International Journal of Architecture and Urban Development
Vol. 10, No.3. P 25-40. Summer 2020

E-ISSN 2345-2331
Applied Article
DOI: 10.30495/IJAUD.2020.15952

Design Factors as Determinants of Neighborhood Quality in the Urban Area of Ibadan, Nigeria

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Recieved 21.05.2020; Accepted 25.06.2020

ABSTRACT: Neighbourhood in many Nigerian cities had been designed without proper consideration of design principles, which invariably affect the residents' quality of life. This study assessed the experts' and residents' perception of design correlates of neighbourhood quality in the urban area of Ibadan. Data were obtained from both primary and secondary sources. A questionnaire survey and direct observations were used to acquire the primary data. A systematic sampling technique was used to select one of every 5th building after the first house had been selected randomly. Data collected were analysed using percentages, Correlation, and Multiple Regression. The results revealed that the majority of 87.9% residents strongly agree that the building lines were strictly followed. The majority of 86.7% strongly agree that the practice of enclosure of space and gating is common in their area. The results of experts' assessment of Design Characteristics Indices (DCI) indicated that Alalubosa GRA was adjudged to be very good with DCI of 4.09, followed by Kolapo Ishola with 3.58 DCI. The Multiple Regression Analysis results showed that design characteristics were related significantly with neighbourhood quality ($p < 0.05$). The result indicates F–value of 1.026E5 and P–value of 0.000a. Furthermore, the results of Pearson's Correlation Coefficient revealed strong and significant correlations between neighbourhood quality and the design factor at either $p < 0.01$ or $p < 0.05$significant levels. The need to consider significant design factors that comprised: variability, tidiness image/milieu, territoriality, connectivity, consistency, legibility and density among others by Planners and Architects in planning and designing adequate neighbourhood as important.

Keywords: *Neighbourhood Design, Neighbourhood quality, Design Factors, Perception.*

INTRODUCTION

It is common to regard neighbourhoods in the urban areas as having quality in terms of safety, privacy, facilities, and services available among others (Makinde, 2014). Housing policy in Nigeria has resisted and struggled for years to consider the relative importance of the neighbourhood context in the delivery of quality housing (Agabi & Jokotade, 2014). The neighbourhood forms the urban tissue of the city and influences residents' socio-economic, physical, and cultural development. It affects the social and psychological housing needs of the people and touches the state of health of the people. The notion of the neighbourhood is well proven as a basic and elementary unit for planning and developing cities. It is a common and established element of physical, cultural, and social organization in the minds of many people. Hence, the neighbourhood is the means and the method of preserving the environment and socio-cultural values of the fast-developing urban centers (Meenakshi, 2011; Salleh et al., 2013).

The impacts of neighbourhood quality are well documented in the literature, with sufficient evidence that living in the poor, deprived, unsafe neighbourhood takes an extensive effect and toll on health (Jiboye, 2011; Amao, 2012). Studies had shown that a person's objective perception alone that he or she lives in a bad neighbourhood is related to the quality of life and health (Ilesanmi, 2012). The need to formulate a policy which aims at developing and revitalizing neighbourhood within urban areas facing challenges is required (Gbakeji and Magnus, 2007). Urban areas in many Nigerian cities have widespread housing diversity, and the issues surrounding neighbourhood quality

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in urban areas are closely related to neighbourhood design, physical, social, economic, cultural, character, and form (Owens, 2005). Well-designed residential communities are the strength of a successful and effective city (Pan, 2004; Bekleyen & Yilmaz-Ay, 2016).

Previous researches have demonstrated the importance of good neighbourhood design in the development of public and private housing (Ewing & Handy, 2009; Black & Street, 2014). Few studies had focused primarily on design characteristics, which were considered along with physical, characteristics. Therefore, understanding neighbourhood quality with these attributes in urban areas is important. These design factors that comprised: tidiness, image, territoriality, scale, enclosure among others are very critical to the study of neighbourhood quality (Prompayuk & Sahachaisaeree, 2012; Bekleyen & Yilmaz-Ay, 2016). These aspects of physical characteristics have not been accounted for in the study of neighbourhood quality especially in the context of urban areas in a developing country such as Nigeria (Amao, 2012).

There is an underlying concern to achieve quality in neighbourhood design in Nigeria for forthcoming generations. Also, there is a need to examine the environmental implications of the design of this development (Agabi & Jokotade, 2014). Other main concerns include: reducing the density of land take; choice of site if possible previously developed land that is well connected to existing facilities and public transport routes; using less energy in construction and reducing the energy expended in use and occupation. Other concerns include controlling pollution; efficient waste management; engendering community privacy, pride, culture, and safe neighbourhoods; enhancing the quality of life, user-friendliness, and accessibility for all (Shaidi & Lucian, 2016).

Studies on neighbourhood quality have been limited and the design quality has not had prominence. The rigid approach to neighbourhood design has led to uninspiring housing architecture in many Nigerian cities (Ilesanmi, 2012; Makinde, 2014). The present model of the neighbourhood has failed to satisfy and meet several residents' aspirations for housing need for which appropriate design is required and the highest quality design is essential for the neighbourhood, based on best practices (Ewing & Handy, 2009). There is a need to evaluate the design quality of the neighbourhood to inform stakeholders on design strategies that could enhance the quality of life of the residents in this area. This study seeks to identify and examine diverse underlying neighbourhood design characteristics that sum up the quality of the neighbourhood in an urban area in Ibadan, provide design direction and planning evaluation tools for the development of the neighbourhood. Furthermore, the study will generate dependable and actionable quality information for the development of a neighbourhood in the study area.

The Study Area

Ibadan is located within latitude 7° 29' 25" and 7° 19' 08" of the equator and longitude 4° 0' 22 and 3° 47' 50". Ibadan is the third-largest metropolitan and urbanite area in Nigeria, after Lagos and Kano and the capital city of Oyo State and with inhabitants of 1,338,659 according to the 2006 census. Ibadan is also the biggest metropolitan geographical area in Nigeria as demonstrated in Figure 1. The metropolis consists of five local government areas as revealed in Figure 1. These are Ibadan Southwest, Ibadan South East, Ibadan North West; Ibadan North, and Ibadan North East. Though, the larger area of Ibadan extends beyond the boundary of the metropolis, the study area encompassing all the eleven local governments, which also comprises: Akinyele, Egbeda, Ido, Lagelu, Ona-Ara, and Oluyole. The metropolis and the other six local government areas were considered for this study.

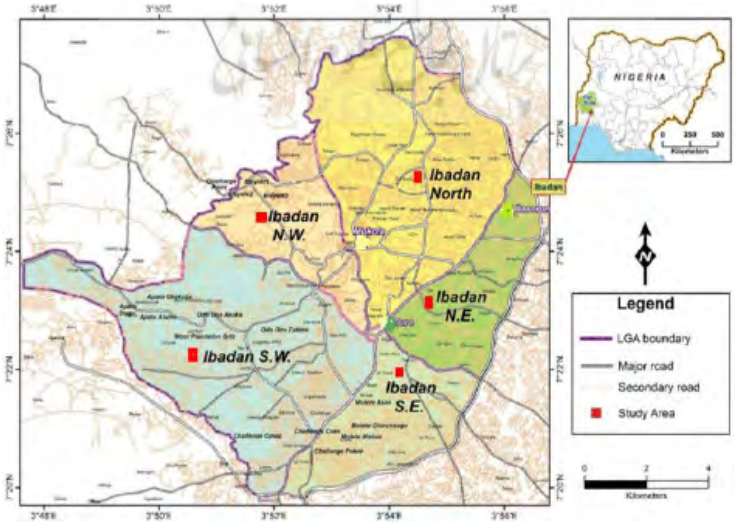

Fig. 1: Map of Ibadan Metropolis (Source: Makinde, 2019)

Conceptual Clarification and Literature Review

Concept of Neighbourhood

The concept of neighbourhood is perhaps one of the most important planning standards that shaped the city system and urban form of the twenty-first-century city in many countries (Patricios, 2002). A neighbourhood is the smallest planning and design unit required for the development of blueprints for residential areas or layouts. Inhabitants may all share the common amenities and services, facilities, and social activities essential in the surrounding area of the dwellings within the region. The population of neighbourhoods varies from 2,000 to 8,000 necessitating land areas of 20 to 100 hectares (Charles, 2000). The concentration of development is the major decisive factor. The main theoretical difference between the house and the neighbourhood is related to space. The neighbourhood require amenities and services, facilities, and social activities within its confined area for it to function effectively (Meenakshi, 2011). Dubin (1992) and Egert & Mihaljek (2007) defined neighbourhood as a confined area in which certain and specific land-use activities are involved, attracted, and retained by sets of linkages which are the glue that holds a neighbourhood together (Fong & Milena, 1999). Linkages may be thought of as external economies and centripetal forces. It is the periodic interaction between people or establishments that draw and hold them together (Power, 2004; Cheshire, 2007). In a residential neighbourhood, linkages may exist between the home, shopping, schools, recreational parks, health care centres, social and religious centres, and place of employment (Denton & Douglas, 1991; Aliyu et al., 2015).

Whittick (1974) defined neighbourhood component as planned urban areas related and integrated to the larger community and consisting of open spaces, residential areas, schools, shopping facilities, industrial and religious buildings among others (Chahal, 2000; Meenakshi, 2011). The term neighbourhood has been regularly mentioned in the context of traditional and modern residential development (Makinde, 2019). Ever since the invention of the concept 'neighbourhood' in 1929 by Clarence A. Perry, it has turned out to be a regular theme in planning several cities in the world. The planning organizations continue to familiarize and make regular use of the neighbourhood when designing and planning a layout for new communities. The physical and social meanings of neighbourhood need to be understood to be able to carry forward its principle for the benefit of planned development efforts. Neighbourhoods have some specific social and physical characteristics that differentiate them from other types of settlement. The gathering of these neighbourhoods has transformed into cities, villages, and towns (Meenakshi, 2011). The neighbourhood as a development and design concept emanated in response to the deteriorated physical, social, cultural, institutional and environmental conditions nurtured because of the industrial revolution in the 1900s. Nevertheless, it evolved to assist a much wider purpose of providing a visible character for the concept of the neighbourhood and contribution to designers to formulate a blueprint and framework for breaking the city into smaller subareas. This model delivered definite guiding principles for the spatial circulation of streets, businesses, residences and community services (Lawhon, 2009). The physical design of this type will tend to generate neighbourhood association and local social control and regulation, which are missing in many parts of the contemporary city. The physical design of a neighbourhood is a factor that determined its social aspects. It assumed that physical designs could promote social progress. Perry's emphasizing the concern for the quality of the architecture, aesthetics, the layout of streets, and the importance of planting alongside curbs and in yards, the planning, arrangement and setback of buildings are the significant qualities for consideration in the development of the neighbourhood (Perry, 1929).

The conception of the Neighbourhood Design

According to Perry, (1929) the physical organization of the local shops, elementary school, playgrounds and small parks where the root of neighbourhood concept. Every neighbourhood was to be a unit of the city (Patricios, 2002). Perry defined the neighbourhood component as that inhabited area that would necessitate and support the school with an enrolment of between 1,000 and 1,200 pupils (Gallion & Eisner, 1984). Perry enumerated six important principles of neighbourhood quality design. These essential principles were structured around several social and physical design and institutional ideals. Major roads should not pass through residential neighbourhoods. Instead, these roads should provide borders to the neighbourhood; Inner street arrangements should be designed and built through the use of cul-de-sacs pattern. Also, it should be curved design for layout and light-duty surfacing to encourage low volume traffic movement, a quiet, safe and protective of the residential environment. The population density of the neighbourhood should support its elementary school. The neighbourhood focal and central point should be the elementary school that is centrally situated on a common area, along with other establishments that have amenities and service areas coextensive with the neighbourhood borders. The radius of the neighbourhood should be a maximum of one-quarter of a metric. This should rule out a walk of more than that distance for any basic schoolchild; and shopping areas should be located on the verge of neighbourhoods if possible at major road intersections. The Figures 2 and 3 show the grouping of the three neighbourhood components served by an elementary school and two or one major commercial centers, the range for walking distance to these amenities and services being one metric (Berk, 2005; Meenakshi, 2011).

Criticism of Neighbourhood Design Component

Numerous important criticisms and disapproval of the neighbourhood had been pointed out in the planning and design literature. In the 1940s, the neighbourhood idea came under criticism from Reginald Isaacs. Isaacs (1948a) held that the

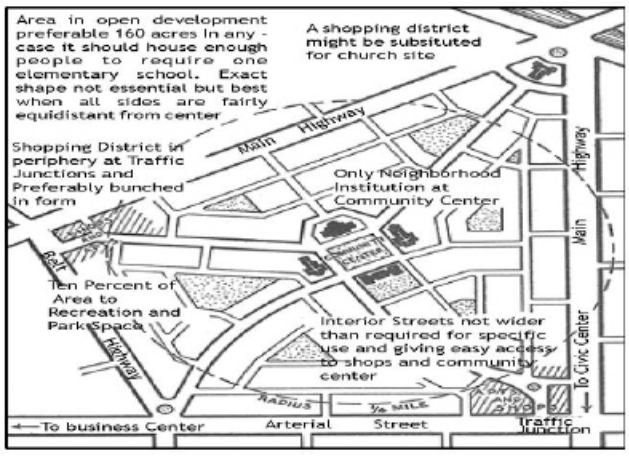

Fig. 2: Perry's NHD Unit of 1929 (Source: Allaire, 1960)

Fig. 3: Strayer & Engelhardt Diagram of NHDs (1929) (Source: Patricios, 2002)

overwhelming support of the neighbourhood component, as a solution for all urban problems, was ill-advised; advocating that the powers and supports accredited to the concept by its supporters bring about a dangerous discourse relating to its purpose. Isaacs (1948a & 1948b) attack on neighbourhood component was based on its applications that were being misused as a tool for the segregation of religious, racial, economic and ethnic groups by private developers prepared to use the gated-community feature of the neighbourhood (Allaire, 1960).

Isaacs (1948b) argument became a rallying point for the collective opposition of the neighbourhood, as planners began to question the unintended consequences of its repeated use, its socially divisive nature and its emphasis on the physical environment as the sole determinant of wellbeing. In developed countries across the globe, the spread of urban systems, which embrace obsolete or impractical uses of space to manifest a synthetic rural community lifestyle, was increasingly viewed as a blight upon attempts to achieve sustainable metropolitan growth. In the past, Isaacs (1948b) argument was weakened through its inability to provide an alternative framework for community planning. In the present, planning bodies internationally, both private and public as of 2004, continue to adapt and make modular use of the neighbourhood component when planning new communities (Berk, 2005). It is becoming clearer that a reconsideration of the current hetero-normative approach to planning layout of new communities on the urban periphery, or in the re-planning of existing and present neighbourhoods, which needed to satisfy density objective and enhance sustainable development. There is a need to trace the physical, design, institutional and social forces that produced the principles that influenced and controlled the development of the neighbourhood concept. The neighbourhood, as envisaged by Perry had influenced community layout planning and design since its commencement (Allaire, 1960).

Determinants of Neighbourhood Quality

In determining the quality of residential development and suitability of neighbourhood, which is a degree of the

acceptability at a specified time and place and a given set of sociocultural, technological, economic, environmental and physical conditions (Makinde 2019). Five important principles are stipulated which recommended that neighbourhood must be in agreement with tolerable standard, energy-efficient and functionality. Furthermore, it must be free from the severe poor condition, provided with up-to-date services and facilities, and must be safe, private, secure and healthy (Neilson, 2004). These factors comprised variables such as; access and affordable basic housing and the quality of infrastructural services and amenities, public facilities, quality of design and spatial adequacy. Also, it should comprise fittings and fixtures, landscaping and building layout, pollution and noise control as well as privacy and safety (Ilesanmi, 2012). There are nevertheless factors from several studies that a particular variable might not be adequate to measure the qualitative and quantitative nature and environment of residential development. Consequently, neighbourhood qualitative and quantitative assessment and acceptability should as well take into consideration materials used, type of constructions, design and spatial arrangement, facilities and services within residences, efficiency, function, aesthetics, safety and privacy among others (Jiboye, 2011; Amao, 2012).

In assessing the neighbourhood quality, scholars have acknowledged some factors as significant variables for quality assessment in housing development. Ebong (1983) identified ease of movement, air pollution, waste and sewage disposal, noise and pollution level in the neighbourhood, age of building, design and spatial adequacy. Others comprised: aesthetics, privacy and safety, ornamentation, sanitation and drainage, access to basic neighbourhood facilities and among others, as significant quality factors in the neighbourhood. Nevertheless, Bajunid et al., (2012) concluded that quantitative and qualitative neighbourhood requires the establishment of infrastructural amenities and services that will result in sustainable evolution and development through enhanced spatial design, environmental, social and physical conditions that improved livelihood. Ilesami (2012) identified neighbourhood quality indicators, which included: external and internal visual quality, construction material and structural quality of buildings, specification quality of buildings, quality of facility amenities and services, quality of neighbourhood roads and landscaping, open spaces, environmental layout and locational quality of the area. The first five factors related to the housing as a unit, while the next five criteria have to do with their neighbourhoods. The criteria as a whole cover aesthetic, functional, and technical qualities.

The Implications of Neighbourhood Quality

Adverse and unplanned neighbourhood affects the social, cultural and economic prospects of the people. Studies had shown that well-planned neighbourhood has been established to be a significant motivation for residents' wellbeing, specifically in the area of coming out of poor health and for children's upbringing (Makinde, 2019). For the fact that the quality of the neighbourhood a family, live in influences important social economic and residents' quality of life (Rabe &Taylor, 2009). Neighbourhood quality characteristics affect the possibility that people's social connections will improve (Sampson et al., 2002). Social and physical environments in neighbourhoods can be visibly hazardous; for instance, ethnic conflicts, crime-infested or polluted areas can strictly limit the options and assets accessible to individuals (Cubbin et al., 2008). Concerns for neighbourhood quality have instant everyday consequences. Physical characteristics of neighbourhoods, for instance, the absence or presence of basic facilities, housing quality, dependable public transportation, reliable hospitals, and availability of retail stores are important factors of well-being (Josiah, 2014). Neighbourhoods with inadequate quality housing, little resources, poor design and with the unsafe environment will inflict stress, which can result in hopelessness. The stress resulted from adverse neighbourhood increased despair beyond and above the consequences of the individual's delicate stressors. For instance, negative events and poverty within the workplace or the family (Cagney et al., 2009). Furthermore, adverse neighbourhood quality appears to strengthen the damaging impact of individual stressors and hamper with the development of bonds connecting people, once more escalating threat for depression. Neighbourhoods do not similarly influence all individual in the same way, this is because individuals have diverse personality characteristics, diverse behaviour, varied demand and requirements expected in neighbourhoods (Cutrona et al., 2006).

MATERIALS AND METHODS

Data for this study was obtained from both primary and secondary sources. A questionnaire survey and direct observations were used to acquire the primary data. Such data provided information on the significance of design factors as a determinant of neighbourhood quality in the study area. The study is limited and focuses on low-density residential areas in Ibadan, with a known higher concentration of socio-economic class of residents with well-known good physical and environmental qualities that could pass for a qualitative neighbourhood at a fleeting look and at a glance. Five residential areas were randomly selected; these include Agodi Government Reservation Area; New Bodija Scheme; Old Bodija Scheme; Kolapo Ishola Scheme and Alalubosa Government Reservation Area. From the preliminary survey, there are a total of four thousand, nine hundred and twenty-two (4,922) residential buildings in the study area as obtaining from Oyo State Urban Project (IDF II), Ministry of Finance, Budget and Planning, 2019. Nine hundred and eighty-five (985) representing 20% of the residential buildings were sampled. A systematic sampling technique was used to select one of every

5th buildings after the first house had been selected randomly. Also, the study used ratings from ten (10) expert panels that comprised five Architects from academia and five from those practicing. Data collected were analysed using percentages, Correlation and Multiple Regression. Table 1 highlighted the target population for the study. In evaluating the design factors (correlates) affecting neighbourhood quality, the dependent variables of the neighbourhood quality were correlated (using Pearson's correlation coefficient) with the thirteen (13) identified independent design attributes. The acceptable levels of significance were attained at the 0.01 and 0.05 probability levels respectively. As a result, elements with significant correlations were further subjected to analysis of variance test (ANOVA) and regression analysis to ascertain specific factors and also identified the level of interaction between these factors and neighbourhood quality in the study area. The results were presented in Table 3 and Table 4.

RESULTS AND DISCUSSION

Experts' Perception of Neighbourhood Design Characteristics

The study critically examined the view of architects as an expert on their opinions over design factors to neighbourhood quality by using ratings from ten (10) experts that comprised five Architects from academia and five from those practicing. The result as contained in Table 2 shows the expert perception on neighbourhood Design Characteristics Indices (DCI) in Old Bodija Scheme. The study shows that 8 variables out of 13 identified had positive deviation around the DCI. The study revealed that 8 variables out of 13 identified had DCI that were above the average of 3.01 in Agodi GRA. The study revealed that amongst all the characteristics, Permeability with 2.4 DCI, Grain with 2.1 DCI and Density with 2.0 DCI were far below the average DCI of 3.01 which were considered as not well design features that need upgrading and improvement. The study shows that 9 variables out of 13 identified had the DCI above the average of 3.16 in the New Bodija Scheme, which was considered as major features that are well design and positively influencing neighbourhood quality in this area. In contrast, four design characteristics with DCI below 3.16 include Scale with 3.0 DCI. The study revealed that amongst

Table 1: Target Population for the Study

S/N	The Study Population (20% of the target population selected randomly)	Sampling Frame (No of houses)	Sampling Size (20% of the household head selected using systematic sampling)
1	Old Bodija Scheme	2,495	499
2	Agodi GRA	492	99
3	New Bodija scheme	800	160
4	Kolapo Ishola Scheme	300	60
5	Alalubosa GRA	835	167
	Total	4,922	985

Table 2: Summary of Expert Perception of the Neighbourhood Design Characteristics in the Study Area

S/N	Indicators	Old Bodija Scheme	Agodi GRA	New Bodija Scheme	Kolapo Ishola Scheme	Alalubosa GRA	Mean
1	Tidiness	3.6	3.6	3.2	4.1	4.6	3.82
2	Image/milieu	3.2	3.2	3.2	4.4	4.5	3.7
3	Territoriality	4.0	2.7	3.4	3.6	4.5	3.64
4	Scale	2.7	2.7	3.0	4.4	4.4	3.44
5	Enclosure	3.5	3.5	3.4	3.6	4.4	3.68
6	Permeability	2.4	2.4	2.9	4.5	4.3	3.3
7	Surveillance	3.6	3.4	3.3	4.0	4.1	3.68
8	Connectivity	3.5	3.5	3.4	3.7	4.0	3.62
9	Variability	3.5	3.5	3.3	3.7	4.0	3.6
10	Consistency	3.4	3.4	3.4	3.5	3.7	3.48
11	Legibility	3.1	3.1	3.5	3.4	3.7	3.36
12	Grain	2.1	2.1	2.6	3.3	3.7	2.76
13	Density	2.0	2.0	2.5	3.1	3.3	2.58
	Average	40.6/13	39.1/13	41.1/13	49.3/13	53.2/13	3.82
	Mean deviation	3.12	3.01	3.16	3.58	4.09	

all the characteristics, Permeability with 2.9 DCI, Grain with 2.6 DCI and Density with 2.5 DCI were far below the average DCI of 3.16. These were the most significant factors that need upgrading and improvement in this area.

In evaluating neighbourhood design characteristics in Kolapo Ishola Scheme, the results obtained revealed that 5 variables out of 13 identified had the DCI above the average of 3.79. The results show that Grain with 3.3 DCI and Density with 3.1 DCI were far below the average DCI of 3.79 which were considered as the most significant design features that need upgrading and improvement. Comparing DCI value obtained from Old Bodija Scheme, Agodi GRA and New Bodija Scheme. It can be inferred that the DCI value in Kolapo Ishola Scheme is higher than these three areas, which can still be improved upon. The study shows that 7 variables out of 13 identified had the DCI above the average of 4.09 in Alalubosa GRA. The results revealed that Tidiness with 4.6 DCI is the highest, followed by Image/milieu with 4.5 DCI, Territoriality with 4.5 DCI, Scale with 4.4 DCI, Enclosure with 4.4 DCI, Permeability with 4.3 DCI and Surveillance that had 4.1 DCI. These factors with positive deviation about the mean were considered as major design characteristics that were positively established in the study area. This evaluation implies that the Experts agreed that these seven design characteristics were the significant characteristics that were positive in terms of design features and make extraordinary quality life in the neighbourhood likely. The study revealed that among all the design characteristics, Density with 3.1 DCI was far below the average DCI of 4.09. This was considered as the most significant design features that require upgrading and improvement. Comparing the DCI value obtained from Old Bodija Scheme, Agodi GRA, New Bodija Scheme and Kolapo Ishola Scheme it can be inferred that the DCI values in Alalubosa GRA were higher than these four areas, which can still be improved upon. Figure 4 shows the comparative means of the Design Characteristics Indices in the five study areas, while Figure 5 shows the comparative means of the neighbourhood design characteristics in the five study area. In general, the Design Characteristics Index values show a variation among the neighbourhoods in the study areas. More than any other, the comparative mean scores for variability illustrate a striking contrast between the design characteristics of newer (Kolapo Ishola Scheme and Alalubosa GRA) and older (Old Bodija Scheme, Agodi GRA and the New Bodija Schemes) neighbourhoods and streets. This study is in agreement with Agabi and Odekunle, (2014) on the general concepts of older neighbourhoods has been visually more complex.

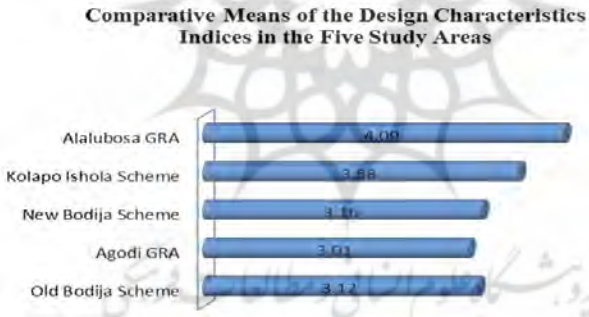

Fig. 4: The comparative means of the Design Characteristics Indices in the five study areas.

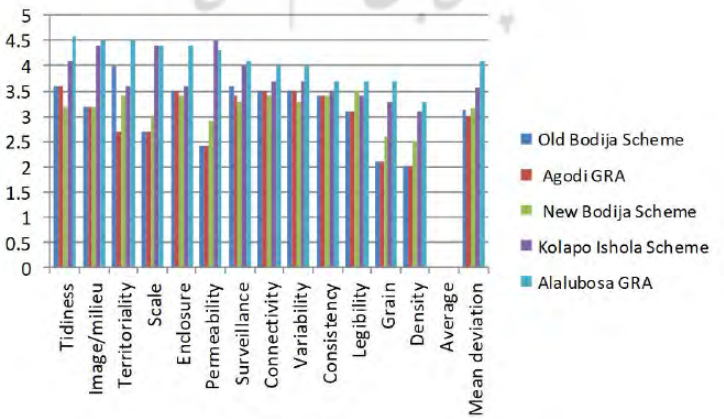

Fig. 5: The comparative means of the neighbourhood design variables across the five study area.

Multiple Regression Analysis Showing the Relationship between Design Variables and Neighbourhood Quality in all the Study Area

To make the dependent variables suitable for multiple regression analysis, they were summarised into one composite variable. This was done and variables of design characteristics were statistically obtained. The residents' perception of the neighbourhood quality was regressed (multiple regression) on the thirteen (13) identified independent design characteristics variables in all the study areas. Table 3 shows the Multiple Regression Analysis results of the relationship between design characteristics and neighbourhood quality in the study area. The result indicates F–value of 1.026E5 and P–value of 0.000a. It was observed that the relationship between design variables and neighbourhood quality is significant.

Moreover, with a correlation coefficient (R) of 0.941 and coefficient of multiple determinations (R2) of 0.886; this indicates that there is a strong relationship between the dependent and the independents' variables. One observed that about 88.6% of the variation in design characteristics may be attributed to a magnitude change in neighbourhood quality. In order words, 88.6% of the variability in observed neighbourhood quality was explained by design characteristics in the study area. This suggests that the regression model used describes (0.886 x 100) 88.6 % of the variance in neighbourhood quality. The implication of this is that these design factors that comprised: tidiness, image/milieu, territoriality, scale, enclosure, permeability, surveillance, connectivity, variability,

Table 3: Aggregate of Regression Analysis Showing the Relationship between Design Variables and Neighbourhood Quality in the Study Area

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.941 [a]	.886	.878	.00110

a. Predictors: (Constant), Density, Territoriality, Enclosure, Permeability, Surveillance, Consistency, Legibility, Connectivity, Variability, Tidiness, Scale, Image/milieu, Grain

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.233	13	.123	1.026E5	.000[a]
	Residual	.000	6	.000		
	Total	1.233	19			

a. Predictors: (Constant), Density, Territoriality, Enclosure, Permeability, Surveillance, Consistency, Legibility, Connectivity, Variability, Tidiness, Scale, Image/milieu, Grain

b. Dependent Variable: Neighborhood Quality

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-5.783	.105		-55.299	.000
	Tidiness	.108	.031	.211	3.497	.007
	Image/milieu	-.248	.037	-.612	-6.693	.000
	Territoriality	.029	.002	.062	17.977	.000
	Scale	.205	.020	.650	10.487	.000
	Enclosure	-.453	.020	-.669	-22.945	.000
	Permeability	-.019	.132	-.072	-.147	.885
	Surveillance	1.891	.013	2.427	142.584	.000
	Connectivity	.017	.017	.015	1.020	.334
	Variability	.748	.238	.713	3.142	.006
	Consistency	-.004	.010	-.002	-.427	.680
	Grain	.085	.206	.221	.413	.685
	Legibility	2.146	.037	2.016	57.251	.000
	Density	-1.308	.041	-2.854	-31.849	.000

a. Dependent Variable: Neighbourhood Quality

P-values significant at 0.05 levels

consistency, grain, legibility and density are the major design factors influencing neighbourhood quality in the study area.

To determine the weight of each of the components and factors of neighbourhood quality, reference is made to their regression coefficients using the standard Beta coefficients, the constant "a" would disappear (Ronald et al, 1983) and the regression equation is of the form:

Y = a + b1x1 + b2x2 + b3x3+ b4x4 + b5x5 + b6x6 + b7x7 + b8x8 + b9x9+ b10x10 + b11x11 + b12x12 + b13x13

Becomes:

Y (Neighbourhood Quality) = 0. 211x1 - 0.612x2 + 0.062x3 + 0.650x4 + 0.699x5 - 0.072x6+ 2.427x7 + 0.015x8 + 0.713x9 - 0.002x10 + 0.221x11+ 2.016x12- 2.854x13

As shown in Table 3 one observed that Tidiness (Beta = 0.211), Image/milieu (Beta = -0.612), Territoriality (Beta = 0.062), Scale (Beta = 0.650), Enclosure (Beta = -0.669) and Permeability (Beta = -0.072); others comprised: Surveillance (Beta = 2.427), Connectivity (Beta = 0.015), Variability (Beta = 0.713), Consistency (Beta = -0.002), Grain (Beta = 0.211), Legibility (Beta = 2.016) and Density (Beta = -2.854). The regression coefficients for factor 1-13 are; 0. 211, 0.612, 0.062, 0.650, 0.699, -0.072, 2.427, 0.015, -0.002, 0.221, 2.016, and - 2.854 respectively, which shows that factor 7 (Surveillance) with Beta 2.427 and factor 12 (Legibility) with Beta 2.016 have more effect on neighbourhood quality, closely followed by factor 9 (Variability) with Beta 0.713 and factors 4 (Scale) with Beta 0.650 than other factors.

Furthermore, the result of regression coefficient also implies that for a one-unit change in tidiness, neighbourhood quality will change with a unit of 0. 211, and then concerning a one-unit change in image/milieu, territoriality, scale, enclosure, permeability, surveillance, connectivity, variability, consistency, grain, legibility and density, neighbourhood quality will change with a unit of 0.612, 0.062, 0.650, 0.699, -0.072, 2.427, 0.015, -0.002, 0.221, 2.016, and - 2.854 respectively in the study area.

Aggregate of Relationship between Design Characteristics and Neighbourhood Quality Using Pearson's Correlation Co-efficient (r) in the Study Area

Table 4 shows that the computed Pearson's correlation (r) among pairs of the thirteen (13) identified relevant neighbourhood design variables in the study area. The result of finding in column (A) reveals that variable neighbourhood quality with correlation coefficient of 0.830 had a positive and significant correlations with variables that comprised: Image/milieu (PCC = 0.900), Territoriality (PCC = 0.434), Scale (PCC = 0.842) and Enclosure (PCC = 0.905) among others were all significant at 0.01 levels. Only Legibility (PCC = 0.543) is significant at 0.05 levels. Column (B) shows that neighbourhood quality with correlation coefficient of 0.755 has positive and significant correlations with variables that included: Scale (PCC = 0.992), Enclosure (PCC = 0.744), Permeability (PCC = 0.977), Surveillance (PCC = 0.944) and Connectivity (PCC = 0.896) among others were all significant at 0.01 levels, while Territoriality (PCC = 0.410) is not statistically significant. In addition, column (C) shows that neighbourhood quality with correlation coefficient of 0.803 that has positive and significant correlations with variables such as: Scale (PCC = 0.408), Permeability (PCC = 0.398), Variability (PCC = 0.442), Consistency (PCC = 0.431), Legibility (PCC = 0.395), Grain (PCC = 0.443) and Density (PCC = 0.424) that are not significant at 0.05 and 0.01 levels. Additionally, it has a positive and significant correlation with variables such as Enclosure (PCC = 0.469), Surveillance (PCC = 0.559) and Connectivity (PCC = 0.454), which are significant at 0.05 levels.

Additionally, column (D) shows that neighbourhood quality with correlation coefficient of 0.720, which has positive and significant correlations with variables such as: Enclosure (PCC = 0.693), Permeability (PCC = 0.996), Surveillance (PCC = 0.908) Connectivity (PCC = 0.848), among others that are significant at 0.01 levels. Column (E) shows that neighbourhood quality with correlation coefficient of 0.781 which has positive and significant correlations with variables that comprised: Permeability (PCC = 0.635), Surveillance (PCC = 0.771), Connectivity (PCC = 0.949), among others that are significant at 0.01 levels. Column (F) shows that neighbourhood quality with correlation coefficient of 0.684 which has positive and significant correlations with variables that comprised: Surveillance (PCC = 0.877), Connectivity (PCC = 0.799), Variability (PCC = 0.755) among others that are all significant at 0.01 levels. The result of finding in column (G) reveals that the neighbourhood quality with correlation coefficient of 0.894 has positive and significant correlations with variables such as: Connectivity (PCC = 0.915), Variability (PCC = 0.928), Consistency (PCC = 0.783), Grain (PCC = 0.844) and Density (PCC = 0.820) were all significant at 0.01 levels. Only Legibility (PCC = 0.527) is significant at 0.05 levels.

Column (H) shows that neighbourhood quality with correlation coefficient of 0.833 has a positive and significant correlation with variables that comprised: Variability (PCC = 0.986), Consistency (PCC = 0.929), Legibility (PCC = 0.661), Grain (PCC = 0.867) and Density (PCC = 0.819) that are all significant at 0.01 levels. Column (I) shows that neighbourhood quality with correlation coefficient of 0.836 has a positive and significant correlation with variables such as: Consistency (PCC = 0.890), Grain (PCC = 0.801) and Density (PCC = 0.749) that are significant at 0.01 levels. Only Legibility (PCC = 0.544) is significant at 0.05 levels. Column (J) shows that neighbourhood quality with correlation coefficient of 0.755 has a positive and significant correlation with variables that comprised: Legibility (PCC = 0.784), Grain (PCC = 0.861) and Density (PCC = 0.815) that are all significant at 0.01 levels. Column (K) shows that neighbourhood quality with a correlation coefficient of 0.527 has a positive and significant

Table 4: Aggregate of Relationship between Design Characteristics and Neighbourhood Quality Using Pearson's Correlation Co-efficient (r) in the Study Area

S/N	Variables	A (i)	B (ii)	C (iii)	D (iv)	E (v)	F (vi)	G (vii)	H (viii)	I (ix)	J (x)	K (xi)	L (xii)	M (xiii)	N (xiv)
(i)	Tidiness (A)	1													
(ii)	Image/milieu (B)	.900**	1												
(iii)	Territoriality (C)	.434	.410	1											
(iv)	Scale (D)	.842**	.992**	.408	1										
(v)	Enclosure (E)	.905**	.744**	.469*	.693**	1									
(vi)	Permeability (F)	.789**	.977**	.398	.996**	.635**	1								
(vii)	Surveillance (G)	.945**	.944**	.559*	.908**	.771**	.877**	1							
(viii)	Connectivity (H)	.983**	.896**	.454*	.848**	.949**	.799**	.915**	1						
(ix)	Variability (I)	.997**	.873**	.442	.811**	.927**	.755**	.928**	.986**	1					
(x)	Consistency (J)	.880**	.808**	.431	.780**	.952**	.738**	.783**	.929**	.890**	1				
(xi)	Legibility (K)	.543*	.690**	.395	.738**	.691**	.745**	.527*	.661**	.544*	.784**	1			
(xii)	Grain (L)	.818**	.950**	.443	.966**	.779**	.960**	.844**	.867**	.801**	.861**	.882**	1		
(xiii)	Density	.771**	.943**	.424	.969**	.716**	.972**	.820**	.819**	.749**	.815**	.880**	.995**	1	
(xiv)	Neighbour-hood Quality (N)	.830**	.755**	.803**	.720**	.781**	.684**	.894**	.833**	.836**	.755**	.527*	.723**	.684**	1

** Correlation is significant at the 0.01 level and * Correlation is significant at the 0.05 level

correlation at 0.55 levels with variables that included: Grain (PCC = 0.882) and Density (PCC = 0.880) that are significant at 0.01 levels. Table 4 revealed that column (L) shows that neighbourhood quality with a correlation coefficient of 0.723 has a positive and significant correlation at 0.01 levels with variables that Density (PCC = 0.995) that is significant at 0.01 levels. Column (M) shows that neighbourhood quality with a correlation coefficient of 0.684 that has a positive and significant correlation at 0.01 levels. The study revealed a strong and significant correlation between neighbourhood quality and design characteristics that comprised: tidiness, image/milieu, territoriality, scale, enclosure, permeability, surveillance, connectivity, variability, consistency, grain, legibility, density and neighbourhood quality.

This study is in line and corroborated with findings in earlier studies by Owens (2005), Ewing and Handy (2009), Prompayuk and Sahachaisaeree (2012) that demonstrated the importance of good neighbourhood design in the development of public and private GCs. The design characteristics, along with physical and social-economic characteristics of residents are important in the design and developments of neighbourhood as demonstrated in this study. There is the need to consider these factors at the level of neighbourhood.

Residents' Assessment of Neighbourhood Physical Characteristics

Agreement based result was carried out in assessing neighbourhood physical characteristics in all the study areas. The responses obtained in the study are presented in Table 5, which shows the respondents' agreement level to physical characteristics in all the study areas. For this study, thirty-eight (38) variables that could influence and affect neighbourhood quality were identified. It is believed that the level of agreement of the resident would indicate the level of influence of these variables (factors). It also employed a five-point Likert Scale of strongly agree (SA), Agree (A), just agree (JA), disagree (D) and strongly disagree (SD). The findings presented in Table 5 show the level of agreement on physical characteristics. With regards to residents' agreement to location and connectivity in the study area; majority 38.4% (304) strongly agree, 38.3% (303) agree, 10.2% (81) just agree, 6.4% (51) Disagree, 6.69% (53) strongly disagree that the proximity to amenities are adequate. For the level of agreement to the degree of accessibility to facilities in the neighbourhood, majority 76.8% (608) strongly agree, 12.6% (100) agree, 5.3% (42) just agree, 21 (2.7%) disagree and 2.7% (21) strongly disagree that there is a high degree of accessibility to facilities in their neighbourhood. For the level of agreement to the connectivity of streets, majority 84.1%

(666) strongly agree, 10.9% (86) agree, 2.5% (20) just agree, 1.4% (11) disagrees and 1.1% (09) strongly disagrees with the connectivity of streets in their neighbourhood.

Also, the result revealed the frequencies and distribution of levels of agreement of residents on neighbourhoods and liveability. The study assessed whether the amenities and services are within walkable distance. Majority 73.2% (580) strongly agree, 16.2% (128) agree 6.6% (52) just agree, 2.7% (21) disagree and 1.4% (11) strongly disagree with the walkable distance to amenities and services. Levels of the agreement to whether housing choice and access responded to needs and aspiration of residents' in the neighbourhoods; the majority 48.1% (381) strongly agree, 28.9% (229) agree, 12.9% (102) just agree, 6.2% (49) disagree and 3.9% (31) strongly disagree to the housing choice and access respond to needs and aspiration of the residents in their area. Residents also rated whether the local environmental quality is adequate, 75.5% (598) strongly agree, 16.3% (129) agree, 4.9% (39) just agree, 2.3% (18) Disagree, while 1.0% (08) strongly disagree with the suitability of local environmental quality. Residents also rated whether management structures are adequate. The study shows that the majority strongly agree 41.4% (328), 25.5% (202) agree, 19.2% (152) just agree, 12.8% (102) disagree and 08 (1.0%) strongly disagree with appropriateness of management structures in their area. Residents also appraised whether there is efficient building design; specification and construction in their area. Majority 76.4% (605) strongly agree, 15.8% (125) agree, 2.5% (20) just agree, 22 (2.8%) disagree and 2.5% (20) strongly disagree. Another important attribute of the neighbourhood that influenced neighbourhood quality is the level of the permeable street network in the neighbourhood. Three variables were evaluated. Firstly, the study assessed the level of agreement of residents on whether the streets in their neighbourhood encourage permeability and connectivity with the urban fabric. The majority 86.7% (687) strongly agree, 12.3% (97) agree, 0.3% (3) just agree, 0.3% (3) disagree and the minority 0.3% (2) strongly disagree. Secondly, the study considered the level of agreement of residents on whether their neighbourhood creates a recognisable hierarchy of streets. The result obtained showed that the majority of the resident widely held that their neighbourhood creates a recognisable hierarchy of streets. The study revealed that 38.1% (302) strongly agree, 19.7% (156) agree, just agree 26.4% (209), 8.0% (63) disagree and a smaller number that comprised 7.8% (62) strongly disagree. The study also looked at whether the neighbourhood streets provide public pedestrian routes and thoroughfares. From the results obtained; 83.5% (661) strongly agree, 11.0% (87) agree, 4.3% (34) just agree, 0.8% (6) disagree and 0.5% (4) strongly disagree.

Another vital trait of neighbourhood quality that has been established to be significant in housing studies is the grade and level at which the public realm and enclosure of space were in the area. Six variables were appraised. To begin with, the study considered the neighbourhoods in the study areas to know whether the building lines are strictly followed. The majority 87.9% (696) strongly agree, 9.5% (75) agree, 1.8% (14) just agree, 0.6% (5) disagree and very few 0.3% (2) respondents strongly disagree that the building lines are strictly followed. The study also looked at whether the practice of enclosure of space and gating is not common in the neighbourhood. From the result obtained, the minority 0.3% (2) strongly agree, 0.3% (3) agree, 0.3% (3) just agree, 12.3% (97) disagree and the majority 86.7% (687) strongly disagree. Additionally, the study also established whether the neighbourhood provides open and green space and 87.3% (691) strongly agree, 10.7% (85) agree, 1.3% (10) just agree, 0.5% (4) disagree and 0.3% (2) strongly disagree. The analysis implies that the majority of the neighbourhoods provide open and green space. Furthermore, the descriptive statistics of the respondents' level of agreement on whether the neighbourhood in their area provides street furniture and public art; 0.8% (6) strongly agree, 0.5% (4) agree, 4.3% (34) just agree, 11.0% (87) disagree and the majority 83.5% (661) strongly disagree. This result suggested that the majority of the neighbourhood in the study area did not provide street furniture and public art. Also, the study looked at whether the neighbourhood provides a good sound management strategy. Furthermore, 7.8% (62) strongly agree, 8.0% (63) agree, 19.7% (156) just agree, 26.4% (209) disagree and majority 38.1% (302). The result suggested that the neighbourhood provide a good sound management strategy.

Density and mix of uses is a fundamental design characteristic, which has impacts on neighbourhood quality. Five variables were considered for evaluation. The study examined the adequacy for both commercial and residential in terms of whether the gross densities and plot ratios are adequate. In addition, 82.8% (656) strongly agree, 14.5% (115) agree, 1.8% (14) just agree, 0.6% (5) disagree and 0.3% (2) strongly disagree. The inference from this is that gross densities and plot ratios for both commercial and residential are adequate in the study area. The study further assessed whether the neighbourhood location and street hierarchy are adequate and 86.7% (687) strongly agree, 12.3% (97) agree, 0.3% (3) just agree, 0.3% (3) disagree and 0.3% (2) strongly disagree. The result suggested that the neighbourhood location and street hierarchy are adequate. The study also looked at whether the placing of tall buildings is adequate; 605 (76.4%) strongly agree, 15.8% (125) agree, 2.5% (20) just agree, 2.8% (22) disagree and 2.5% (20) strongly disagree. The implication of the level of agreement suggested that the placing of tall buildings in the neighbourhood is adequate. The study also looked at the trend of agreement of neighbourhood Quality, diversity and distinctiveness. Diversity is neighbourhood quality that is obtained through a mix of land uses, compatible housing and building types. Two neighbourhood quality variables were measured and evaluated. Presented in Table 5 were the respondents' levels of agreements on whether Architectural diversity is encouraged in the areas. The majority of the residents 76.8% (608) strongly agree, 12.6% (100) agree,

5.3% (42) just agree, 2.7% (21) disagree and 2.7% (21) strongly disagree. The results obtained suggested that the study area had building types with diversities of characteristics, such as the size and shape of the buildings, its storey heights, location of access and the building's relationship to external spaces were adequate. All of these elements were influential in creating a neighbourhood quality realm that is enjoyable for all users in the study areas. The study also examined and obtained results as shown in Table 5 on the level of agreement of residents on whether design competitions are encouraged in the study areas. The majority of residents that comprised 87.9% (696) strongly agree. While 9.5% (75) agree, 1.8% (14) just agree, 0.6% (5) disagree and (0.3% (2) strongly disagree. From the analysis, it can be inferred that there was distinctiveness in the level of uniqueness and particularity of some special design character for some individual housing development in the study area.

The study furthermore examined whether the neighbourhood ensures valued natural green spaces were protected. The majority that consisted 83.5% (661) respondents strongly agree, 11.0% (87) agree, 4.3% (34) just agree, 0.8% (6) disagree and very few respondents 0.5% (4) strongly disagree. From this trend, the result suggested that the neighbourhood ensured valued natural green spaces were protected. Finally, the research investigated whether there is continuous canopy by trees to define streets; 2.7% (21) strongly agree, 2.7% (21) agree, 5.3% (42) just agree, 12.6% (100) disagree and 76.8% (608) strongly disagree. The information obtained showed that there were very few continuous canopies on street trees to define streets in the study area. The study has also confirmed and fits into previous studies by Ilesanmi, (2012), Jiboye, (2011), Agabi & Odekunle (2014) that suggested that the physical characteristics such as quality of infrastructural amenities, access to community facilities and basic housing and spatial adequacy. In addition, fixtures and fittings, quality of design, building design, landscaping and layout, pollution and noise control in addition to privacy and safety are essential factors influencing neighbourhood quality.

CONCLUSIONS

This study examined experts' perception of design characteristics and residents' perception of physical characteristics to identify significant factors peculiar to the design of the neighbourhood to inform policy on neighbourhood design and development. The qualities of the overall environment of the low-density

Table 5: Residents Assessment of Neighbourhood Physical Characteristics in the Study Area

Key policy issues	S/N	Variable	Strongly Agree	Agree	Just Agree	Disagree	Strongly Disagree
Location and Connectivity	.1	Proximity to amenities are adequate	304 (38.4%)	303 (38.3%)	81 (10.2%)	51 (6.4%)	53 (6.69%)
	.2	There is a high degree of accessibility to facilities in my neighbourhood	608 (76.8%)	100 (12.6%)	42 (5.3%)	21 (2.7%)	21 (2.7%)
	.3	Connectivity of streets are good	666 (84.1%)	86 (10.9%)	20 (2.5%)	11 (1.4%)	09 (1.1%)
Neighbourhoods and livability	.4	Amenities and services are within walkable distance	580 (73.2%)	128 (16.2%)	52 (6.6%)	21 (2.7%)	11 (1.4%)
	.5	Housing choice and access respond to needs/aspiration	381(48.1%)	229 (28.9%)	102 (12.9%)	49 (6.2%)	31 (3.9%)
	.6	Local environmental quality is adequate	598 (75.5%)	129 (16.3%)	39 (4.9%)	18 (2.3%)	08 (1.0%)
	.7	management structures are adequate	328 (41.4%)	202 (25.5%)	152 (19.2%)	102 (12.8%)	08 (1.0%)
	.8	There is efficient building design, specification and construction in my area	605 (76.4%)	125 (15.8%)	20 (2.5%)	22 (2.8%)	20 (2.5%)
Car dependency	.9	There are quality parking standards in my area	488 (61.6%)	121 (15.3%)	122 (15.4%)	32 (4.0%)	29 (2.7%)
	10	There is large car ownership in my area	672 (84.8%)	66 (8.3%)	18 (2.3%)	16 (2.0%)	20 (2.5%)
	.11	There is quality public transportation in my area.	21 (2.7%)	21 (2.7%)	42 (5.3%)	100 (12.6%)	608 (76.8%)
	.12	My neighbourhood encourage cycling/ walking (e.g. cycle hire)	363 (45.8%)	242 (30.6%)	145 (18.3%)	27 (3.4%)	15 (1.9%)

Continue Table 5: Residents Assessment of Neighbourhood Physical Characteristics in the Study Area

Key policy issues	S/N	Variable	Strongly Agree	Agree	Just Agree	Disagree	Strongly Disagree
Waste minimization	.13	There is low-quality waste minimisation strategy in the neighbourhood	312 (39.4%)	263 (33.2%)	166 (21.0%)	37 (4.7%)	14 (1.8%)
	.14	My neighbourhood provide recycling services and promote systems to facilitate recycling	20 (2.5%)	16 (2.0%)	18 (2.3%)	66 (8.3%)	672 (84.8%)
	.15	The neighbourhood Promote waste minimization strategies	302 (38.1%)	253 (31.9%)	156 (19.7%)	37 (4.7%)	44 (5.6%)
Water cycle (management of water resource)	.16	My neighbourhood encourage stakeholder participation and association	651 (82.2%)	77 (9.7%)	21 (2.7%)	23 (2.9%)	20 (2.5%)
	.17	The neighbourhood encourage water saving in areas of scarcity (e.g. water metering)	09 (1.1%)	11 (1.4%)	20 (2.5%)	86 (10.9%)	666 (84.1%)
	.18	Rainwater and wastewater management systems are good	156 (19.7%)	62 (7.8%)	302 (38.1%)	63 (8.0%)	209 (26.4%)
Permeable street network	.19	My neighbourhood encourage permeability and connectivity with urban fabric	687 (86.7%)	97 (12.3%)	3 (0.3%)	3 (0.3%)	2 (0.3%)
	.20	My neighbourhood create a recognisable hierarchy of streets	302 (38.1%)	156 (19.7%)	209 (26.4%)	63 (8.0%)	62 (7.8%)
	.21	My neighbourhood street provide public pedestrian routes and thoroughfares	661 (83.5%)	87 (11.0%)	34 (4.3%)	6 (0.8%)	4 (0.5%)
Public realm and enclosure of space	.22	The Building line are strictly followed	696 (87.9%)	75 (9.5%)	14 (1.8%)	5 (0.6%)	2 (0.3%)
	.23	Enclosure of space / gating is not common in the neighbourhood	2 (0.3%)	3 (0.3%)	3 (0.3%)	97 (12.3%)	687 (86.7%)
	.24	Creation/animation of the public realm is not common in the neighbourhood	342 (43.2%)	116 (14.6%)	209 (26.4%)	62 (7.8%)	63 (8.0%)
	.25	My neighbourhood provide open and green space	691 (87.3%)	85 (10.7%)	10 (1.3%)	4 (0.5%)	2 (0.3%)
	.26	My neighbourhood provide street furniture and public art	6 (0.8%)	4 (0.5%)	34 (4.3%)	87 (11.0%)	661 (83.5%)
	.27	My neighbourhood provide good sound management strategy	62 (7.8%)	63 (8.0%)	156 (19.7%)	209 (26.4%)	302 (38.1%)
Density and mix of uses	.28	Gross densities/plot ratios for both commercial and residential are adequate	656 (82.8%)	115 (14.5%)	14 (1.8%)	5 (0.6%)	2 (0.3%)
	.29	Neighbourhood location and street hierarchy are adequate.	687 (86.7%)	97 (12.3%)	3 (0.3%)	3 (0.3%)	2 (0.3%)
	.30	Placing of tall buildings is adequate	605 (76.4%)	125 (15.8%)	20 (2.5%)	22 (2.8%)	20 (2.5%)
	.31	Level of access requirements in my area is adequate	641 (81.0%)	87 (11.0%)	44 (5.6%)	12 (1.5%)	8 (1.0%)
	.32	Privacy distances (not < 20 metres for single aspect units and 15 for dual) are followed in my area	656 (82.8%)	115 (14.5%)	14 (1.8%)	5 (0.6%)	2 (0.3%)

Continue Table 5: Residents Assessment of Neighbourhood Physical Characteristics in the Study Area

Key policy issues	S/N	Variable	Strongly Agree	Agree	Just Agree	Disagree	Strongly Disagree
Quality, diversity and distinctiveness	.33	Architectural diversity is encouraged.	608 (76.8%)	100 (12.6%)	42 (5.3%)	21 (2.7%)	21 (2.7%)
	.34	Design competitions are encouraged.	696 (87.9%)	75 (9.5%)	14 (1.8%)	5 (0.6%)	2 (0.3%)
Biodiversity by Design	.35	The green infrastructure plan is encouraged	580 (73.2%)	128 (16.2%)	52 (6.6%)	21 (2.7%)	11 (1.4%)
	.36	Energy and microclimate are adequate	342 (43.2%)	116 (14.6%)	209 (26.4%)	62 (7.8%)	63 (8.0%)
	.37	The neighbourhood ensure valued natural green spaces are protected	661 (83.5%)	87 (11.0%)	34 (4.3%)	6 (0.8%)	4 (0.5%)
	.38	There is a continuous canopy on street trees to define streets;	21 (2.7%)	21 (2.7%)	42 (5.3%)	100 (12.6%)	608 (76.8%)

residential neighbourhoods in Ibadan under study agree to the conclusion that low density residential neighbourhoods also display inadequate design quality. The study found that certain factors including the Tidiness, Image/milieu, Territoriality, Scale, Enclosure, Permeability, Surveillance, Connectivity, Variability, Consistency, Legibility, Grain and Density among others, were significantly related with the experts' perception of neighbourhood quality; thus suggesting that these factors which have physical dimension are significant determinants of residents perception of neighbourhood quality. Therefore, the understanding of the nature of these factors is necessary for the development of an effective policy for sustainable neighbourhood design and urban development in Nigeria. The role of design and physical characteristics in the development of the neighbourhood to neighbourhood quality cannot be overemphasized. The design and development of neighbourhood need to be based on the standard design principles and physical characteristics with consideration of neighbourhoods' location and connectivity, and liveability, safety, privacy and facilities among others. The identified highly important and less important factors positively influencing neighbourhood quality will provide useful information for various developers and policymakers in their decision making.

The study recommended that in the design and development process, attention should be paid to the physical characteristics by focusing on attaining compatibility with the massing, scale, height, building elements and architectural character and materials of the new and existing apartments in the neighbourhood. Generally, adopted architectural features appreciated by the residents should be encouraged for consideration and used as key factors in establishing and upholding the character of the neighbourhood. The neighbourhood is encouraged to be designed to incorporate sustainable building technologies and techniques that minimize environmental impacts. Designers, owners and developers are advised to incorporate sustainable design features, such as renewable energy technologies, passive building design, water use reduction and wastewater technologies and natural habitat retention. Developers are encouraged to integrate building details, elements and good quality materials originated in the close and surrounding area that can enrich and enhance the visual continuity and uphold the character and pattern of the neighbourhood.

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