0
Satisfied	20	14.3	14.3
Fairly Satisfied	30	21.4	35.7
Dissatisfied	42	30	65.7
Very dissatisfied	48	34.3	100
Total	140	100	

A. Satisfaction with Neighbourhood Facilities /Services

For the external spaces, the occupants/respondents expressed their opinions on the following facilities:

1) Roads & Drainage

Respondents had a general consensus and agreed that they were all satisfied with the roads & drainages provided in the estate. The study through observation was in agreement with respondents' views as all the streets had their roads constructed and tarred with good drainages provided on both sides of the roads thereby making circulations of both pedestrian and vehicular movements very easy. This has helped to prevent erosion in the estate over the years.



Fig. 4. Road and drainage pattern in the Estate. Source: Author's fieldwork, 2022.

2) Landscaped areas/Parking Spaces

Respondents scored this very poor and were totally dissatisfied that there were no landscaped areas and parking spaces provided in the estate. Observation reveals that only a few housing units (less than 5%) had the external areas landscaped with just green grasses and shrubs only but without defined parking spaces (Fig. 5).



Fig. 5. Undefined Landscape and parking space pattern in the Estate. Source: Author's fieldwork, 2022.

3) Waste Collection /Disposals

The study revealed that there are no waste collection and disposal points within the estates. Respondents expressed their worries and concern over this omission as most of the residents collect and dump their waste and refuse into nearby bushes either personally or through hired labourers. However, residents who have their means of transportation put their collected refuse in sacks and take it to the neighbouring towns with these facilities for dumping.

4) Neighbourhood Facilities

This includes shopping areas, schools, health centre, recreational /green areas, sports areas, water reservoirs, fire service and maintenance units. These facilities that make living comfortably are all lacking in the estate. This has resulted in a situation where the occupants have to travel long distances in kilometres to search for such facilities in the nearest towns. Expectedly, the study observed that few owners of housing units have provided boreholes with overhead tanks and taps for water supply for both personal use and retailing to other residents. Also, there are some alterations in the construction of some of the housing units as some have included mini shops and additional functional spaces to the originally acquired houses (Fig. 6).

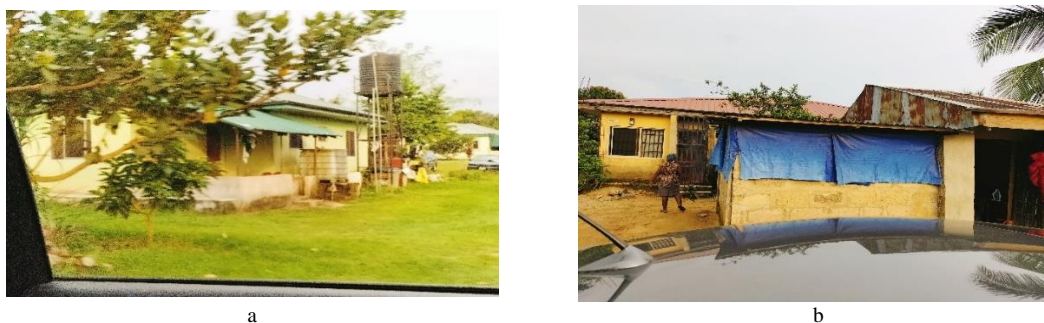


Fig. 6. (a) Borehole for water retailing (b) Alteration with Mini shop. Source: Author's fieldwork, 2022.

V. CONCLUSION

This study successfully assessed the residential satisfaction with public housing (civil servants' housing estate) in Akpabuyo, Cross River State, Nigeria. The assessment was based on satisfaction with the design of internal spaces of the housing units and public facilities and services within the estate as well as their effects on the overall satisfaction level of residents with public housing.

For the sizes of all the internal spaces in the various housing types, the study shows that respondents were generally satisfied with the living rooms (lounge), bedrooms and kitchen. On the other hand, respondents were dissatisfied with stores, toilets/baths and dining spaces. This is not surprising as some of the housing types especially the 1-bedroom and 2-bedroom housing types have no dining spaces provided. The study concluded that irrespective of the income level of users and housing type, the basic functional spaces required in any housing unit should be provided for all for the sake of equity.

The study also showed that for neighbourhood services and facilities, residents were only satisfied with roads and drainage system which is well constructed. However, most of these services and facilities such as police post, shopping areas, schools, health centre, recreational /green areas, sports areas, water reservoirs, fire service and maintenance units are not provided in the estate. This has made life uncomfortable for the residents as most residents have to travel long distances to neighbouring towns for these facilities. Hence, residents are very dissatisfied with the absence of these facilities. However, a study of the layout plan shows that all these facilities were included and provided for in the design but during the construction phases of the project, the facilities and services were neglected. More worrisome is the fact the areas designated for these facilities have been used up for some illegal constructions. Therefore, the study recommends the following:

- i. The internal spaces within the housing units with low level of satisfaction should be reassessed and redesigned to improve residents' satisfaction
- ii. Execution and construction of projects should strictly follow the provided housing designs and should be supervised by relevant professionals and not just any contractor.
- iii. There should be a provision of neighbourhood services and facilities before the occupation of housing units to enhance the comfort and quality of life of residents.

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