AN EVALUATION OF PUBLIC HOUSING PERFORMANCE IN GOMBE METROPOLIS, NIGERIA

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Abstract—The study evaluates the performance of public housing developments in Gombe metropolis, Nigeria with the aim of identifying areas of strength and weakness for correction. Unlike in all previous studies, occupants’ experience with performance of building and environmental features is compared with socio-economic attributes.

Keywords- occupants’ experience, performance evaluation, post occupancy evaluation, public housing

INTRODUCTION

Background of the Study
Houses are prediction of a shelter that meets human basic needs of habitation. Therefore, the prediction can be right in some areas and wrong in others. There is mostly wide gap between the design intent and the final performance of the building after occupation Loftness et al. (2009). It is constant evaluation of the houses in use that can identify, correct and provide guide to avoid the occurrence of the same mistakes in future housing policies, design and developments. Southworth & Cranz (2012) pointed that the occupants view is never taken into consideration as a source of knowledge that a professional architect or planner can utilise for future designs.

Statement of the Problem
Poor housing represents and environmental health risk (Sheppard, 2011). Ibe (2011) revealed how little attention is given to safety of housing occupants, especially in public housing developments. A study by Curtis, Corman, Noonan, & Reichman (2010) to investigate the relationship between health shock at birth and housing condition of the patient revealed that a health shock at birth increases the likelihood that the family experiences overcrowding and homelessness, with inadequate utilities or lives in a poor quality sub-optimal maintenance housing unit. Gibson, Thomson, Kearns, & Petticrew (2011) reviewed 130 relevant publications on relationship between health and housing which shows that change from neighbourhood with better facilities condition increases the proportion of participants reporting good or excellent health condition. Other studies like Rauh, Landrigan, & Claudio (2008) have demonstrated the relation between health and housing infrastructure. A study by Afolabi, Clement, Ekundayo, & Dolapo (2012) attributed the study findings on major causes of death among under-five year’s children in Nigeria on hidden causative factors such as poor housing. However, there is also problem of inadequacy of housing performance evaluation. Ibem and Amole (2010) pointed that there is inadequacy in evaluation research on public housing and use of appropriate evaluation tools and methods. Stevenson & Leaman (2010) showed that human attitudes and behaviour are in most cases over looked in the housing performance evaluation. Sinou & Kyvelou, (2006) further noted that not all the building evaluation tools take into consideration the aesthetics, social parameters as well as the economic performance of the buildings, which this study intent to address.

Purpose of the Study
The study is to evaluate the performance of public housing developments in Gombe metropolis, Nigeria, with a view to measure occupants’ experience and proffer solution to issues in public housing performance identified in the study area. To achieve the above mentioned aim, the following objectives were forwarded:

i. To identify the performance criteria for public housing evaluation

ii. To determine the occupants’ experience with the performance of building features of public houses in Gombe metropolis.

iii. To identify the occupants’ experience with the performance of environmental features of public houses in Gombe metropolis


iv. To examine the socio-economic attributes of the occupants that influence occupants’ experience with the performance of public residential housing in Gombe metropolis

v. To develop a framework for effective performance of public housing development in the study area.

Scope of the Study
The study will measure occupants experience with building (structural) features such as number and size of rooms and ventilation. It will examine the environmental (neighbourhood) features such as greenery, sport facilities, and security of the area. The occupants’ socio-economic attributes such as family size and education status are relevant to the study as they may influence experience of the occupants. The expected respondents to the instruments are the occupants of the public houses in the study area. This research is significant not only to government as developer and provider of public estates, but also to private real estate developers as well as the occupants of such estate based on the fact that it will provide enormous potential for improving the housing performance.

Literature Review
Public housing is “a form of housing tenure in which the property is owned by a government authority, which may be central or local”. The Nigerian government efforts on public housing were dated back from the colonial’s era to date (Rees, 2009). The public housing policy structure tends to favour the architects preferences, with overall target of low costing, while there is need for the buildings to serve the needs of the people who use them (Watson, 1999).

Systematic judgement through empirical study was referred to evaluation research (patton, 1990). Post Occupancy Evaluation (POE) was sighted by Shen, Shen, & Sun (2012) as a process of evaluating building performance in an organised and thorough way after it has been in occupation for some time. The term POE was said to have originated from occupancy permission given to certify that a property is fit for occupation (Riley, Kokkarinen, & Pitt, 2010).

Post occupancy evaluation as a relevant technique, involves a careful & systematic approach to measuring the performance of a building by involving each user group & each important element of the building under examination (Khan & Kotharkar, 2012). POE in this context is use to evaluate occupants experience with public housing developments. Experience was also defined by Hurlburt and Schwitzgebel (2007) as “anything that emerges, coalesces, become a phenomenon or is experience out of the inner and outer stimuli that simultaneously impinge on people”. Hence, experience is seems to have specific content and significant form, for in each experience there is seem to be a specific reference to reality. Occupants experience refers to all parts of the interaction between occupants and the houses (Kuniavsky, 2007). However, emphasis is given to the usability of the housing units in describing occupants’ experience. Good experience relies on the extent of use by the occupants concern (Hassenzahl and Tractinsky, 2006). Who interacts with what, when and how shape the nature of the occupants’ experience. Quantification of occupants experience is inevitably difficult, as it measure who interacts with the house, how, when and where.

In simple terms building performance has been defined in BS 5240 as behaviour of a product in use (Douglas, 1996). Collections of the occupants view of buildings was introduced by the Royal Institution Of British Architects (RIBA) and was incorporated in the RIBA First handbook in 1965 (Gray, Isaacs, Kernohan, & McIndoe, 1996). The Building Performance Research Unit (BPRU) at University of Strathclyde was sponsored by RIBA, The Architects' Journal and the Ministry of Public Buildings and Works to carry out POE researches as feedback programme in UK. Relatively better recognition and application of POE was reported in USA Federal Facilities Council (2001) in Wheeler et al. (2011). The POE was accepted as a tool for sustainable development which led to the development of building database USA. Khan & Kotharkar (2012) pointed that POE is an accepted technique for assessment of building performance worldwide but in India such evaluations are in a nascent stage, going by the lack of publications on this issue. Scholars like Jaafar & Hasan (2008) and Shafie, Zahari, Yusoff & Pawi (2012) examined the building performance in Malaysia, while Iben & Amole (2011) and Iben, Opoko, Adeboyie & Amole (2013) carried out building performance evaluation in Nigeria. The results indicated the importance of such evaluation in public houses.

Various methods were developed to provide a guide for effective assessment of building performance in
relation to physical, environmental and socio-economic characteristics of the property. Some of the methods were targeted at solving a particular problem like thermal and acoustic, which makes them applicable only to a particular problem, stage of development process or even a country. The most comprehensive methods were presented in table 1 below;

Table 1 Building Performance Evaluation Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Authors/Year</th>
<th>Focus</th>
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<tbody>
<tr>
<td>The BREEAM</td>
<td>Siou &amp; Kyvelo, 2006</td>
<td>Buildings and environmental</td>
</tr>
<tr>
<td>The GBTool method</td>
<td>Siou &amp; Kyvelo, 2006</td>
<td>Building, Environmental and sustainability</td>
</tr>
<tr>
<td>The LEED method</td>
<td>Fernández-Solis et al., 2011</td>
<td>National standard for developing sustainable buildings (LEED-H for homes)</td>
</tr>
<tr>
<td>The CASBEE method</td>
<td>Siou &amp; Kyvelo, 2006</td>
<td>Framework for Selecting Performance Assessment Tools for Achieving LEED 3.0 Credits</td>
</tr>
<tr>
<td>The HQE method</td>
<td>Siou &amp; Kyvelo, 2006</td>
<td>Environmental labelling method for buildings, based on environmental performance</td>
</tr>
<tr>
<td>The VERDE method</td>
<td>Siou &amp; Kyvelo, 2006</td>
<td>Integrates parameters with management of the building life operations</td>
</tr>
<tr>
<td>COPRAS</td>
<td>Viteikiene &amp; Zavadskas, 2007</td>
<td>Evaluating The Sustainability Of Vilnius City Residential Areas</td>
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</table>

The literature review on performance criteria used in housing evaluations showed that Likert scales are mostly used to measure variables in evaluation studies. For instance adequacy is measured by very adequate, fairly adequate and inadequate; satisfactions are also measured by unsatisfied, satisfied, very satisfied and performance are measured by very good, good, fair, bad and very bad. Authors usually start by identification of building parameters, weight is then assigned to each variable respond, significance tests are then carried out, correlation analysis is then use to identify variables that determine building performance and their levels of performance. (Hussein, 2012; Ibem, 2011; & Ibem and Amole, 2010). The major gap identified in the literature review is the medium of evaluation used in previous studies for housing performance evaluation. This refers to the use of satisfaction indicators in housing performance evaluation. The conventional method of asking whether occupants are satisfied or not satisfied is too broad and does not specifically measure the effective performance of the house. This is because a satisfaction rating like ‘very satisfied’ or ‘very dissatisfied’ is a cluster carrying within it the attributes of the respondent such as perception, social taste, economic background and a lot of other attributes which may change over time. Therefore housing performance can be more effectively evaluated using occupants experience with the functionality of the building components and environmental features of the public houses in as the bases. This is because occupants experience is closer to reality and hence truth than satisfaction. Occupants experience is also complete and indivisible, there are no such things as ‘very experienced’ or ‘very inexperienced’ in the evaluation as used in satisfaction. Hence, this is used to evaluate the performance of public housing developments in Gombe metropolis of Gombe state, Nigeria.

Research Methodology

As housing evaluation is multi-desiplinary activity, it has multiple theoretical underpinnings. Literature review indicated that there is no definite theoretical or conceptual framework for evaluating public housing developments; instead, the evaluations use approaches that best suit the needs of the evaluation (Ibem and Amole, 2010). Therefore, it is based on this that both theoretical and conceptual frameworks were adopted by incorporating different components of public housing features with a number of relevant theories and philosophical assumptions generated from literature.

The place of theory in deductive reasoning intent is theory testing and inductive reasoning is theory building, both needed each other to conceptualise scientific research holistically. Inductive and deductive reasoning do not occur in isolation, instead they are fused together (Martella et al., 1999), therefore the appropriate research reasoning approach for the evaluation of public housing performance is the combination of both deductive and inductive reasoning. This is because there are many theories relevant to housing performance evaluation. Housing evaluation has some elements of subjectivity as it is based on the occupants experience on the physical attributes of the building and environment which is influenced by the gender, ethnicity and social role of the respondents (Filfil, 1999).

Evaluation research as this one, involving human instruments required the use of naturalistic inquiry procedures to ensure its reliability (Guba, Lincoln and Yvonna, 1981). Therefore this study employed five (5) inquiry levels presented in the research framework of the study Figure 1 below. It
comprises of area of investigation, methodology adopted for data collection, methods of data analysis, purpose or aim of studying each area of study and expected results from each area.

**Expected outcomes**

i) Performance criteria for public housing evaluation in Gombe metropolis

ii) The most significant building features that influences public housing performance in Gombe metropolis from occupants experience

iii) The most significant Environmental features that influence public housing performance in Gombe metropolis from occupants experience

iv) The most relevant socio-economic attributes of the occupants that influence occupants’ experience with the performance of public residential housing in Gombe metropolis.

**Conclusion**

The findings of the study will portray the importance and relevance of POE to sustainable public housing development especially in developing countries like Nigeria. Therefore, the use of POE on public housing development has become necessary to identify areas of weakness and guide future developments.

**Reference**


