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To cite this article: Foluke Oladunni Jegede *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **665** 012031

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# Assessment of Residential Satisfaction for Sustainability in Public-Private Partnerships (PPPs) Housing Estates in Lagos State, Nigeria

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## Abstract

Approaches towards public housing has been noted as Government-sponsored over time, the government have been accorded the responsibility of provision of safe, secure, sanitary, accessible and affordable housing for its citizens, both for low, medium and high incomes. Also in the fulfilment of the United Nations Sustainable Development Goals (SDGs), Goal 11; which seeks to make towns, cities and settlements an inclusive habitation that is safe, resilient and sustainable for all categories of people by the year 2030. However, due to various limiting factors, the government have run short of meeting this expectation and in order to bridge this gap, it has brought about the Private-Public Partnership (PPP) schemes to meeting mass housing provision. However, the success of Public-Private Partnership is dependent on certain socio-economic variations. This study assessed the residential satisfaction amongst residents of selected two public-private partnership housing estates in Lagos State, Nigeria. With a view to understanding the performance of the estates in meeting residents housing needs. This is done by identify the socio-economic and demographic characteristics of residents, examining the physical characteristics of housing units in the PPP housing estates and identifying the factors that influence occupants' satisfaction with the PPP housing estates. The data were analysed using descriptive statistics and categorical regression analysis. The result showed that the housing situations are generally satisfactory to the residents. The residents were mostly satisfied with their housing unit features, followed by their neighborhood environment and least satisfied with the maintenance practices. The study revealed that the residents socio-economic characteristic and demographic is the most significantly predictor to the residents level of satisfaction. The study concluded that satisfaction derived by residents of the PPP housing estates studied can be improved by provision of better housing maintenance practices and effective infrastructures and services.

**Key words:** Residential Satisfaction, Sustainable development, Public-Private Partnerships, Housing Estates, Lagos State.



## 1. Introduction

Housing is one of the necessary needs of man's existence. It is provided as protection from the elements of weather, wild animal and security of properties. As a result of civilisation, man has progressed from having housing from only post and lintel to having innovative new ways to sheltering. This comes with the discovering of new building materials and technologies to achieving maximum satisfaction in the provision of housing. This discoveries has not just been limited with the provision of just residential shelters, but to other form of building purposes, such as worship places, sport facilities, education centres, and commercial centres among others.

However, the increasing global population and economic challenges experience in most parts of the globe, especially in developing countries such as Nigeria, had resulted in the provision of a means of residential housing forms on a larger scale to cater for the needs of population that is continually increasing. This housing type is refers to as mass housing schemes; a form of large number of housing provision for large number of people. This is provided most times by the government and is refers to as public housing, although with different name in different countries, such as "social housing" or "state-housing" in the United Kingdom and "welfare housing" in USA [14]. However, there are various problem associated with public housing and is more critical in developing countries such as Nigeria as specify by [30] , [1] and [23]. This problems includes among others, inadequate and non-availability of facilities and infrastructures, inadequate dwelling space, overcrowding, poor sanitation, increase in crime, poor maintenance culture, and environmental degradation. The inability of government alone to meeting these various problems of public housing in addition with the problem of population increase and economic factors, had brought on-board the public-private partnership (PPPs) housing schemes. This is an advancement in the provision of public mass housing by the private sectors for citizens, a verge in solving some of the highlighted problems of public housing is what the introduction of the private partnership is all about. In view of the attention on the building sector, which is caused by the increasing rate of urbanization especially in developing countries has attracts international attention. This is due to the result of the massive and intense visible shortage in adequate housing provision, which has become overwhelming in respect with the population of countries like Nigeria. The need to know the role and the situations of PPP and its contributions to meeting the mass public housing needs in Nigeria is important.

Pubic Private Partnership (PPP) scheme in housing and urban infrastructure provision has been witnessed by almost all countries of the world since its adoption into the housing sector [40]. Part of this success is measured in relation to housing units developed through PPP delivered housing units, which may vary in different countries as a result of political, economic and cultural factor differences. This has proved the relevance of PPP in many countries of the world [6].

All across Nigeria, PPP has been adopted at all Government levels, the Federal, State and Local levels. PPP is important to achieving an environment that is market oriented, by shifting focus away from a bureaucratic or state-led management, allowing solutions provided by private and public investors to complement themselves, this is explained by [18]. Multi-nationalists like G. Cappa, Julius Berger and large scale estate developers like CITEC, HFP, and Seagate Estate Developers are at the fore row of contributing to the provision of residential houses. Serviced plots, mostly used by high income earners are usually provided by them also. Middle and low income housing delivery has also been established by some small-scale contractors [10]. Practice proves however that, value adding PPPs are rare and private partners with personal interests and gain make urban renewal and low-cost housing difficult to realize.

The intention of PPP is meant to assist government develop more effective integrated solutions, foster innovative approaches that could bring about reduction in cost and time used in executing projects, share risks with the private partner, foster quality results and build an interest to a part of projects in bidders, as opportunities to learn new skill and acquire advanced technology [27].The adoption of PPP, still has not solved housing problems both in qualitative and quantitative terms. This is evident

in reports gotten from surveyed areas of the country. Only a few PPP housing projects have been successfully implemented [19].

Notwithstanding, PPP is meant to ensure adequate housing provision, it is important to observe users satisfaction from the schemes. This study evaluates the level of satisfaction of users of PPP schemes in Lagos State, Nigeria, with the view to assessing the performance of this schemes in meeting the users housing needs. Taken into consideration (i) the socio-economic and demographic characteristics of residents of PPP housing estates in the study area, (ii) the physical characteristics of the housing units, (iii) the level of satisfaction of the residents and identifying the factor that influences residents' level of satisfaction with the PPP housing schemes in the study area.

## **2. Literature review**

### ***2.1 Housing Importance and Public Housing in Nigeria.***

Next to the gathering of food as the oldest conscious activities of man is shelter making, which is the art and science of construction. Housing has been defined by different authors. Simply it is the provision of places to live and work. Housing provides a place where the activities of man can be carried out safely and comfortably. There are different forms of housing, the single-family detached homes and the multi-family residential dwelling and there can be variations to these types, in their scale and in the number of the dwellings provided. The various housing types could be provided by private entity or by the government. Housing provided by the government in most times are refers to as public housing. Public housing, which is a form of housing that depends on the use of public funds in its delivery to the citizens. Study by [22] referred to public housing as government provided or subsidized housing projects, which presumes the inability of the private sector to fully meet the housing needs of the entire citizenry, especially the low-income group.

The history of public housing in Nigeria dated back to the colonial period prior to the independence in 1960 with the provision of residential quarters for both the expatriate and Indigenial staffs, especially the workers at the railway and the police. These efforts advanced to the formation of housing corporations tasked with the responsibility of providing housing for the general public. Also, the 1970s saw the Federal government of Nigeria actively involved in the provision of residential public housing. The importance of public housing to the government has since this period been greatly increased with new and more innovative way to achieving mass housing provision to the public. Different authors such as [38]; [21]; [19]; [20] and [2] evaluated issues with the emergence of public housing in Nigeria.

### ***2.2 Public-Private Partnership Housing in Nigeria.***

The Public-Private Partnership (PPP) housing, simply means a system in which the government and private individuals are associated persons and sharer in business of housing provisions, sharing risks and profits. This partnership also, means the existence of a contract that places persons in a state of being called partners in any business of providing effective housing scheme to bridge the housing deficits. However, in order to achieve a very effective housing provision of this type, a good partnership amongst the country's public, private, voluntary, non-governmental organizations and individuals for this cause are very essential. Also, Public-Private Partnership (PPP) is a pragmatic reaction to dire societal conditions of providing a place of above, not just a politically-inspired ideology. [28] explained that PPP carries out projects, which are usually delivered or provided by the public sector, by establishing a partnership involving the private and public sector, just as Public Private Partnership (PPP) on its own, is being made known as one of the partnering strategies that is an alternative approach to the provision of goods and services.

Studies by authors have defined PPP as the contractual arrangements involving the private sector and the public sector with the purpose of well-defining and sharing goals in a well-managed, cost-effective, quality and sustainable order ([18]; [3]; [35]). The PPP process identifies that the private and public sectors have essential benefits relevant to the other in specific task executions, therefore, these advantages of one helps to cover the error or disadvantage of the other. Therefore, organisation of the public-private partnership initiative in housing is by the government with the purpose of exploring efficient and replicable housing delivery approaches, by creating effective and sustainable

partnerships between the public and private sectors, this is explained by different authors such as [10] and [18].

However, the greatest benefit of PPP to the development of infrastructure is the availability of financial, technical and managerial resources from the private sector for the delivery of quality social and economic infrastructure [34]. This is to ensure efficiency and subsidise costs of infrastructure and service operation and management. This approach is not a withdrawal by the government or the public sector from basic services and infrastructure provision and critical areas of interventions. Rather, it improves the performance of utilities and services [34].

Also, the private sector is seen as the means to solving the problem of shortages and unfair prices of shelter in Nigeria by the new national housing policy, 2006. The national housing policy supports the public-private sectors partnership scheme as it provides for the increasing population of the country. The government is interested in providing a housing market where the public can purchase a home for themselves through a lenient and fair mortgage system, explained by [34]. The government now enables or facilitates the creation of a suitable environment that embraces individual and cooperative housing actors as implementers of housing policy. The policy moves real estate developers in the country to be under one association that the government can partner with, so as to give low income earners the opportunity to own a house and developers are required to develop houses to serve specific targets [37]. This allows for these groups to partner with government and her agencies in providing required housing in key sectors, both in old and new settlements, especially in cities like Lagos.

Furthermore, the application of the PPP initiatives is a global arrangement. Turkey has one of the oldest examples of partnerships for housing development involving the central government, the municipality and other sector organization [39]. [36] noted that between 1979 and 1990, 120,000 dwellings for the low-income earners was provided in 27 municipalities' partnership experiences. The total housing delivery in Turkey increased from 18.1 to 25.3 between 1985 and 1990, as a result of the partnership. In Nigeria, the adoption by the Federal Housing Authority (FHA) of PPP with three real estate developers, which have within a decade brought about the completion of more than 500 housing developments within a decade from the agreed 807 units is an achievement of the initiative [8].

### ***2.3 Public Housing and Public-Private Partnership in Lagos State.***

Lagos state is one of the largest and fastest growing cities in Nigeria and Africa. As a result of its high growth in industrial capacity, the rate of housing development is inadequate in respect to the rate of population growth. This is a problem which has remained intractable.

The establishment of Lagos Executive Development Board (LEDB) brought about the beginning of public housing in Lagos and Nigeria. This is as a result of the rise of communicable diseases and epidemics, and the rise to fight against unhealthy living conditions in Lagos. Before then, the only Public housing existing were the Governmental Reserve Areas (GRAs), built to accommodate the colonial foreign firm administrators. Yaba Estate for the workers and Lagos Housing Scheme (LHS) was LEDB's first attempt at public housing delivery [25]. The government is responsible for the provision of public housing, as it is the citizen's fundamental human right embedded in the United Nations Habitat Agenda- the global call on human settlements. The government is saddled with the responsibility of providing safe, secure, sanitary, accessible and affordable housing for its citizens. Government-provided housing is in most cases done on a large-scale housing development and ownership, directly managed by the government, from outright sell to rents and it is sternly distributed in relation to need.

Furthermore, the Government's efforts to reduce housing problems faced by Nigerians have not proven to be effective. Records have shown in a study by [29]; [40] that strategies outlined by public housing have not provided solution to the housing need of low-income earners. This can be as a result of myriad challenges faced by housing programmes, which includes poor funding, bureaucracy, improper organisation, and mismanagement of resources and the high cost of housing [17]. On the

other hand, it was observed by scholars like [7]; Ogu and [32]; [24] that those strategies and programmes took a turn to provide subsidized and affordable housing for middle-income and high-income earners. Therefore, Nigeria can be said to have followed an elitist orientation in regards to public housing delivery strategies over the years, against her socio-economic context where most are low-income earners.

The recent housing issues in places like Lagos, has brought to light responsibility of housing provision, which has to be shared amongst the government and the citizens, as the government cannot handle it alone. Private housing involves individuals or group of people other than the government contributing to housing production, owning and managing housing. The more the multinational companies are involved in housing delivery, the more the number of housing delivered. But on the other hand, the more it can become uncomfortable for national economy, as high-cost rental housing are provided, which is unaffordable for low-income earners that form majority of the nation's population. This is one of the problems PPP schemes are facing.

#### ***2.4 Problems of Public-Private Partnership in Nigeria.***

The study by [18] described the weakness and successes of the PPP and how to bring about issues that requires necessary attention to achieve adequate and consistent mass housing delivery. The problems includes (i) awareness (ii) the problem of affordability (iii) Association problem which involves the delays brought on the completion of PPP projects and meeting up with deadlines as a result of issues like the bureaucratic bottleneck in the on-time release of FMBN credit fund. These delays are evident in production, commercial bank interest rates, government's provision of infrastructure, (iv) Organisational Constraints, (v) Lack of motivation for private investors, (vi) Non-Adherence to planning standard, (vii) The Use of Inexperienced housing developers: Quality of big-time jobs depends greatly on the experience of the housing developer but perhaps as a result of unfavourable time schedules and inadequate and uneasy to access well trained professionals to pool and carry out such big-time jobs, they are contracted to inexperienced housing developers causing problems to the quality of the job and accountability for the entire project execution and (viii) The Challenges of Poverty: many families in Nigeria cannot afford a good home in Nigeria because the market for the purchasing houses based on cash and carry reduced marketing drives and hence home-owning citizens in the country ([18]; [34]). This are obstacle to PPP's aims and policy thrust.

#### ***2.5 Measuring Resident Satisfaction in Housing.***

Study by [9] indicated that the Level of satisfaction could be measured by the noticed differences between achievement and aspiration, which is influenced by past experience and present expectations. Housing needs and expectations evolve as residents go through different life situations and studies have shown that social and physical factors like job, religion, residence, family among others affect quality and satisfaction, in which quality life can be seen as the combination of these different factors. Also, decisions are based on subjective assessments of a situation and how attributes of the factor is being described affects the examination of the factor and the standard used in assessing. However, the standard used in assessing might be biased on personal aspirations, expectations, and needs.

Furthermore, the level of satisfaction with these factors is determined by the assessment of these factors. Criticism of satisfaction under quantitative assessment has led to discussions that perceive satisfaction as a subjective reply to an objective environment. Scepticism and criticism have assumed measures of satisfaction as to have multiple truth affairs, as reports tend to be equally high, in objective reality, objective measure of quality and context does not have a right stand with the subjective measures of satisfaction, therefore concluded invalid measures, satisfaction with an object is too unstable to base actions, as it varies with time and with personal principles and social aspirations and Sub-optimal environments as a result of too much attention on satisfaction [11]. The criticisms show limitations that should be considered for dissolving results, which still seem to require the construct of satisfaction [11]. However, [11]; [42], also added that based on the following factors, subjective responses do not required exaggerated scepticism, this is due to (a) the similarities and differences between subjective and objective indicators of well-being, (b) the reliability of quantitative assessment, (c) the measures of reality of factors being examined, and (d) the aim of

analysis [5]. Also, [12], explained that satisfaction cannot be explained by objective measures only, with [26] noting that assessable factors are addressed by satisfaction. However, study by [41] showed that satisfaction is an attitude and it is affected by affective, cognitive, and behavioural variables. Emotional and evaluative constitute the affective and forms a “global representation of the affective reaction of people to the physical and social environment in which they live” that involves multiple actions. Perception and beliefs about the physical environment, other residents etc. constitutes cognitive and behavioural intentions, which are assessed by the behavioural component. In all, conception and interpretation of satisfaction simply means that a single question is not enough to assess satisfaction as it is a multifaceted construct. However, four questions, showing affective, cognitive and behavioural components were used by the study of [5] to solve the complexity of satisfaction in housing, which are; how satisfied the respondent are with living in the place, how long the respondent want to live in the community, If the respondent would again like to live in another place like that and finally, would the respondent recommend that place to someone else.

Furthermore, the study by [11] proposed a model of housing satisfaction, describing six factors that predict resident satisfaction. They include objective environmental attributes, behavioural and normative beliefs, individual characteristics, emotions, perception, and behavioural intentions. These factors come together to contribute and constitute qualities of residential satisfaction. However, social dimensions have proven to be more important in evaluating residential satisfaction than previously thoughts, as explained by [13] and where other factors like race also alter resident perception [33]. This researches explores comparison between long-time and newly arrived residents in respect to characteristics that influence their residential satisfaction.

It is clear that quality of satisfaction is influenced by different factors including physical, social and cultural, economic, and public services, which will also be investigated. Variables like housing conditions, the neighbourhood, among others, constitute the physical environment. Variables such as family relations, neighbours, and community sensitivity make up the social and cultural aspect. Variables like employment and retail conditions form the economic environment. The public services are such like transportation, infrastructures, and open spaces. Subjectively, these characteristics vary in scale of preference for various resident. Therefore, the assessment of these characteristics combined will give an overall result on the quality of satisfaction for this research.

### 3. Methodology

Data sources used for this study are primary data, derived from the administration of questionnaires to residents of the surveyed estates in Lagos, Nigeria. Two PPP housing estates in the mainland area of Lagos, having both the medium and low income housing units was selected for this study. These are Diamond Estate, Isheri-Olofin, Lagos and Low-Income Housing Scheme, Isolo, Lagos (LIHS Estates). Diamond estate Isheri-Olofin is a Federal government PPP housing project. The public sector partner is the Federal Housing Authority –FHA and the private developer is Locke international. The project is located in Lagos. The partnership comprises of 554 units of three bed room low income houses constructed and delivered to Federal Housing Authority by Locke international. The maintenance and management of the estate is by the estate resident association. Low-Income Housing Scheme (LIHS), Isolo, scheme was constructed by the Lagos state Government around 2003-2007 for low income earners. The Lagos State Development and Property Corporation (LSDPC) was the public agency involved. The project was executed under the PPP housing delivery system in Oshodi-Isolo Local Government Area of Lagos State. It is made up of seven blocks of six 3 bedroom flats in three locations with 3 blocks of type A and 2 blocks of type B and C. Each block is made up of 2 flats of 3 floors is for 42 households. Within the estates are other facilities such as clinic, primary and secondary schools, recreation/event centre, recreation centre, offices, churches, mosque, playgrounds, auto-mechanical and related workshops, 2 mini-markets, retail shops and mini shops [8]. The population distribution of the two estates selected for this study are shown in Table 1.

Table 1: The population and sampling of the housing units in the two studied estates.

Housing estates	Total Housing Units.	The percentage of the total population (%)	The percentage of the sample size used for the study (%)	Sample size used for each estate (Housing units)
FHA 4 Diamond Estate, Isheri Olofin Middle Income Housing (PPP)	554	72.51	60.0	122
LSDPC 55 LSDPC Low Income Housing, Isolo (BlocksA-G): 7Blocks x 3-Bedr Flats (PPP)	210	27.48	40,0	82
<b>Total</b>	<b>764</b>	<b>100</b>	<b>100</b>	<b>204</b>

Source: Compiled by the Author

The selection of the study area for the research was carried out on the mainland area of Lagos State, due to the soil nature of many of the main land, this can have effect on the construction methods used in the buildings, which seems to be cheaper on the mainland area of Lagos. This is to align with the sustainable factor of housing provision, being able to provide a cheaper and affordable mass housing. Also, for the choice of selection of these two housing estates, there are other PPPs estates on the mainland, but many of them have small housing units in number that may not be adequate for the study. The two estates selected were part of the earliest PPPs schemes done by the government.

Purposive sampling technique was used in carrying out the survey in the selected case study estates. One questionnaire was distributed per each household, questionnaire was administered by hand to the respondents and retrieved by hand by the researchers. From Table 1, a population of 554 units was represented from Diamond Estate and 210 units represented from the LSDPC, PPP Low income Housing Scheme, making a total of 764. Sample size was calculated using the formula by [43] for finite population used by previous researcher such as [23] and [4]. The formula is given as:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = sample size, N = population size, e = level of precision expressed as a proportion (0.06). The level risk assumed at + 6%.

Using this formula, N = 764, e = 0.06

$$n = 764 / [1 + 764(0.06)^2]$$

Therefore, n results at 204 sample size.

The data was collected using three sections for the questionnaire. The first section of the questionnaire was used to gather data on the socio-economic and demographic characteristics of the residents, who are the respondents in the survey. The second section of the questionnaire was used to obtain data to examine the physical characteristics of housing units in the studied PPP housing estates, the third section of the questionnaire was used to collect data on the extent to which the occupants of the studied PPP housing estates are satisfied with their current housing situation. The questions were structured based on 5- point Likert type scale with 1 representing Never; 2 for Rarely, 3 for Not Sure; 4 for S= Sometimes and 5 for A=Always.

204 questionnaires were administered and all was retrieved.

Questionnaires were shared amongst the estates to meet a proportion 60% to 40%. 60% going to Diamond Estate, which is 122 questionnaires and the remaining 40% going to LIHS estate, which is 82, from the retrieved questionnaire, all 204 were imputed. The Statistical Package for the Social Sciences (SPSS) software was used to analyse the data.

#### 4. Result and discussion

##### 4.1. Residents Socio-Economic Characteristics.

The respondent's socio-economic and demographic characteristics from the survey is shown in Table 2.

Table 2: Respondents Socio-economic and Demographic characteristics.

Respondents' Characteristics/Variables	Categories	Frequency (N= 204)	Percentage
<b>Sex</b>	Male	93	45.6
	Female	111	54.4
<b>Age</b>	18-33 years	94	46.1
	34-49 years	67	32.8
	50-65 years	23	11.3
	over 66 years	20	9.8
<b>Marital Status</b>	Single	89	43.6
	Married	89	43.6
	Widowed	15	7.4
	Divorced	11	5.4
<b>Education</b>	No	7	3.4
	Secondary	28	13.7
	Tertiary	168	82.4
	No response	1	0.5
<b>Employment Type</b>	Public Servants	26	12.7
	Private Sector	44	21.6
	Self-Employed	95	46.6
	Unemployed	28	13.7
	Retirees	11	5.4
<b>Monthly Income</b>	Less than N41,000	46	22.5
	N41,000- N81,000	48	23.5
	N82,000- N122,000	48	23.5
	N123,000- N163,000	36	17.6
	More than N163,000	26	12.7
<b>Tenure Status</b>	Owner-Occupier	50	24.5
	Renter	133	65.2
	Free Occupation	21	10.3
<b>Length of Stay in House</b>	Less than 1year	22	10.8
	1-5years	96	47.1
	5-10years	35	17.2
	More than 10years	51	25.0
<b>Household Size</b>	1 person	28	13.7
	2-5 persons	148	72.5
	6-10 persons	21	10.3
	More than 10 persons	7	3.4
<b>Ethnic Origin</b>	Hausa/Fulani	22	10.8
	Igbo	55	27.0
	Yoruba	110	53.9
	Others	17	8.3

Source: Compiled by the Author (2019)

The Socio-economic and Demographic characteristics of the respondents shows that majority (over 54%) of the respondents were females, while the minority (almost 46%) were males. Respondents within the age range of 18-33 years contributed to 46.1% of the sample, those within the age range of 34-49 years were 32.8% and those within the age range of 50-65 years were 11.3%, while respondents within the age range of over 60 years represented 9.8% of the research sample.

This result indicated that majority (almost 80%) of the respondents were of ages, between 18-49 years, while the minority (less than 10%) were retired and aged, over 66 years. The result of the

marital status of respondents who are single is given as 43.6%, 43.6% married, 7.4% widowed and 5.4% were divorced, showing clearly that majority of the study population were singles and married with evenly distribution. Respondents with tertiary education as their highest level of educational attainment were 82.6%, those with secondary education as their highest education attainment were 13.7%, while the remaining 3.4% had no formal education of any sort. Less than 1% of the research population did not respond

This result indicates that majority (Over 82%) of the research population are those who have tertiary education, while the remaining percentage (almost 18%) either have secondary education or no formal education at all. The results of the employment status of the respondent shows that a total of 80.9% are employed either by self-employments, private sector and public servants, and 13.7 are unemployed, while those retired were 5.4% of the research population.

The monthly income of the respondents shows that majority (over 64%) of the respondents were medium income earners of monthly income between N41, 000 and N163, 000, over 22% of the respondents were low income earners of monthly income of less than N41, 000, while the least almost 13% were those that can be classified as high-medium income earners with N163, 000 and more monthly income. For the length of tenure it shows that majority (Over 65%) are renters, 24.5% were owner occupiers, while the free occupants are over 10% of the research sample. This also means that majority of the respondents are non-owner occupiers. Majority (over 89%) of the respondents had lived in the estate residence 1 year and more, while respondents that have lived less than 1 year in their estate residence are least (almost 11%). This further indicates that a good number of the respondents have lived nothing less than a year in their estate. Enough time to gather good knowledge-base about the estate residences. The result of the household size shows that majority (over 86%) of the respondents were those with less than or exactly five occupants while those with more than 10 occupants were the least (almost 4%).

#### 4.2 Housing Characteristics

The housing characteristics of the surveyed estates is shown in Table 3.

Table 3: Housing characteristics

Housing Characteristics/Variables	Categories	Frequency (N= 204)	Percentage
<b>House Type</b>	Single family Bungalow	110	53.9
	Semi-detached bungalow	12	5.9
	Multiple-family Terrace row housing	1	.5
	Multi-storey block of flats	81	39.7
<b>Number of Bedrooms in Dwelling Units</b>	1	31	15.2
	2	41	20.1
	3	127	62.3
	4	5	2.5
<b>Number of families in the building</b>	1	72	35.3
	2	31	15.2
	3	28	13.7
	4	12	5.9
	More than 4	61	29.9
<b>Shared building Facilities</b>	Entrances	59	28.9
	Staircase	48	23.5
	Car Park	35	17.2
	Children play area	3	1.5
	None	57	27.9
	Others	1	.5
	No response	1	.5
<b>Provided needed spaces</b>	Space for shop	42	20.6
	Storages	46	22.5
	Visitors' toilet	32	15.7
	Guest room	21	10.3
	Laundry	63	30.9
<b>Manner of waste disposal</b>	Designated dump sites	4	2.0
	Independent collectors	38	18.6
	Estate approved collectors	162	79.4
<b>Main source of water in apartment</b>	Water vendors	4	2.0
	Wells	12	5.9
	Borehole within the estate	44	21.6

	Borehole outside the estate	1	0.5
	Borehole within your premises	118	57.8
	Water Corporation	25	12.3
<b>Main source of electricity in apartment</b>	Personal generator	12	5.9
	PHCN	188	92.2
	Electricity generator in the estate	1	.5
	Solar panels and inverter	3	1.5
<b>Walling materials</b>	Burnt bricks	3	1.5
	Sandcrete Blocks	200	98.0
	Compressed Stabilized Laterite	1	.5
<b>Wall finishes</b>	Cement sand plastering	17	8.3
	Painted	180	88.2
	Ceramic Tiles	7	3.4
<b>Type of windows used in the house</b>	Timber	1	.5
	Glazed louvers	67	32.8
	Glazed aluminium	136	66.7
<b>Type of doors used within the house</b>	Plywood flushed	83	40.7
	Panelled timber	98	48.0
	Steel push	23	11.3
<b>Type of external doors to apartments</b>	Timber	95	46.6
	Aluminium Glazed	26	12.7
	Steel	82	40.2
	No response	1	0.5
<b>Type of floor finishes</b>	Cement screed	43	21.1
	PVC Tiles	60	29.4
	Ceramic Tiles	100	49.0
	No response	1	0.5
<b>Type of artificial ventilation mechanisms used</b>	Fans	117	57.4
	Air-conditioners	1	.5
	Fans and Air-conditioners	86	42.2
<b>Type of electricity lighting</b>	Filament Bulbs	42	20.6
	Energy-saving bulbs	96	47.1
	Fluorescent lamps	24	11.8
	Energy-saving fluorescent lamps	42	20.6
<b>Type of ceiling Material(s) used in the house</b>	Asbestos	93	45.6
	Mineral Fibre	10	4.9
	Acoustic ceiling	15	7.4
	PVC strips	25	12.3
	Polished timber	7	3.4
	Plaster of Paris (POP)	54	26.5
<b>Type of roofing material</b>	Galvanized iron	15	7.4
	Asbestos	27	13.2
	Aluminium long span	144	70.6
	Aluminium steep tiles	12	5.9
	Stone-coated Step Tiles	6	2.9
<b>Type of perimeter fencing</b>	No perimeter Fence	72	35.3
	Sandcrete blocks	96	47.1
	Metal	32	15.7
	Plants/trees	4	2.0
<b>Nature of maintenance of the houses</b>	Individual residents	132	64.7
	Contractors engaged by the residents	42	20.6
	Owners of the estate	15	7.4
	Government Agencies	15	7.4

Source: Compiled by the Author (2019)

Results of the housing characteristics shown in Table 3. For housing types, single family bungalow ranked highest and constituted 53.9% of the sampled houses. Next to this are multi-storey blocks constituting 39.7% and semi-detached bungalows, constituting 5.9%. Multiple-family Terrace row housing are 0.5%. This result is an indication that the majority (over 62%) of houses sampled were 3 bedroom apartments; indicating that a lot of emphasis was laid on the construction of 3-bedroom houses in mass housing projects in the study. From the results in Table 2, it shows that from the shared facilities in the housing types, majority (over 28.9%) of the families shared entrances in their buildings and the least frequently shared facilities are the children play area and also there are some spaces needed by the responded which the housing type had not provided for, showing that 30.9%

needed laundry, 22.5% storage space, 20.6% shops, 15.7% visitors' toilet and 10.3% guest room. Results for the services provision in the houses shows that for disposal of domestic waste from individual households, majority of the households (79.4%) used estate approved collectors and a very minimal number of households (2%) used designated dump sites. For the main source of water supply, majority (57.8%) of the households use borehole within their premises, while the least percentage of households (0.5%) use boreholes outside the estate and for main electricity supply, majority (92.2%) of the households use PHCN within their houses, while the least percentage of households (0.5%) use electricity generator in their estate.

The results of the finishes for the buildings showed that the walling material used in the houses to be majority (98%) sandcrete blocks, while the least used walling material (0.5%) is compressed stabilized laterite, with the walling finishes used in the houses having a majority (about 88%) finished with paint, while the least used wall finish is the ceramic tiles with 3.4% of households using it. A majority (about 66.7%) of the houses had glazed aluminum windows while the least used window type is timber with 0.5% of houses using it. The types of doors used within the houses were analyzed to be majority (about 48%) paneled doors, while the least used door type with 11.3% is the steel push doors. And for the external door, a majority (about 46.6%) of the houses had timber external doors while the least used external door type used was the aluminum glazed with 12.7% of the houses using it.

Also, for the floor finishes, about 49% of the houses had ceramic tiles as a floor finish, while the least used floor finishes type used was cement screed with 21.1% of houses using it. Ceiling material used with the highest about 45.6% of the houses having asbestos ceilings, while the least used ceiling material was polished timber with 3.4% of houses using it. About 70.6% of the houses had aluminum long span roofing sheet as roofing materials, while the least used roofing material were stone-coated step tiles with 2.9% of houses using it. About 47.1% of the houses used sandcrete blocks for the perimeter fencing, while the least used material for the perimeter fencing is the plants/trees having 2% of houses using it.

Overall, the general maintenance of the houses in the estates, shows that a majority (about 64.7%) of the houses were maintained by individual residents, 20.6% by contractor engaged by the residents, while the houses are least maintained by owners of the estate and government agencies with result showing as 7.4% each. This indicated that the overall responsibility of care and maintenance of the estates rest solely of the residents, either the houses are rentals or owners occupied. An indication of less attention of the PPP responsibility in the post occupancy responsibilities of the estates. Figure 1 and Figure 2 shows the block of flats in the LSDPC Low Income housing Estate Isolo and the FHA Diamond Estate Isheri-Olofin Estate respectively.



**Figure 1: Showing Isolo Low Income Housing Scheme.**

Source: Author's field work.



**Figure 2: Showing signage at the entrance of diamond estate.**

Source: Author's field work.

#### **4.3. Residents' Satisfaction in Housing**

The results of the satisfaction are analysed based on these areas, which are (i) Housing unit features (ii) Neighborhood Environment (iii) Maintenance practices. This is done using the third section of the questionnaire used for the study.

SPSS transformation/computation of ordinal variables on different scales was used to carry out this analysis. This is done to find the mean score, which will determine the level of satisfaction, residents derive from the current condition of the estates. Application of this is in three categories, which are Very satisfied (4.00-5.00), Satisfied (3.00-3.99), Dissatisfied (0.00-2.99), and these results showed the extent to which residents of the PPP housing estates studied are satisfied with their current housing conditions as shown in Table 4, Table 5 and Table 6.

**Table 4: Residents' satisfaction derived from the Housing Unit feature**

	N	Mean	Std. Deviation
Mean Satisfaction with Housing Units	203	3.5696	.47067
Valid N (list wise)	203		

Source: Compiled by the Author

The study assessed the satisfaction derived from the housing unit features by the respondents in the survey. Table 4 showed that the mean satisfaction score is 3.5696. This result reveals that residents are satisfied with the current condition of the housing unit features.

**Table 5: Residents' Satisfaction derived from Neighborhood Environment**

	N	Mean	Std. Deviation
Mean Satisfaction with Neighbourhood Environment	202	3.4829	.58918
Valid N (list wise)	202		
Missing	2		

Source: Compiled by the Author

The study assessed the satisfaction derived from the housing unit features by the respondents in the survey. Table 5 showed that the mean satisfaction score is 3.4829. This result reveals that residents are satisfied with the current condition of the Neighbourhood Environment.

**Table 6: Residents' Satisfaction derived from the Maintenance Practices**

	N	Mean	Std. Deviation
Mean Satisfaction with Maintenance	204	2.9155	1.09743
Valid N (list wise)	204		

Source: Compiled by the Author

The study assessed the satisfaction derived from the housing unit features by the respondents in the survey. Table 5 showed that the mean satisfaction score is 2.9155. This result reveals that residents are not satisfied with the current condition of the Maintenance practices in the estates.

**Table 7: General Overall Analysis of Residents' Satisfaction with Current Condition derived from the housing estates.**

	N	Mean	Std. Deviation
Total Mean Satisfaction	196	3.2334	.63741
Valid N (listwise)	196		
Missing	6		

Source: Compiled by the Author

The study assessed the satisfaction derived from the housing unit features by the respondents in the survey. Table 7 showed that the mean satisfaction score is 3.2334 and this result revealed that residents are satisfied with the overall condition of the studied estates.

However, it is important to know the factors that influence the residents' satisfaction with their housing conditions. A total of 14 indicators were used to investigate factors that influence residents' satisfaction with the studied PPP housing estate. The indicators were entered as independent variables in a Categorical multiple Regression (CATREG) analysis. The dependent variable was entered as overall mean satisfaction, which is the average satisfaction derived from the mean satisfaction with housing unit, neighborhood environment and maintenance practices shown as:

$$M_0 = \frac{m_1 + m_2 + m_3}{3}$$

Where,

$M_0$  = Overall mean satisfaction

$m_1$  = Mean satisfaction with Housing unit

$m_2$  = Mean satisfaction with Neighborhood Environment

$m_3$  = Mean satisfaction with Maintenance practices

Tables 8 -10 showed model summary and the ANOVA from SPSS analysis on Regression.

**Table 8: Model summary**

Model Summary				
	Multiple R	R Square	Adjusted R Square	Apparent Prediction Error
Standardized Data	.849	.721	.665	.279

Source: Compiled by the Author

**Table 9: ANOVA**

ANOVA					
	Sum of Squares	Df	Mean Square	F	Sig.
Regression	147.024	34	4.324	12.826	.000
Residual	56.976	169	.337		
Total	204.000	203			

Source: Compiled by the Author

The result reveals  $F [= 12.826, p= .000]$ ,  $R \text{ Square}= .721$ ,  $\text{Multiple R}= .849$  and  $\text{Adjusted R Square}= .665$ . This simply means the model accounted for about 72% of the variance in residential satisfaction of the research population in the study area.

**Table 10: Coefficients of the Regression Analysis to identify Variable that predict the overall satisfaction in the housing estates.**

	Coefficients				
	Standardized Coefficients		df	F	Sig.
	Beta	Bootstrap (1000) Estimate of Std. Error			
<b>Name and location of PPP housing estate</b>	.865	.388	1	7.102	.008
<b>Sex</b>	.092	.064	1	2.062	.153
<b>Age Grouping of Respondents</b>	.374	.088	3	18.236	.000*
<b>Marital Status</b>	.242	.104	3	5.367	.001*
<b>Highest educational attainment</b>	.214	.083	2	6.580	.002*
<b>Employment type</b>	.601	.116	4	26.914	.000*
<b>Monthly income</b>	.230	.071	4	10.509	.000*
<b>Tenure Status</b>	.425	.103	2	17.188	.000*
<b>Length of stay in housing living estate</b>	.392	.105	3	13.882	.000*
<b>Household size</b>	.211	.078	3	7.216	.000*
<b>Ethnic origin</b>	.175	.055	3	10.239	.000*
<b>House type</b>	.315	.198	3	2.531	.059
<b>Number of bedrooms in apartment</b>	-.126	.083	1	2.279	.133
<b>Number of families in building</b>	.113	.084	1	1.780	.184

\*significant predictors

Dependent Variable: Overall Mean Satisfaction

Source: Compiled by the Author

The coefficients of the regression analysis is shown in Table 8 with the variables used. 9 variables are significant ( $p < 0.0005$ ) in predicting the overall mean satisfaction in the estate and  $\beta$  values result indicated the variables that contributed most to predict the overall satisfaction in the housing estates. Employment type of residents has the highest  $\beta$  value of .601,  $F = 26.914$ ,  $P = 0.000$ , followed by Tenure Status of residents  $\beta$  value of .425,  $F = 17.188$ ,  $P = 0.000$ , then Length of stay in Housing Estate  $\beta$  value of .392,  $F = 13.882$ ,  $P = 0.000$ , then Age Grouping  $\beta$  value of .374,  $F = 18.236$ ,  $P = 0.000$ , followed by Marital Status  $\beta$  value of .242,  $F = 5.367$ ,  $P = 0.001$ , followed by Monthly Income  $\beta$  value of .230,  $F = 10.509$ ,  $P = 0.000$ , then Education Attainment  $\beta$  value of .214,  $F = 6.580$ ,  $P = 0.002$ , followed by Household Size  $\beta$  value of .211,  $F = 7.216$ ,  $P = 0.000$ , while the least is Ethnic Origin with  $\beta$  value of .175,  $F = 10.239$ ,  $P = 0.000$ . Employment type of residents is the most contributing factors to the overall satisfaction of the residents and Ethnic Origin is the less contributing factor to the overall satisfaction of the residents with their housing estates.

The nine (9) factors from the regression, that have shown to be significant in predicting the overall mean satisfaction in the studied estates were clearly seen to be socio-economic characteristics and demography of the residents and from literature, the study by [18] showed that the problems militating against PPPs schemes, among which are awareness, affordability, government bureaucratic bottleneck and poverty, of which the resident's socio-economic characteristic and demographic setting is not part of the influencing factor to the PPPs schemes, this is to say that the residents or users socio-economic characteristics and demographic can be a form of support or enabling factors for consideration in achieving a desired outcome in the PPP's aims and policy thrust. Also, from literature the study by [9], which indicated that housing needs and expectations evolve as residents go through different life situations, seen in the social and physical factors like job, religion, residence, family among others, which affect quality and satisfaction. But in this case, from this research, the resident's satisfaction is affected by their social factors and it's an added advantage, which is significant to their

level of satisfaction. The nature or type of residing occupants of the houses in terms of their social and demographic nature, would affect their level of satisfaction. Physical factors of the estates, such as the estates location, name, house type and number of bedrooms in houses, has not shown to be significant in the resident's level of satisfaction. Suggesting that the residents complied and adapt to the type of physical appearance of the houses. In this case therefore, PPP developers should provide the type of building that has the acceptable quality for human habitation.

## 5. Conclusion

The research assessed the level of satisfaction derived by residents of public-private partnership (PPP) housing estates in Lagos State, Nigeria, with a view to understanding the performance of the estates in meeting the residents housing needs. From literature, the role of PPP housing is intent to make it possible for effective solutions to problems facing housing delivery in Lagos State and Nigeria, as public and private investors' work together to compliments one another to arrive at quality housing for the public at affordable prices. This research assessed the satisfaction derived by residents from this initiative over the years, since its adoption. Using two PPP housing estates in Lagos State as case study and based on the objectives of the study, the socio-economic characteristics and demography results of the residents showed that the residents are mostly of working ages below 60 years, there are the same number for marital status of the residents for both married and singles, majority of the residents have tertiary education and have a form of employment either at the public or private sector. Also, the result showed that not all the services and facilities in the estates are shared by the residents; some are supplied individually, such as water supply, where electricity and waste disposal are provide jointly by the estate. The walling material used in the construction of the houses are the sandcrete blocks, where the wall finishes is majorly paint. Most of the buildings have majorly glazed aluminum windows, panel internal doors and timber external doors. This shows that the buildings were constructed with none expensive building materials, which would reduce the cost in construction of the houses. This have implication of building cost for affordability of the PPP housing scheme in order to have a sustainable housing development. The result also indicated that the overall responsibility of care and maintenance of the estates rest solely of the residents, either as rental houses or owners occupied. An indication of less attention of the PPP responsibility in the post occupancy responsibilities of the estates. The residents are generally satisfied with PPP housing in the study area. A pointer to the effectiveness of the scheme. Also, the study revealed that most of the factors that contributed to the level of satisfaction of the resident are mostly socio-economic variables which have to be carefully considered in PPP housing delivery and also the residents of the PPP housing were mostly satisfied with the housing unit features and least satisfied with the maintenance practices in the estates. It is recommended that socio-economic and demographic factors of the citizens be well considered when developing PPP housing estates, as it greatly influences the satisfaction derived from the housing provided. More attention should be paid to providing more PPP housing estates in Lagos State, Nigeria, as it has proved to be effective in providing satisfactory housing for the population. More attention should be paid to maintenance practices in the PPP housing estates in Lagos State, especially the low-income PPP estates. For a sustainable implementation of the PPP housing policy, which is aimed at housing provision to reduce the housing deficit, agreeing with the United Nations Sustainable Development Goals (SDGs), Goal 11 by the year 2030, the socio-economic characteristics of the citizenry should be considered in implementation of PPP schemes. Further study can be done to identify the influence of maintenance practices carried out in PPP housing schemes on the level of satisfaction of the residents.

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