

ORIGINAL RESEARCH ARTICLE

Appraisal of facility provisions in public-private partnership housing delivery in southwest Nigeria

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Abstract

The impact of facility provisions within housing environs cannot be overemphasized. It represents the backbone of housing development, stabilizes occupant satisfaction level, and improves living conditions of residents. It is on this premise that this study appraises facility provisions within Public-Private Partnership (PPP) constructed estates in three (3) South-western states of Nigeria to determine the provider of the major facilities in PPP housing within the study area. A quantitative research method was adopted for the study with the use of questionnaires emerging for data collection. The questionnaire was administered to 90 residents of housing units within the selected estates in which 88 questionnaires were retrieved. The study shows that apart from providing the building structures and finance, the private sector provides potable water for consumption and domestic use, waste management and disposal, the connection of PPP residential houses to the national electrical grid, and provision of a network of roads within the estates linking the government provided main access road. The study recommended that in providing facilities for any future PPP housing delivery system, parties involved in the provisions of required facilities need to understand the end-user's facility needs. (*Afr J Reprod Health 2021; 25[5s]: 46-54*).

Keywords: Facility provider; housing; public-private partnership

Résumé

On ne saurait trop insister sur l'impact des dispositions relatives aux installations dans les environs du logement. Il représente l'épine dorsale du développement du logement, stabilise le niveau de satisfaction des occupants et améliore les conditions de vie des résidents. C'est sur cette prémisse que cette étude évalue les dispositions en matière d'installations dans les domaines construits en partenariat public-privé (PPP) dans trois (3) États du sud-ouest du Nigéria afin de déterminer le fournisseur des principales installations de logements en PPP dans la zone d'étude. Une méthode de recherche quantitative a été adoptée pour l'étude avec l'utilisation de questionnaires émergents pour la collecte de données. Le questionnaire a été administré à 90 résidents d'unités de logement dans les domaines sélectionnés dans lesquels 88 questionnaires ont été récupérés. L'étude montre qu'en plus de fournir les structures et le financement des bâtiments, le secteur privé fournit de l'eau potable pour la consommation et l'usage domestique, la gestion et l'élimination des déchets, le raccordement des maisons résidentielles PPP au réseau électrique national et la fourniture d'un réseau de routes dans les domaines reliant le gouvernement ont fourni la route d'accès principale. L'étude a recommandé qu'en fournissant des installations pour tout futur système de livraison de logements en PPP, les parties impliquées dans la fourniture des installations requises doivent comprendre les besoins en installations de l'utilisateur final. (*Afr J Reprod Health 2021; 25[5s]: 46-54*).

Mots-clés: Fournisseur d'installations; logement; partenariat public-privé

Introduction

The housing facility is one of the basic components incorporated in the buildings; it influences the way of life of occupants of the building. The facilities in a building play important role in determining the comfortability of the occupant and sometimes their societal values. Therefore, this prompted the United Nations to include it as Sustainable Development

Goal (SDG) goal 9. The importance of incorporated facilities in housing is stressed in the definition of housing as a place of shelter, refuge, comfort, security, and dignity¹. The author also noted that a house provides the physical framework in which human, social, economic, and cultural resources are realized, enriched, and integrated. Adequate shelter remains an essential requirement for survival, integration, and development of man and his

environment. Therefore, both the end-users and housing providers play significant roles in selecting and providing suitable facilities in a building.

In Nigeria housing provision, Public-Private Partnership (PPP) has been celebrated because it promotes multi-stakeholders' participation; enhances productivity of the public-sector housing, provision of quality facility and services and reduces housing affordability challenges¹. On a general note, housing provision with required facilities in urban areas is inadequate quantitatively, while in the rural settlement is in qualitative terms^{1,2}. In most cases, the facilities available within the buildings of housing scheme delivered through PPP are either through the public sector or the private sector, and the maintenance of such facilities were majorly resting on the end-user². Studies identified most of the significant contributions of government's (public sector) to PPP projects as the provision of land, provision of drawings, while private investor on their part makes available most of the finance and other essential facilities and services for the building structure^{2,3}. It was also stated that facilities comprise of utilities that link individuals and families to the community and the community to the region in which it grows and progresses⁴. The facility is a component in a building that needs a sequencing method of maintenance because of its functionality and to prevent early deterioration⁵. In Nigerian since 1980, utilities and other essential site and service facilities provided through government housing schemes and the majority of housing schemes provided in partnership with private institutions have been declining⁶. This was further explained that the deterioration occurs in all components of the building at different rates, depending on the quality of the material, quality of construction process and method, environmental conditions, intensity, and type of occupation of the building⁷.

In a bid to uncover the problems associated with housing facilities, it was noted that there is a dearth of gaps on the subject of facilities provided for housing projects through PPP in terms of its provider, maintenance, and replacement for the benefit of the end-user. As such, there is a need to understand and identify essential facilities required within PPP housing estates according to the needs of intending occupants. Therefore, the main

objective of this study is to appraise facilities provision in PPP in housing projects in South-western Nigeria. In advanced countries, the PPP system has been widely adopted⁸. The provision of facility and infrastructure is needed for the teeming population that is migrating to cities with overextended facility usage. Therefore, there is a need for the provision of infrastructures like water, good road, sustainable habitation, and railroad among others. It is to this end, that the study investigated the provision of facilities in housing scheme projects using the PPP procurement system as a panacea to providing mass and sustainable infrastructure as detailed out in SDG goal 9.

Literature review

Housing delivery system in Nigeria is a combination of inter-woven components and resources such as land, infrastructures, building materials, building regulations and policies, and more importantly the means of financing the project⁹. Facilities in housing enable the building function efficiently, then facilitate easy maintenance and replacement¹⁰. The end-users (occupants) make use of the available facility provided by both the government and the private sector to suit their usage through community effort¹¹. The facilities must be convenient for the occupants to organize themselves¹². Also, it was stated that facilities provided in PPP housing are delivered either with a direct public fund or through (PPP) initiative. In some cases, agreements could be reached between the two parties (the government agencies and the private organization) involved in PPP projects on the provision of certain facilities. These include land, security, access road, social amenities, and in use facilities like doors, windows, burglary, sanitary fittings, floor tiles, painting walls, swimming pool, space, electricity among others¹³. These facilities were provided to satisfy the end user's needs¹³. It was further posited that the site and services scheme is one of the many partnerships that the government entered into with the private sector in providing required facilities with PPP housing provisions^{14,15}. The site and services scheme are housing schemes where the government will provide the facilities such as road, drainage, and electricity while the private will provide the finances needed to execute the housing itself^{7,16}.

Another study also observed that the impact of facilities within the housing estate cannot be overlooked due to its effect on the activities of the occupants¹⁶. Researchers also stated that the life span of facilities provided in a building deteriorates due to lack of effective maintenance planning after the delivery of the housing project^{17,18}. On the other hand, it was stated that the facility provided for occupants within the PPP housing should be of good quality, easy to operate, and maintained¹⁹. But for some reason, it has been observed that most of these provided facilities don't meet the expectation of the end-users. It was believed that for the housing sector to improve on the quality of housing production, facility needs, and expectation of the occupants/end-users' must be understood and explored²⁰. It was argued that facility providers in PPP housing need to understand facility requirements of the end-users²¹. Some researchers maintained that most homeowners of PPP housing with good financial strength will do anything to improve available facilities within their environment to meet their standards and status^{16,22,23}.

Additionally, it was observed that the government (public sector) should provide a robust policy aimed towards the provision of quality facilities that will support private contributors to the housing delivery¹⁴. Infrastructural facilities and services provide in housing should be efficient and served its purpose²⁴. Housing facilities must be free from constant repairs, free from dampness prejudicial to the health of occupants, with an adequate supply of wholesome water, etc²⁵. Also, the waste collection was one important area of providing hygienic among occupants of PPP housing. Study carried out on a PPP estate located in Lagos a commercial city in Nigeria showed that the waste within the PPP housing estate is based on private sector participant (PSP) waste management policy initiated by the government²⁶. In collaborating the statement, another study carried out in Mumbai showed that the involvement of PSP through private involvement in the provision of waste management facilities has helped in the management of human waste within PPP housing²⁷.

Major problems that lead to faulty facilities in buildings have to do with the difficulty in the process of getting required equipment, materials,

components, or personnel required for easy installation, repairs, and replacement²⁸. Also, it was further observed that unstable economic condition was one of the factors that encourage the use of substandard materials for facility provisions and maintenance in PPP housing delivery because of financial gain²⁹. The bureaucratic process involved in PPP housing project most time leads to hasty construction, meaning that the method engaged in fixing all the essential facilities was done in a haste¹⁵. Consequently, it was submitted that resources for construction projects should be adequately planned and scheduled to avoid unplanned failure with the provided facilities provided with PPP housing²⁰. Nevertheless, facilities failure within PPP housing is caused largely as a result of lack of strictly followed rules and regulations, financial gain of the contractor, use of substandard materials, unstable economic condition, use of inexperienced personnel, and bad workmanship^{17,18}.

Additionally, the private sectors (developers) take a great risk in investing in PPP housing facilities financially¹⁶. However, some of the challenges faced by private contributors in providing the necessary facilities required for PPP housing delivery include government policy somersaulting, bureaucracy bottleneck among others³¹. A study showed that majority of occupants of PPP low-cost housing were satisfied with their housing conditions but they were dissatisfied with the provided support facilities by both parties to the housing provision due to its substandard and locations³². Nonetheless, the private sector contribution outweighs and more proficient than the public sector in the facility provisions within the PPP housing delivery²⁹. Similarly, the process involves in providing facilities within the PPP housing should be subjected to integrity to avoid deterioration of the provided facility facilities³³. For the sustainability of the provided facilities within the PPP housing estate, there is a need to provide a maintenance unit for early repairs of provided facilities^{5,20,34}. The maintenance unit should be included from the planning stage of the PPP housing by parties involved^{5,20}. Additionally, project supervisors, especially in the installation of the facility for PPP housing during production and

installation stages, must exercise their power and skills in ensuring quality materials and facilities are procured, installed, and maintained³⁵.

In lieu of the submissions above, as a gap noticed in the trend of the submission in the articles reviewed, it was discovered that the scope of the articles did not involve appraisal of facility provisions in the public-private partnership, therefore this study has carried out an investigation into the appraisal of facility provision in PPP projects in housing delivery in southwestern Nigeria. In the context of this study, PPP system has been one of the ways that authorities are exploiting in producing mass and affordable housing units, this has been adjudged as a means of achieving SDG goal 9 which borders on the provision of infrastructure and sustainable development.

Methods

A quantitative research method was adopted for this study while employing a descriptive research design. This was chosen as it allows for gathering data from large number of respondents from which tangible opinion can be drawn. This, therefore, necessitated the use of questionnaire survey which was designed to evaluate the different facilities and their providers in housing schemes procured using PPP. The study was carried out using an existing three housing estates constructed through PPP procurement method within the South-Western, Nigeria. The choice of these three housing estates was due to the fact that they were constructed using PPP procurement method. A total of 440 housing units (standalone buildings) were identified in the study area, these include 190 housing units in King Court estate, Oko Oba, Lagos State, 160 housing units in Oluyole housing estate Ibadan, Oyo State, and 120 Housing units in City gate housing estate, Oshogbo Osun State. 20% of the buildings were taken across board from each estate because of similarity in response and to avoid saturation of response from the sample area. Systematic sampling method was used and Questionnaires were administered per building as follow, 38 copies of questionnaire were administered in King court estate, Oko Oba, 28 copies at Oluyole housing estate, Ibadan, and 24 copies were administered at City gate housing estate, Oshogbo respectively. The

three states were chosen on account of the concentration of construction and infrastructural facilities that are procured based on PPP procurement method. It was discovered that the Governments of the three states are embarking on the facility provided through the PPP approach. In all, a total of 90 copies of the questionnaire were administered between November 2019 and February 2020 and 88 copies were retrieved. This helped the research work to assess the provider of facilities among the parties to PPPs housing estate. Data were analysed using frequency, and percentage while the results were presented in tables.

Results

The result of the analysis carried out is presented in Table 1. Table 1 shows respondents' opinions on the provider of land for PPP housing within the study area. Very significant number 78.41% (69) agreed that the government is the major provider of land, while a very insignificant number 21.59% (19) said that the private sector provides the land. Table 1 also shows respondents' opinion on the provision of electrification within the study area. The result showed that very significant number of 50% (44) of respondent agreed that government provides electrification and 47.73% (42) of the respondent stated that the private sector provides electrification for PPP housing while a very insignificant number 2.27% (6) said that the home-owner provides their electrification. Table 1 further shows the respondents' opinion on waste disposal for PPP housing within the study area. Very significant number 69.32% (61) agreed that the private sector is the major provider of waste disposal, and 23.86% (21) of the respondents opined that the government (public sector) provides waste disposal within the PPP housing, while 6.82% (6) of the respondents agreed that home-owner of the PPP housing involvement provides waste disposal within the estate.

Similarly, Table 1 indicates the provider of potable water through the main supply. The result shows that the respondents 68.18% (60) agreed that government provides the source of potable water for all the estate through water mains from government waterworks close to the estates, 31.82% (28) of the respondent stated that the private sector provides

Table 1: Facility providers in Public-Private Partnership Housing delivery

Facility provision in PPP Housing delivery	Provider	Frequency	Percent
Land	Government	69	78.41
	Private	19	21.59
	Home-owner	0	9.2
	Total	88	100
Electrification	Government	44	50
	Private	42	47.73
	Home-owner	2	2.27
	Total	88	100
Waste disposal	Government	21	23.86
	Private	61	69.32
	Home-owner	6	6.82
	Total	88	100
Water supply Facility (Main)	Government	60	68.18
	Private	28	31.82
	Home-owner	0	0
	Total	88	100
Water supply system (distributions)	Government	0	
	Private	81	92.05
	Home-owner	7	7.95
	Total	88	100
Gas facility for cooking	Government	0	0
	Private	0	0
	Home-owner	88	100
	Total	88	100
Security facility	Government	9	10.22
	Private	14	15.90
	Home-owner	65	73.89
	Total	88	100
Access road and drainage system	Government	43	48.86
	Private	19	21.59
	Home-owner	0	0
	Total	88	100
Maintenance of facility provided	Government	9	10.23
	Private	30	34.09
	Home-owner	49	55.68
	Total	88	100
Rules and regulation guiding facility provided	Government	3	3.41
	Private	41	46.59
	Home-owner	44	50.00
	Total	88	100

alternative water source to the estate for an emergency through the borehole and overhead tanks, hence the result shows that home-owners of these estates depend majorly on both government and private providers for their source of potable water for consumption and domestic use. Table 1 further revealed that the water supplying system (distribution) within the PPP Housing estate. The result shows that 92.05% (88) of the respondents stated that water distribution within their estate is provided by the private sectors that were involved in the delivery of the housing estate, while 7.95% (7) stated that water distribution within the estate is provided through home-owners' effort. Table 1 also shows the respondents' opinion on the provision of cooking gas connection pipe within the study area. The result shows that 88% (100) of

the respondents agreed that there is no provision for a cooking gas plant nor its connectivity for easy cooking within the housing estate. Additionally, Table 1 indicates security provisions within the study area. The result shows 10.23% (9) of the respondents stated that the government provides security around the estate through government police, while 15.91% (14) stated that the private investors provide the security around the estate through the employment of registered private companies, and 73.86% (65) of the respondents stated that it is the home-owner that makes provision for security around the estates. Table 1 also shows the respondents' opinion on the provider of the drainage system and inner estate road within the study area. The result shows that 48.86% (43) of the respondents stated that they

were provided by the government, while 51.14% (45) of the respondent said that it was the private investors that provided the drainage system.

Furthermore, the result as presented in Table 1 indicated that 55.68% (49) of the respondents linked the maintenance of the facility provided within the PPP housing estate to home-owners, 34.09% (30) attributed the maintenance of facilities within the estates to private, while 10.3% (09) opined that government maintained some facility provided within the estate. Also, Table 1 shows the provider of rules and regulations guiding the use of facilities within the estate. The result shows that 3.41% (03) of the respondents stated that government makes the rules, 46.59% (41) stated that private investors make the rules within the estate, while 50% (44) stated that home-owner provides rules and regulation on the available facilities provided by both public and private section within the estates.

Discussion

This study appraised facility provisions in some selected Public-Private Partnership housing estates within three South-Western Nigeria states, in an attempt to evaluate providers of such facilities in PPP housing estate. The PPP policy recognizes that PPP is a key means of engaging the private sector in addressing qualitative and quantitative inadequacies with the provision of quality facilities in the public-sector housing in Nigeria (Ibem, 2010). However, the outcome of the finding of this study indicates that all parties that were involved in PPP housing provision have their strength towards facilities provision.

According to the results of the study, land provision for the execution of the PPP's housing was largely provided by the government (public sector). This is made possible because of the land use Decree of 1978 that domiciled the ownership of all lands with the government². The result was in line with findings that identified land as the major facility contributed by governments' (public sector) in PPP housing delivery to attract and encourage private and individual developers by making land available towards provisions of affordable housing through partnerships where the government will provide most of the land needed and the private or individual provides other major facilities required³.

The result of the study also reveals that the government was the major provider of electrification through the national grid for an easy connection for the private sector to power the PPP

housing while little or no effort was made by the home-owners in providing for their electrification. This is in-line with the findings that the government (public sector) provides a robust policy aimed towards the provision of a quality electrification project for housing delivery¹⁴. In the area of waste management and disposal, the result of the study shows that private sectors were the major provider of waste disposal facilities within PPP housing in terms of its collection and its eventual disposal within the study area. This buttressed the study that in Nigeria and other developing countries private sector provides waste disposal facilities in the management of waste services within PPP housing arrangements^{26, 27}.

The study further shows that the private sector provides water for consumption and domestic use within the study area. The result validates the findings which show that the private sectors were the major provider of utilities and other essential site and services facilities within PPP housing provision^{5,6}. Similarly, the result shows that the home-owner provides their cooking gas and other essential cooking facilities through self-help. The finding is in line with the submission that the majority of home-owner of PPP houses provides their in-house facilities require within their houses due to non-provision of these facilities during its delivery^{5,6}.

In the area of security, the study shows that the home-owners provide the security arrangement within the study area. The result affirms the study which asserted that less importance is being given to security arrangement at the beginning of PPP housing provision in Nigeria, this has propelled users (home-owner) to arrange for alternative security within the estate¹⁶. The result of this study also shows that the public sector provides access road to and within the PPP housing with well-connected drainage systems within the study area. The result is in line with the previous findings in the body of knowledge that the site and services scheme of government help in the provision of serviceable roads with good drainage system within the PPP housing estate^{14,15}. Moreover, the study shows that home-owner provide maintenance services for facilities provided within the PPP estates. This agreed with submissions of an existing study that lack of provision of maintenance services for facilities provided within PPP housing estate by major parties involved has led to a self-help situation (home-owner effort) on facility provided¹². Also, the result negates the existing findings that the administrative processes involved in providing

facilities within the PPP projects need to be subjected to integrity to avoid early damage and repairs of provided facilities³³. Similarly, the study shows that home-owners of the PPP estates provide rules and regulations on the facilities provided within the study area. The finding of this study is in agreement with the findings that end-users' (home-owner) of PPP housing makes use of the available facility provided by both the government and the private sector to suit their usage through community effort and regulations^{36,17,18,29}.

Conclusion

The study appraised facility providers in PPP housing delivery in the selected South Western States of Nigeria. The study identified land, electrification, access road, and water supply system (main) as some of the facilities provided by the public sector (government) within the PPP housing estate, which is provided through the site and services scheme of the government. It further shows that government provides the policy that guide provision of facilities by other parties within the PPP housing estate especially in the area of waste disposal through the establishment of private sector participant (PSP) used in the management of waste services. However, the study maintains that the private sector provides most of the facilities for PPP housing estate apart from providing the building structure and finance. The private sector provides waste management and disposal, provision of potable water for consumption and domestic use for the residential building in the estate, connection of PPP residential houses to national electrical grid provided by the public sector (government), and provision of networks of roads within the estates linking the government provided main access road. For the home-owner on the other hand as one of the end-users of PPP housing, the study shows that they provide security facilities within the estate to protect life and property through community effort. They further provide maintenance and regulation for the provided facilities by both the public and private sectors to avoid damage and deterioration of provided facilities within the PPP housing estates. However, in providing quality facilities for PPP housing, the study, therefore, recommends the following items:

- i. Public sector (government) should improve on its site and services scheme towards the

provision of an essential facility for future PPP housing delivery plans.

- ii. The policy made by the public sector (government) toward the provision of the essential facility for PPP's housing provision should be flexible and of economic gain to encourage more private investors to be involved in the provision of facilities for PPP housing.
- iii. Security facilities should be planned from the beginning of the PPP housing process together with other facilities to accommodate security personnel for the protection of life and property immediately after the PPP housing is ready for occupation.
- iv. To preserve existing facilities and its auxiliary services from damaged and deterioration, maintenance management units should be incorporated in the planning stage of the PPP housing project to continue the maintenance of facilities provided within the housing project delivered.
- v. Any facility that will be provided by parties to PPP housing provision should be of quality to avoid constant repairs of the facility

The study also recommends that in providing facilities for any future PPP housing delivery system, parties involved in the provisions of required facilities need to understand the end-user's facility need which should be based on a good facility management plan in order not to negate the objectives of providing quality facilities in the PPP housing delivery system. A major limitation of this study was the focus on only three estates in the South Western region of Nigeria in which only 20% of the total housing units of the estates were considered for this study. Also, the opinion of the home-owners was only considered for this study leaving out the private and government providers.

Contribution of authors

Conceptualization, Ogunbayo B.F. and Aigbavboa C.O.; Methodology, Ogunbayo B.F., Aigbavboa C.O. and Amusan L.M.; Original draft preparation, Ogunbayo B.F. and Akinradewo O.I.; Data collection, Akinradewo O.I. and Ogundipe K.E.; Data curation, Amusan L.M and Kunle E. Ogundipe. All authors have read and agreed to the published version of the manuscript.

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References

- Ademiluyi IA. Public housing delivery strategies in Nigeria: A historical perspective of policies and programmes. *Journal of sustainable development in Africa*, 2010; 12(6), 153-161.
- Mabogunje AL. Reconstructing the Nigerian City: The New Policy on Urban Development and Housing. In *Conference Paper on the City in Nigeria*. Abuja. 2002.
- Ogunbayo BF, Alagbe OA, Ajao AM and Ogundipe EK. Determining the Individual Significant Contribution of Public and Private Sector in Housing Delivery in Nigeria. *British Journal of Earth Sciences Research*, 2016; 4:3, 16-26.
- Habitat UN. The global campaign on urban governance: concept paper. *Nairobi, Kenya: United Nations Human Settlements Programme (UN-Habitat)*. 2002.
- Ogunbayo BF and Aigbavboa OC. "Maintenance requirements of students' residential facility in higher educational institution (HEI) in Nigeria." In *IOP Conference Series: Materials Science and Engineering*, vol. 640, no. 1, p. 012014. IOP Publishing, 2019a.
- Olokesusi F and Okunfulure OJ. *Strategic issues in housing*. Strategic Issues in Nigeria Development, Ibadan, NISER, 2000; 169-207.
- Olatubara CO and Adegoke SAO. Housing Maintenance. *Housing Development and Management: A Book of Readings* (ed. Agbola, T. 2007.
- Sustainable Development Goal. <https://www.sdgfund.org/goal-9-industry-innovation-infrastructure>, accessed on 27/7/2020. SDG.2019
- Doling J, Vandenberg P and Tolentino JC. Housing and Housing Finance-A Review of the Links to Economic Development and Poverty Reduction. *Asian Development Bank Economics Working Paper Series*, 2013; 362.
- Ebong BB. "Infrastructure Financing: The Public-Private Partnership Option." *Infrastructure Financing: The Public-Private Partnership Option*. 2012; 8.
- Jensen R. The (perceived) returns to education and the demand for schooling. *The Quarterly Journal of Economics*, 2010; 125:2, 515-548.
- Akinloye OA. Problems of Public Housing Estate in Nigeria. Research Report, *Development Policy Centre*, Ibadan. 2009.
- Oyedele OA. Challenges of infrastructure assets management in Nigeria. 2019.
- Henshaw G. The role of private sector in the provision of affordable housing to the public, Paper presented at the *Nigeria Society of Engineers Workshop*, Cross Rivers State Branch, Calabar. 2010.
- Ibem EO. Accessibility of services and facilities for residents in public housing in urban areas of Ogun State, Nigeria. In *Urban Forum*. Springer Netherlands. 2013; 24:3, 407-423
- Ogunbayo BF, Ajao AM, Alagbe OT, Ogundipe KE, Tunji-Olayeni PF and Ogunde A. "Residents' facilities Satisfaction in Housing Project Delivered By Public Private Partnership (PPP) In Ogun State, Nigeria." *International Journal of Civil Engineering and Technology (IJCIET)*. 2018;9:1 562-577.
- Amusan LM. Sustainability Strategies in Engineering Infrastructure Maintenance in Developing Countries: Selected South Western Nigeria States Case Study. *International Journal in Marketing IT and Management*, 2011.; 3:4.
- Ogunde A and Fagbenle OI. Assessment of effectiveness of planning techniques and tools on construction projects in *Lagos state*, Nigeria.2013.
- Sholanke AB, Adeboye AB and Alagbe OA. Adequacy of Ogun State Building Development Regulatory Legislation in Promoting Universal Design Practice in Nigeria. *International Journal of Civil Engineering and Technology*. 2019;10:1, 671-690.
- Fatoye EO and Odusami, KT. Occupants' satisfaction approach to housing performance evaluation: the case of Nigeria. In *RICS COBRA research conference* held at the University of Cape Town 2009;9,10.
- Teck-Hong T. Housing satisfaction in medium-and high-cost housing: the case of greater Kuala Lumpur, Malaysia. *Habitat International*, 2022; 35:3, 1-9.
- Liu AMM. Residential satisfaction in housing estates: a Hong Kong perspective. *Automation in construction*, 1999; 8:4, 511-524.
- Vera-Toscano E and Ateca-Amestoy V. The relevance of social interactions on housing satisfaction. *Social indicators research*, 2008; 86:2, 257-274.
- Babarinde JA. Analysis of Industrial relocation in relation to Housing and Infrastructural services in Metropolitan Lagos. *The Lagos Journal of Environmental studies*, 1998; 1:1, 97-108.
- Krieger J and Higgins DL. Housing and health: time again for public health action. *American journal of public health*, 2002; 92(5), 758-768.
- Aliu IR, Adeyemi OE and Adebayo A. Municipal household solid waste collection strategies in an African megacity: analysis of public private partnership performance in Lagos. *Waste Management & Research*, 2014; 32(9_sul), 67-78.
- Rathis S. Alternative approach for better MSW management in Mumbai, India. *Waste Management* 2006; 26:10, 1190-1200.
- Enoma A. The role of facilities management at the design stage. In *21st Annual ARCOM Conference*. London: SOAS, University of London, Association of Researchers in Construction Management. 2005; 1: 421-430.
- Ogunbayo BF and Aigbavboa CO. Experimental Investigation of Coarse Aggregates Used for Concrete Production in the Construction of Higher Educational Institution (HEI) Buildings. In *Journal of Physics: Conference Series*. 2019b; 1378: 3, 032012). IOP Publishing.
- Ogundipe KE, Ajao AM., Ogunbayo BF and Amusan LM. Post Consolidation Effects of Banking Sector

- Recapitalization on Nigeria Construction Industry (Lagos and Ogun State Case Study). *Post Consolidation Effects of Banking Sector Recapitalization on Nigeria Construction Industry (Lagos and Ogun State Case Study)*. 2015; 3(2), 68-80.
31. Jamali D. Success and failure mechanisms of public private partnerships (PPPs) in developing countries. *International Journal of Public Sector Management*. 2004.
 32. AbdulRashid K. PPP within the Context of the Procurement Paradigm. *Kuala Lumpur*. 2010.
 33. Ajao AM, Ogunbayo BF, Ogundipe KE, Bamigboye G, Ogunde A and Tunji-Olayeni, P F. Assessment of sandcrete blocks manufacturers 'compliance to minimum standard requirements by standard organisation of Nigeria in Southwest, Nigeria. *International Journal of Allied Engineering Research*, 2018; 13(6), 4162-4172.
 34. Akinradewo O, Oke A, Aigbavboa C and Ndalamba M. Benefits of adopting lean construction technique in the South African construction industry. In *International Conference on Industrial Engineering and Operations Management*. 2018;1271-1277.
 35. Ogundipe KE, Ogunde A, Olaniran HF, Ajao AM, Ogunbayo BF and Ogundipe JA. Missing gaps in safety education and practices: academia perspectives. *International Journal of Civil Engineering and Technology (IJCIET)*. 2018; 9(1), 273-289.
 36. Inalhan G and Jensen PA. The facilities management value map: a conceptual framework. *Facilities*. 2010.