

Influence of Housing Attributes on Housing Satisfaction in Selected Residential Areas of Ogun State, Nigeria

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Housing problem is one of the most significant urban challenges discussed all over the world. This is due to the dire need for shelter and the shortage of accommodation. The available housing units in some cases are not satisfactory as a result of inadequacies which fall short of the expectations of the occupants and result to abandonment and relocation. Satisfaction with housing conditions suggests meeting of these expectations or high degree of congruence in the desired situation. This research therefore aims at investigating the influence of the housing attributes on housing satisfaction. The research areas are residential areas of the selected Local Government headquarters of Ogun state, Nigeria, with 20 Local Government Areas (LGAs). Mixed research approach is adopted, and data were collected through structured questionnaire. Descriptive and inferential statistical tools were used for the analysis. The study reveals that satisfaction with the housing attributes is influenced by indoor air quality (IAQ), individual space (INS), building privacy (BUP), condition of building materials (CBM) and indoor lightening (INL). The implication of the findings is that the adequacy of any of these attributes will have effects on the occupants' satisfaction. The study recommends that policy makers, housing developers and the professionals should put these attributes into consideration while providing housing for the people.

Keywords: Housing attributes, Inadequate housing, Satisfaction, Influence, Housing conditions

Introduction

The challenge of inadequate housing exists as a result of population increase in relation to housing supply and increased rural-urban migration due to high industrialization of modern cities around the world (Oduwaye, 2013). This population increase puts extreme pressure on existing infrastructure, including housing facilities across the globe. It also accounts for chaotic human conditions of living in slums dotting major urban centers (Soyinka & Siu, 2018). The concept of housing goes beyond mere accommodation for protection or security against elements of nature and human intruders (Aragonés, Francescato, & Gärling, 2002; Milić & Zhou, 2018). According to Olayiwola (2012) and Olotuah (2009), housing encompasses all

phenomena of environmental qualities which man's existence stands on. It includes biological (clean air, water), psychological (contentment, prestige, satisfaction, privacy, choice, security, freedom), social (interaction with others, human development and cultural activities) components for fruitful subsistence. The core of this lies in making provision for adequate and accessible shelter on land and wherever human habitation is feasible, with necessary amenities to make it functional, convenient, aesthetically pleasing, safe and hygienic (Huang & Du, 2015). An individual's place of residence or lack thereof, is essential in defining their quality of life. Millions of families and individuals deemed financially burdened by the national poverty threshold are hard-pressed to find

decent, affordable housing that meets their economic, social and environmental needs (Nguyen, Tran, Vu, & Luu, 2018).

The judgment of quality of residential conditions for households is usually premised on their needs and aspirations. Satisfaction with housing conditions suggests the actualization of these expectations or high degree of congruence in a desired situation. Otherwise, there would be complaints about these inadequacies in their living conditions (Permentier, Bolt, & Van Ham, 2011). One of the challenges emerging from the process of socio-economic, demographic, cultural and political transformation of urban areas in the developing countries is how to plan and design urban houses and spaces, to meet the specific needs of individuals in line with their age, sex and economic status, as well as cultural and religious backgrounds (Ipoh, 2011). It is therefore imperative to examine the factors which account for residents' satisfaction or dissatisfaction with their housing conditions. This study, therefore, investigates the influence of housing attributes on housing satisfaction in selected residential areas of Ogun state to improve the challenges of urban housing.

Literature Review

Housing, for people of different socio-economic class is more than mere shelter. It encompasses all the infrastructure, utilities and services necessary to complement human survival, including access to employment and security (Nwokoro *et al.*, 2015; Soyinka & Siu, 2018). It is an important economic sector given its large positive externalities regarding economic growth, public health, and societal stability (Farinmade, Soyinka, & Siu, 2018; Jiboye, 2010; Ogu, 2002). Housing is seen as a product of human enterprise, and a key sector of the economy that is a pre-requisite to national socio-economic prosperity. It is one of the best gauges of a person's standard of living and place in the society (Jiboye, 2010; Mulliner, Smallbone, & Maliene, 2013).

The concept of housing satisfaction relates to how a consumer of housing product reacts to the overall components of such a product, predicated on their taste as indicated by his expectations. The degree of satisfaction is to the expectation (of the inhabitants) or how they feel that their housing is helping them to achieve their goals (Jiboye, 2012). It also refers to an individual's evaluation of his environment, viz-a-viz his needs, expectations and achievements (Najib, Yusof, & Osman, 2011). The concept of residential satisfaction was developed on the premise that the gap between the actual desired housing by occupants and the exact neighbourhood's conditions is compared (Ibem & Amole, 2010; Mohit & Raja, 2014). Decisions on the choice of accommodation to be sought by the household are based on their needs and aspirations. If these aspirations are met, the household is satisfied and there would be a limited or no complaint. On the other hand, dissatisfaction breeds complaints about substantial mismatch between actual housing facilities and expectations of its inhabitants as submitted by Kellekc & Bebköz (2005).

Lawanson and Onifade (2013) in a study on private and public housing estates assessed the housing satisfaction in medium income estates of Lagos; the study concludes that the private housing residents are more satisfied with their apartment than the public housing occupants. It has been observed in developing countries that most of the public and private housing projects fail largely due to the non-consideration of the occupants' requirements or what satisfies their residential requirements, as corroborated by Jiboye (2012).

Waziri, Yusof, and Salleh (2013) conducted a study on the level of inhabitants' satisfaction with a private residential estate development in Abuja, Nigeria. The study measures four major housing satisfaction components in the study area: structural components, dwelling features, neighbourhood facilities and environment, management services. Structured

questionnaires were administered through a systematic random sampling technique to one hundred and twelve (112) occupants of Prince and Princess Housing Estate. Data were analysed using descriptive statistics of the mean scores of components based on a five-point Likert scale. The result of the analysis indicates that residents have generally expressed low satisfaction with their dwelling unit features. They are, however, neither satisfied nor dissatisfied with the overall housing services. The result of this research can be used as a yardstick for development control monitoring parameters as well as a policy guide in the developing countries in general. The experience garnered from this could assist in resolving similar housing issues elsewhere. Hence, the reason for the investigation of the present research endeavour with respect to Ogun state.

Jim and Chen (2009) in another study, presented factors (on both physical and social levels) which influence residential satisfaction in a sampled occupant of a chosen residential area in Hong Kong. Findings show that there exists a high level of dissatisfaction amongst the public housing occupants. However, the major concerns of the public housing occupants lie in the areas of maintenance and cleanliness of their housing units and its environment, integrity of the building fabric, and ease of access by public transport. While the major concerns of the private housing occupants lie in the lack of facilities for the disable as well as lack of facilities for recreational, the elderly and children, and the challenge of social inequality as also identified by Soyinka & Siu (2018). Djebarni and Al-Abed (2000) report on the occupants' satisfaction of the three housing schemes, with their neighbourhood factors. It was found that the most determinant factor of the three housing environment variables (dwelling unit, the neighbourhood, and community service) affecting overall housing satisfaction is the neighbourhood. Occupants attach greater importance to the level of adequacy of facilities within their neighbourhoods than with the other two variables. The most critical factors affecting

the level of satisfaction are: privacy, distance to work, location of schools, and provision of amenities.

Potter, Chicoine, and Speicher (2001) in a comparative case study that focuses on resident satisfaction in three buildings renovated for housing, index variables such as management, perception, way-finding, safety, comfort and adequacy were used as basis for assessment. Findings from the study reveal that there is a significant relationship between resident satisfaction and age for one of the buildings; safety and perception are significant and common contributors to residents' satisfaction. Safety and perception are significant for all buildings. The study states that safety, perception and comfort are significant to resident satisfaction in different settings, and age is a factor that may contribute to resident satisfaction.

Literature attests to the fact that in determining housing satisfaction, housing characteristics are critical factors as well as the residents' demographics (Dieleman, 2017; Ikurekong, 2009; Lotfi, Despres, & Lord, 2018). Relocation takes place when residents are not satisfied with the house they are residing in. In another study carried out by Lotfi *et al.* (2018), it is reported that demographic factors influence the satisfaction level of residents besides building features. Studies further established that housing characteristics, among which are the sizes of bedrooms, number of bedrooms, living rooms, kitchens, bathrooms, the level of privacy, staircases, dining areas, and the overall size of the house influences the residents' satisfaction level. A good building structure is an important indicator of determining the quality of housing and the value of a dwelling (Kutty, 1999). Based on the past works, this study is premised on the methodology used to investigate the effect of building factors (housing attributes) on housing satisfaction in Ogun State, Nigeria.

Housing Attributes

A dwelling that is adequate from the design perspective may not necessarily be

satisfactory to end users. The concept of satisfactory housing is related to the physical, architectural and engineering components of the house; social, behavioural, cultural and personal characteristics of the inhabitants, and the components of the environment and the nature of institutional arrangements under which the house is managed. Assessing housing satisfaction entails evaluating the level of end users satisfaction for a housing unit with defined building features, located in a neighbourhood, with socio-cultural amenities and under an institutional management. It is also important to make provision for design improvement and innovations in housing projects (Ilesanmi, 2012).

Aigbavboa and Thwala (2014); Djebarni and Al-Abed (2000); Waziri *et al.*, (2013) viewed housing attributes from different housing elements that can ensure satisfaction such as the internal aspects of a dwelling unit, its external aspects as well as its surroundings on the whole. According to Elsinga and Hoekstra (2005), the higher the quality of a dwelling, the higher the residents' satisfaction with the housing unit. They submit that in assessing housing quality, one variable only is not sufficient; other aspects must also be considered, whether on subjective or objective dimensions. Considering the critical foundational factors of housing quality by Kain and Quigley (1970) and other literature such as Jim factors of housing quality is classified into five determinants namely: basic housing quality, dwelling unit quality, the quality of the surrounding property, non-residential land use, and structural average quality.

The significant housing attribute determinant based on these studies refers to the index used to measure the housing surrounding and its external physical quality. The dwelling unit attributes is assessed from the structural aspects and internal hygiene of the dwelling unit, while surrounding property quality factor is assessed from the general cleanliness of the surrounding areas, its ambience and

landscaping. The factor of quality for non-residential uses is measured through the effects of industrial and commercial uses in the residential area. These effects are assessed based on the level of discernible noise, air quality, and traffic flow in the area, while the structural average quality factor assessed is based on the structural quality of the building facade.

Research Methods

Using an average household size of five (5) as established by National Bureau of Statistics final report, (2007) and the number of buildings in each of the selected communities, a total of five thousand two hundred and seventeen (5217) copies of questionnaire were derived but four thousand six hundred and ninety-one (4691) were retrieved for analysis. The systematic sampling technique was adopted for the respective residential areas. The sampling procedure entails the identification of the study area, identification of buildings and conduct of interviews with the respondents. Data analytical method utilized in the study includes both descriptive and inferential analysis. In recognition of the level of urbanization in Ogun state and all its regions and sub-region, the research work cut across various selected residential densities of low, medium and high areas in all the headquarters of local government areas in the state. Thus, the choice of the study area.

The analysis of respondents' (occupants') relative satisfaction with housing was carried out using the values of the weighed attributes of housing satisfactions to determine the housing satisfaction index. Thus, the Housing Satisfaction Indexes (HSI) for each of the subsystems was determined across the different residential densities and the overall study area (Ogun State). The significant agreement or level of satisfaction tested was determined by adopting the mid-point value of the index which is three (3) (that is indifferent or neither satisfied nor dissatisfied), as the acceptable mean (Oladapo, 2006; Fatoye and Olatubara (2006); Jiboye (2008). This implies that any result significantly different from these mean values was assumed to be

either positive or negative (Oladapo (2006); Jiboye (2008).

In arriving at the housing satisfaction index for each subsystem, the Total Weight Value (TWV) for each attribute within the housing satisfaction subsystem was calculated. This was obtained through the summation of the product of the number of responses for each rating to an attribute and the respective weight value. Mathematically, this is expressed as:

$$TWV = \sum_{i=1}^5 X_i Y_i$$

Where; X_i = Number of respondents rating an attribute i :

Y_i = Weight assigned to attribute i .

i = Value of the rating i.e. 1,2,3,4 and 5

After the calculation of the TWV, the Housing Satisfaction Index (HSI) for each of the housing satisfaction attribute was

obtained by dividing the TWV by the total number of responses for each housing satisfaction attributes. This is expressed as:

$$HSI = \frac{TWV}{\sum_{i=1}^5 P_i}$$

The mean Housing Satisfaction Index $\overline{HSI}$ for each housing satisfaction subsystem was then obtained by summing up the HSI of each attribute and dividing by the total number of attributes in the housing subsystem. Thus, the mean index for dwelling, environment and management subsystems were denoted $\overline{HSI}_{\text{DWELLING}}$, $\overline{HSI}_{\text{ENVIRONMENT}}$, and $\overline{HSI}_{\text{MANAGEMENT}}$ respectively. Similarly, the mean Housing satisfaction Index for the overall study area was denoted $\overline{HSI}_{\text{S.A.}}$. Mathematically, the mean Housing Satisfaction Index is expressed as:

$$\overline{HSI} = \frac{\sum HSI}{N}$$



Figure. 1: Nigeria showing Ogun state.

Table 1: Type of building

Building type	Residential densities						Total	
	Low		Medium		High			
	Freq.	(%)	Freq.	(%)	Freq.	(%)	Freq.	(%)
Traditional compound	98	12.6	304	9.5	154	21.7	556	11.9
Rooming house	188	24.3	561	17.5	161	22.7	910	19.4
Single room apartment	90	11.6	548	17.1	82	11.5	720	15.3
Flat	315	40.6	1462	45.6	269	37.9	2046	43.6
Duplex	59	7.6	271	8.5	44	6.2	374	8.0
Others	25	3.2	60	1.9	0	0.0	85	1.8
Total	775	100.0	3206	100.0	710	100.0	4691	100.0

Table 2: Chi-Square Analysis on housing and environmental conditions across Residential differentials

Variable	χ^2	Df	P-value	Remark
Building type	148.141	10	0.000	Significant
Age of building	159.380	6	0.000	Significant
Construction material	76.163	12	0.000	Significant
Roofing material	104.648	10	0.000	Significant
Condition of roof	141.673	8	0.000	Significant
Type of building improvement	56.658	4	0.000	Significant
Road appearance	63.291	6	0.000	Significant
Drainage type	38.144	8	0.000	Significant
Drainage disposal	79.884	8	0.000	Significant
Power source	63.950	6	0.000	Significant
Water supply	57.007	10	0.000	Significant
Toilet facility	84.440	8	0.000	Significant
Kitchen type/location	134.025	8	0.000	Significant

Respondents Level of Satisfaction with Housing Units

The perception of respondents as regards their housing satisfaction is discussed. Highlighted in Table 3 is the perception of respondents' satisfaction level towards dwelling units. The results findings revealed that more than half of the respondents in the study area were satisfied with the different attributes in their dwelling units. A breakdown of analysis revealed that 85.3%, 78.3% and 76.9% of respondents were either satisfied or very satisfied with the amount of space, interior design, and individual space respectively. Similarly, respondents' level of satisfaction on privacy, size of room, condition of building materials, indoor air quality and lightening showed that 79.8%, 79.5%, 74.1%, 74.7% and 76.6% of respondents respectively claimed they were either satisfied or very satisfied with the dwelling unit attributes. About 75.0% of respondents in the study area were satisfied with the overall dwelling unit.

In the low density areas, a high proportion of respondents were either satisfied or very satisfied with interior design of dwelling units compared to 85.1% and 85.95 of

respondents in the medium and high density who were satisfied with the amount of space (space adequacy) in their dwellings. Within the medium density areas, it was observed that 80.8% of respondents were either satisfied or very satisfied with the level of privacy in their dwelling unit compared to 78.3% and 80.8% of occupants in the low and medium density respectively. Further findings showed that 78.3% of respondents in the high-density areas were either satisfied or very satisfied with the quality of indoor air as 76.0% and 65.7% of respondents in the medium and low density areas respectively also reported the same.

The proportion of respondents who were either satisfied or very satisfied with the size of room in their dwelling units across the three density areas was close. This represents 79.9%, 78.6%, 78.1% of respondents in the medium, high- and low-density areas respectively. However, the satisfaction from indoor brightness showed that most (81.0%) of respondents in the high-density areas were either satisfied or very satisfied with the level of brightness compared to 78.4% and 64.8% of respondents in the low and medium density areas. For the overall satisfaction with

dwelling units, it was established that about 75.0% of respondents in the high-density areas were either satisfied or very satisfied;

a proportion higher than 73.3% and 74.0% in the low and medium density respectively.

Table 3: Level of satisfaction with housing units

Space adequacy	Residential densities						Total	
	Low		Medium		High		Freq.	(%)
	Freq.	(%)	Freq.	(%)	Freq.	(%)		
Very satisfactory	95	12.3	236	7.4	137	19.3	468	10.0
Satisfactory	569	73.4	2491	77.7	473	66.6	3533	75.3
Indifferent	35	4.5	190	5.9	50	7.0	275	5.9
Unsatisfactory	44	5.7	198	6.2	26	3.7	268	5.7
Very unsatisfactory	32	4.1	91	2.8	24	3.4	147	3.1
Total	775	100.0	3206	100.0	710	100.0	4691	100.0
Interior design								
Very satisfactory	65	8.4	195	6.1	109	15.4	369	7.9
Satisfactory	568	73.3	2335	72.8	399	56.2	3302	70.4
Indifferent	42	5.4	281	8.8	90	12.7	413	8.8
Unsatisfactory	75	9.7	282	8.8	101	14.2	458	9.8
Very unsatisfactory	25	3.2	113	3.5	11	1.5	149	3.2
Total	775	100.0	3206	100.0	710	100.0	4691	100.0
Individual space								
Very satisfactory	96	12.4	371	11.6	123	17.3	590	12.6
Satisfactory	470	60.6	2104	65.6	440	62.0	3014	64.3
Indifferent	85	11.0	237	7.4	75	10.6	397	8.5
Unsatisfactory	97	12.5	339	10.6	62	8.7	498	10.6
Very unsatisfactory	27	3.5	155	4.8	10	1.4	192	4.1
Total	775	100.0	3206	100.0	710	100.0	4691	100.0
Privacy								
Very satisfactory	139	17.9	401	12.5	163	23.0	703	15.0
Satisfactory	468	60.4	2190	68.3	380	53.5	3038	64.8
Indifferent	30	3.9	140	4.4	68	9.6	238	5.1
Unsatisfactory	115	14.8	267	8.3	64	9.0	446	9.5
Very unsatisfactory	23	3.0	208	6.5	35	4.9	266	5.7
Total	775	100.0	3206	100.0	710	100.0	4691	100.0
Size of room								
Very satisfactory	98	12.6	411	12.8	133	18.7	641	13.7
Satisfactory	508	65.5	2152	67.1	425	59.9	3085	65.8
Indifferent	49	6.3	262	8.2	81	11.4	392	8.4
Unsatisfactory	108	13.9	301	9.4	53	7.5	462	9.8
Very unsatisfactory	12	1.5	80	2.5	18	2.5	110	2.3
Total	775	100.0	3206	100.0	710	100.0	4691	100.0
Condition of building materials								
Very satisfactory	87	11.2	337	10.5	95	13.4	519	11.1
Satisfactory	414	53.4	2087	65.1	454	63.9	2955	63.0
Indifferent	140	18.1	369	11.5	88	12.4	597	12.7
Unsatisfactory	101	13.0	319	10.0	61	8.6	481	10.3
Very unsatisfactory	33	4.3	94	2.9	12	1.7	139	3.0
Total	775	100.0	3206	100.0	710	100.0	4691	100.0
Indoor air quality								
Very satisfactory	31	4.0	139	4.3	51	7.2	221	4.7
Satisfactory	478	61.7	2300	71.7	505	71.1	3283	70.0
Indifferent	143	18.5	372	11.6	65	9.2	580	12.4
Unsatisfactory	75	9.7	237	7.4	46	6.5	358	7.6
Very unsatisfactory	48	6.2	158	4.9	43	6.1	249	5.3
Total	775	100.0	3206	100.0	710	100.0	4691	100.0

Indoor lightening								
Very satisfactory	68	8.8	139	4.3	59	8.3	266	5.7
Satisfactory	434	56.0	2376	74.1	516	72.7	3326	70.9
Indifferent	159	20.5	349	10.9	83	11.7	591	12.6
Unsatisfactory	89	11.5	262	8.2	27	3.8	378	8.1
Very unsatisfactory	25	3.2	80	2.5	25	3.5	130	2.8
Total	775	100.0	3206	100.0	710	100.0	4691	100.0
Overall Housing/Dwelling unit								
Very satisfactory	22	2.8	123	3.8	36	5.1	181	3.9
Satisfactory	546	70.5	2250	70.2	495	69.7	3291	70.2
Indifferent	63	8.1	375	11.7	92	13.0	530	11.3
Unsatisfactory	103	13.3	353	11.0	60	8.5	516	11.0
Very unsatisfactory	41	5.3	105	3.3	27	3.8	173	3.7
Total	775	100.0	3206	100.0	710	100.0	4691	100.0

Respondents' Relative Satisfaction with the Housing Variables

Table 4 below reveals the average satisfaction derived from respondents' dwellings in the study area ($\overline{HSI}_{S.A.}$) was 3.71. The mean Housing satisfaction Index for the overall study area was denoted $\overline{HSI}_{S.A.}$. This implies that respondents in the study were indifferent but closer to being satisfied with their dwellings. However, dwelling satisfaction attributes such as space adequacy (3.83), size of the room (3.79), privacy (3.74) and individual space (3.71) were had high HSI higher than the mean HSI; indicating that respondents were very close to being satisfied with their dwellings. Accessing through the residential densities, it can be concluded that the mean housing satisfaction with dwelling units ($\overline{HSI}_{HOUSING}$) was higher in the high residential areas (3.78) compared to the low (3.65) and medium (3.70) density. Also,

dwelling attributes such as space adequacy, privacy, size of room, individual space within dwellings and condition of building materials were seen to be higher than the mean satisfaction with dwelling units for each residential density. Space adequacy (3.84), privacy (3.74), size of the room (3.74), and individual space (3.66) were above 3.65; the mean dwelling index ($\overline{HSI}_{low}$) for low density areas while space adequacy (3.81), privacy (3.72), and size of the room (3.78) were higher than the mean dwelling index ($\overline{HSI}_{medium}$) of 3.70 for medium density areas. Similarly, space adequacy (3.95), individual space (3.85), size of room (3.85), privacy (3.81) and the condition of building materials (3.79) were observed to be above the mean dwelling index ($\overline{HSI}_{high}$) of 3.78 in the high-density areas.

Table 4: Respondents' perception on the condition of some housing elements

Housing Attributes	Residential densities						Study Area	
	Low		Medium		High			
	TWV	HSI	TWV	HIS	TWV	HSI	TWV	HSI
Space adequacy	2976	3.84	12201	3.81	2803	3.95	17980	3.83
Interior design	2898	3.74	11835	3.69	2624	3.70	17357	3.70
Individual space	2836	3.66	11815	3.69	2734	3.85	17385	3.71
Privacy	2910	3.75	11927	3.72	2702	3.81	17539	3.74
Size of room	2897	3.74	12131	3.78	2732	3.85	17755	3.79
Condition of building materials	2746	3.54	11872	3.70	2689	3.79	17307	3.69
Indoor air quality	2694	3.48	11643	3.63	2605	3.67	16942	3.61
Indoor lightening	2756	3.56	11850	3.70	2687	3.78	17293	3.69
Overall dwelling unit	2730	3.52	11551	3.60	2583	3.64	16864	3.59
Sub-total	25443	32.83	106825	33.32	24159	34.03	156422	33.35
$\overline{HSI}_{\text{Housing}}$	$\overline{HSI}_{\text{low}} = 3.65$		$\overline{HSI}_{\text{medium}} = 3.70$		$\overline{HSI}_{\text{high}} = 3.78$		$\overline{HSI}_{\text{S.A.}} = 3.71$	

The Influence of Housing Attributes on Housing Satisfaction

The contribution of variables towards respondents' dwelling attributes to the explanation of housing satisfaction in the overall study area (Ogun state) was determined using a stepwise regression. Thirteen out of the fourteen dwelling attributes (variables) entered into the regression analysis were significant in predicting housing satisfaction in the overall study area. The overall performance of the predictors (independent variables) as depicted in Table 5 revealed that 61.5% of the variation in the housing satisfaction is accounted for by dwelling factors in the study area ($R^2 = 0.615$). Similarly, the multiple correlation coefficients, R , between the dependent variable (housing satisfaction) and the independent variables on respondents dwelling attributes showed a strong relationship with R value of 0.784. Thus, the stepwise regression model of dwelling factor predicting housing satisfaction in the study area is given as follows:

$$HS = \beta_0 + \beta_1 IAQ + \beta_2 INS + \beta_3 BUP + \beta_4 CBM + \beta_5 BID + \beta_6 INL + \beta_7 CFL + \beta_8 ROS + \beta_9 SPA + \beta_{10} COR + \beta_{11} CBR + \beta_{12} COD + \beta_{13} CWI$$

Further findings from Table 5 showed that the most important housing/dwelling variable explaining the variations in housing satisfaction in the study area is the quality of indoor air (IAQ) as it explains 35.8% of the variation in housing satisfaction. This was followed by individual space (INS), building privacy (BUP), condition of building materials (CBM) and indoor lightening (INL) which accounts for 11.8%, 5.0%, 3.2% and 2.1% respectively of variance in respondents' housing satisfaction in the study area. In addition, interior design (BID), room size (ROS), condition of the floor (CFL), adequate space (SPA), condition of the roof (COR), road to the building (CBR), condition of window (CWI) and the condition of drainage (COD) contributed only 1.4%, 1.1%, 0.6%, 0.3%, 0.2% and 0.1% respectively to the variation of the dependent variable (housing

satisfaction) in the study area. A positive relationship was also observed to exist between the thirteen significant dwelling variables with respondents' housing satisfaction in the study area.

Further stepwise regression analysis across the residential densities as presented in Tables 6, 7 and 8 showed similar trend as the most important dwelling/ building variable is the quality of indoor air (IAQ) as it contributes 42.8%, 32.3% and 41.7% of variance in housing satisfaction in the low, medium and high residential density respectively. This was however followed by interior design (BID), building privacy (BUP), individual space (INS) and condition of drainage (COD) with 15.3%, 7.1%, 3.5% and 2.0% of variance explaining respondents' housing satisfaction in the low-density area (Table 6). Other dwelling variables in the order of importance to housing satisfaction in the low density area were: condition of floor (CFL), indoor lightening (INL), condition of building materials (CBM), condition of road (COR), condition of door (CDO), room size (ROS), adequate space (SPA) and the least important as the condition of window (COW). The coefficient of multiple determination (R^2) value of 0.751 showed that 75.1% of the variance of housing satisfaction is explained by the thirteen predicting dwelling variables in the low-density areas.

For the medium density areas, individual space (INS) was the second most important variable that contributed to the model as it accounts for 11.9% of variance in housing satisfaction. This was followed by the condition of building material (CBM), room size (ROS), presence of indoor lightening (INL), space adequacy (SPA) and privacy (BUP). This accounted for 5.2%, 3.5%, 2.4% and 1.2% respectively of variance explaining housing satisfaction in the medium density. The least contributing dwelling variables to the dependent variable as indicated in Table 7 are the condition of roof (COR), building interior design (BID), building road (CBR) and the condition of floor (CFL). However, the coefficient of

multiple determination (R^2) value of 0.594 showed that 59.4% of the variance of housing satisfaction is explained by the eleven predicting dwelling variables in the medium density areas.

In the high-density areas, adequate individual space (INS) was the second important variable just as in the medium density as it explains 12.6% variance in predicting housing satisfaction (Table 8). This was followed by building privacy

(BUP), indoor lightening (INL), condition of floor (CFL), condition of window (CWI) condition of wall (COW), condition of drainage (COD), interior design (BID), condition of building material (CBM), and the condition of door (CDO). However, the coefficient of multiple determination (R^2) value of 0.676 showed that 67.6% of the variance of housing satisfaction is explained by the eleven predicting dwelling variables in the high-density areas.

Table 5: Stepwise Multiple Regression Analysis of Housing/Dwelling Attributes in the Ogun State

Variables	R	R ²	R ² change	B	Beta	Sig.
IAQ	0.598 ^a	0.358	0.358	9.237	0.269	0.000
INS	0.690 ^b	0.476	0.118	5.837	0.165	0.000
BUP	0.725 ^c	0.525	0.050	5.868	0.158	0.000
CBM	0.747 ^d	0.557	0.032	4.843	0.142	0.000
BID	0.760 ^e	0.578	0.021	3.964	0.109	0.000
INL	0.769 ^f	0.592	0.014	4.837	0.137	0.000
CFL	0.776 ^g	0.603	0.011	2.092	0.069	0.000
ROS	0.780 ^h	0.608	0.006	3.015	0.082	0.000
SPA	0.782 ⁱ	0.611	0.003	2.724	0.065	0.000
COR	0.783 ^j	0.613	0.002	1.317	0.043	0.000
CBR	0.784 ^k	0.614	0.001	1.299	0.040	0.000
COD	0.784 ^l	0.615	0.001	-0.915	-0.026	0.006
CWI	0.784 ^m	0.615	0.001	0.922	0.030	0.010

(F=575.165, Sig.<0.05)

Table 6: Stepwise Multiple Regression Analysis of Dwelling Attributes in the Low Density

Variables	R	R ²	R ² change	B	Beta	Sig.
IAQ	0.654 ^a	0.428	0.428	11.792	0.360	0.000
BID	0.762 ^b	0.581	0.153	12.227	0.304	0.000
BUP	0.807 ^c	0.651	0.071	9.714	0.258	0.000
CBM	0.828 ^d	0.686	0.035	3.552	0.109	0.000
CDO	0.840 ^e	0.705	0.020	3.242	0.103	0.001
INS	0.846 ^f	0.716	0.011	5.712	0.163	0.000
COD	0.853 ^g	0.727	0.011	-5.201	-0.140	0.000
CFL	0.858 ^h	0.736	0.009	3.601	0.116	0.000
ROS	0.860 ⁱ	0.739	0.004	-3.434	-0.091	0.001
COR	0.862 ^j	0.743	0.003	3.374	0.109	0.000
INL	0.864 ^k	0.746	0.004	3.736	0.115	0.000
SPA	0.865 ^l	0.749	0.002	-3.629	-0.082	0.004
COW	0.866 ^m	0.751	0.002	-2.134	-0.068	0.014

(F= 176.321, Sig.<0.05).

Table 7: Stepwise Multiple Regression Analysis of Dwelling Attributes in the Medium Density

Variables	R	R ²	R ² change	B	Beta	Sig.
IAQ	0.568 ^a	0.323	0.323	7.847	0.230	0.000
INS	0.665 ^b	0.442	0.119	5.696	0.164	0.000
CBM	0.703 ^c	0.494	0.052	5.239	0.154	0.000
ROS	0.727 ^d	0.529	0.035	4.226	0.116	0.000
INL	0.744 ^e	0.553	0.024	5.829	0.165	0.000
SPA	0.752 ^f	0.566	0.012	3.018	0.074	0.000
BUP	0.760 ^g	0.577	0.012	5.531	0.149	0.000
COR	0.764 ^h	0.584	0.006	1.887	0.063	0.000
BID	0.767 ⁱ	0.589	0.005	3.337	0.093	0.000
CBR	0.769 ^j	0.592	0.003	1.741	0.053	0.000
CFL	0.771 ^k	0.594	0.002	1.517	0.051	0.000

(F= 429.971, Sig.<0.05).

Table 8: Stepwise Multiple Regression Analysis of Dwelling Attributes in the High Density

Variables	R	R ²	R ² change	B	Beta	Sig.
IAQ	0.646 ^a	0.417	0.417	11.423	0.304	0.000
INS	0.737 ^b	0.543	0.126	7.741	0.202	0.000
BUP	0.768 ^c	0.589	0.046	7.568	0.207	0.000
INL	0.787 ^d	0.620	0.030	6.641	0.168	0.000
CFL	0.800 ^e	0.639	0.020	4.625	0.148	0.000
CWI	0.807 ^f	0.651	0.005	9.291	0.282	0.000
COW	0.813 ^g	0.662	0.011	-6.609	-0.206	0.000
COD	0.816 ^h	0.666	0.004	-2.616	-0.076	0.001
BID	0.819 ⁱ	0.670	-0.001	4.184	0.122	0.000
CBM	0.820 ^j	0.673	0.003	2.574	0.070	0.008
CDO	0.822 ^k	0.676	0.003	-2.969	-0.091	0.017

(F= 132.219, Sig.<0.05).

Conclusion

This study reveals that satisfaction with the housing/dwelling attributes is influenced by indoor air quality (IAQ), individual space (INS), building privacy (BUP), condition of building materials (CBM) and indoor lightening (INL). The implication of these findings is that the availability and adequacy of any of these attributes would have negative or positive effects on the occupants' satisfaction with their housing units. It is therefore recommended that, policy makers, housing developers and the professionals should put these attributes into consideration while providing housing for the people.

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APPENDICE

Definition of Variables in the Analysis of the Factors Influencing Housing Satisfaction across the Residential Densities in Ogun State

Variables	Definitions
Dependent = Housing Satisfaction	Satisfaction = 1, Otherwise = 0
Independent (Predictors)	
Gender (GEN)	Male = 1, Female = 0
Age (AGE)	Below 30years = 1, 31-60years = 2, 61years & above =3
Marital Status (MAS)	Married = 1, Otherwise = 0
Ethnicity (ETY)	Yoruba = 1, Non-Yoruba = 0
Religion (REL)	Christianity = 1, Islam = 2, Traditional =3, Others = 4
Education (EDU)	Formal education= 1, No formal education = 0
Position in Household (PIH)	Head =1, Wife =2, Child = 3, Relative = 4
Household size (HOS)	1-6 = 1, 7 and above = 2
House tenureship (HOT)	Inherited/owner =1, Tenant =2, Squatting/others =3
Number of rooms occupied (NOR)	Ordinal
Length of stay (LOS)	< 1Year = 1, 1-5years =2, 6-10years =3, Above 10 years = 4
Employment status (EMP)	Employed =1, Retired = 2, Unemployed/students = 3
Income (INC)	Below 100,001 = 1, 100,001-300,000 = 2, Above 300,000 = 3
Residential density (RED)	
Dwelling Attribute	
Space Adequacy (SPA)	Satisfactory = 1, Otherwise = 0
Building Interior Design (BID)	Satisfactory = 1, Otherwise = 0
Individual Space (INS)	Satisfactory = 1, Otherwise = 0
Building Privacy (BUP)	Satisfactory = 1, Otherwise = 0
Room Size (ROS)	Satisfactory = 1, Otherwise = 0
Condition of Building Material (CBM)	Satisfactory = 1, Otherwise = 0
Indoor Air Quality (IAQ)	Satisfactory = 1, Otherwise = 0
Indoor Lightening (INL)	Satisfactory = 1, Otherwise = 0
Condition of wall (COW)	Satisfactory = 1, Otherwise = 0
Condition of door (CDO)	Satisfactory = 1, Otherwise = 0
Condition of window (CWI)	Satisfactory = 1, Otherwise = 0
Condition of floor (CFL)	Satisfactory = 1, Otherwise = 0
Condition of roof (COR)	Good = 1, Otherwise = 0
Condition of building road (CBR)	Tarred = 1, Otherwise = 0
Condition of drainage (COD)	Covered and free = 1, Otherwise = 0
Environmental Attribute	
Security (SEC)	Satisfactory = 1, Otherwise = 0
Crime rate (CRR)	Satisfactory = 1, Otherwise = 0
Safety & child friendliness (SCF)	Satisfactory = 1, Otherwise = 0
Access to facilities/amenities (AFA)	Satisfactory = 1, Otherwise = 0
Neighbourhood Quietness (NEQ)	Satisfactory = 1, Otherwise = 0

Proximity to police service (PPS)	Satisfactory = 1, Otherwise = 0
Proximity to medical service (PMS)	Satisfactory = 1, Otherwise = 0
Proximity to recreational service (PRS)	Satisfactory = 1, Otherwise = 0
Proximity to nursery school (PNS)	Satisfactory = 1, Otherwise = 0
Proximity to primary school (PPS)	Satisfactory = 1, Otherwise = 0
Proximity To secondary school (PSS)	Satisfactory = 1, Otherwise = 0
Proximity to work place (PWP)	Satisfactory = 1, Otherwise = 0
Distance to city centre (DCC)	Satisfactory = 1, Otherwise = 0
Social participation and interaction (SPI)	Satisfactory = 1, Otherwise = 0
Neighbourhood relation (NER)	Satisfactory = 1, Otherwise = 0
Neighbourhood association (NEA)	Satisfactory = 1, Otherwise = 0
Feeling about neighbourhood (FAN)	Satisfactory = 1, Otherwise = 0
	Satisfactory = 1, Otherwise = 0
Management Attribute	Satisfactory = 1, Otherwise = 0
Authority response to complaints (ARC)	Satisfactory = 1, Otherwise = 0
General maintenance (GMN)	Satisfactory = 1, Otherwise = 0
Cordiality with management (CWM)	Satisfactory = 1, Otherwise = 0
Level of communication flow (LCF)	Satisfactory = 1, Otherwise = 0