

FACTORS AFFECTING THE PROVISION OF INFRASTRUCTURE IN PUBLIC PRIVATE PARTNERSHIP HOUSING ESTATES IN ABUJA, NIGERIA

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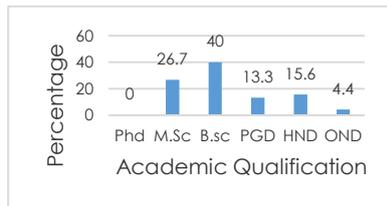
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Graphical abstract



Abstract

Housing is important to the wellbeing of humans, it goes beyond providing shelter alone. Without proper infrastructure provision, housing cannot be sustainable. Infrastructure provision plays a huge role in making a community or society habitable. Rapid population growth brings about high demand for housing and infrastructure as experienced in the country's capital Abuja. Government's inability to provide sufficient housing and infrastructure in the past brought about the public private partnership in housing delivery where government provides primary infrastructure to districts and private estate developers provides secondary infrastructure to estates. This arrangement have suffered setbacks, as subscribers of houses under this scheme suffer from little or no infrastructure provision leading to poor living and environmental conditions and many houses remain unoccupied. This research aims to assess the factors affecting the provision of infrastructure in public private partnership estates. From the research findings, the inability of government to provide primary infrastructure to districts (RII=0.89), insufficient finance (RII=0.87) and high interests on loan (RII=0.80) ranked as the most significant factors affecting the provision of infrastructure. It was concluded from the findings that government's inability to provide primary infrastructure in districts and insufficient loans are the major hindrances to estate developers in the provision of infrastructures in housing estates. It is recommended that government should participate fully in the provision of infrastructure in districts and act as minority equity co-investor in future housing development projects.

Keywords: Developers, housing, infrastructure, public private partnership

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1.0 INTRODUCTION

Housing has been viewed as the process of providing a large number of residential buildings on a permanent basis, with adequate physical infrastructure and social amenities, in planned, decent, safe and sanitary neighbourhoods to meet the basic and special needs of the population [1-2]. Rapid growth in population creates demand pressure towards shelter and efficient supply and distribution of basic utilities and services for city dwellers [3]. In most

urban centres, the problem of housing is not only restricted to quantity but to the poor quality of available housing units [4]. According to [5], a satisfactory home is one in a suitable living environment with portable water, adequate shelter and other services and facilities. The housing condition of a country is a pointer to the health motivation, economic well-being and the social circumstances of her citizens. Housing touches on the life of an individual as it provides the space for protection, privacy, economic activities, recreation and livelihood [4]. The

phenomenal rise in population, number and size of cities over the past few years have manifested in the acute shortage of dwelling units which resulted in overcrowding, high rents, poor urban living conditions, and low infrastructure services and indeed high crime rates [4]. Government has embarked on mass housing schemes to cater for the ever growing demand of housing but only a little percentage has been achieved. This could be attributed to the fact that most government housing programs have been frustrated by corruption, politicization, insufficiency of technical staff at building sites, and lack of infrastructure [6].

Since the movement of the Federal Capital Territory (FCT) to Abuja in 1991 followed by the relocation of all Federal Ministries and Parastatals, the demand of housing has been on the increase in Abuja. The Federal Capital Territory Administration (FCTA) and the Federal Capital Development Authority (FCDA) decided in the year 2000 to embark on a new approach in order to meet the challenges. Private Public Partnership (PPP) concept was initiated to reduce the burden of providing housing and its needed infrastructures on the government and increase the participation of the private sector. Government provided parcels to private estate developers to housing estates. The developer enters into a 'Development Lease Agreement' with the FCTA/FCDA. This agreement states the term and conditions as well as the obligations of each of the two partners. One of the agreed conditions is that government provides primary infrastructure (in districts) while private estate developers provide secondary infrastructure (within the estates). This means that for infrastructure like water, electricity, sewer lines and drainages to be provided in housing estates under the PPP arrangement, government must have provided primary infrastructure to enable the secondary infrastructure provided by estate developers to function.

According to [7], inadequate urban infrastructure and subsequent deterioration in the urban environment has become the most persistent and challenging problems facing Nigerian cities in the twenty-first century. The reality in many urban areas in Africa is that there is poor delivery of infrastructure necessary for housing, this is due to insufficient finance and capacity to deliver, coupled with greater responsibilities and mandates for municipalities, and the increasing demands of rapid urbanization [8]. Cases of poor provision of infrastructure in estates have been reported by house owners and residents. There was a publication on the internet by [9] reporting a dispute between a private estate developer and residents of Abuja Jubilation Bethel Estate, Lokogoma, Abuja as regards the inability of the estate developer to provide the required infrastructure in the estate. Houses in estates at Abuja remain unoccupied due to lack of infrastructure provision needed to ensure a conducive environment.

Based on the above, infrastructure provision plays an important role in housing development and should be given much attention. This research intends to assess the provision of infrastructure in housing estates under the public private partnership arrangement with a

view to proffer recommendation towards the provision of infrastructure in PPP housing estates.

2.0 LITERATURE REVIEW

2.1 Housing in Nigeria

Housing is defined as the process of providing safe, comfortable, attractive, functional affordable and identifiable shelter in a proper setting within a neighbourhood, supported by continuous maintenance of the built environment for the daily living activities of individuals/families within the community while reflecting their socio-economic, cultural aspirations and preferences [10]. [11] describes housing as residential environment which includes the physical structure used for shelter, all necessary services, facilities, equipment and devices needed or desired for the physical and mental health and social wellbeing of the family and individuals.

Urbanization in Africa has not yet brought the economic development and degree of prosperity that might have been expected. Inadequate education and physical infrastructure, combined with poor governance, have constrained the efficient use of productive resources, and the industrial development that might have come with it [12]. According to [13], African governments' efforts to provide shelter for the increasing urban population hasn't yielded much result, very little new housing is actually being built or improved by the formal sector and most of it that is built remains unaffordable to the great majority of the poor. Since the city is regarded as the engine of growth which propels national economic development [14], the effects and problems emanating from these population increases have undoubtedly constitute critical challenges to sustainable housing and urban development [15].

Nigeria having various cities, with an estimate of 80% of its urban dwellers living in slums has a shortage of housing stocks. The proportion of the Nigerian population living in urban centres has therefore increased phenomenally over the years; while only 7% of Nigerians lived in urban centres in the 1930s, and 10 percent in 1950, by 1970, 1980 and 1990, 20 percent, 27 percent and 35% lived in the cities respectively. Over 40% of Nigerians now live in urban centres of varying sizes [16]. [17], estimated that about 2.3 million urban housing units are below standard, only 33% of houses are be considered to be physically sound, and 44% and 19% require minor and major repairs respectively to bring them to normative and structural standards. It is the right of every individual to have decent housing yet a greater number of Nigerians live in poor housing conditions.

2.2 Public Private Partnership

The Canadian [18], defines Public Private Partnership (PPP) as a 'cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards'. PPP may also be defined as a

contractual agreement between the government and the private sector for the delivery of goods and services normally provided by the government with both party sharing in the risks and rewards inherent in the delivery of the goods or service which include financial risks and responsibilities. In simple terms, public private partnership means the cooperation of the government and the private sector where each party contributes her quota to the delivery of goods and services.

2.3 Overview of Public Private Partnership Housing in Abuja

The concept of involving the private sector in housing development in Abuja is traceable to [19] position paper in 1999. [19] recommended government to encourage the development of Organized Private Sector (OPS) and made land available to this class of developers in the city. The Federal Capital Territory Administration (FCTA) and the Federal Capital Development Authority (FCDA) decided in the year 2000 to embark on a new approach in order to meet the challenges. The Mass Housing Programme (MHS) was initiated with more emphasis in creating the enabling environment for the private sector to participate more actively. It aimed to bridge the wide gap that existed between supply and demand of housing stock within the City of Abuja and its environs [20].

The private real estate developers were allocated parcel of land within Abuja to develop housing estates. At the beginning the land allocation was made to the OPS developers at no cost, apart from the little processing fee paid, as government equity contribution to the scheme. They are however not issued with a formal Right of Occupancy letter which is the standard practice but a 'Letter of Intent'. This allows them to source for fund from any financial institution to enable them carry out their development.

The private developers were made to sign a Development Lease Agreement (DLA) and an undertaken to mobilize to site within six months and complete development within three years from the date of signing of agreement. It also requires the developers to comply with the city's regulations, standards and specifications in the course of construction of the housing units. Most of the OPS were from Real Estate Developers Association of Nigeria (REDAN) having 93% and remaining is shared between international construction companies, public corporations and formal organizations staff co-operatives enlisted for participation.

2.4 The Goals and Requirements of the Partnership

The partnership is a form of leasehold agreement between the FCTA and its agencies, and the private housing developers, many of whom belong to the REDAN [21-22]. The goals of the FCTA in involving private sector in the mass housing delivery are:

- i. To enhance private sector participation in housing delivery through enabling environment.

- ii. To bridge the gap between supply and demand of the housing stock within the city of Abuja and its environs.
- iii. To take off the burden of providing infrastructure and housing for the growing population from government.

The goal of the private partners is to deliver decent housing at an affordable cost to the populace and generate sufficient returns in investment.

2.5 Infrastructure

Infrastructure is widely defined as the system of services and facilities which provides for the basic wellbeing and quality of life [23]. The Longman online dictionary (2014) defines infrastructure as the basic systems and structures that a country or organization needs in order to work properly, for example roads, railways, banks etc. Infrastructure can be described generally as the set of interconnected structural elements that provide framework supporting an entire structure of development. [23], further described infrastructure as facilities and basic systems on which the sustainability and growth of a community and state depends. The term typically refers to the technical structures that support a society, such as roads, water supply, sewers, electrical national grids, telecommunications, and so forth, and can be defined as "the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions" [24]. The major features in the above definition of infrastructure consists of facilities and utilities which are provided for the public to enhance living standards of the people. As the population of any society grows, the existing infrastructure suffers deterioration due to high demands.

2.6 The Provision of Infrastructure

Differences in infrastructure across regions have implications for the prosperity of cities and reflect a variety of factors, including levels of income or development, economic growth, pace of urbanization, technical capacities and political commitment. The lowest levels of infrastructure provision are to be found in urban Africa [12]. There is a positive link between the provision of infrastructure and the level of urbanization [12]. As urbanization takes place, the need to provide basic and supportive infrastructures to the inhabitants arises. According to [25], the construction of infrastructure and its maintenance is capital intensive and these services are normally provided by the different tier of government although the private sector is becoming involved due to the liberalization policy of some aspect of the national economy by the government.

[7] identified three broad strategies for urban infrastructure development in Nigeria. These are the technocratic conventional state provision, private provision and the international-led participatory approach. The conventional state provision requires urban policies in which physical planning, implementation and maintenance of urban

infrastructure services are firmly in the hands of public agencies. The standards and regulations of infrastructure are based on conventional standards which are formulated by professionals at the town planning, lands and survey departments. The Private provision is the second approach. Due to the prevailing initiative towards the liberalization of the provision of infrastructure and international agency emphasis on the involvement of the private sector in infrastructure development, cities have engaged the services private operators in infrastructure development. The international-led participatory approach involves the increased role for Non-Governmental Organizations (NGO) and Community Based Organizations (CBO) and international agencies and support, as well as relinquishment of rigid master plans for the planning of urban physical development.

2.7 Impact of Inadequate Infrastructure on Health

The immediate environment in which humans live play a huge role in their wellbeing. This shows the importance of basic amenities in communities to promote good health. [26] defines environmental health as encompassing those elements of human health that are influenced by physical, chemical, biological, social and psychological factors in the environment. Human exposure to hazardous agents in the air, water, soil, food also to physical hazards in the environment are major contributors to illness, disability, and death worldwide. Poor environmental conditions is estimated to be directly accountable for approximately 25 percent of all preventable ill health in the world, especially among vulnerable populations [11]. The effect of the physical environment on the health status of a population is well recognized. The absence of infrastructure and deteriorated infrastructure is known to have can have a negative impact on health, particularly with regard to infectious and parasitic diseases.

Access to clean water is essential for healthy living in any community. Many diseases are associated with the intake of water of poor quality include gastroenteritis, diarrhoea, typhoid fever and hepatitis. Parasitic diseases associated with contaminated water include giardiasis, dysentery and diarrhoea. Young children are specifically at risk of suffering from potentially severe consequences due to infection with water-borne diseases. In cities, poor solid waste management has a direct impact upon health, length of life and the urban environment. Ever since the middle of the 19th century, when infectious diseases were linked for the first time to poor sanitation and uncollected solid waste, municipalities have therefore been responsible for providing solid waste collection services to their citizens [27]. Inadequate power and electricity supply may restrict the capacity of people to carry out healthy living practices such as washing, cooking, food storage, temperature control and lighting. Poor electricity supply or inadequately maintained power supply may also cause trauma and injury [28]. Indiscriminate disposal of excreta and sewerage system failure, such as overflows or

leakages, can have serious implications for the health of community residents.

3.0 RESEARCH METHODOLOGY

The study focuses on the perception of private estate developers as regards the factors affecting the provision of infrastructure in public private estates in Abuja. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena is called research methodology [29]. Questionnaires were administered to randomly selected developers within Abuja for this research. The questionnaire was grouped into two sections. The first section focuses on the respondent's profile, it targeted at gathering useful information about the respondents ranging from the educational background and years of experience to the category of developer the respondents belong to. The second section contains the practices that would enhance the provision of infrastructure in public private partnership housing estates.

According to REDAN, there are 591 registered developers in Abuja. [30-31] showed that the sample size can be calculated by using the following equation for 94% confidence level.

$$n = \frac{n^1}{[1 + (\frac{n^1}{N})]}$$

Where:

- n = sample size from finite population
- n¹ = sample size from infinite population = $\frac{S^2}{V^2}$
- Where S² is the variance of the population elements and V² is a standard error of sampling population, S= 0.1 to 0.5 and V = 0.06
- N = total number of population, S= 0.5 was chosen
- $n^1 = \frac{S^2}{V^2} = 69.44$, N= 591.
- $n = \frac{69.44}{[1 + (\frac{69.44}{591})]} = 63$

Thus this study administered 63 questionnaires to developers. Most of the questions in the questionnaire involve assessing some indices of housing financing established in literature, on a five (5) point Likert's scale. The data analysis therefore employed the following steps:

$$\% = \frac{\text{Number of responses}}{N} \times 100 \quad \text{-----}3.1$$

n – Number of responses
N – Total number of respondents

Weighted Mean

$$x = \frac{f_1x_1 + f_2x_2 + f_3x_3 + f_4x_4 + f_5x_5}{x_t} \quad \text{-----}3.2$$

Where: f – weight given to each response
x – Number of responses
x_t – total number of responses

3.1 Relative Importance Index (RII)

Relative importance index was used in the study to rank the factors that affect motivation among both the consultants and the management. Relative Importance Index (RII):

$$= \frac{\sum fx}{\sum f} \times \frac{1}{k} \text{-----} 3.3$$

Where,

$\sum fx$ = is the total weight given to each attributes by the respondents.

$\sum f$ = is the total number or respondents in the sample.

k = is the highest weight on the likert scale.

Ranking of the items under consideration was based on their RII values. The item with the highest RII value is ranked first (1) the next (2) and so on. [32], Interpreted of the RII Values as follows:

$RII < 0.60$, item is assessed to have a low significance
 $0.6 \leq RII < 0.80$, item assessed to have high significance

$RII \geq 0.80$, item assessed to have very high significance

4.0 RESULTS AND DISCUSSION

From the research work, the following findings were discovered, and presented in figures and tables for easy articulation and interpretation. A total of 63 questionnaires were distributed and 45 were properly completed and returned representing a percentage response of 71%. According to [33], the result of a survey could be considered significant if the response rate not lower than 30-40%. Therefore, the response rate is considered to be adequate. Table 1 shows that 28.9% of respondents have 16-20 years working experience and 0-5 years have the least working experience percentage as 11.1%. Also 24.5%, 22.2% and 13.3% of the respondents have working experiences of 11-15 years, 6-10 years and 20 years above respectively. Therefore the respondents have adequate knowledge and experience.

Table 1 Working experience of respondents ^o

Years of Experience	Frequency	Percentage (%)
0-5 years	5	11.1
6-10 years	10	22.2
11-15 years	11	24.5
16-20 years	13	28.9
20 years and above	6	13.3
Total	45	100

^o The frequency were determined to obtain the working experience of the respondents

The academic qualification of the respondents are represented in Figure 1 of which 26.7% are Master Science (MSc.) holders. The other categories of academic qualification are given as follows; First degree 40%, Postgraduate Diploma (PGD) 13.3%, Higher National Diploma (HND) 15.6%

and Ordinary National Diploma (OND) 4.4%. The academic qualification of the respondents is important to the integrity and quality of the data collected for the research

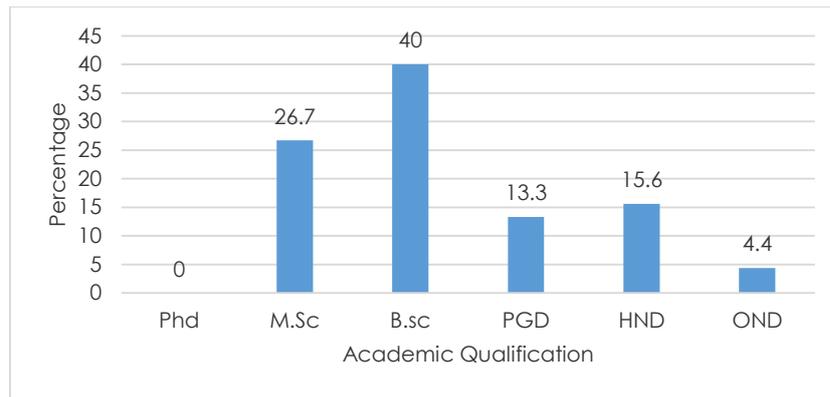


Figure 1 Showing the academic qualification of respondents ^o
 The percentage were determined to obtain the Educational level of the respondents

Table 2 summarizes the category of developer the respondents belong to, 15.6% of the respondents were land developers, 24.4% were on-site

developers, 42.2% were merchant developers and 17.8% were developer investors.

Table 2 Category of developer ^o

Category of developer	Frequency	Percentage (%)
Land Developer	7	15.6
On-site Developer	11	24.4
Merchant Developer	19	42.2
Developer Investor	8	17.8
Total	45	100

^o The frequency were determined to obtain the category of developer

Table 3 shows the factors affecting the provision of infrastructure in PPP housing estates in Abuja and has been ranked accordingly. The highest ranked factor is the inability of government to provide primary infrastructure with the value of RII as 0.89, it is regarded as a factor with very high significance because the relative important index (RII) is greater than 0.8. Also insufficient finance and high interest on loans ranked second and third respectively with the values of relative important Index (RII) as 0.87 and 0.80 having high significance. High cost of materials, lack of long term loans, high cost of construction, poor planning and execution strategies by developers, risk of low returns on investment, delayed detailed land use and site development and increasing demands due to rapid urbanization ranked fourth, fifth, sixth, seventh,

eighth, ninth and tenth respectively with their relative important index (RII) assessed to be of high significance. High infrastructure standards and inability to provide collateral for loans, negative effect on the affordability of the houses and delays from subcontractors, lack of technical professionals, complexity of construction works and inconsistency in government policies, and weather ranked eleventh, twelfth, thirteenth, fourteenth fifteenth, sixteenth, seventeenth and eighteenth respectively with their RII assessed to be of low significance. With the results obtained below, it can be inferred the inability of government of government to provide primary infrastructure is the greatest challenge faced by developers followed by insufficient finance to execute the provision of infrastructure and high interest on loans.

Table 3 Developers' perception on the factors affecting the provision of infrastructure in PPP housing estates

°S/N	Factors	Frequency of Response					Σf	Σfx	Mean	RII	Position
		1	2	3	4	5					
1.	Inability of government to provide primary infrastructure	-	2	3	13	27	45	200	4.44	0.89	1 st
2.	Increasing demands due to rapid urbanization	5	19	1	12	8	45	134	2.98	0.60	10 th
3.	Poor planning and execution strategies by developers	5	8	6	22	5	45	152	3.38	0.68	7 th
4.	Insufficient finance	-	-	9	11	25	45	196	4.36	0.87	2 nd
5.	High interest on loans	-	2	10	14	19	45	180	4.00	0.80	3 rd
6.	Inconsistency in government policies	11	14	6	8	6	45	111	2.47	0.49	16 th
7.	Delayed detailed land use and site development	5	6	8	22	4	45	149	3.31	0.66	9 th
8.	High cost of building materials	3	7	2	12	21	45	176	3.91	0.78	4 th
9.	Lack of technical professionals	14	11	7	9	4	45	113	2.51	0.50	15 th
10.	Delays from subcontractors	10	12	14	6	3	45	115	2.56	0.51	13 th
11.	High cost of construction	-	10	7	16	12	45	165	3.67	0.73	6 th
12.	Risk of low returns on investment	-	15	11	7	12	45	151	3.35	0.67	8 th
13.	High infrastructure standards	4	17	11	13	-	45	123	2.73	0.54	11 th
14.	Complexity of construction works	3	7	12	15	8	45	153	2.43	0.49	16 th
15.	Negative effect on the affordability of the houses	9	15	8	13	-	45	115	2.56	0.51	13 th
16.	Inability to provide collateral for loans	12	10	7	11	5	45	122	2.71	0.54	11 th
17.	Weather	12	14	9	10	-	45	107	2.37	0.48	18 th
18.	Lack of long term loans	-	7	8	13	17	45	172	3.82	0.76	5 th

° Developers' Perception on the factors affecting the provision of infrastructure in PPP housing estates were measured on a five point Likert scale, where 1 = strongly, disagree, 2 = disagree, 3 = uncertain/unsure, 4 = agree and 5 = strongly agree.

5.0 CONCLUSION

This research considered factors affecting the provision of infrastructure in housing estates in Abuja. The inability of government to provide primary infrastructure is the most significant factor that hinders the provision of infrastructure in PPP housing estates in Abuja. This is followed by insufficient finance and high interest loans as limiting factors. It is important that government provides primary infrastructure to districts to enable developers provide secondary infrastructure in housing estates. A new approach towards financing of housing and infrastructure projects under the PPP arrangement should be explored to ensure the success of the partnership. The [34], introduced new reforms in PPP in the United Kingdom which should be adopted by the

Nigeria government. This involves government having minority equity in future housing development projects leading to better partnership in terms of project and financial transparency. Also, this approach would attract a pool of long term-debt providers since government acts as co-investor. The FCTA/FCDA should function effectively in terms of planning, monitoring and supervision of all stages involved in infrastructure delivery in PPP housing estates. Further research should be carried out in the problems involved in the provision of infrastructure by government in districts in Abuja.

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