



# User's Satisfaction of Public-Private Partnerships Housing Delivered in Ogun State: Evidence from Social Sustainability

**Abiodun S. Oguntimehin**

Federal Polytechnic, Ilaro, Department of Architectural Technology, Ilaro, Ogun State, Nigeria.  
E-mail: [abiodun.oguntimehin@federalpolyilaro.edu.ng](mailto:abiodun.oguntimehin@federalpolyilaro.edu.ng)

**Sophia O. Alabi-Akugbe**

Federal Polytechnic, Ilaro, Department of Architectural Technology, Ilaro, Ogun State, Nigeria.  
E-mail: [Sophia.Alabi-akugbe@federalpolyilaro.edu.ng](mailto:Sophia.Alabi-akugbe@federalpolyilaro.edu.ng)

**Abstract:** *Adequate housing provides security, and stability, and enables individuals to develop a sense of belonging, thrive and contribute to society. Public-private partnership (PPP) involves the collaboration between government entities and private sector organizations to jointly address societal issues and deliver public services. This has gained prominence as a solution to address housing shortages and improve housing conditions. Thus, the PPP housing strategy was examined in this paper to evaluate its social sustainability among Ogun State PPP housing users. A survey research method was adopted to conduct the study. Data was gathered from 1,186 residents of housing constructed through PPP by administering a structured questionnaire, where 75% (885) of the responses were valid. Descriptive and inferential method of data analyses was used to analyze the data. The descriptive part consists of the mean response score of the social sustainability factors while principal component analysis was adopted to make inferences. Findings indicated that the PPP housing unit delivered in the state is to some greater extent sustainable socially as these buildings were found to be satisfactory in terms of their distance to the nearest town center, workplace, police station, market, religious buildings, recreation Centre and bus stations to mention a few. This implies that despite challenges that may be experienced in the course of housing delivered through PPP, the method can be viewed to be one of the best methods. Thus, governments are encouraged to use the PPP approach for housing delivery by creating a level-playing ground for the masses as beneficiaries of the housing scheme.*

**Keywords:** *Housing, Public-Private Partnerships, Social sustainability, Sustainability, User's satisfaction*

## Introduction

Housing is a fundamental human need and plays a crucial role in determining the overall quality of life for individuals and communities. Adequate housing provides security, stability, and a sense of belonging, enabling individuals to thrive and contribute to society. However, meeting the housing needs of a growing population is a complex challenge that requires innovative solutions and collaborative efforts. One such approach is the utilization of public-private partnerships (PPPs) to harness housing needs and promote social sustainability (Oguntimehin 2023). Public-Private Partnerships involve collaboration between government entities and private sector organizations to jointly address societal issues and deliver public services which have gained prominence as a solution to address housing shortages and improve housing conditions. More so, it provides a powerful mechanism to mobilize resources, expertise, and innovation from both sectors, thereby enhancing the

effectiveness and efficiency of housing initiatives (Carley and Davies, 2018). By leveraging the strengths of each sector, the potential to generate sustainable and inclusive housing solutions that prioritize social well-being cannot be underrated in the advent of PPP housing. PPPs are now been widely applied by various countries to pace infrastructural developments required to facilitate economic growth, and economic development and achieve good governance. As a result of this, the motivation behind this paper is to critically dwell on the social sustainability of PPP Housing delivered in Ogun State, considering the users' socio-economic characteristics.

## Review of Literature

Salami and Akbari (2021) conducted a study in Iran to examine users' satisfaction with PPP housing. The research utilized a survey-based approach, collecting data from residents of PPP housing projects. The findings revealed that overall user satisfaction was positively



correlated with factors such as housing quality, location, affordability, and community facilities. However, some participants expressed concerns about the lack of involvement in decision-making processes and the limited control over their living conditions. Low and Smith (2018) conducted a comprehensive review of studies investigating user satisfaction in PPP housing projects. The review encompassed various countries and contexts. The findings indicated that factors such as design quality, affordability, maintenance, and management significantly influenced users' satisfaction. Additionally, effective communication and engagement between residents and project developers were identified as key factors in ensuring user satisfaction.

A comparative study in Iran and the UK to explore residents' satisfaction with PPP housing was conducted by Mohammadi and Asadi-Shekari (2019). The research employed a mixed-methods approach, combining surveys and interviews. The findings suggested that while residents in both countries expressed overall satisfaction with their PPP housing, there were variations in the factors influencing satisfaction. For instance, residents in Iran emphasized affordability and access to basic amenities, while UK residents highlighted the quality of design and construction. Renuka and Garg (2018), conducted a study in India to examine user satisfaction with PPP housing projects. The research employed surveys and interviews to collect data from residents. The findings indicated that users' satisfaction was influenced by factors such as housing quality, affordability, accessibility to services, and provision of social infrastructure. Additionally, residents' participation in decision-making processes was found to positively impact user satisfaction. Mberu and Montgomery (2019) examined the social sustainability of low-cost housing delivered through PPPs in Nairobi, Kenya. The research utilized survey data collected from residents and highlighted the users' perspectives on social sustainability. The study found that factors such as community cohesion, access to social services, safety, and inclusivity significantly influenced residents' perceptions of social sustainability. The findings underscored the importance of considering users' perspectives to enhance social sustainability outcomes in PPP housing projects.

A literature review conducted by Manzi, et al., (2014) on social sustainability in urban areas, including the role of PPP housing emphasized the significance of fostering social connections, promoting community participation, and creating inclusive urban environments. It highlighted the importance of well-designed public spaces, community facilities, and social infrastructure to enhance users' well-being and social sustainability. The review also stressed the need for meaningful engagement with users to ensure their perspectives are incorporated into

the planning and implementation of PPP housing projects. In addition, to this, Serkan et al. (2020) conducted a literature review focusing on social sustainability in urban renewal projects, which includes PPP housing initiatives. The review highlighted the need to consider users' perspectives, community well-being, and social cohesion. It stressed the importance of affordable and inclusive housing, access to basic services, and the creation of socially vibrant neighbourhoods. It also emphasized the significance of user involvement in decision-making processes and the empowerment of communities for achieving social sustainability outcomes in PPP housing projects. The study conducted by Awuzie and McDermott (2018) was found to examine the social sustainability of PPP housing projects through users' satisfaction and well-being. The research employed a mixed-methods approach, combining surveys, interviews, and observational data. The study found that users' satisfaction and well-being were influenced by factors such as community cohesion, safety, access to social amenities, and opportunities for social interaction. The research highlighted the significance of considering users' perspectives in promoting social sustainability in PPP housing projects. However, similar studies are as evidenced by Kavishe and Chileshe, (2022) and Ibem, (2011).

### **Theoretical Frameworks**

Residential satisfaction is a gauge of how much a community's residents believe their home is assisting them in achieving their objectives (Danquah et al., 2014). According to their wants, expectations, and accomplishments, individuals evaluate the conditions of their current living situation (Jiboye, 2019). Theoretical frameworks for residential satisfaction, according to Casini et al. (2021), are predicated on the idea that residential satisfaction is a gauge of the gap between inhabitants' actual and desired housing and neighbourhood conditions, with evaluations based on their wants and ambitions.

When residents are content with their living arrangements, there are no complaints because their requirements are being met. As a result, if their houses and surroundings do not satisfy their residential needs and goals, they are likely to feel unsatisfied.

According to Rosenberg's Expectancy-Value Model of Attitude, assessments are heavily influenced by people's expectations or beliefs about how much the object being evaluated helps or hinders them in achieving their objectives. To conceptualize residential satisfaction in more detail, Morris and Winter (1975) proposed the idea of a "housing deficit" (Batikawai and Nawaqalevu, 2020). According to their Housing Adjustment Theory, which forms the foundation of this study, a household is likely to indicate a high degree of happiness with housing and neighbourhood if its current home complies with the



norms. When there is a discrepancy between the actual housing situation and the norms, it creates a housing deficit that leads to residential dissatisfaction; once this level of dissatisfaction is reached (the threshold level), people are likely to consider making some types of housing adjustment (Salleh, 2008; Hui and Yu, 2009). The adjustment could take the shape of a desire to move, barring certain socioeconomic considerations.

### Conceptual Models of Residential Satisfaction

Literature reviews evidenced that various theoretical models have been proposed to guide research into residential satisfaction (Shin, 2016; Fernández et al., 2017; Wang et al., 2019) and a few of them have been tested empirically. The conceptual model of this study is evidenced in Fig. 1.

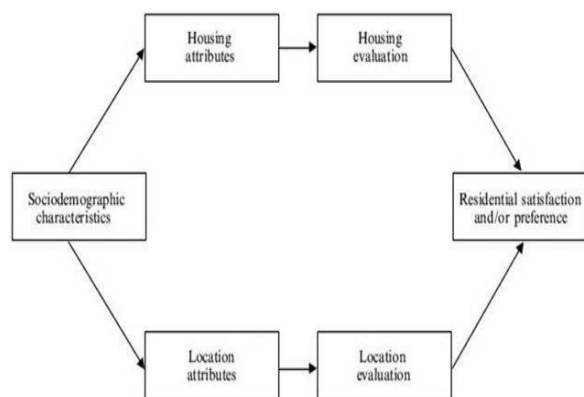


Fig. 1: Conceptual Model of the study

### Materials and Methods

This paper adopted a survey research design. Adopting this design was due to the post-occupancy evaluation of housing built by PPPs as the data collection method was through a structured questionnaire, distributed to users of the PPP houses delivered within the nine(9) local government areas in which PPP housing was built and delivered out of 20 local government domiciled in the State. Additionally, about 6,500 housing units were constructed from the inception of Ogun State in the year 1976 to 2022. This serves as the population of this study. From the stated population, a sample of 1,186 housing units was randomly selected, as estimated using Modified Cochran’s sample size calculator. Household heads of the selected buildings, representing the PPP housing users’ were distributed a structured questionnaire to be filled out and returned. These respondents were mostly civil/public servants in active service or retired, categorized under

low-income, middle-income and high-income earners. Table 1 depicts the response rate of the PPP housing users’ based on the administered questionnaire.

**Table 1: Returned Questionnaire**

Questionnaires	Frequency	Percentage (%)
Valid response	885	75
Invalid Response	63	5
Not returned	238	20
<b>Total</b>	<b>1186</b>	<b>100.0%</b>

**Source:** *Researchers’ Field Survey, 2023*

A descriptive and inferential method of data analysis was adopted for this study. The descriptive part was used to analyze the distribution of the PPP housing dwellers. Principal component analysis, a method of factor analysis was used to identify the underlying structures in the set of social sustainability factors of the PPP housing as structured in the research instrument.

According to fewer unobserved variables known as factors, the principal component analysis is a multivariate statistical technique used to explain variability among observable variables (Ojo and Ogunnusi, 2022). An interesting construct might be validated using the principal component analysis. Data reduction and the identification of structure (underlying dimensions) in a set of variables are both accomplished using it. According to Leech et al. (2005), choosing which component to keep depends on the proportion of the variance that the variable accounts for, the absolute variance that each factor accounts for, and if the factor has a meaningful interpretation. In general, factors with Eigenvalues greater than one are kept.

The Kaiser-Meyer-Olkin (KMO) test and Bartlett’s sphericity test were used to evaluate the sampling efficiency. The KMO statistic ranges from zero to one, with zero being inadequate and close to one being adequate. It is a proportion of variance among variables that may share similar variance. The identity matrix (off-diagonal is zero) and the observed correlation matrix are compared using Bartlett’s test. If they are comparable, there will need to be an equal number of factors and variables, rendering the analysis worthless. In general, Bartlett’s sphericity test results with p 0.05 and KMO values more than 0.50 are regarded as acceptable.

### Results and Discussion

*Analysis of Respondents’ Socio-Economic Status*

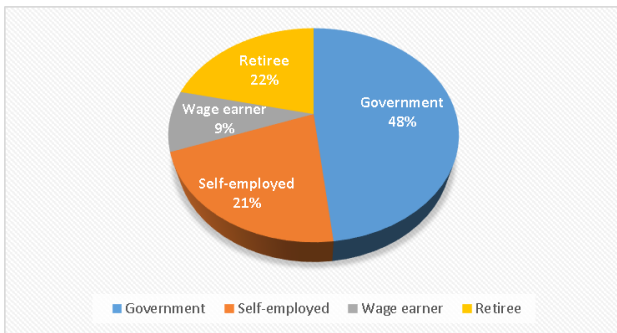


Fig. 2: Distribution of Respondents by Nature of Employment.

Taking the participants' nature of employment into consideration, the result of Fig. 2 shows that the majority of them 48% were civil/public servants, 21.2% were self-employed, 9% were wage earners and 21.4% were retirees. This implies that civil/public servants (government workers) have major access to the housing units provided by the public/private partners as against self-employed participants and those working in the private sector of the economy.

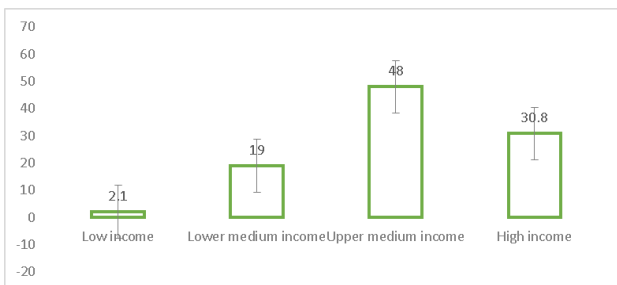


Fig. 3: Social Economic Status of PPP Housing Users

The result of Fig. 3 indicates that the majority of the respondents representing 48% were in the category of upper medium-income earners, 30.8% were high-income earners, 19% were lower-income earners and 2.1% of the entire participants were low-income earners. This implies that the majority of the dwellers can afford the housing units provided by agencies irrespective of whether their payment methods are outright or in instalments.

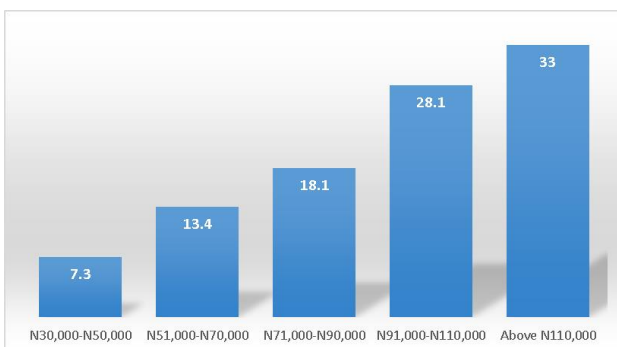


Fig.4: Distribution of Respondents on the Range of Monthly Income

The result of Fig. 4, depicts the range of average monthly income of the residents, the result showed that the majority of the respondents representing 33% earn above ₦110, 000, 28.1% earn between ₦91, 000-₦110, 000, 18.1% earn between ₦71, 000-₦90, 000, 13.4% earn between ₦51, 000-₦70, 000 while 7.3% of them earn between ₦30, 000-₦50, 000.

Hence, the socio-economic characteristics of the participants as evidenced by the field survey, indicated that the PPP housing units mostly benefitted from government workers who may later mortgage it to private individuals as evidenced by their nature of employment.

#### Analysis of Responses Emanating from PPP Housing Social Sustainability Factors

**Table 2:** Descriptive Statistics of Variables of Social Sustainability Factors

s/n	Social factors	Mean	Std. Deviation	Remark
Sof1	Distance to the nearest town center	3.70	1.091	S
Sof2	Distance to workplace	3.48	1.114	N
Sof3	Distance to school	4.11	.918	S
Sof4	Distance to Police Station	3.92	1.062	S
Sof5	Distance to Hospital	3.53	1.130	S
Sof6	Distance to Shopping Center	3.74	1.113	S
Sof7	Distance to Market	4.09	.958	S
Sof8	Distance to Public Library	3.73	1.121	S
Sof9	Distance to Religious Building	3.54	1.053	S
Sof10	Distance to the recreational center	3.83	1.183	S
Sof11	Distance to Bus Station	3.69	1.190	S
Sof12	Distance to Fire Station	3.66	1.006	S
<b>Grand mean/SD</b>		<b>3.75</b>	<b>1.1080</b>	<b>S</b>

*SoF* = Social Factor; Weighted Averages: Strongly Satisfactory (SS) = 4.5-5.0; Satisfactory (S) = 3.50-4.4; Neutral (N) = 2.5-3.4; Not Satisfactory (NS) = 1.5-2.4; strongly not satisfactory (SNS) = <1.5; MS = Mean score; SD = Standard Deviation

**Source:** Researcher's Self-Computation, 2023

The descriptive statistics of the social factors influencing PPP housing projects can be evidenced in Table 2. It can





be seen that the factors are rated on a point Likert scale ranging from strongly satisfactory, satisfactory, neutral, not satisfactory and strongly not satisfactory. The mean response score (MS) and associated standard deviation (SD) are between 3.54 to 4.11 and 0.958 to 1.183 respectively. The result indicated from item 1 with MS of 3.70 that residents of the PPP housing were satisfied with the distance of their houses to the nearest town centre; but neutral on the mean score of 3.48 about the distance to their workplace. In addition, items 3-12 indicated that the majority of the participants on mean scores of 4.11, 3.92, 3.53, 3.74, 4.09, 3.73, 3.54, 3.83, 3.69 and 3.66 were satisfied based on the distance to school, police station, hospital, shopping centre market public library, religious building, recreational centres, bus station and fire station respectively. Overall, the grand mean score of 3.75 implies that the satisfactory level of the participants in terms of the social factors influencing PPP housing projects in Ogun State is high, indicating that, to some greater extent, PPP housing projects domiciled in the study area are satisfactory social-wise. Identifying the most prominent factors among the described social factors is depicted in the principal component analysis approach. This approach factors out the most prominent social factors influencing User's satisfaction with PPP-delivered housing projects in the study area.

**Table 3:** Kaiser-Meyer-Olkin (KMO) and Bartlett's Test

KMO Measure of Sampling Adequacy	Bartlett's Test	
	Chi-square	p-value
0.668	2142.589	0.000

Figures in parentheses [ ] represent the degree of freedom (df)

The suitability of the sub-variables of the identified social factors considered for sustainable PPP housing was analyzed using a factor analytical approach where principal component analysis was adopted and the model validated using the Kaiser-Meyer-Olkin (KMO) sampling adequacy and Bartlett's test of sphericity as well shown in table 3. Coefficient 0.668 indicated that the inter-relationships of the sub-variables were averagely adequate and were of good precision. However, the Chi-square values of Bartlett's test of sphericity with varying degrees of freedom indicated from the p-values < 0.05 that it is reasonable to consider applying a dimension-reduction techniques to the aforementioned variables as the variables are from the multivariate normal distribution (MVN~( $\mu$ ,  $\Sigma$ )) and that the correlation matrix is significantly different from an identity matrix.

**Table 4:** Correlations matrix of economic factors influencing PPP housing projects

Distance of the PPP housing to:	1	2	3	4	5	6	7	8	9
Nearest town center	r 1								
Workplace	r .049	1							
	P-value .142								
School	r -.015	-.059	1						
	P-value .659	.082							
Police Station	R .172**	.086*	.151**	1					
	P-value .000	.010	.000						
Hospital	R .249**	.169**	.044	.140**	1				
	P-value .000	.000	.195	.000					
Shopping Center	R .168**	.175**	.215**	.030	.075*	1			
	P-value .000	.000	.000	.367	.026				
Market	r .208**	.109**	.297**	.321**	.110**	.209**	1		
	P-value .000	.001	.000	.000	.001	.000			
Public Library	r .686**	.035	-.003	.214**	.254**	.149**	.272**	1	
	P-value .000	.300	.940	.000	.000	.000	.000		
Religion building	r .074*	.488**	.051	.070*	.197**	.254**	.196**	.126**	1
	P-value .027	.000	.129	.036	.000	.000	.000	.000	
Recreational center	r -.041	-.011	.275**	.046	.041	.083*	.133**	-.041	-.083*
	P-value .219	.741	.000	.170	.226	.014	.000	.222	.014
Bus Station	r .249**	.068*	.227**	.411**	.259**	.142**	.392**	.230**	.060
	P-value .000	.044	.000	.000	.000	.000	.000	.000	.075
Fire station	r .262**	.167**	.010	.229**	.524**	.136**	.138**	.264**	.105**
	P-value .000	.000	.762	.000	.000	.000	.000	.000	.002

<sup>1</sup> Nearest town center; <sup>2</sup> Workplace; <sup>3</sup> School; <sup>4</sup> Police station; <sup>5</sup> Hospital; <sup>6</sup> Center; <sup>7</sup> Market; <sup>8</sup> Public library; <sup>9</sup> Religious Building; <sup>10</sup> Recreational center; <sup>11</sup> Bus station; <sup>12</sup> Fire station

r = Pearson correlation coefficient

\* and \*\*. Represents the significance of correlation at 0.05 and 0.01 levels respectively

Source: Researcher's Self-Computation, 2023

Evidence from examined Table 4 also indicated that the majority of the identified social factor variables are statistically and significantly related as shown by the p-values < 0.05 level of significance. Hence, confirming Bartlett's test of sphericity and KMO sampling adequacy of the analyzed social factors

**Table 5:** Total Variance Explained Based on Social Factors

Component	Extraction Sums of Squared Loadings
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	Total	% of Variance	Cumulative %
1	2.911	24.261	24.261
2	1.579	13.160	37.421
3	1.486	12.382	49.802
4	1.201	10.012	59.814

Source: Researcher's Self-Computation, 2023

To identify similar movement patterns in each social factor variable PC, the Eigenvalues and the associated percentage of variance are not also left out. The results of the component analysis are shown in Table 5, of which three main components with Eigen values greater than 1 explained 59.8% of the variance. The result also indicated that the first component explains about 24.3% of the total variance. The second component explains about 13.2% of the overall variance, with the third component explaining 12.4% while the last (fourth) component explains 10% variance. It cannot be overemphasized that the first component recorded the greatest variance followed by the second component with the remaining components following the same decreasing trend of variance.

Distance to Hospital	<b>.649</b>	.557	-	-	.528
Distance to Shopping Center	.466	.396	-	.129	.368 .397
Distance to Market	.582	.565	.360	.230	.283
Distance to Public Library	<b>.768</b>	<b>.631</b>	-	-	-
Distance to Religious Building	<b>.696</b>	.363	-	.453	<b>.593</b> .078
Distance to the recreational center	.409	.092	<b>.554</b>	.146	.268
Distance to Bus Station	.560	<b>.648</b>	.338	-	.028 .160
Distance to Fire Station	<b>.690</b>	.600	-	.148	.173 <b>.527</b>

$h^2$  (Communalities) represents the proportion of the variance of each variable that can be explained by the principal components

Source: Researcher's Self-Computation, 2023

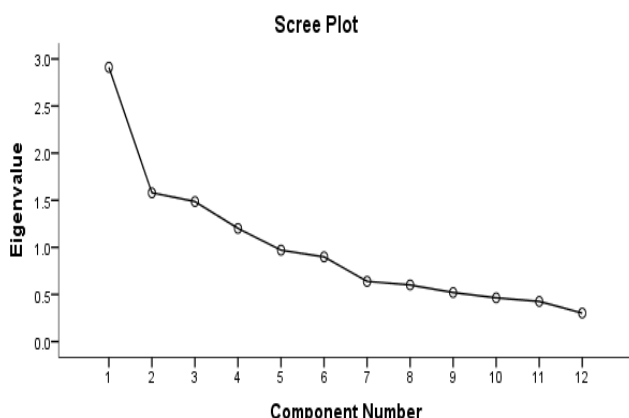


Figure 5: Scree plot of the ordered eigenvalue of social factors influencing PPP housing delivered

Results from the graphical representation of the ordered eigenvalues also indicated that four (4) components with ordered eigenvalues greater than 1 are considered in identifying the prominent social factors influencing the PPP housing project delivered in the study area, as it explains 59.8% of the total variance

Table 6: Communalities and Component Matrix of Social Factors for the Sustainability of PPP Housing Projects

Dimensions	$h^2$	PC1	PC2	PC3	PC4
Distance to the nearest town center	<b>.760</b>	<b>.607</b>	-	-	-
Distance to workplace	<b>.652</b>	.306	-	.557	.147
Distance to school	<b>.586</b>	.274	<b>.603</b>	.365	.122
Distance to Police Station	.361	.519	.290	-	.022 .082

Table 6 shows from the identified components of social factors that component 1 is found to be highly correlated with three (3) original social variables of distance to the nearest town, distance to public library and distance to the bus station. Also, component 2 is correlated with two original social variables which are taken into consideration distance to school and to the recreational center. While components 3 and 4 are moderately correlated with distance to religious buildings and distance to fire stations. Therefore, all four constructed PCs are statistically significant as they contain 59.8% of the total variation. The findings of this result corroborate with that of Mberu and Montgomery (2019) examined the social sustainability of low-cost housing delivered through PPPs in Nairobi, Kenya. The research utilized survey data collected from residents and highlighted the users' perspectives on social sustainability. The study found that factors such as community cohesion, access to social services, safety, and inclusivity significantly influenced residents' perceptions of social sustainability. The findings underscored the importance of considering users' perspectives to enhance social sustainability outcomes in PPP housing projects. Hence, the seven identified original social variables can be said to majorly influence the PPP housing projects delivered in the study area.

### Conclusion and Future Works

This paper has provided insights on the social sustainability of PPP housing projects delivered in Ogun State taking into cognizance, the user's satisfaction mechanism. The interrelationship between users' satisfaction and the social sustainability of public-private

partnership (PPP) housing projects cannot be underrated. Factors such as the distance of the PPP housing to the nearest town center, workplace, school, police station, hospital, shopping center, market, public library, religious buildings, recreational center, bus station and fire station were found to be satisfactory among the users as content validity of these factors were buttressed by principal component analysis techniques. Creating inclusive communities, fostering social interactions, and providing necessary social infrastructure are crucial for ensuring the long-term success of these projects in meeting residents' needs and promoting social well-being. Future research should continue to explore the complex dynamics between user satisfaction and social sustainability, considering the diverse cultural and contextual factors that shape residents' experiences.

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