Housing Data Base for Sustainable Housing Provision

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Abstract

The paper examined selected data requirements for housing provision in selected housing estates as applicable to house owners with the view of determining the degree of relevance to mass housing provision. The research employed a mixed method approach by collecting both quantitative and qualitative data which were analysed using descriptive analysis in SPSS. The results are presented in tables, charts and figures to illustrate the data developed. The result showed that a significant percentage of the people living in these estates are tenants and cannot afford to pay for the ownership of the houses. It also showed that the houses were not built based on any data obtained from prospective house owners hence the constant desire to make changes. The paper concludes that the housing provision as currently practised is not socially sustainable as it does not rely on data from the prospective house owners. It therefore recommends that for future housing estate developments, prospective house occupiers should be determined first in order to obtain relevant data considered necessary to be infused in the design.

Keywords: *Database, estates, housing, owners, tenants*

Introduction

Housing shortage in Nigeria has been widely discussed and documented, with many researchers putting the figure for housing shortage at about 17million units (Anugwom, 2001; Olotuah &Taiwo, 2013; Adedayo 2015; Gemade 2014; Asojo, 2010). This housing deficit has led to an upsurge in mass housing developments in major Nigerian cities. The Federal Government of Nigeria had led the way in housing provision with the introduction of many housing schemes across the country (Olotuah, 2007). This has been replicated by many State Governments in Nigeria through provision of Low-Income housing schemes in the State capitals and some selected cities (Adedayo, 2013). It was the expectation of these Governments that the housing deficit would be reduced, however; this has not been the case (Israel & Bashiru, 2008). Several factors have been adduced for the cause of such failure, which ranged from cost of building materials to type of building design (Adedeji & Ogunsote, 2012).

The issues of access to land is also considered as a critical factor that has affected the provision of housing units in Nigeria as the process is considered cumbersome and it excludes a particular category of citizens who are often displaced as the cities grew (Federal Government of Nigeria, 2012; Morakinyo, Okunola, Ogunrayewa & Dada, 2015; Jinadu, 2007). The issue of speculative housing which in many cases is the basis of housing estates development in Nigeria has had its negative impact on the type and nature of houses provided within the city centre as many housing schemes have become profit driven. The provision of housing for the public in Nigeria through practice of estate development has seen a lot of none professionals taking over the process with professional input reduced to just provision of building design. The basic principle of data collection and analysis in design process as opined by Adedayo (2013) is often neglected or reduced to simply the design brief as supplied by the clients.

The required data from the prospective house owners is usually not sought, hence it is common to find housing estates being developed for a particular group of people yet the target group consider the housing estate a failure due to many reasons which range from, affordability to design requirements (Okechukwu, 2009). It is on this basis that this paper examined some selected housing estates in Nigeria with the view of determining the type of data required and used for the housing provision. The study covers some selected cities in Nigeria as it is common to find similar housing designs across the country despite the differences in the cultural and socio-economic capabilities of the inhabitants.

The use of similar designs for housing estates is considered a key factor in the failure of some of the housing estates developments in countries with diverse cultural differences such Nigeria (Zubairu, 2006; Tipple, Owusu & Pritchard, 2004; Olayiwola, Adeleye & Ogunshakin,2005). According to Onder (2007) and Ozaki (2003), the house owner should be the focus of the housing design regardless of the design being in a mass housing estate. A

critical examination of mass housing design in Nigeria will show that this has not been the case, issues such as the definition of the prospective house owner in terms of specific data have been over looked with many architects simply assuming the parameters, it should therefore not be surprising when the houses built are often not taken up as is the case in Abuja.

Overview of Housing Provision in Nigeria

Urbanisation has been considered as a critical factor responsible for the increase in housing demand in the city centres as people usually migrate to such areas for improved livelihood (Onu & Onu, 2012; Akinyode & Tareef, 2014). The provision of housing in Nigeria is a sector that has high number of participants seeking to provide houses for the populace be it public or private sector driven. According to Ademiluyi (2010), the rate of housing unit provision of 2 units to 1000 persons fell short of the recommended standard of 8-10 units by the United Nations. This shows that there is need for increased attention to housing provision. However, the need to also collect data for the houses provided is evident as this would allow for measurement of progress in addressing the challenges.

The need for a sustainable housing provision in Nigeria is quite important as it would assist the Government in meeting its responsibilities to the citizens of the country and address the growing population because housing problem is considered very critical in the urban areas (Adesoji, 2011; Jambol, Molwus & Daniel, 2013). The Federal Government of Nigeria had

tried removing itself from housing provision to the citizen through the provision of different housing policies all geared towards ensuring that the private sector drive the process but this has met with challenges as reported by researchers (Ibem, 2010; Henshaw, 2010; Amao, 2013; Abimaje, Akingbohungbe & Baba, 2014). The focus of many researches and Government policies have been towards housing quantity with little attention to quality issues as they relate to the houses provided; hence the unsatisfactory nature of housing provision. It could be observed that housing estates targeted at low income earners are usually not affordable by such group of people as ascertained by Abimaje et al., (2014). It implies that the basic requirement of data regarding the prospective house owner was not adequately analysed if gotten at all (Okpoechi, 2014).

The need for housing in Nigeria is quite evident and the demand established; however, with all these variables not known to those required to provide solution, the rate of housing provision is still considered as being low according to Odunjo (2014), who put the blame on financial constraints and lack of political will. It has been difficult for any researcher to categorically establish the total number of existing houses in Nigeria at a period so as to determine the exact amount needed, despite the population and censuses conducted in 2006. The basis for any significant attempt at solving the housing deficit problem in Nigeria must begin from data based and managed housing delivery. In some of the studies reviewed (Osaretin, 2011; Basorun & Fadairo, 2012; Ukwayi, Eja, Ojong

& Out, 2012; Ibem, Aduwo, & Ayo-Vaughan,2015) none examined the issue of housing as it related to obtaining the data of the prospective house owners before designing and constructing the houses. The focus of mass housing designs in many Nigerian urban centres has been the low-income earners and the urban poor (Adunwo, Edewor & Ibem, 2016; Aribigbola, 2011; Ukoje & Kanu, 2014; Adesoji, 2011). It is clear from these studies that the data for the prospective house owners need to be obtained and used for design by the architects.

The common data usually obtained when it comes to mass housing estates provision has been that of income capability of the house owners as shown in researches by Igbinosa (2011); Olowofeso, Bada, Bamanga, Bassey & Dzaan, (n.d); Morakinyo et al., (2015) and Ibem & Amole (2010). The house owner income is of minimal significance to the architect when compared with data required for building design by the architect which affects the nature of the house. It is on this basis that the need for a data based housing scheme was investigated and the application as it affects mass housing by architect.

Research Method

The research design adopted was descriptive survey using a questionnaire as the research instrument for collection of data. The method is considered adequate as it falls within the process of Post Occupancy Evaluation, as stated by Adedeji and Fadamiro (2012). This was to allow the respondents provide their opinion on the housing data required for the study. A total of three estates were randomly selected for the study while the house occupants in the estates were selected based on stratified random sampling method to ensure that the whole estate occupants were given equal chance of being selected.

A total of 450 copies of questionnaire was distributed in the estates at 150 copies of questionnaire per estate. A total of 169 copies were returned giving a return rate of 37.55% which was considered adequate for the study (Porter, 2004; Carley-Baxter, Hill, Roe, Twiddy, Baxter & Ruppenkamp, 2009). The returned questionnaire in both cases were analysed using descriptive statistics from SPSS, while the tables and charts generated in SPSS were further developed using Microsoft Excel. Likert scale calculation was done to determine the value for each variable as established by the respondents.

Results and Discussion

Characteristics of Respondents and House Design Base

One of the first issues the architect always tries to address before embarking on a design is to obtain the design brief and analyse the data provided. In the case of housing estate development this is often disregarded or inadequately gathered because the houses usually provided are seen to be the same, apparently assuming that the house owners are the same. Unfortunate signal for this trend is the mass production method adopted for mass housing and estates development; whereas, many architects simply discuss with the client who is usually the financier of the project.

There is nowhere in the design process where the prospective house owners details are sought and incorporated in the design. In Table 1 it can be observed from the respondents that the response to various questions regarding their characteristics are varied, however if they are grouped it would be easier for the architect to develop schemes that can suit each category of respondent.

A major characteristic which effects the house design is that of religion as the design requirements for an Islam faith based household will be different for others. In examining the income and occupation of the respondents it would be observed that about 80% of the respondents are civil servants who earn about Twenty Thousand Naira per month. This compared with the nature of house design

provided, majority of the targeted house owners would be found unable to purchase the house. The income level of the house owners accounts for 20% of the tenants found in these houses while the significant 60.7% Civil servants allocation show that many simply rely on their employer to solve their accommodation problem while in service.

The marital status has a significant influence on the design of the house, yet the same type of housing design is provided for both married and single persons. The data shows that 89.8% of the respondents were married hence the need for more space for him than the single person. These are some of the data that should be considered while considering the design brief for housing estates so as to avoid modifications of the housing units by the occupants.

Table 1: Characteristics of House Occupants and Base for House design

Variable	Description of Characteristics			
Sex	Male (62.7%)	Female (37.8%)		
Religion	Christianity (46.2%)	Islam (52.4%)	Others (1.4%)	
Marital Status	Singl (10.2%)	Married (89.8%)		
Occupation	Public Service (83.8%)	Private Service (16.2%)		
Monthly Income	Less than #15000 (15%)	#15000-#20000 (4.8%)	Above #20000 (80.2%)	
Family per Block of Flat	One family (53%)	Two families (7.2%)	Three families s (18.1%)	Four & Above (21.7%)
Base for House design	Owner Occupier (18.5%)	Tenant (20.8%)	Civil Servant Allocation (60.7%)	

Housing Acquisition

The process for acquisition of a house in a housing estate usually varies depending on the location of the estate, the property developer and the mortgage plan. In many cases when government builds an estate it usually hands it

over to the respective State housing authorities to allocate to qualified individuals while some are handled by private estate companies. The usual practice of the process is that the houses are either complete before advertisements are made or have reached practical completion.

The prospective house owners are simply expected to obtain forms as the first step towards owning a house within the estate. The process through which respondents have gained knowledge about a house is shown in Table 2 where it is observed that the knowledge about the housing estate was mostly through the government allocation representing 55.1% of respondents view which is attributed to the trust people placed in government as it concerns housing, it was also evident that respondents trust their friends and family in recommending houses for them because they are considered to understand their peculiar family needs. It was observed that in obtaining houses for ownership, government allocation was still the highest with 48.1% as it was believed by the respondents that government was not likely to betray their trust while directly from the developer had the least. It implies that when houses are to be sold to prospective house owners there is need for the Government to be directly involved for it to be a success and give people sense of security of their money and house. A major source of funding was through personal savings while the use of Cooperative societies was also adopted by respondents. It implies that should data be needed for housing provision, cooperative societies are good sources as this would help ensure that the house are taken up. The low use of mortgage is a major concern. Some of the respondents claimed that the process for obtaining mortgage finance was too cumbersome and long hence they sought other options.

Table 2: Housing Acquisition Approach

Variable	Description					
Knowledge about House	Agent (10.2%)	Referral by friends/family (25.1%)	Advertisements (9.6%)	Government Allocation (55.1%)		
Obtaining of House ownership	Government (48.1%)	Previous Owner (31.3%)	Inheritance (13.7%)	Developers (6.9%)		
Source for Purchase of House	Personal Savings (61.9%)	Mortgage (5.3%)	Commercial Bank (2.7%)	Cooperative Societies (23.9%)	Family (3.5%)	Others (2.7%)
Payment Method	Lump Sum/outright purchase (52.8%)	Installment (47.2%)				

Housing Type Description

In describing the house type occupied by the respondents which are usually common in majority of the housing estates provided in the country, it was observed as shown in Table 3 that 63.3% of the houses were detached houses which allowed for some form of privacy within the premises particularly for the houses with fenced enclosures. These were the types that majority of respondents considered as conducive for them, to avoid conflict with neighbours and to feel a sense of complete ownership. In examining the habitable rooms within the houses the issue of family size was a major consideration as the number of bedrooms varied between two to three and in some cases four bedroom. 34.3% of the respondents considered two rooms as habitable with one of the rooms serving as part store for items not frequently used. The respondents that chose three rooms were those who had to create guest room for visitors or non-nuclear family

members. This implies that in planning the number of rooms for a family there is need to ensure that an extra room is provided that could serve dual purposes for the family. The houses that had unmarried single person considered the use of one room as sufficient, however they foresaw challenges when they get married and start to raise children. The implication of this is that should the housing estate be sustainable there was the need for provision of increased space within the house through remodelling of the interior spaces. In examining the number of housing units per plot it was observed that the 60.9% of the respondents were housed in one housing unit per plot which explains their desire for privacy. The implication of this choice on design of housing estates is that the architects should seek out opportunities for ensuring that each user enjoys privacy by siting only one building per plot as this would improve social sustainability.

Table 3: House type and Plot Description

Variable	Description				
Building Type	Detached (63.3%)	Semi -detached (16.6%)	Others (20.1%)		
Number of Habitable Rooms	One (2.4%)	Two (34.3%)	Three (26%)	Fou r (14.8%)	Others (22.5%)
Plot Size	$15X15m^2$ (6.5%)	$30X15m^2$ (78.7%)	$30X30m^2$ (7.7%)	$45X30m^2$ (1.2%)	Others (5.9%)
Housing Units per plot	One (60.9%)	Two (22.5%)	Three (5.4%)	Fou r (11.2%)	

Satisfaction with House Type

In ensuring sustainability of housing estate provision there is need to ensure that the house owners are satisfied with the houses provided which will in turn point to the possible success of future house and also enhance the nature of future house designs. In figure 1, it was observed that 74% of the respondents considered that their house was too small with regards to what they required. This is a key issue in terms of determining sustainability of the housing estates as it would appear that the respondents were simply managing the individual housing unit. This issue is one that could be avoided at the design stage by the architect if the right data was obtained rather than the generalised method of assumptions of space needs.
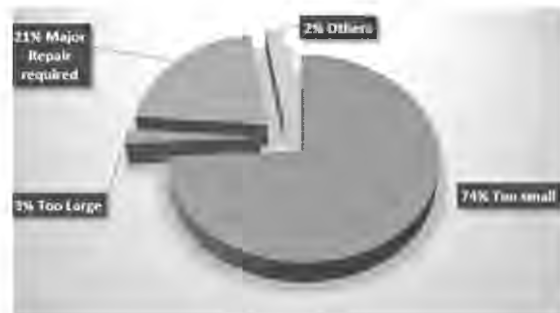

Figure1: Reasons for house not meeting household needs.

In determining satisfaction of the respondents regarding the houses in the estates series of questions were asked as shown in Table 4, where majority of them responded to the questions in affirmative with regards to what they considered important to be included in houses if given the opportunity to make an input.

Table 4: Number of respondents per opinion on Importance of housing features in future house

Measured Variable	Very Important	Important	Unimportant	Very Unimportant	Total
Large Bedrooms	26	104	28	11	169
Large Living room	42	75	34	16	167
Large Toilet spaces	15	113	31	9	168
Large Kitchen	36	89	27	17	169
Additional Store	88	53	21	4	166
Location of Doors	37	96	22	10	165
Individual Plots	49	87	25	7	168
Private garden Space	9	43	98	19	169
Separate Covered parking Space	39	117	12	0	168
Outdoor leisure areas	23	121	13	11	168
Separate Dining Space	8	26	91	43	168
Visitor's lounge	67	81	15	6	169

In determining the level of importance placed on the various options rated a weighted score of 1 to 4 was used as represented as follows;

Very Important	1		Important	2
Unimportant	3		Very Unimportant	4

Table 5: Weighted Score of respondents on Importance of housing features in future house

Measured Variable	Very Important X1	Important X2	Unimportant X3	Very Unimportant X4	Total
Large Bedrooms	26	208	84	44	362
Large Living room	42	150	102	64	358
Large Toilet space	15	226	93	36	370
Large Kitche	36	178	81	68	363
Additional Store	88	106	63	16	273
Location of Doors	37	192	66	40	335
Individual Plots	49	174	75	28	326
Private garden Space	9	86	294	76	465
Separate Covered parking Space	39	234	36	0	309
Outdoor leisure areas	23	242	39	44	348
Separate Dining Space	8	52	273	172	505
Visitor's Lounge	67	162	45	24	298

Based on the weighted score in Table 5, the obtained result was used in the Likert scale calculation to determine the perception of importance placed on each variable and this shown in Table 6. The scale of measurement is give as follows;

1.0 - 1.49	Very Important	1.5 - 2.49	Important
2.5 - 3.49	Unimportant	> 3.5	Very Unimportant

Table 6: Respondents Opinion on Importance of housing features in future house

Measured Variable	Sum	Mean	Decision	Ranking
Additional Store	273	1.644578	Important	1st
Visitor's lounge	298	1.763314	Important	2nd
Separate Covered parking Space	309	1.839286	Important	3rd
Individual Plots	326	1.940476	Important	4th
Location of Doors	335	2.030303	Important	5th
Outdoor leisure areas	348	2.071429	Important	6th
Large Bedrooms	362	2.142012	Important	7th
Large Living room	358	2.143713	Important	8th
Large Kitchen	363	2.147929	Important	9th
Large Toilet spaces	370	2.202381	Important	10th
Private garden Space	465	2.751479	Unimportant	11th
Separate Dining Spac	505	3.005952	Unimportant	12th

It can be extracted from Table 6 that of the twelve variables examined only two were considered as unimportant of which the separate dining space is an area that is often provided within these houses. Hence it goes to show that it is the least sought after space which could be excluded from the housing design or should not be the focus.

The Issue of additional store ranks highest, this can be attributed to the need to store other items of not immediate need and, which could not be stored in the kitchen. Little wonder that some bedrooms were converted to temporary stores in some of the houses. Availability of a visitor's lounge satisfies a house owner (e.g. the Muslim) to house a guest, away from direct access into the main house or living room

The import of using some of these data in planning and designing the housing estates is that it allows for the houses to meet the needs of the users and ensure the sustainability of the schemes as the houses would be taken up because the data would be gathered from the prospective house occupiers. The result of the likert scale shows that the issues which the house owners consider important might not necessarily be the same with the architect undertaking the design.

Conclusion

Sustainability is a topical issue globally as it affects the different facets of human life of which shelter is a major concern. The need for appropriate housing in urban areas of Nigeria which was established in the paper is of great importance, hence the level of attention it should get from both the Government and the private sector.

The current method adopted in housing estate provision is considered as one that is not sustainable considering the fact that there is no record to show that the data of the prospective house occupier were ever factored. It implies that the houses developed are based purely on speculations and assumed data, which runs contrary to the concept of sustainability. The

paper was able to show that the assumptions made by the architects and the developers of housing estates do not meet the expectation of the house owners which implies that if this approach is not checked the method will continue to give rise to houses that are not acceptable to the occupiers, thereby eliciting continuous modification of the houses which would increase the overall cost of the houses. One of the key elements of sustainability is planning and every form of planning requires data which would help serve as basis for measurement. In the case of housing estate development in Nigeria, this has been overlooked, hence the need for a drastic change in approach. The paper showed that the assumptions of architects in design for these category of people was not in tandem with those of the house owners going by the features they considered important in housing provision.

It is therefore recommended that for future housing estate developments, opinion or choice of prospective house occupiers should be sought first so that the relevant data stated in the paper and other data considered necessary could be obtained and infused in the design. A constant Post Occupancy Evaluation of the housing estates should be carried out so as to determine the issues that affect the houses and the house owners with the view of ensuring sustainability. This should improve the quality

of shelter being built and it would ensure that the needs of the house owners are properly taken care of at the design stage.

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