



Intra-city polarization, residential type and attribute importance: A discrete choice study of Lagos



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A B S T R A C T

Keywords:

Intra-city residential polarization
Informal housing market
Housing attributes
Home preferences
Discrete choice model
Lagos megacity

The theory of urban residential polarization assumes that the urban housing market is not a monolithic phenomenon but a framework that displays wide variations in quality, quantity and value. As a city splits into different neighbourhoods, so also the residential quality differs. The types of dwellings available to urban households often reflect in their neighbourhood and structural features. This study therefore examines the importance of the neighbourhood and dwelling features accompanying housing choices of residents within three residential neighbourhoods – the Low, the Medium and the High residential density areas – of Lagos Metropolitan areas using Discrete Choice Model. Data were collected through an extensive housing survey of residences in 56 wards within 12 administrative units in Lagos megacity. Descriptive and inferential analytical statistics were used to render explanations for the variations in residential quality variables and choices across the study area. Findings evinced a preponderance of multifamily units in the high density area, as against flat and duplex housing units in the medium and low density areas of the city. The logit analysis of home types indicated significant influence of dwelling quality on home choices in the three residential neighbourhoods of Lagos. Practical and policy implications of these findings to urban housing development are explicitly given.

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Introduction

The dynamics of the relationship between urban built environment and home choices have continued to arouse the interests of urban scholars in developing economies perhaps because of their apparent effects on urban development and sustainability. Studies have shown that environmental and dwelling features of homes implicitly control rental choices (Berenyi & Szabo, 2009; Dunse, Thanos, & Bramley, 2013; Opoku & Abdul-Muhmin, 2010; Quigley, 1985; Wang & Li, 2004). Existing local studies have documented the implicit link between residential polarization and housing preferences in Nigerian cities (Ajala & Adelodun, 2007; Aluko, 2000; Aribigbola, 2005; Sanni & Akinyemi, 2009). However, a significant area has been largely ignored in recent housing studies in Nigeria: the importance of exterior and interior residential quality indicators to rental choice behaviour within polarized housing markets.

The changing urban environment and the centrality of desirable housing to the individual and collective wellbeing of urban

residents underscore the continuous focus of scholars on the analysis of urban housing markets in both developing and developed economies. Vast literature on housing choices using traditional hedonic and discrete choice models have shown that housing analysts routinely attempt to infer consumer choices from the utilities of structural, neighbourhood and locational attributes of dwellings. A study of housing preferences in Belfast, Northern Ireland, by Adair, Mcgreal, Smyth, Cooper, and Ryley (2000) indicated that neighbourhood accessibility is significant in shaping residential preferences of urban residents. In Chinese cities, studies showed renters place more emphasis on neighbourhood variables than structural variables in the choice of homes (Li & Li, 2006; Wang & Li, 2004). Also Tital, Petras, and Greenbaum (2006) found significant associations between neighbourhood characteristics in terms of crimes and home preferences. Kauko (2006) in an explorative study of consumers in Randstad, Holland discovered that the functionality and spaciousness of the house itself matters more than location. Garcia and Hernandez (2007) found that both housing tenure and urban location, in addition to the unobserved heterogeneity of individuals modify appreciably housing demand estimates for both owners and renters. In a study of Fairfield in Connecticut, USA, Earnhart (2002) estimated the benefits and value

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of environmental amenities that are associated with residential locations. [Tayyar and Khan \(2007\)](#) found that residential location decisions are made by considering the telecommuting of households in Ottawa region of Canada.

[Clark, Deurloo, and Dieleman \(2006\)](#) investigated the role of neighbourhood and dwelling attributes in housing mobility and choice in Netherlands discovering that neighbourhood quality played more role than the dwelling quality in determining residential choices among the Dutch. In Rotterdam, [Kasten \(2007\)](#) showed that families express clearly the time-geographical reasons for urban living and in particular, the location of work provides a strong incentive to seek housing in the same city. In the rural regions of New South Wales Australia, [Dufty \(2007\)](#) explored the potential locational preferences of housing assistance recipients and discovered that majority of tenants indicated a preparedness to become locationally flexible even though this preference was not influenced predominantly by economically rational factors. In Ibadan, Nigeria, [Sanni and Akinyemi \(2009\)](#) studied district and housing preferences and found that different categories of residential density districts of the city had distinct set of households' residential district preferences peculiar to them and concluded that broad generalizations for the whole city could be erroneous. Research also revealed that residential choice behaviours of home consumers are also controlled by the perception of the interior structural design of dwellings ([Huang, 2003](#); [Opoku & Abdul-Muhmin, 2010](#)). In a recent study [Dunse et al. \(2013\)](#) investigated the link between housing preferences and residential density discovering that consumers in England express more preferences for flat and detached properties over semi-detached and terrace properties in low and high density areas than in the medium density region. In spite of the contributions by past research in elucidating housing choice dynamics, the role that dwelling attributes play in home choice decision of urban residents in polarized housing markets remains insubstantially explained.

Although there have been a sustained debate on the dynamics and determinants of home choices in many cities for much long time, it is the recent work by [Opoku and Abdul-Muhmin \(2010\)](#) that actually draws more direct attention to the important role that residential quality plays in home preference making. However in Saudi Arabia, [Opoku and Abdul-Muhmin \(2010\)](#) showed that using factor analysis 10 factors actually shape housing preferences of low income residents. A major drawback of that study was the lack of spatial differentiation of housing analysis in Saudi housing markets. Hence, variations over space were masked and the influence of polarization could not be clearly revealed. An alternative approach to engender a deeper understanding of the influence of residential attributes on home choices is the spatial dependence Discrete Choice Model (DCM) which has been employed to estimate utilities of residential location and home choices in some cities ([Li & Li, 2006](#); [McFadden, 1977](#)). Of course, many approaches have been employed for the analysis of residential choices, including factor analysis, but estimating housing attribute importance through DCM in heterogeneous markets allows a more realistic and robust prediction of choice behaviour and consequently adds to the growing understanding of housing choice dynamics.

The selection of Lagos megacity for this study is interesting for three basic reasons. One, Lagos is the most populous Nigerian city with more competing infrastructural and social challenges including housing than other cities in the country. Two, Lagos has the most developed and the most polarized housing market in Nigeria. This is perhaps traceable to the historical and political development of Lagos both as the colonial seat of power and the first capital city of Nigeria until 1991. Three, the megacity is a cosmopolitan region where economic and social peculiarities define residential needs, tastes and behaviours of residents.

Understanding the role played by residential attributes in different parts of the megacity on consumer home choices throws more lights on the practical relevance of housing attributes to urban wellbeing and sustainability. Similar enquiries have been conducted in other megacities notably Beijing and Guangzhou in China ([Li, 2000](#); [Li & Li, 2006](#); [Wang & Li, 2004](#)).

The objectives of this study therefore are to describe and summarize the home type choices, analyze spatio-neighborhood and dwellings features that are associated with home choices, estimate the utilities/importance of residential quality variables (spatial, neighbourhood and dwelling features) of housing choices, and offer practical and policy implications of residential attributes and housing choices in the study area. The main goal of this study is to disentangle the precise role that residential attributes play in house type choices within delineated residential areas of Lagos from other influences. The rest of this article is organized in six sections: theoretical premises, study area, research methods, results, discussion and conclusion.

Theoretical premises

This study is predicated upon Residential Choice Decision theory (RCD) as propounded by [Herbert \(1972\)](#) but modified by [Carter \(1982\)](#) and as expounded by [McFadden \(1977\)](#). The choice of residential status comes from change in neighbourhood and dwelling characteristics or what [Herbert \(1972\)](#) has characterized as "external considerations" on one hand and change in the economic status, life style and family status or what has been characterized as "internal considerations" on the other. In extending the Herbert-McFadden residential choice decision model, the external considerations are framed in the context of six factors neighbourhood prestige, exterior quality, and location on one hand and dwelling facility, interior design and cost on the other and the internal considerations are viewed from socioeconomic status and stage in life cycle (see [Fig. 1](#)).

According to [McFadden \(1977\)](#), a basic theoretical construct underlying housing location and choice analysis is Random Utility theory (RUT) or what [Earnhart \(2002\)](#) and [Mason and Quigley \(1990\)](#) called Discrete Choice Model (DCM). It is assumed that housing preferences are made based on utilities of housing attributes and in both revealed and stated preferences the utility functions are established by equation (1):

$$U_{ij} = f(N, S, L, E) \quad (1)$$

where U_{ij} is the utility function, N the residential neighbourhood attributes, S the residential structural attributes, L the residential location attributes and E the household socioeconomic and demographic characteristics. But in RUT framework, overall utility U_{ij} is the sum of a deterministic component V_{ij} and a random component e_{ij} , which can further be rewritten as in equation (2):

$$U_{ij} = V_{ij} + e_{ij} \quad (2)$$

Just as indicated in equation (1), U_{ij} is the utility function, V_{ij} the vector representing both residential attributes and household characteristics, and e_{ij} is the error term. Assuming a household aspires to select between two sets of houses with different attributes V_{ij} and V_{nj} , then the choice of the former can be represented as a probabilistic function, $x_{n(i)}$ which has the higher utility value as depicted in equation (3).

$$x_{n(i)} = \text{Prob}(V_{ij} + e_{ij} \geq V_{nj} + e_{nj}; j \in K_j) \quad (3)$$

But the choice that maximizes utility is determined by the difference between the deterministic and random components of

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