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**Urban Forum**

ISSN 1015-3802

Urban Forum

DOI 10.1007/s12132-018-9337-4



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# Residential Satisfaction Among Low-Income Earners in Government-Subsidized Housing Estates in Ogun State, Nigeria

Eziyi O. Ibem<sup>1</sup> · Emmanuel A. Ayo-Vaughan<sup>2</sup> · Adedamola O. Oluwunmi<sup>3</sup> · Oluwole A. Alagbe<sup>1</sup>

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**Abstract** Governments in Nigeria have developed several mass housing schemes with the goal of providing satisfactory residential environment at affordable cost for residents in urban areas. However, there is little understanding of the extent to which such schemes are meeting the housing needs and expectations of the low-income earners in this country. This study relied on a questionnaire survey involving 333 respondents to examine residential satisfaction among low-income households in 10 government-subsidized housing schemes in urban areas of Ogun State, Nigeria. The data were subjected to descriptive statistics, factor and regression analyses, and findings show that around 66% of the respondents were dissatisfied with the residential environment in the housing estates. Although the residents were most satisfied with the size of main activity areas and privacy in their homes, they were least happy with the economic environment in the estates. The regression model explained 89% of the variance in  $R^2$

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✉ Eziyi O. Ibem  
ibem.eziyi@covenantuniversity.edu.ng

Emmanuel A. Ayo-Vaughan  
kunlevaughan@gmail.com

Adedamola O. Oluwunmi  
funke.oluwunmi@covenantuniversity.edu.ng

Oluwole A. Alagbe  
oluwole.alagbe@covenantuniversity.edu.ng

<sup>1</sup> Department of Architecture, College of Science and Technology, Covenant University, Km 10 Idiroko Road, Canaanland, Ota, Ogun State, Nigeria

<sup>2</sup> Department of Architecture, College of Environmental Sciences, Bells University of Technology Ota, Ota, Ogun State, Nigeria

<sup>3</sup> Department of Estate Management, College of Science and Technology, Covenant University, Km 10 Idiroko Road, Canaanland, Ota, Ogun State, Nigeria

with management of the housing estates, size of main activity areas, and privacy in the dwelling units and economic environment within and around the estates emerging as the top three factors with the most significant influence on residential satisfaction. The findings are instructive in providing a fresh insight into areas where specific attention is needed to ensure that future projects meet the needs of low-income households in urban Nigeria.

**Keywords** Residential satisfaction · Government-subsidized housing · Low-income earners · Urban areas · Survey · Nigeria

## Introduction

Since the return of democratic governance in 1999, successive governments in Nigeria have implemented several mass housing programs with the goal of providing urban residents with satisfactory residential environment at affordable cost. Many of such schemes were designed to cater for the housing needs of the less privileged Nigerians (Federal Republic of Nigeria 2012). This is because evidence in the literature (Taiwo 2013; Olotuah 2015; Aduwo et al. 2016) shows that over 50% of the estimated 89.75 million urban residents in Nigeria who live in deplorable housing conditions are low-income earners. Moreover, the existing studies (e.g., Mohit et al. 2010; Teck-Hong 2011; Ibem and Amole 2013; Byun and Ha 2016) have revealed that one of the ways for understanding the performance of housing projects in meeting the needs, expectations, and aspirations of the target population is to investigate the extent to which the beneficiaries are happy with the residential environment provided through such schemes.

Residential satisfaction, which is a measure of the extent to which people are happy or contented with their home environment (Galster 1987; Mohit et al. 2010; Buys and Miller 2012; Abe and Kato 2017), is one of the tools for assessing the impact of residential environment on the quality of life of residents (Mohit and Azim, 2012; Salleh et al. 2012; Ibem and Amole 2013; Akin et al. 2014; Huang and Du 2015). Previous studies (Lu 1999; Vera-Toscano and Ateca-Amestoy 2008; Abdu et al. 2014) have linked residents' income status with residential satisfaction. Other studies in countries like the USA (Rent and Rent 1978), Spain (Am'erigo and Aragon'es 1990), Malaysia (Mohit et al. 2010), South Africa (Aigbavboa and Thwala 2012), Iran (Shahriari et al. 2014), South Korea (Byun and Ha 2016), and Nigeria (Olatubara and Fatoye 2007; Ibem and Amole 2013) have examined residential satisfaction among low-income residents in government-subsidized housing schemes/public housing estates. However, their findings provide limited understanding of the general pattern of residential satisfaction among this class of residents and the factors influencing this in government-subsidized housing schemes. Moreover, authors (Nathan 1995; Ibem et al. 2013b) have argued that since mass housing projects are frequently replicated and they affect the lives of residents, there was a need for researchers to continuously evaluate and document the outcomes of such schemes in order to provide feedback for policy and practice in public housing provisioning. In view of the foregoing, this study investigated residential satisfaction and the factors influencing it among low-income earners in government-subsidized housing estates in urban areas of Ogun State,

Nigeria. The specific objective of the study was firstly to examine the extent to which the low-income earners are satisfied with their housing conditions in 10 government-subsidized housing estates constructed between 2003 and 2010 in major urban areas of Ogun State, Nigeria, and secondly to identify the factors with the most significant influence on residential satisfaction among low-income residents in the selected public housing estates in the study area.

Ogun State, located in southwest geopolitical zone, is one of the low-income and densely populated states in Nigeria (see Fig. 1; Federal Republic of Nigeria 2007). According to the Ogun State Regional Development Strategy (OSRDS 2008), this state has a high rate of urbanization and a huge urban housing and infrastructure supply deficit. This informs why successive governments in the state have embarked on several mass housing programs with a view to addressing this challenge. Ogun State was therefore chosen for this research because a previous study by Ibem et al. (2013a, b) revealed that it is among the five out of the 36 States in Nigeria that implemented the Presidential Mandate Housing Scheme (PMHS) launched in by the defunct government of Chief Olusegun Obasanjo in 2004, which Etim et al. (2007) observed was part of the social housing program designed to provide housing for the less privileged Nigerians. The current study is part of the ongoing efforts to evaluate the outcome of the PMHS and other housing projects executed in the study area after democratic governance was restored to Nigeria following decades of military rule.

Among other benefits, this study seeks to provide a fresh insight into the effectiveness of government-constructed housing projects in delivering satisfactory residential environment to low-income earners in urban centers in the study area. In addition, findings of this study can inform public policy and design practice, particularly on the specific areas where more attention is needed to enhance the well-being of low-income residents in public housing schemes in urban Nigeria and other countries in sub-Saharan Africa.

## Review of Literature

### Theoretical Framework

The review of literature reveals that residential environment has been described as consisting of both housing products and services (Ibem and Amole 2013). Hence, residential satisfaction has been conceived of as a multidimensional construct that measures firstly the extent to which people are happy with their dwelling units and neighborhood/community environment and the associated services (Ren and Holmer 2016) and secondly the gap between current and expected or aspired housing conditions (Galster 1987; Huang and Du 2015; Gan et al. 2016). This means that the key components of residential satisfaction are satisfaction with housing units' features, satisfaction with support services, and satisfaction with neighborhood environment as explained by previous authors (Hashim 2003; Ren and Holmer 2016).

Abe and Kato (2017) have observed that in residential satisfaction research, several customer/consumer satisfaction-related theories and conceptual models have been used to provide insight into how residents evaluate satisfaction with their housing situations.



**Fig. 1** Map of Nigeria showing the location of Ogun State and housing estates investigated

In fact, a review of the existing theories and conceptual frameworks used in residential/housing satisfaction research reveals that they all seek to provide insight into the various components of the home environment and how residents perceive and evaluate the performance of these components in meeting their current housing needs, expectations and aspirations during or after their housing consumption experience (Vera-Toscano and Ateca-Amestoy 2008; Ibem and Aduwo 2013a). Based on this understanding, the theoretical framework for this study draws on the system approach, housing deficit theory, affective-cognitive model, and actual-aspirational-gap and purposive model.

The extant study by Onibokun (1974) proposed a system approach to studying residential satisfaction by arguing that the assessment of residential satisfaction

involves four main components: the resident (i.e., housing occupant), housing units, neighborhood environment, and management practices. He explained that, on the one hand, the resident is at the center of residential satisfaction assessment as he/she provides all the necessary feedback from the housing units, neighborhood environment, and management aspect. On the other hand, the housing unit (comprising the dwelling units' features and support services) is where the resident live in, and the neighborhood environment consisting of the social and economic settings as well as the physical facilities constitute the surrounding environment where the housing unit is located. Onibokun (1974) also described the management aspect as comprising the institutional framework and practices engaged in the administration, management, and maintenance of the entire housing package. He therefore contended that a combination of the dwelling units, neighborhood environment, and management practices give rise to the housing conditions that the residents evaluate as being satisfactory or not satisfactory at any given time. It was on the basis of Onibokun's conception that Varady and Carrozza (2000) posited that residential satisfaction can be viewed from four main perspectives: satisfaction with housing units, satisfaction with services within the housing units, satisfaction with the housing units and services provided, and satisfaction with the neighborhood or surrounding environment. Similarly, other previous authors (Jiboye 2010; Mohit and Nazyddah 2011; Ibem and Aduwo 2013a, b) have also conceived of residential satisfaction as consisting of satisfaction with dwelling unit features, housing unit support services, socio-economic environment, neighborhood facilities, and management component.

Morris and Winter's (Morris and Winter 1975) housing deficit theory has also been used in residential satisfaction research as observed by Mohit et al. (2010). The housing deficit theory explained that residents evaluate their housing situations based on some established family norms comprising physical, social, economic, and psychological factors and societal norms, which directly or indirectly influence their quality of life. Morris and Winter (1975) argued that in the process of evaluating residential environment, if the residents perceive any form of incongruity between their housing situations and the established family and societal norms, housing deficit is said to exist, which may lead to residential dissatisfaction (Mohit et al. 2010; Ibem and Amole 2013). This means that residential satisfaction can also be described as an assessment of the extent to which residents' housing situations conform to the established family and societal norms.

From the lens of affective-cognitive model, authors (Russell and Pratt, 1980; Caro and Gracia 2007) have noted that the meanings residents attach to their environment are products of affective and cognitive assessments. Whereas the former is the emotion-inducing assessment of quality residents ascribe to their environment, the later deals with feelings (perceptions) or attitudes residents have towards their environment. Am'erigo and Aragon'es (1990) and Mohit et al. (2010) described the affective as a subjective evaluation of the ecological and socio-economic characteristics of the residential environment by residents. On the other hand, the cognitive realm represents objective evaluation of the different components of the residential environment, which involves a comparative analysis of what residents currently have, and what they should or aspire to have (Galster and Hesser 1981; Mohit et al. 2010; Jansen 2013). Therefore, residents are assumed to evaluate their housing environment by comparing or relating it

to their aspirations, expectations, or established norms/standards (Vera-Toscano and Ateca-Amestoy 2008).

The tenets of affective-cognitive model and housing deficit theory are also related to the actual-aspirational-gap model developed by Galster (1987), which posits that people evaluate their environment by comparing it with certain established standards or reference points they aspire to have (i.e., their aspirations). Hence, residential satisfaction is seen as a measure of the level of congruity between the actual housing conditions and aspired housing conditions (Galster and Hesser 1981; Gan et al. 2016). The implication of this is that residential satisfaction can be described as residents' affective and cognitive evaluation of the extent to which the quality of various physical, social, and economic components of their residential environment are adequate in meeting their housing aspirations (Galster 1987; Huang and Du 2015).

From the perspective of the purposive evaluation approach, Galster (1987) also argued that residents tended to assess their housing environment based on the extent to which they perceive it as serving the purpose of helping them achieve specific goals in life. This means that the more residents feel that their residential environment is contributing adequately to their quest to achieve specific goals, the happier they would be with such housing environment, and vice versa. Based on this understanding, residential satisfaction can be described as a measure of the extent to which residents, who are the consumers of housing products and services (Onibokun 1974), feel that their residential environment is serving the purpose of meeting their physiological and psychological needs, protection against contagions, accidents, and intruders (Ibem and Aduwo 2013b).

## Review of Empirical Studies

From the review of literature, it was found that compared to the quantum of published works on residential satisfaction, research literature on residential satisfaction among low-income earners in government-subsidized housing schemes in the developing countries is very thin. In attempt to identify the gap in literature this study attempted to fill, the review of literature was focused on published works on residential satisfaction among low-income residents in public or state-subsidized housing schemes within and outside Nigeria. The summary of studies done outside Nigeria reviewed in this paper is presented in Table 1.

As shown in Table 1, the previous studies conducted in the USA (Rent and Rent 1978) and South Africa (Aigbavboa and Thwala 2012) reveal that low-income residents of government-subsidized housing in these two countries have expressed high levels of satisfaction with their housing situations. Also shown in the existing studies (e.g., Mohit et al. 2010; Aigbavboa and Thwala 2012; Shahriari et al. 2014) is that the findings on the levels of satisfaction with the various components of the residential environment in such schemes differs from one country to another. In addition, the existing studies on the factors influencing residential satisfaction among low-income earners have also produced different results. For examples, while studies (Rent and Rent 1978; Mohit et al. 2010; Byun and Ha 2016) identified housing units' and neighborhood characteristics as well as the quality of housing services as key factors influencing residential satisfaction, several other studies reviewed here have linked a number of socio-economic and demographic variables with residential satisfaction.



**Table 1** Summary of the existing studies done outside Nigeria reviewed

Authors	Purpose of study	Key findings	Limitations
Rent and Rent and Rent (1978)	To examine the factors related to residential satisfaction among low-income 257 occupants of low-income housing units in 33 different projects in South Carolina, USA	The study reported a high degree of residential satisfaction among the residents. This was influenced by home ownership, type of housing units, attitudes towards neighbors, length of stay in the residence, and orientation to life orientation. The number of residents, location to relatives and friends, and being a renter were not found to affect residential satisfaction.	The study was not focused only on residents of public housing
Amerigo and Aragones (1990)	Identification of the objective and subjective factors which influence residential satisfaction among 477 housewives in council housing in Madrid, Spain	The attachment to the neighborhood and relationships with neighbors explained the greatest variance in residential satisfaction among the respondents	The study focused mainly on housewives and thus its findings cannot be generalized for other categories of residents
Hashim (2003)	Investigation into the relationship between social integration and residential satisfaction among 472 residents in public low-cost housing estates in Selangor, Malaysia	The key factors with positive influence on residential satisfaction were place attachment and involvement in community activities	The study did not examine overall residential satisfaction
Mohit et al. (2010)	Assessment of residential satisfaction of 102 residents in newly designed public low-cost housing dwellers of Kuala Lumpur, Malaysia	The residents were found to be moderately satisfied with dwelling unit support services and neighborhood facilities than dwelling unit features and social environment of the estates. The size of bedrooms, security control, perimeter road, cleanliness of homes, housing units' support services, size of bedrooms, and distance of home to shopping center were the predictors of residential satisfaction. Whereas age, family size, working wives, and previous residence had negative correlation; race, employment type, length stay in the of residence showed positive correlation with residential satisfaction	Only one housing estate was studied and thus its findings are limited to residents in that housing estate
Aigbavboa and Thwala (2012)	Residential satisfaction and the social and physical factors, which influenced it among 78 residents in four different government-subsidized housing estates	The residents were found to be generally satisfied with their housing situations. They expressed satisfaction with the physical attributes of the houses and privacy in their residences but were	Only four housing projects were sampled and the number of respondents

**Table 1** (continued)

Authors	Purpose of study	Key findings	Limitations
Shahriari et al. (2014)	for low-income people in the Gauteng Province of South Africa Residential satisfaction among 100 low-income households' heads in Abadeh Mehr housing estate, Iran	dissatisfied with the social attributes of their housing environment in the estates The respondents were generally satisfied with the security of their housing and access to the public services but were dissatisfied with access to city center; public transportation services cultural features	is few compared to the number of housing estates sampled The predictors and dimensions of residential satisfaction were not investigated in this study
Byun and Ha (2016)	Determination of the level of satisfaction among low-income households in public rental housing in Seoul, South Korea	Safety and physical, facilities accessibility, and equipment-related factors were found to have significant influence on residential satisfaction	The study population was renters, and thus, the findings are limited to this group of households

Compiled by the authors

Some of the socio-economic variables identified with residential satisfaction among low-income residents are ownership (tenure), housing type (single or multiple family units), perception of neighbors, length of stay in residence, and a positive attitude towards life (Rent and Rent 1978), place attachment and neighbors (Am'erigo and Aragon'es 1990), social interactions (Hashim 2003); age, family size, working wives, employment type, and length of stay in the residence (Mohit et al. 2010) and concern for safety (Byun and Ha 2016).

In Nigeria, a number of studies have also been conducted on residents' satisfaction with their housing situations in government-constructed residential estates. For example, in a study of public housing in the Federal Capital Territory-Abuja, Ukoha and Beamish (1997) found that the residents were generally satisfied with neighborhood facilities but were not happy with the dwelling units' features and management of the estates. In contrast, the study by Olatubara and Fatoye (2007) in Abesan housing estate constructed for low-income earners in Lagos revealed that the residents were most satisfied with the design and construction of the housing units and least satisfied with the planning of the estates and provision of public facilities and services. Similar results were reported by Ilesanmi (2010) in selected public housing estates in Lagos and Akin et al. (2014) in six public housing estates in Osogbo, Osun State. Also in Lagos, the findings by Jiboye (2010) in six public housing estates partly corroborated that by Ukoha and Beamish (1997) by revealing that most of the residents sampled expressed satisfaction with the appearance of their housing estates but were dissatisfied with management of the estates. That study also reported that the dwelling units, neighborhood environment, and management components of public housing schemes had significant influence on residents' satisfaction with their housing situations in the estates.

Elsewhere in Ondo State, Clement and Kayode (2012) revealed that residents in public housing estates were more satisfied with closeness of their homes to places of worship and size of living room than with closeness of their homes to recreational and healthcare facilities. Similarly, in another study in Abeokuta, Ogun State, Ibem and Amole (2013) found that most of the 156 respondents were generally satisfied with their housing situations in a core housing estate developed for low-income public sector workers. That study also reported that the residents were most satisfied with the dwelling units' features but dissatisfied with the neighborhood environment of the estate, which also corroborated that by Olatubara and Fatoye (2007) as previously highlighted. The authors (Ibem and Amole 2013) further revealed and the respondents' educational background, employment sector, sex, and age were the key predictors of satisfaction.

From the Nigerian studies reviewed here, it is evident that apart from the study by Ukoha and Beamish (1997) indicating that the residents were most satisfied with neighborhood facilities, other studies revealed that there is generally low satisfaction with neighborhood facilities in government-constructed housing schemes in this country. It is also observed that apart from these studies (Olatubara and Fatoye 2007; Ibem and Amole 2013) that are based on data drawn from two housing estates developed mainly for low-income earners in Lagos and Abeokuta, respectively, all the other studies reviewed present the views of residents in public housing estates developed for all income groups. This suggests that there is a need to specifically uncover the housing experiences of low-income households in government-constructed residential estates in Nigeria. Furthermore, relating

findings of the studies presented in Table 1 to those from Nigeria, it can be inferred that there is indeed no general pattern of residential satisfaction and factors influencing it among the low-income residents in public housing schemes in the different countries and cultures. Therefore, more research is needed on that subject, especially in a country like Nigeria where studies on residential satisfaction among the low-income earners in government-subsidized housing schemes appear to be less reported in the literature.

### Conceptual Framework

From findings of the review of literature in the previous section of this paper, a conceptual framework was developed for current study (see Fig. 2). Specifically, the existing studies (Onibokun 1974; Mohit et al. 2010; Jiboye 2010; Ibem and Amole 2013) influenced the development of the conceptual framework. Drawing on these studies, the current study conceives of residential satisfaction among low-income residents in government-subsidized housing estates as a product of satisfaction with the dwelling units' features, housing unit support services, neighborhood/community environment, and management practices and households' demographics.

The framework (Fig. 2) shows that satisfaction with dwelling units' features and support services, neighborhood environment, and management aspect is a function of two key aspects: the residents' objective evaluation and subjective assessment of the different components of their residential environment. This is in turn determined by the physical, social, and economic characteristics of the residential environment and household demographics. Based on this understanding, this framework proposed that the factors influencing residential satisfaction among low-income earners in mass housing projects constructed by

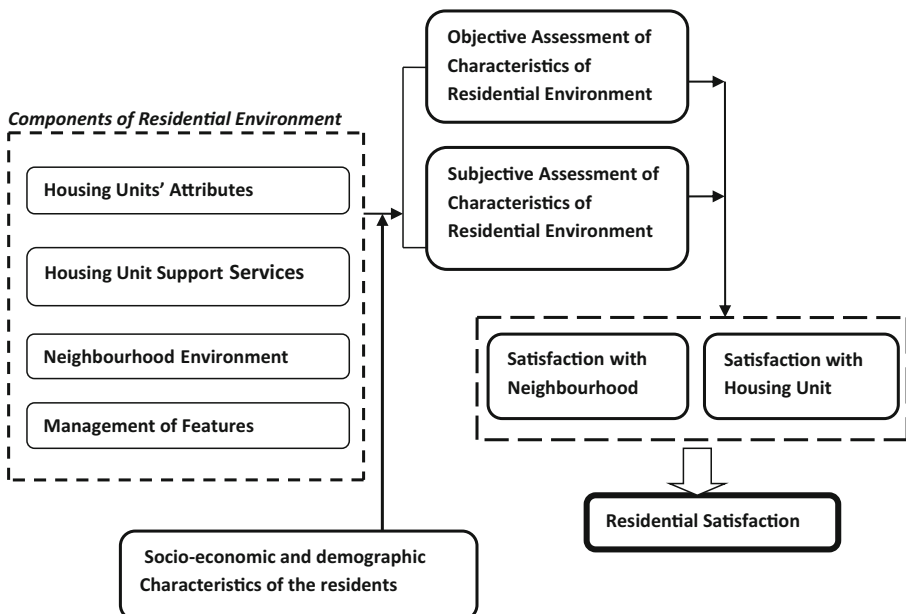


Fig. 2 Conceptual framework of the study

the Ogun State government are mainly the residents' satisfaction levels with the different aspects of their housing environment and management practices in the estates as well as their socio-economic characteristics (household demographics).

## Methodology

The primary data used in this paper were obtained in a larger research project designed to evaluate the outcomes of 10 of the 12 mass housing estates constructed by the Ogun State government in five urban centers, namely, Abeokuta, Agbara, Ibafo, Ijebu-Ode, and Ota. The 10 housing estates included in this study were occupied by residents, while the remaining two were yet to be occupied at the time the survey were conducted. Similarly, the five urban areas were purposely selected for this study because the 10 housing estates investigated are located in here (see Fig. 1). A brief distribution of the five urban centers where the housing estates are located shows that whereas Abeokuta is the administrative headquarter of the state and Ota and Agbara are industrial towns with the largest concentrations of industrial activities in Ogun State, Ije-Ode and Ibafo are known for agricultural activities. The data presented here represent the views of 333 low-income household heads with average monthly income of below ₦71,000.00 (US\$194.52) who participated in the larger research project. Although EFInA (2011) noted that the average monthly income of the low-income population in Nigeria ranged between ₦5000.00 (US\$13.70) and ₦40,000.00 (US\$109.60), but in this study, the low-income earners are those between grade levels (04–08) in the civil service of Nigeria whose average monthly earning is below ₦71,000.00, as stated in by the Federal Republic of Nigeria (FRN 2012).

The data collection instrument used for this research was a structured questionnaire designed by the researchers based on findings from the review of literature. The data reported in this paper were derived from “Section 1” of the questionnaire comprising questions on 10 items related to households' socio-economic characteristics (demographics) and “Section 4” which had questions on residents' satisfaction with 31 variables used to describe the residential environments in 10 housing estates. The household demographic variables included in this study were sex, age, educational attainment, marital status, sector of employment, income, tenure, length of stay in the residence, household size, and the size of dwelling units. The data on residential satisfaction were extracted by asking the respondents to rate their levels of satisfaction with the 31 variables used to describe their housing environment based on 5-point Likert-type scale ranging from “1” for very dissatisfied to “5” for very satisfied. The 31 variables investigated were drawn from housing units' features, housing units' services, neighborhood's physical and socio-economic environment, and management practices in the estates (see Ibem and Amole 2013; Table 3). In order to measure the general (overall) residential satisfaction (RSAT), the participants were also asked to indicate the extent to which they were generally satisfied with their housing situations in the estates based on the aforementioned 5-point Likert-type scale, and the mean scores were computed for all the 333 participants put together. The reliability of this scale was investigated using the alpha Cronbach test, which returned 0.879 for the variables used in describing the residential environment.

At the time of the survey, a total of 1411 housing units were constructed in the aforementioned urban areas. Of these, 709 housing units representing around 50.3% of the total number of housing units constructed were fully occupied. Prior to the main

survey, a pilot survey was conducted to pre-test the questionnaire, and the feedback was used to adjust contents of the questionnaire before the main survey. The main survey was conducted between December 2009 and February 2010 in the study area, and since not all the housing units constructed were occupied at the time of the surveys, stratified sampling technique was used in selecting 670 housing units where questionnaires were administered to the residents. The administration and retrieval of questionnaires were done by the researchers and four research assistants who visited the housing units. The target population was household heads or one adult member of the family in each dwelling unit selected for the survey. Although 517 questionnaires were retrieved, only from 333 representing around 64.41% of the questionnaires retrieved filled by 333 respondents with average monthly income of below ₦71,000.00 (US\$194.52) were analyzed and reported in this paper. The remaining 184 questionnaires retrieved from other respondents in middle and high-income households were excluded from this paper.

The data were analyzed with the help of Statistical Package for the Social Sciences (SPSS) and three types of analyses were conducted. The first type of analysis was descriptive statistics used to analyze the data on the personal profiles of the respondents; compute the mean attribute satisfaction score (MASS) for each of the 31 variables describing the residential environments in the estates; the mean satisfaction scores for the different housing components extracted from exploratory factor analysis (MHcSS); and the overall residential satisfaction score (RSAT) as provided by all the respondents. The second type of analysis the data was subjected to exploratory factor analysis with principal component and Varimax rotation methods. Firstly, this was used to collapse the 31 variables describing the residential environment to few factors included in the regression analysis. Secondly, it helped in dealing with any form of multicollinearity existing among the 31 variables presented in Table 3.

The third type of analysis executed in this research was Categorical Regression Analysis (CATREG). This analysis was used to investigate the factors with the most significant influence on residential satisfaction in the 10 housing estates. In carrying out this analysis, the RSAT was the criterion, while nine variables related to household demographics (excluding income) and the scores of all the five factors extracted from the exploratory factor analysis were the predictors. The nine household demographic variables were coded using numerical values, which represent unordered categories recognized as nominal values in the CATREG analysis. The CATREG was used instead of general linear model because the survey data set is a combination of nominal, ordinal, and numerical variables, and according to previous authors (Hussain et al. 2006; Shrestha 2009), the former can easily transform and standardize non-numerical variables into numerical variables to produce only standardized coefficient estimates without dummy coding.

## Findings

### Household Demographics/Personal Profiles of the Participants

One of the basic assumptions in this study is that household demographics or personal profiles of the participants are among the predictors of residential satisfaction (see Fig. 2); hence, the need to have a good understanding of the personal profiles of the low-income

**Table 2** Household demographics of the respondents

Household demographic variables	<i>N</i> = 333	Percentage
Respondent's sex		
Male	188	56.5
Female	145	43.5
Age group in years		
No response	3	0.9
18–30	59	17.7
31–45	208	62.5
46–59	55	16.5
60 and above	8	2.4
Marital status		
No response	5	1.5
Never married (single)	32	9.6
Divorced	3	0.9
Married	288	86.5
Widowed	5	1.5
Highest educational attainment		
No response	5	1.5
Primary education	4	1.2
Secondary education	10	3.0
Tertiary education	314	94.3
Sector of employment		
Government	223	67.0
Private	95	28.5
Retired	5	1.5
Unemployed	10	3.0
Average monthly income in Naira <sup>a</sup>		
Below N38,000 (low-income)	141	42.3
N38,000–N71,000 (middle low-income)	192	57.7
Tenure type		
Privately rented	145	43.5
Owner occupied	188	56.5
Size of residence (number of rooms)		
One	74	22.2
Two	159	47.7
Three	100	30.0
Household size in persons		
No response	2	.6
1	9	2.7
2	29	8.7
3	69	20.7
4	116	34.8
More than 4	108	32.4

**Table 2** (continued)

Household demographic variables	<i>N</i> = 333	Percentage
Length of stay in the residence		
No response	1	0.3
Less than 1 year	49	14.7
1–3 years	269	80.8
4 years +	14	4.2

<sup>a</sup> US\$1 = N365.00 as at May 2018

earners who participated in the survey. Table 2 shows the personal profiles of the 333 respondents in the survey.

It is evident from the data in Table 2 that many of those who participated in the research were male, married, between the ages of 31 and 45 years, have tertiary education, and owner-occupiers with family size of minimum of four persons and had lived in the estate for a minimum of 1 year. In addition, Table 2 also reveals that the highest proportion of respondents lived in two-bedroom apartments followed by those in three-bedroom and the least proportion were occupants of one-bedroom dwelling units.

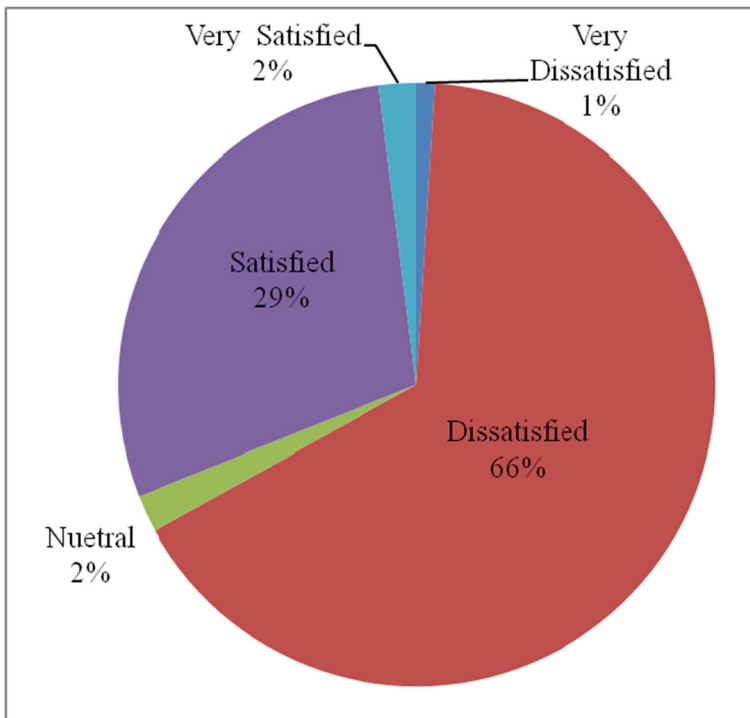
### Residential Satisfaction among the Respondents

Figure 3 shows the distribution of the respondents according to levels of satisfaction with their current housing situations the estates. It is evident from the result (Fig. 3) that many (66%) of the respondents expressed dissatisfaction, while 31% of them were satisfied with their current housing situations in the estates. The remaining respondents were neither satisfied nor dissatisfied with their housing situations. The result also reveals that the overall residential satisfaction score (RSAT) was 2.86, suggesting that the low-income earners residing in the estates reported low satisfaction level, and thus can be considered to be generally dissatisfied with their housing situations. Table 3 indicates that with MHcSS of 3.38 the residents were most satisfied with the size of main activity areas, privacy, and closeness of home to market but least satisfied with the economic environment of the housing estates (MHcSS = 2.49).

### Factors Influencing Residential Satisfaction

Table 3 shows result of the five factors extracted from the exploratory factor analysis of the 31 variables describing residential environment in the housing estates and their satisfaction scores. The factors are labeled factors 1–5 and include (i) satisfaction with housing typology, accesses to social amenities, and neighborhood facilities (factor 1); (ii) satisfaction with size of main activity areas, privacy, and accessibility to market (factor 2); (iii) satisfaction with management of the housing estates (factor 3); (iv) satisfaction with the economic environment of the housing estates (factor 4); and (v) satisfaction with security in the estates (factor 5). These five factors represent the different ways or dimensions in which the residents understood and evaluated satisfaction with their housing situations in the housing estates sampled.





**Fig. 3** Distribution of the respondents according to levels of satisfaction with their housing conditions

Table 4 shows result of the regression analysis used to investigate the factors influencing residential satisfaction in the 10 housing estates investigated.

From the result in Table 4, it is obvious that of the nine household demographic variables investigated, only two, the respondents' sector of employment and tenure status, have significant influence on residential satisfaction in the estates. On the other hand, the housing-related variables that significantly influenced residential satisfaction in the survey are the five factors (factors 1–5) extracted from the exploratory factor analysis. Examination of the Beta values also presented in Table 4 reveals that satisfaction with management practices in the housing estates ( $\beta = 0.193$ ,  $P < 0.000$ ), the size of main activity areas, privacy and accessibility to market ( $\beta = 0.180$ ,  $P < 0.000$ ), economic environment of the housing estates ( $\beta = 0.167$ ,  $P < 0.000$ ), housing typology, accesses to neighborhood facilities ( $\beta = 0.614$ ,  $P < 0.000$ ), and satisfaction with the level of security in the housing estates ( $\beta = 0.090$ ,  $P < 0.000$ ), respectively, contributed significantly to influencing residents satisfaction with their housing situations in the estates investigated.

It is also evident from the result that a combination of the aforementioned two socio-economic and five housing-related variables has significant influence on residential satisfaction among the low-income residents in the 10 government-subsidized mass housing schemes in the study area. The ANOVA of the regression model produced  $F(104, 332) = 1962.78$ ,  $P < 0.000$ , and  $R^2 = 0.89$ , suggesting that the regression model accounts for about 89% of the variance in residential satisfaction in the survey.

**Table 3** Exploratory factor analysis of residential satisfaction variables

Characteristics of residential environment	MHcSS	MASS	Factor loading
Factor 1: Housing typology, accesses to social amenities, and neighborhood facilities	2.93	–	–
Satisfaction with the number of bedrooms in the residence		3.02	0.529
Satisfaction with the type of dwelling unit		3.39	0.618
Satisfaction with bath and toilet facilities in the dwelling unit		3.23	0.676
Satisfaction with the type of building materials used in the construction of the residence		2.98	0.524
Satisfaction with the location of residence in the estate		3.43	0.608
Satisfaction with aesthetic appearance of the house		3.26	0.672
Satisfaction with natural lighting and air circulation in living and bedrooms in the house		3.36	0.732
Satisfaction with water supply and sanitary services in the residence		3.23	0.683
Satisfaction with the level of noise in the housing estate		3.45	0.509
Satisfaction with electrical services in the residence		2.56	0.636
Satisfaction with the cost of acquisition/rent		3.26	0.586
Satisfaction with the distance from the housing unit to recreation/sporting facilities		2.04	0.636
Satisfaction with proximity of house to public infrastructure and urban services		2.64	0.589
Satisfaction with the distance from house to medical and healthcare facilities		2.04	0.576
Satisfaction with the distance from residence to Children's School		2.47	0.444
Satisfaction with the design of residence in relation to cultural values		3.26	0.669
Factor 2: size of main activity areas, privacy and accessibility to market	3.38	–	–
Satisfaction with the sizes of living and dining spaces in the house		3.66	0.624
Satisfaction with sizes of bedrooms in the house		3.79	0.558
Satisfaction with the sizes of cooking and storage spaces in the house		3.34	0.541
Satisfaction with the level of privacy in the residence		3.83	0.436
Satisfaction with the distance from residence to the nearest market		2.26	0.581
Factor 3: management of the estates	2.95	–	–
Satisfaction with the state of cleanliness of the housing estates		3.01	0.690
Satisfaction with management and maintenance practices in the housing estates		2.68	0.731
Satisfaction with rules and regulations within the housing estates		3.30	0.674
Satisfaction with the level of communal activities in the housing estates		2.82	0.518
Factor 4: economic environment of the estates	2.46	–	–
Satisfaction with the prices of goods and services in the housing estates		2.03	0.579
Satisfaction with the distance from residence to the place of work		3.21	0.552
Satisfaction with business and job opportunities within and around the housing estates		2.14	0.421
Factor 5: security	3.37	–	–
Satisfaction with the level of crime and anti-social activities in the housing estates		3.38	0.542
Satisfaction with security of life and property in the housing estates		3.36	0.509

**Table 4** Coefficients of regression analysis

	Standardized coefficients		df	F	Sig.
	Beta	Bootstrap (1000) estimate of Std. Error			
Respondent's sex	0.001	0.002	1	0.356	0.551
Age group in years	-0.004	0.004	1	1.250	0.265
Marital status of respondent	0.006	0.003	2	2.979	0.053
Highest educational attainment	0.005	0.003	2	2.907	0.057
Employment sector	0.009	0.005	3	3.150	0.026*
Length of stay in the residence	-0.002	0.004	1	0.358	0.550
Size of residence (number of bedrooms)	-0.003	0.005	1	0.446	0.505
Household size	0.001	0.004	1	0.073	0.787
Tenure type	0.001	0.002	1	0.378	0.012*
Satisfaction with housing typology, accesses to social amenities, and neighborhood facilities	0.614	0.011	37	2851.945	0.000*
Satisfaction with the size of main activity areas, privacy, and accessibility to market	0.180	0.010	17	326.823	0.000*
Satisfaction with management of the estates	0.193	0.011	16	297.156	0.000*
Satisfaction with the economic environment of the estates	0.167	0.010	13	290.100	0.000*
Satisfaction with security of the estates	0.090	0.007	8	173.291	0.000*

\* $p < 0.05$ 

## Discussion

Before delving into the discussion of the result on residents' satisfaction with their housing situations and factors influencing it in the housing estates sampled, it is an important note here that a greater percentage of the respondents in the survey were middle-aged and educated persons employed by the government. This finding did not come as a surprise because evidence in the literature (Awotona 1990; Etim et al. 2007; Federal Republic of Nigeria 2012) has shown that most government-subsidized housing projects in Nigeria are primarily targeted at public sector employees, while anecdotal evidence shows that those mostly employed by the three tiers of government in Nigeria are persons with tertiary education.

Regarding the respondents' satisfaction with their housing situations in the estates, the result shows that the residents expressed low satisfaction level and thus can be said to be generally dissatisfied with their housing situations in the 10 housing estates sampled. This is evident in the overall residential mean satisfaction score (RSAT) of 2.86 and 66% of the respondents who expressed discontentment with their housing conditions in the estates (see Fig. 3). This means that many of the low-income residents in the government-subsidized housing schemes developed between 2003 and 2010 in the study area felt that the housing environments in the estates have performed below expectations in meeting their current housing needs and expectations. This may imply that there are deficiencies in the housing estates, and thus a gap exists between what the

current housing situation is in the housing estates investigated and what it should be. This finding appears to contradict the previous studies in the USA by Rent and Rent (1978), South Africa by Aigbavboa and Thwala (2012), and Nigeria by Ibem and Amole (2013) which reported that low-income residents in government-constructed housing schemes in South Carolina, Gauteng Province, and workers estate in Abeokuta, respectively, expressed high levels of satisfaction with their overall housing situations. On the one hand, it can be argued that the differences in culture, number of respondents, the research designs, and time these studies were conducted among other reasons might help to explain this variation in results. This finding on the other hand can be linked to the dynamic nature of human needs and expectations as well as individual differences that make people feel and respond differently to similar or the same environmental conditions as explained by authors (Russell and Pratt, 1980; Caro and Gracia 2007) and previously highlighted in this paper.

The study also found that the respondents were most satisfied with the size of main activity area and privacy in their apartments and closeness of their homes to market but least satisfied with the economic environment of the housing estates. This suggests that the residents perceived the design and construction of main activity area of the housing units as adequate and consistent with their needs and expectations as well as the location of the housing estates in relation to the existing markets as relatively good. However, they viewed the economic environment within and around the housing estates as being inadequate in meeting their needs. It can be inferred from this result that in spite the fact that the residents expressed satisfaction with closeness of their residence to market, which might be as a result of good access roads and availability of transport services from the estates to markets; the main source of dissatisfaction with their housing situations in the estates is unfavorable economic environment and poor access to neighborhood facilities. Arguably, the level of satisfaction with economic environment and access to neighborhood facilities in the estates could be as a result of the location of the housing estates at the outskirts of the urban centers where major economic activities take place and key urban infrastructural facilities like schools, hospitals, shopping malls, recreation parks, and others exist. This might have contributed to the lack of business and job opportunities and poor access to basic amenities within and around the housing estates leading to high cost of goods and services as residents have to commute to other parts of the towns for the purposes of participating in their desired economic activities and gaining access to vital neighborhood facilities.

Although previous studies have reported similar results in government-constructed mass housing projects for the low-income earners in Nigeria (see Olatubara and Fatoye 2007; Ibem and Amole 2013), Malaysia (Mohit et al. 2010), and South Africa (Aigbavboa and Thwala (2012), these finding however contradict that by Shahriari et al. (2014) who reported that the low-income residents in Abadeh Mehr housing estate, Iran were most satisfied with the neighborhood environments but least satisfied with the design, planning, and construction of their dwelling units. One of the inferences to be drawn from these conflicting results is that the developers of government-subsidized mass housing schemes for the low-income households in the different countries appear to be giving varying degrees of attention to the different components of the residential environment in such schemes. This situation might be as a result of differences in public housing policies and mass housing experiences of governments in each countries or cities as the case may be.

Furthermore, the study findings corroborate those of other studies like (Rent and Rent 1978; Mohit et al. 2010; Ibem and Amole 2013) in showing that the respondents' employment and tenure status were the two socio-demographic variables with significant influence on residential satisfaction. The result also appears to be consistent with the finding by previous authors (Byun and Ha 2016) indicating that the concern for safety and security of lives and property has influence on residents satisfaction with their housing situations. However, the results contradict the findings by Ibem and Amole (2013) suggesting that age, sex, and education of the respondents and their length of stay in the residence (Rent and Rent 1978; Mohit et al. 2010) have significant influence on residential satisfaction among low-income earners in government-subsidized housing schemes.

In addition, although all the five factors extracted from the exploratory factor analysis emerged as significant predictors of residential satisfaction in the survey, the three factors with the most significant influence on the extent to which the low-income residents encountered in the survey expressed contentment with their housing situations in the estates in the order of their contribution are (i) satisfaction with management of the housing estates, (ii) satisfaction with the size of main activity areas, privacy, and closeness of home to the market place, and (iii) satisfaction with the economic environment in the housing estates. Notably, this finding partly corroborates that by Ibem and Amole (2013) indicating that management aspect contributed most to influencing residents' satisfaction with their housing situation in the core housing estate in Abeokuta, Nigeria. It also appears to be in agreement with findings of previous studies (Onibokun 1974; Hashim 2003; Mohit et al. 2010; Aigbavboa and Thwala 2012; Byun and Ha 2016; Ren and Holmer 2016) showing that satisfaction with the various components of residential environment, including the management aspect, is vital to understanding the extent to which residents are generally satisfied or dissatisfied with their housing situations.

In view of the findings of this study showing that a combination of the respondents' employment and tenure status and their satisfaction with the dwelling units, housing services, neighborhood environment, and management aspects emerged as the significant predictors of residential satisfaction in the 10 housing estate investigated, it can be inferred that the conceptual framework of this study as presented in Fig. 2 has been validated by our survey data.

## Conclusions and Implications of Study Findings

This study investigated the extent to which low-income earners in government-subsidized housing schemes in urban areas of Ogun State, Nigeria, are happy with their current housing situations and the factors that count for this. From the findings, two conclusions are made. The first conclusion is that the low-income earners encountered in the survey are generally not happy with their housing situations in the 10 housing estates constructed by government between 2003 and 2010 in the study area. The second conclusion is that the top two factors with the most significant influence on the extent to which the low-income earners are happy with their home environment in the housing estates are satisfaction with management aspect of the housing estates and satisfaction with the size of main activity areas, privacy, and closeness of home to the market place.

One of the key implications of this study is that although the residents of the 10 public housing estates constructed between 2003 and 2010 in urban areas of Ogun State, Nigeria are satisfied with the design and construction of the dwelling units, the entire housing package as found in the estates appears not to be meeting the housing needs, expectations, and aspirations of the low-income residents. This is primarily due to poor access to basic social amenities and neighborhood facilities, unfavorable economic environment, and ineffective and inefficient management practices in the housing estates. Since residential satisfaction is a measure of the quality of life of residents, this study implies that the observed unsatisfactory housing situations in these residential estates might have adverse implications for the quality of life, health, and productivity of the residents. Therefore, in order to enhance satisfaction with housing environment among low-income urban residents in government residential estates, housing policy makers, designers, and developers should ensure that the same level of attention given to the design and construction of dwelling units is extended to the provision of basic social amenities and neighborhood facilities and management of future mass housing projects in the study area.

In view of the foregoing coupled with the fact that the main sources of dissatisfaction among residents in the 10 housing estates appear to be related to institutional framework and practices engaged in the administration, management, and maintenance of the dwelling units and neighborhood environment (i.e., management aspect), it is imperative that government-subsidized housing schemes for the low-income earners be located close to vital neighborhood facilities to ensure that residents have unhindered access to key urban services and facilities. Most importantly, concerted efforts should be made by the promoters of government housing programs to provide basic infrastructural facilities and services in mass housing schemes. To also improve the economic environment of government-constructed massing housing projects, it is suggested that public housing developers should consider making provisions for home-based enterprises (HBEs) in such schemes so that low-income households can effectively utilize their home environment for small scale business activities, which will provide additional income for their families. In achieving this goal, there is a need for both the developers and residents of government housing schemes to work together at all stages of public housing provisioning in the study area. This will help in ensuring that the needs and expectations of end users are adequately taken into consideration at the conception, development, and operational stages of such schemes.

As is true with studies of this nature, the current research is limited in a number of ways. First, this study is limited as only those housing estates constructed by the Ogun State Government and occupied between 2003 and 2010 in the study area were investigated. This means that the result may not apply to other government housing estates constructed before and after this period in the study area. Second, there is also limitation in the number of variables included in the study and the bias of the respondents in the survey. Since 31 variables were used to investigate the residential environment in the 10 housing estates, further studies are needed in other government-subsidized housing estates constructed before 2003 and after 2010 with the inclusion of more variables.

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