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Spatial analysis of housing quality in Nigeria

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Abstract

The study examined the factors responsible for the spatial variation in housing quality across the 36 states and the Federal Capital Territory in Nigeria using 33 housing characteristics. The data used are the 2006 Housing Characteristics and Amenities tables which were sourced from Nigeria's National Population Commission (National Population Commission, 2006). Principal Component Analysis extracted three components. Component 1 accounting for 38% has electricity, water closet toilet, hygienic sources of water and high quality roofing, walling and flooring materials highly loaded on it. Component 2 (31%) comprised inferior walling, roofing and flooring materials, pit toilet, traditional and semi-detached house types, while component 3 (7%) had mainly zinc wall and public toilet highly loaded on it. Using these factor loadings as variables in discriminant analysis, three distinct regions of differing housing quality emerged corresponding to the western, eastern and northern geographical regions of the country with 97.3% of the states correctly classified and with the western (high) and northern (low) states at the opposite ends of the quality scale. It is recommended that non-conforming buildings, particularly, residential, and insanitary environment should be put in check through very strict and proactive enforcement of development control edicts and sanitary laws.

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1. Introduction

Housing quality studies can be justified because it is an indispensable, social and physical infrastructure whose quality and quantity, serves as an instrument for measuring the standard of living, the level of technological advancement, culture and civilization (Mbina, 2007). The problem

of deficiency in housing quality in Nigeria is common both in urban and rural areas. The situation is very severe in urban areas due to the fact that most people live in houses that are poor in terms of quality with unsatisfactory environments. The population growth resulting from rural–urban migration and rapid urbanization is the cause which leads to homelessness, the growth of slums and overcrowding (Mabogunje, 1975; Olotuah and Adesiji, 2005; Lawanson, 2006; Adeleye and Anofojie, 2011).

Quite a lot of studies have been conducted in Nigeria on housing condition and quality with only few undertaken at the national scale. Comprehensive surveys both at local

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and national scales have also not been attempted as what exist are purely sample surveys which, of course, are subject to sampling errors. Furthermore, the majority of these studies are centred on urban area where interests in identifying slum areas within the cities have taken the centre stage. Some of the recent studies include correlates of housing problems in slum areas (Ekop, 2012; Ogunleye, 2013; Uwadiogwu, 2013), spatial structure of housing quality (Aderamo and Ayobolu, 2012) and perception of housing quality (Adeleye et al., 2014).

The work of Abumere (1987) is an example of studies carried out at the national scale. He studied 40 cities cutting across various Nigerian city typologies – traditional, non-traditional and modern cities, cities serving as state capitals, industrial and non-industrial cities, metropolitan, large, medium and small cities reflecting ecological conditions. He noted that as a result of low building technology and absence of durable building materials, no more than nine percent of the houses surveyed were built of mud and bricks which had very short life spans. He further observed that the only cities with a reasonable percentage of buildings older than 80 years were the coastal towns located on sea and river ports and few other hinterland cities that formed contact points for colonial trade and administration. These cities include Sapele, Oshogbo, Kano, Owerri, Forcados, Bururtu, Calabar, Warri, Benin, Lagos, Ibadan, Onitsha and Asaba.

Another comprehensive survey with emphasis on rural areas across southern Nigeria was that of the Federal Ministry of Housing and Environment (1982) which observed a marked variation in the character and structure of rural settlement. The study noted that in some states like Imo, Anambra and Bendel (now Edo and Delta) states where it is often quite difficult to differentiate the rural areas from the urban centres the housing type, commercial structure and land use pattern in even the smallest rural settlements are quite similar to those of the urban centres. This is in contradistinction with the south western states of Ogun, Oyo, Ondo and Lagos, where rural settlements are in many respects different from urban centres. These differences are attributed by the report to the traditional social organization of the people in the two groups of states.

In terms of quality of total housing stock in the country, NISER (2005) estimated that as at 2000, the proportion of housing units with sound structure (44.5%) was less than half of the total stock in the country. These findings have been corroborated by a micro study at Yenagoa by Ede et al. (2007) who concluded that only 9% of the houses surveyed are older than 21 years yet only 14% are well maintained and need no repairs.

From these studies, certain factors begin to emerge which are germane to explaining the spatial variations of housing quality across Nigeria and these include age, quality of building materials, location, early contact with colonial administration, maintenance culture and socio-cultural factors.

The Principal Components Analysis (PCA) has been employed to construct environmental quality index, extract factors to explain housing quality and spatial distribution over space. In their study in Ilorin, Nigeria, Aderamo and Ayobolu (2010) identified five most important factors that can be used to describe housing quality in Ilorin. These are internal facilities; major materials for roofing and materials for external walls; the type of toilet and bathroom facilities available and if the centrally provided electricity by the Power Holding Company of Nigeria (PHCN) is available.

The type of variables included in housing quality analysis varies across studies and this depends on the focus of study. The literature contains various environmental quality studies. It is remarkable that researchers have been focussing on three main areas when examining environmental quality as it relates to housing and its environment. The first area is examining the relationship between environmental quality of housing areas and users' well-being, the second is by focusing on housing and its environment via user satisfaction and perception while the third is concerned with environmental quality as a factor in housing price structure (Alkay, 2009).

Studies that belong to these groups include housing and sales prices (Alkay, 2009), housing and inequality in socio-economic characteristics (Odoi et al., 2005; Owens, 2012), Environmental quality and malaria and diarrhoea mortality (Fobil et al., 2011), public housing and users' satisfaction (Ojo and Oloruntoba, 2012) and urban environmental quality and human well-being (Pacione, 2003), among others. Yet, there are other studies concerned with measuring housing quality or deterioration alone (Fiadzo, 1982; Bunch, 1996; Craig et al., 2001; Khatun, 2007).

Consequently, variables used range from flooring, walling and roofing materials to type of toilet facility, sources of water and lighting, drainage, street quality, proximity to other facilities and socio-economic variables like education, income, religion and race. This current study examines the physical quality of houses and their distribution across the states and regions in Nigeria in the light of comprehensive data provided by the 2006 housing and amenities survey by the National Population Commission as opposed to opinion surveys typified by Anofojie et al. (2014) study of Lagos. The aim is to identify the underlying characteristics of housing that account for the spatial housing quality distribution in Nigeria.

The objectives of this study are threefold. First, the attempt was to identify the various dimensions that account for the distribution of housing quality in Nigeria using the method of Principal Component Analysis. Second, the study examined how the housing quality varies across the states based on the extracted components and finally the regional clustering, pattern that emerged based on the housing quality analysis was identified.

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