

AN ASSESSMENT OF FACILITIES AND MATERIALS SPECIFICATION OF RESIDENTIAL BUILDINGS IN NIGERIA

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Abstract

The serviceability and comfortability of a building edifice are functions of its facilities and materials of construction. The level of facilities and quality of materials determine the degree of comfort, satisfaction and comfortability the users of residential buildings will enjoy. The study assessed the level of facilities and materials specification of residential buildings in Nigeria. Data were collected through questionnaire administered on the users of residential buildings in the study area. The study found out that the facilities available in most of the residential buildings are water closet and ceiling fan. Moreover, materials mostly used in construction were asbestos ceiling board, emulsion paint, floor screed among others. The study concluded that residential buildings in the study area were built with the basic facilities and materials for construction. The study therefore recommends the need for both the government and private players in housing to formulate policy to enforce a minimum standard of facilities and materials specification in residential buildings as essential need of man. This will eliminate the possibility of environmental challenges such as water and household-waste pollutions which could arise from non-availability of basic facilities and thereby improve the living conditions of the users.

Key words: comfortability, facilities/services, materials specification, Nigeria, residential building.

Introduction

The life span of a building structure is a function of the quality of its composition. An inferior building element or component depicts a substandard building with limited life span which undermines the purpose a building element is expected to perform. The durability, serviceability and maintainability of a building component are functions of the level of facilities and quality of materials used. Olotuah (2006) opined that housing quality is a matter of great concern, especially in Less Developed Countries (LDCs). Needleman (1964) described housing needs as the number of conventional dwellings that need to be constructed or repaired, in order to bring housing conditions at a particular point in time to notionally adopted standards. Nigeria Federal Ministry of Works and Housing (2002) cited in Kuroshi and Bala (2005) defined housing as "the process of providing a large number of residential buildings on a permanent basis with adequate physical infrastructure and social amenities, (services) in planned, decent, safe, and sanitary neighborhoods to meet the basic and special needs of the population". Thus, Olotuah (2006) emphasized that owing to rapid population growth, low economic capacity of most urban households, inadequacy of public resources and a general increase in the cost of building, acute housing and environmental conditions abound in urban centres in Nigeria.

Studies have also shown that many residents of urban areas in developing countries live in poor housing and in neighborhoods that lack the basic requirements of liveable environments (Rojas 2000; McLeod, 2001, 2003; Dung-Gwom, 2007 & 2008;). Ooi and Phua (2007) also observed that most cities in developing world have become centres where vast numbers of people compete for the most basic social services and infrastructural facilities: for a room within reach of employment with an affordable rent and for access to portable drinking water. Therefore, adequate housing should provide protection from the elements, minimize the risk of disease and injury, and contribute to the physical, mental and social well being of the occupants. According to Neutze (1998) cited in Australian Bureau of Statistics (2006), inadequate housing can pose serious risks healthwise. In most LDCs, there are varied differential abilities to pay for housing which result in lower income households occupying cheaper, smaller lower quality dwellings closer to the city centre and major centres of employment. Higher income earners occupy larger, higher quality dwellings, which have better facilities and public services but that are in short supply (Walker, 1981). According to Payne (1977) and Lewin (1981), the magnitude of the housing needs of the populace in these countries rises phenomenally day by day. This is on account of rapid growth and urbanization occurring there, and the lack of a commensurate increase in housing stock.

The deplorable quality of housing in Nigeria is reflected in the predominance of structurally unsound and substandard houses in the urban areas as well as the rural areas (Mabogunje, 1975; Onokerhoraye, 1976; Olotuah, 2003; Olotuah and Adesiji, 2005). Awotona (1982) asserted that housing needs should encompass among others the total number of dwelling units required, their distribution among the various socio-economic groups, the quality, adequacy of the dwellings and their environment. In Nigeria, Olotuah (2003) examined the quality of housing in the suburbs of Akure, the capital city of Ondo State in Nigeria. The study developed a model that established a relationship between housing quality and three predictor variables that significantly influence it. These variables include Age of the Buildings (AGE), Use of Toilet (TOL), and frequency of collection of refuse (FRWA).

In Jos metropolis of Nigeria, Anigbogu and Mallo (2009) examined housing quality between residential neighbourhoods. The study observed that most residents of low density zones and some parts of medium density zones live in inadequate houses and decent neighborhoods. Those in the high density zone and some parts of medium density zone live in houses that lack basic infrastructure and facilities. The high density neighbourhoods are unplanned and unsafe with poor sanitary conditions. The conditions of these neighbourhoods allows the study to conclude that such locations have suffered a live long neglect by government with respect to infrastructure development, provision of social amenities, and enforcement of development control standards. Therefore, in Nigeria few studies have examined residential buildings with respect to materials specification and facilities/services available. Against this background, the study assessed the level of facilities and materials of construction of residential buildings in Nigeria. The study area was Osogbo and Ede in Osun state, the former being the state capital city and the later an annex town to the capital city.

Housing challenges in Nigeria

Studies on housing in Nigeria abound. Ajanlekoko (2001) reviewed the financial and infrastructural implication for sustainable housing delivery in Nigeria. The study recommended that more emphasis be placed on low and medium income housing units in Nigeria using intermediate technology. Also, machinery such as Non Governmental Organizations (NGOs), government institutions and other public and private stakeholders should be put in place to ensure that the targeted population i.e. low and medium income earners have access to the housing and not alone the high income group. Housing finance policies must also integrate low income classes through the provision of long term loans with reasonable interest rates without collateral. The situation in Nigeria shows that most of the housing units provided for low and medium income earners by the government were taken over by high income group who could afford the cost. It is evident that most of the low and medium income earners could not afford although the housing provision was tagged as low cost housing.

Sanusi (2003) examined the challenges of mortgage financing in Nigeria and among the lingering problems associated with housing financing identified by Central Bank of Nigeria (CBN) cited in Sanusi (2003) are low interest rate on National Housing Fund (NHF), low level of participation in the NHF, macro-economic environment, and non-vibrancy of some Primary Mortgage Institutions, cumbersome legal regulatory framework for land acquisition and structure of Band Deposit Liabilities. The paper concluded that the CBN would evolve policies that would ensure steady flow of financial resources.

Nubi (n.d.) examined why housing finance system remained passive and irrelevant in the drive towards housing delivery. The housing delivery historical survey revealed reasons for failure of existing practices. The paper recommended a need for alternative approaches for the mobilization of savings towards a more efficient regime in housing finance. This implies that there is limitation to the flow of funds due to lack of adequate policies that could facilitates the housing delivery process. Therefore, there is need for policies that could address those factors and challenges hindering the adequacy of housing provision in Nigeria. Among these are the provision of enabling environment for investments, lack of regulatory framework for operation, realistic funding arrangement and workable policy in the housing sector.

Olayiwola et al. (2005) examined the challenges of public housing delivery in Nigeria. The paper highlighted the nature and dimension of housing problems in Nigeria, various governments' responses at solving the housing problems, factors inhibiting public housing delivery and challenges of housing delivery in the future. Akeju (2007) examined the challenges of providing affordable housing delivery in Nigeria. The study concluded that the 11 housing reform legislations must be passed into law; investment climate for investors must be improved on by adopting and implementing international best practices and ensuring macro-economic stability. The study also concluded that government should provide mortgage insurance to first time buyers who do not have credit history

and restriction on the importation of building materials should continue and more researches should be conducted on the production of local building materials.

Oduwaye et al. (2008) investigated the structure and challenges confronting housing finance efforts of Primary Mortgage Institutions in Lagos. The study found that PMIs nature of business transactions include commercial banking, LPO financing, merchandising, property agency and sales and transport. The study suggested that the NHF policy should be reviewed and that Government should provide incentives such as tax rebate for building materials manufacturers, encourage the re-training of labour to improve their skills and speed; cheap fund sources should be provided specifically for housing finances. Ademiluyi (2010) presented an overview of the housing delivery strategy by government in Nigeria. The paper agitated the urgency for the improvement and transformation of housing sector in Nigeria. Among strategies highlighted to improve housing provisions in Nigeria are by using cooperatives development agents and partnerships through Public Private Sector Participation (PPP).

The major argument of most studies on housing is the challenges inhibiting the low level of housing delivery in Nigeria which include the finance, enabling or friendly environment for operators and adequate policies for operation in the sector. Most of these studies have not examined the level of facilities and materials of construction of the available housing stocks with very few (Anigbogu and Mallo, 2009; Rojas, 2000; McLeod, 2001, 2003; Dung-Gwom 2007, 2008; Olotuah, 2003) appraised the quality level of residential buildings in Nigeria. The paper examined the level of facilities and materials specification of residential buildings in Nigeria with Osogbo and Ede in Osun state as the study area. The level of facilities assessed by the study include Cold and Hot Water Supply, Water Closet (W.C.), Wash Hand Basin (WHB), Bath, Ceiling Fan, Air Conditioning (A.C.) and Fire Fighting Equipment while materials specification appraised include windows, floor finishes, wall finishes and ceiling finishes. The study therefore assessed the level of facilities available and materials specification of residential buildings in Osun state of Nigeria with a view to improving the qualities of residential dwellings in the study area. The study specific objectives were to identify and assess the level of facilities available and examine the materials specification of residential buildings in the study area.

Methodology

The study areas for this study were Osogbo (the state capital city) and Ede (annex town) to the state capital of Osun state in Nigeria. Osogbo and Ede have two (2) local government areas each. This gave a survey of four (4) local government areas out of thirty (30) representing 13%. A survey of the users of residential buildings was conducted and the respondents were randomly selected from the low, medium and high density zones of the study area. Household units were selected from each zone representing the study population. The low density is an area with little number of residential buildings that accommodate essential facilities; high density has large number of residential dwellings where basic amenities are inadequate in supply compared with low density while medium density is an intermediate between the low and high density zones. In Osogbo, the low density area surveyed was Ring Road; while Alekuwodo and Oke-Bale were surveyed for medium and high density zone respectively. In Ede, Country Home, Oke-Gada and Timi-Agbale Market Area were sampled for low, medium and high density zones respectively. The data for this study was collected through a well structured questionnaire that was divided into two sections accompanied by a covering letter to introduce the topic and instructions to be followed by the respondents. Section A comprised the demographical information of the respondents such as their ages, sex and monthly income. Section B contained research variables like type of the building, facilities and materials specification of residential buildings. The respondents' opinions on the questions were examined using three-point Likert scale from 3(high) to 1(low). A total of 115 copies of questionnaire was administered on the users of residential buildings within the study area. A total of 84 copies of questionnaire out of the 105 retrieved which represents 73% were appropriate for analysis. The data collected were analyzed using the descriptive statistical tool.

Results and discussions

Socio-Economic characteristics of the respondents

The socio-economic characteristics of the respondents for this study were described as shown in Table 1. The age group of the users of residential buildings was categorized and none was less than twenty one (21) years and those of age 21-30 years were fourteen percent (14%), age 31-40 were thirty-five percent (35%), age 41-50 were forty-three percent (43%) and those above fifty (50) years

were eight percent (8%). This shows that the majority of these respondents are mature adults. The study also showed that more than seventy percent (70%) of the users are male. The respondents' monthly incomes were also assessed and none earned less than N5, 000 while more than sixty percent (60%) earned N30, 000 and above. The result showed that most of the respondents earned far above the Nigerian newly approved minimum wage (N18, 000) of 2011. The results pointed to the fact that the majority of the respondents are above thirty (30) years of age, male gender and middle income earners who earn not less than N30, 000 as monthly income. The implication of this paper is that the income size of the users of residential buildings could not afford them high quality buildings that accommodate the facilities and materials specification highlighted by this study.

Table 1: Demographic characteristics of the respondents

Variable Name	Variable Values	Frequencies	Percentage (%)
Age	less than 21 yrs	-	-
	21-30 yrs	12	14
	31-40 yrs	29	35
	41-50 yrs	36	43
	Above 50 yrs	7	8
	Total	84	100
Gender	Male	62	74
	Female	22	26
	Total	84	100
Monthly Income (N)	less than N5, 000	-	-
	5,000 – 10,000	5	6
	10,001 – 30,000	24	29
	30,001- 50,000	38	45
	Above 50,000	17	20
	Total	84	100

1 US Dollar = N158

Types of residential buildings

The types of residential buildings occupied by the users in the study area were examined in Table 2. The findings showed that twenty-three percent (23%) lived in bungalow (Flat), fifty-one percent (51%) lived in bungalow (Face to face), six percent (6%) lived in duplex and twenty percent (20%) lived in storey building. This implies that more than seventy percent (70%) of the residential buildings in the study area are bungalow either flat or face to face while less than thirty percent (30%) are duplex or storey buildings. Hence, with respect to their monthly income, the result showed that most of the users are middle income earners who could only afford a means of livelihood. This therefore makes it possible for them to occupy or live in bungalows and not high rise buildings. This established the acceptability and reliability of the information provided by the users of the residential buildings in the study area.

Table 2: Types of residential buildings

Type	Frequency	Percentage (%)
Bungalow (Flat)	19	23
Bungalow (Face to face)	43	51
Duplex	5	6
Storey Building	17	20
Total	84	100

Form of ownership

The form of ownership of the residential buildings in the study area was indicated in Table 3. Out of eighty-four (84) respondents, sixteen percent (16%) owned the buildings they occupied while eighty-one (81%) percent rented the apartment. This implies that most of the residential buildings in the study area were rented. This gave the users a limited control on what the standard and quality of services and materials should be since the responsibilities of quality lies in the owners and not the users. The users could only enjoy a better and quality dwelling only at the forgo of his/her cost.

Table 3: Form of ownership

Ownership	Frequency	Percentage (%)
Owner Occupiers	16	19
Rented	68	81
Total	84	100

Facilities and services in residential buildings

The assessment of the level of facilities and services available within the residential building in the study area was shown in Table 4. The study identified the basic facilities that could make a good quality residential building and these included the cold water supply system, hot water supply system, water closet (WC), wash hand basin (WHB), bath, ceiling fan, air conditioning (AC) and firefighting equipment. The study showed that out of 84 respondents who were users of residential buildings, sixty-three percent (63%) indicated that the residential buildings they occupied had cold water supply system, twelve percent (12%) had hot water supply system, eighty-eight percent (88%) had water closet (WC) and seventy-one percent (71%) had wash hand basin (WHB). Also, thirty-five percent (35%) had bath, eighty percent (80%) used ceiling fan while twelve percent (12%) had air conditioning (AC) and fourteen percent (14%) had fire-fighting equipment.

Table 4: Facilities/Services available within the residential buildings

Facilities/Services	Frequency		Percentage (%)		Ranking (YES)
	YES	NO	YES	NO	
Cold water supply system	53	31	63	37	4 th
Hot water supply system	10	74	12	88	7 th
Water Closet (W.C.)	72	12	86	14	1 st
Wash Hand Basin (WHB)	60	24	71	29	3 rd
Bath	29	55	35	65	5 th
Ceiling Fan	67	17	80	20	2 nd
Air Conditioning (A.C.)	19	74	12	88	7 th
Fire Fighting Equipment	12	72	14	83	6 th

The result showed that most of residential buildings in the study area had basic facilities and services such water closet, ceiling fan, wash hand basin and cold water supply system while most of residential buildings did not have facilities and services such as air conditioning, hot water supply system, firefighting equipment and bath. The reason(s) for this can be accessed from different perspectives either due to their income status or the environmental, weather conditions and design types of the residential buildings in the study area because majority live in bungalow and the study area is high temperate region. These findings showed satisfactory level of facilities and services of residential buildings when compared with other residential buildings that incorporated all facilities and services identified. This indicates that most residential buildings have basic facilities and services with very few having high standard facilities and services. This implies that most residential buildings were built with basic facilities that users could afford because of their income status. In other word, the users lived in residential buildings that are of moderate quality. This is because their income status could not afford residential buildings that accommodate high quality facilities identified by this study. This implies that the users will not be able to enjoy the level of comfort that high quality facilities could provide and level of satisfaction they may desire.

Materials specification of residential buildings

Table 5 also described the materials specification of residential buildings in the study area. The materials identified include windows, floor finishes, wall finishes and ceiling finishes. Each material type has varieties available in the study area. The result showed the order of usage of these materials in the construction of residential buildings occupied by the users. The identified window materials are aluminum, louvre blades, and hardwood; floor finishes are floor screed, tiles, terrazzo and marbles. Also, wall finishes are emulsion paint, texcote, gloss paint and fair finishes. Finally, asbestos ceiling board, plaster of parish (POP) and Polyvinyl chloride (PVC) are for ceiling finishes. The most frequently used materials for window as identified by the respondents were aluminum (45%) and louvre blade (43%). For floor finishes, floor screed (43%), tiles (28%) and terrazzo (23%). In case of wall finishes, emulsion paint (49%), texcote (28%) and gloss (17%). Finally, for ceiling finishes, the frequently used were asbestos ceiling board (69%) and plaster of parish (PoP). The result indicated that most residential buildings employed common materials type for window, wall, floor and ceiling finishings. The result shows that most residential buildings were built with the basic materials that users could afford because of their income status. Otherwise, the users lived in residential buildings that are of moderate qualities. This is because their income status could not afford residential buildings that accommodate materials identified in this study. This indicates that the users will not be able to enjoy the level of comfort that high quality materials could provide and level of satisfaction they may desire.

Table 5: Materials specification of residential buildings

Variables	Variable Values	Frequencies	Percentage	Ranking
Windows	Louvre Blade	36	43	2 nd
	Hardwood	10	12	3 rd
	Aluminum	38	45	1 st
	Total	84	100	
Floor Finishes	Floor Screed	36	43	1 st
	Tiles	24	28	2 nd
	Terrazzo	19	23	3 rd
	Marbles	5	6	4 th
	Total	84	100	
Wall Finishes	Emulsion Paint	41	49	1 st
	Gloss	14	17	3 rd
	Texcote	24	28	2 nd
	Fair Finishes	5	6	4 th
	Total	84	100	
Ceiling Finishes	Asbestos Ceiling Board	58	69	1 st
	Plaster of Parish (PoP)	24	29	2 nd
	Polyvinyl Chloride (PVC)	2	2	3 rd
	Total	84	100	

Conclusion and recommendation

The study focused on the assessment of facilities and materials specification of residential buildings in Osun state of Nigeria with Osogbo and Ede as the study area. Findings from this study pointed to the fact that most users of residential buildings are mature male adults who earn above Nigeria minimum wages and live in rented apartment. This depicts the economic status of the users of residential buildings in the study area. Also, the study identified bungalow either flat or face to face as most types of the residential buildings occupied by the respondents while very few live in duplex or storey building. This means that most of the users will not be able to achieve the level of privacy as may be desired. In addition, the study showed that the facilities or services available in residential buildings include water closet, ceiling fan, wash hand basin and cold water supply system while very little incorporated high quality facilities/services like bath, firefighting equipment, air conditioning and hot water supply system. The study showed similar situation on the materials used in residential buildings where majority used basic materials and very few used high quality materials in the construction of residential buildings. In conclusion, the study showed that most of the users of residential buildings in the study area are middle class income earners and majority of the residential buildings occupied by the users in the area were of moderate quality. This showed that most residential buildings in the study area were built with basic materials which do not offer the users to enjoy the best quality of comfort a residential building should provide.

Therefore, the users of residential buildings could live in better and high quality residential buildings only when their socio-economic status is enhanced and their income level changed above their present status. This study recommends that both the public and private sectors in housing provision should take a critical look into the problem of low quality of the available stock of residential buildings and its resultant impact on the users since the essential needs of man are food, cloth and shelter. Policy should also be made on a minimum standard for level of facilities/services and materials specification of residential building because of the effect of its quality on users' health condition and lifespan. This is because the quality of the shelter (residential housing) has an impact on the quality of health of the users. This will consequently eliminate the possibility of environmental challenges such as water and waste pollutions which could arise from non-availability of basic services and facilities in residential buildings in the study area.

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