SPATIAL DIFFERENTIATION IN SOURCING FACILITIES OF RESIDENTIAL BUILDINGS IN AKURE, NIGERIA

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ABSTRACT

This study focuses on the spatial differentiation in sourcing of facilities in residential buildings of Akure Township, Nigeria. The sample size of 1,326 respondents was distributed in the proportion of 665; 464; and 199 for the core, transition and peripheral zones respectively. A total of 955 representing 72.02% out of the total 1,326 questionnaires administered were retrieved and used for analysis. Twenty field assistants were employed to administer the questionnaire in three months. Findings revealed that 67.0% of the respondents used both generators and national grid as their source of electricity, and 16.6% used generator as the only source of electricity. The prevailing energy source for cooking in the study area is Gas/kerosene stove. At the core, affordability of the available resources showed that, 23.2% ascribed to not affordable and other categories of affordability accounted for 76.8%. At the transitional zone, not affordable accounted for 28.0% and affordable 72.0 percent. Most inhabitants of the city depend on water supply from hand-dug wells. The study recommends stable supply of electricity, the use of gas at affordable price, construction of boreholes and public taps just to mention a few to remediate the lapses detected.

Keywords: *Facilities, Residential, Electricity, Affordability and Water supply.*

INTRODUCTION

Housing is seen to include the neighborhood, facilities, infrastructures and the totality of the environment as it affects and or influences the lives and wellbeing of the occupants. It is the process of providing functional shelter in proper setting in a neighborhood supported by sustainable maintenance of the built environment for the day - to - day living and activities of individuals and families within the community (Federal Republic of Nigeria, 2006). Housing therefore, goes beyond ordinary building structures to mean functional unit in a good neighborhood, properly maintained, equipped with the basic facilities in which the occupier would live comfortably (Gabriel, 2017).

Spatial differentiation is the distinctions among the residential zones with special focus on sources of basic facilities in the residential buildings. This socio-spatial variation of the urban area may result from institutional principles of social organization, or may be the outcome of individual or collective actions, deliberate or not (Grafmeyer, 1994; cited in Veronique, 2004 and Gabriel, 2017). Although, the rapid physical development witnessed by the State has been a boost to its economy, Akure also had to grapple with an array of environmental challenges arising from its growth which could be described as astonishing (Aribigbola, 2008).

Some of the environmental challenges the state has to grapple with include; overcrowding and unplanned human settlement aggravation. The movement of people to Akure town increases the pressure on existing facilities in housing, schools and health centres leading to

congestion and mushrooming of unplanned settlements. These are most noticeable in areas such as Isolo, Oke-Ijebu, Oritagun, Oke-Aro, Isinkan, Odo-Ikoyi, Oke-Emeso, Idi-Agba and Ijoka. Another key challenge is sprawl development arising from rapid population growth. The fact that the area witnesses an unprecedented population growth in the last decade with no corresponding development on infrastructure and housing has led to the development of housing sprawl in some parts of the city center (Aribigbola, 2008). Furthermore, the study analyses the spatial differentiation in sourcing of facilities in residential buildings of Akure, Nigeria. This was achieved by investigating, electricity source, type of energy source for cooking, reason for the choice of energy source, affordability, sources of domestic water of the respondents across the residential zones in the study area. In addition, recommendations were offered to solve the identified problems across the study area.

Concept of Spatial Residential Density

Residential Density is used as a measurement of the spatial concentration of populations. There are a number of definitions of residential density within urban areas. Definitions used in the analysis of settlement densities in Sydney's urban areas range from site density to metropolitan density. National State of the Environment report, defines the concept as the area of land within urban centres designated for 'residential land use' divided by total population resident in those centres. High densities are located near activity centers and along public transport routes to maximize access and convenience to services. Predominantly medium density development locate in areas of high amenity, which may coincide with activity centers or neighbourhood parks, such as open space corridors, nature reserves, lake/water side, as well as in close proximity to public transport routes. The remaining residential areas are often allocated to lower density housing, with the lowest density located at the fringes of an estate bordering non-urban areas (Cardew, 1996 and CSIRO, 2008).

The spatial residential density differentia of the study area shows that more of the low income groups live in the high density area (75%) while more of the higher income groups are found at the low density neighbourhood. This means that the poorer residents are more in the high density area where overcrowding, poor ventilation and lack of basic amenities form the norm rather than exceptions. The situation only improves as we move to the fringes where we have more of the affluent and elite (Ogunleye, 2011). Other distinguishing attributes between the residential densities include household size, type of building, size of plots, age of building, nature of access road and drainage systems among others.

Concentric Zone Model

The Burgess Urban Land Use Model postulated in 1925 presented a descriptive urban land use model, which divided cities in a set of concentric circles expanding from the downtown to the suburbs. This representation was built from Burgess' observations of a number of American cities, notably Chicago, for which he provided empirical evidence. The model assumes a relationship between the socio-economic status (mainly income) of households and the distance from the Central Business District (CBD) (see Fig. 1). The farther away from the CBD, the better the quality of housing but the longer the commuting time. Thus, accessing better housing is done at the expense of longer commuting times and costs. According to this '*monocentric*' model, a large city is divided into five concentric zones as follows:

1. The CBD: The centre which is the central business district.
2. The transition zone of mixed residential and commercial uses or the zone of transition.
3. Low-class housing: Working class residential homes (inner suburbs), in later decades called inner city or zone of independent working men's home.

4. Middle-Class housing: Better quality middle-class homes (Outer Suburbs) or zone of better housing.
5. High Class housing: Finally, zone 5 is the outermost ring in the concentric zone model. It is an upper class neighbourhood, made up of expensive houses where the richest citizens of the city live. It also includes the Commuters zone, and also cost of commuting is highest in this zone. Prior to mass diffusion of the automobile (1930s), most of these settlements were located next to rail stations. According to Burgess, urban growth is a process of expansion and reconversion of land uses, with a tendency of each inner zone to expand in the outer zone.

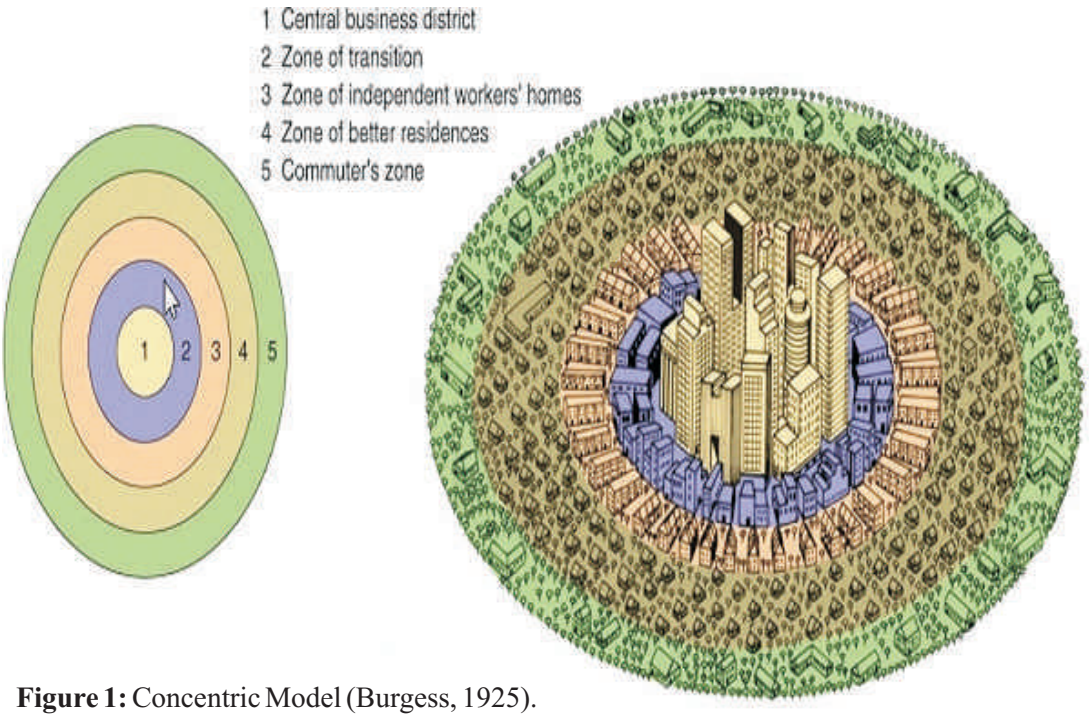

Figure 1: Concentric Model (Burgess, 1925).

Pearson Prentice Hall, Inc., 2015.

Criticisms

The model has been challenged by many contemporary urban geographers. First, the model does not work well with cities outside the United States, in particular with those developed under different historical contexts. Even in the United States, because of changes such as advancement in transportation and information technology and transformation in global economy, cities are no longer organized with clear "zones. It describes the peculiar American geography, where the inner city is poor while suburbs are wealthy; the converse is the norm elsewhere.

i) It assumes an isotropic plane - an even, unchanging landscape. Physical features - land may restrict growth of certain sectors; hills and water features may make some locations unusually desirable for residential purposes.
ii) Commuter villages defy the theory, being a distant part of the commuter zone.
iii) Decentralization of shops, manufacturing industry and entertainment.
iv) Urban regeneration and gentrification - more expensive property can be found in formerly 'low class' housing areas.
v) Many new housing estates were

built on the edges of cities in Britain.

vi) It does not address local urban politics and forces of globalization.

vii) The model does not fit polycentric cities, for example Stoke-on-Trent

Considering the tenets of the land use models, the Burgess' concentric model is considered useful and relevant to this stdy, which was adapted to illustrate the pattern of residential densities in Akure. This formed the basement framework for this study. The zonal arrangement was transformed into three concentric zones, which represent the core, transition and peripheral zones that were used as Data Enumeration Areas (DEAs) for the purpose of data collection for this study.

METHODOLOGY

Study Area

The study area is Akure, a Nigerian city, which like other traditional Yoruba towns in the country, has been in existence long before the advent of British colonial rule, modern planning standards and practices. The city is located within Ondo State in the South Western part of Nigeria and one of the 36 states of Nigeria. It lies approximately on latitudes 7^0 05' and 8° 00' North of the Equator and longitude 5^0 45' East and longitude 6°00' East of the Greenwich Meridian at an altitude of 370m above sea level. Akure is a medium-sized urban centre that became the provincial headquarters of old Ondo province in 1939. It also became the capital city of Ondo State and a Local Government Headquarters in 1979. These dual political roles of Akure have since acted as impetus to the influx of people into the city (Olujimi & Olamiju, 2011; Gabriel, 2017; Gabriel & Fasakin, 2017, Gabriel, 2020).

Akure is located approximately 700 kilometers South West of Abuja, the Federal Capital of Nigeria and about 350 kilometers to Lagos, the former capital of Nigeria. It is located within the tropical rain forest region of Nigeria where rainfall is high throughout the year. The increased relative political influence of Akure as a state capital since 1976 has greatly promoted its rapid growth and socio-economic activities resulting in its spatial expansion from an area of about 16 square kilometers in 1980 to about 30 square kilometers in 2000. The 1991 national population census however, puts the population of Akure at 239,124 and its population in 2006 was 353,211 (National Population Commission, 2006). Using a growth rate of 3.18 percent to project the population for 2019, the city was estimated to have 530,626 people using a formula for projection, $Pt = Po\,(1+r)^n$.

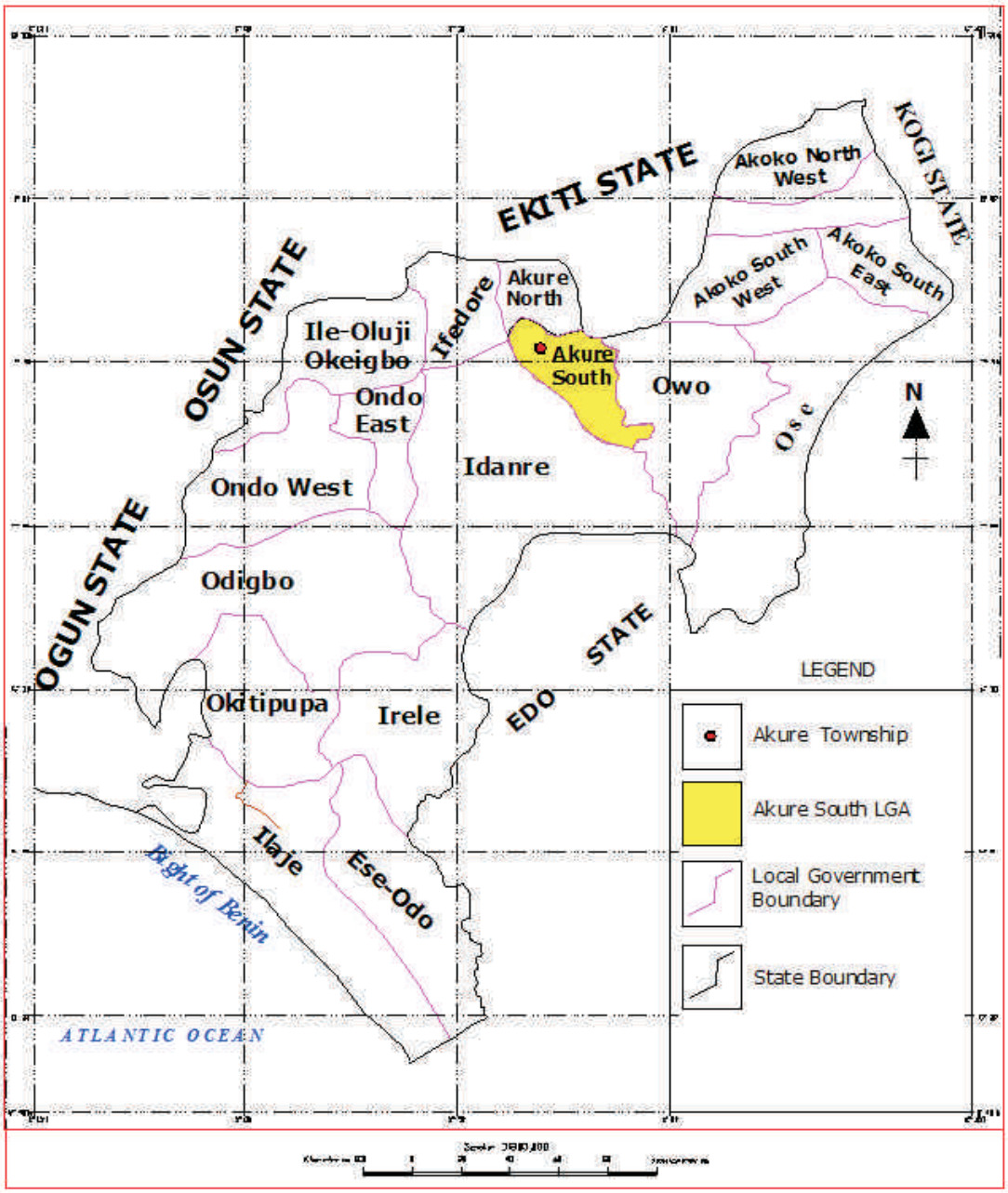

Fig. 1: Map of Nigeria Showing the Study Area in its Regional Setting

Source: Ondo State Ministry of Lands and Survey (2019).

Primary data for the study were generated from the administration of a structured questionnaire. The questionnaire focused on household heads or any adult living in the buildings within the study area. It investigated among other things; electricity source, type of energy source for cooking, reason for the choice of energy source, affordability, source of water of the respondents across the residential zones in the study area. Secondary data were obtained from the Ministry of Lands and Housing, Ondo State Development and Property Corporation, Ministry of Physical Planning and Survey Department in Ministry of Works Akure, Ondo State, while property maps were obtained from the National Population Commission among others.

The population of Akure according to the 2006 population census was 353,211 (NPC, 2006). This was projected to 2019 using 3.18% annual growth rate officially determined by the National Population Commission. The city was estimated to have 530,626 people. The total number of buildings in Akure was calculated to be 18,950 using the following formula, where ppf and hpb are persons per family and households per building (Gabriel, 2017).

$$\frac{Current\ Population\ Figure}{7(ppf)\ X\ 4(hpb)} = \frac{530{,}626}{28} = 18{,}950\ buildings$$

A sample size of 7% was used for questionnaire administration that gave 1,326 respondents. This proportion was reasonable given the homogeneity characterizing the study area which includes, form and age of buildings, physical conditions of housing units, condition of neighbourhood infrastructure and respondents personal profile among others. Using the table of random numbers, 24 Enumeration Areas (EAs) were selected on the ratio of 50:35:15 for the core; transition and peripheral zones from the 2006 EAs from the National Population Commission (Rotowa, 2014; and Gabriel, 2017). Twelve (12) EAs were sampled for the core; 9 for the transition zone; and 3 for the peripheral zone. The sample size of 1,326 respondents was distributed in the proportion of 663; 464; and 199 for the core, transition and peripheral zones respectively. A total of 955 representing 72.02% out of the total 1,326 questionnaires administered were retrieved and used for analysis. The selection of twenty-four (24) EAs was reasonable, when earlier studies were considered that utilized EAs. For instance, the Federal Ministry of Health [Nigeria], 2003 used two EAs per Local Government; and the National Population Commission [Nigeria], used the same number of EAs for 2008 National Demographic and Health Survey. Twenty field assistants were employed to administer the questionnaire in three months. Tables were used to present, interpret and discuss research findings through SPSS version 21 and Microsoft Excel 2013.

RESULTS AND DISCUSSION

Electricity Source

Results of electricity source in the residential zones of the study area are shown in table 1.

Findings revealed that 67.0 percent of the respondents in the study area use generator and national grid as their sources of electricity. Those that use generator as their sole means of electricity had 16.6 percent and those that depend on national grid had 15.6 percent. Inverter / national grid and others had 0.4 percent each. Spatially, at the core, generator and national grid as sources of electricity had 79.1 percent, transition 68.9 percent and periphery 36.7 percent. Generator as the source of electricity solely, at the core 10.0 percent, transition 16.3 percent and periphery 40.8 percent.

In addition, the findings revealed that majority of the inhabitants in the study area use generator and national grid as their main sources of electricity. According to Abdullahi, Timothy and Adekunle (2017), electricity is one of the main drivers of development; it has a major impact on every aspect of our socioeconomic life. It is used in residential buildings, commercial buildings, and industrial buildings. The source of electricity in most Nigeria residential buildings is through the National Grid. However, the findings of the study revealed that, a reasonable number of the respondents in the study area complained of unpredictable supply of electricity from the national grid. This result concurs with the findings of Olujimi (2010) which reveals that all the sampled tenants in these residential zones complained of erratic supply of electricity. Therefore, it can be deduced that because of unreliable supply of electricity from the National Grid, residents have decided to adopt alternatives sources.

Table 1: Electricity Source

Zone / Electricity Source	Core		Transition		Periphery		Total (Study Area)	
	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)
Generator only	47	10.0	56	16.3	58	40.8	159	16.6
National Grid only	48	10.2	50	14.8	29	20.0	149	15.6
Generator and national grid	374	79.1	234	68.9	52	36.7	639	67.0
Inverter and national grid	0	0	0	0	4	2.5	4	.4
Others	3	.7	0	0	0	0	4	.4
Total	472	100.0	340	100.0	143	100.0	955	100.0

Source: Author's Fieldwork, 2019.

Hours of Electricity Supplied/Day (National Grid)

Findings on table 2 show the number of hours that electricity is supplied to residential buildings by the national grid across the different residential zones in the study area. The results revealed that 77.6 percent of the buildings in the study area had less than six hours of electricity supply by the national grid per day. Only 19.5 percent had 6 to 10 hours and 2.9 percent above ten hours per day. It was observed that those at the transitional zone in the study area had better hours of supply of electricity by national grid than those at core and periphery. The findings concurred with findings of Nwachukwu, Ezedinma, & Jiburum (2014) that revealed that, electricity supply in this country has been erratic and epileptic thus resulting in frequent power outages that have impaired economic growth and development. The residential, commercial and industrial electricity consumption accounted respectively for 51.3, 26.7 and 22 percent of total electricity consumption. Similarly, Abdullahi, Timothy and Adekunle, (2017) opined that, the supply of electricity to the residential sector and other sectors at large is getting declined; this can be attributed to the increase in population and drastic decrease in electricity generation.

Table 2: Hours of Electricity Supplied/Day

Zone / Hours of Electricity Supplied/Day	Core		Transition		Periphery		Total (Study Area)	
	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)
Zero hour	7	1.4		0	0	0	7	0.7
1 - 5 hours	384	81.3	273	80.3	76	53.3	734	76.9
6 - 10 hours	68	14.5	53	15.6	67	46.7	186	19.5
11 - 15 hours	13	2.8	14	4.2	0	0	28	2.9
Total	472	100.0	340	100.0	143	100.0	955	100.0

Source: Author's Fieldwork, 2019.

Average Monthly Bill

Table 3 shows the results of average monthly bill paid by the residents for consummation of electricity from the national grid in the study area. The findings revealed that 76.2 percent of the respondents in the study area pay more than N1, 500 per month on the average. Spatially, the findings revealed the average monthly bill of more than N1, 500 as, at the core, 72.3 percent, transition 78.5 percent and periphery 84.1 percent. It is inferred from the results that the average monthly bill is not commensurate with the number of hours supplied.

Table 3: Average Monthly Bill

Zone / Average Monthly Bill	Core		Transition		Periphery		Total (Study Area)	
	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)
Less than N500	4	.9	0	0	0	0	4	.5
N500 - N1000	46	10.9	14	4.8	11	9.2	71	8.5
N1,001 - N1,500	67	15.9	48	16.6	8	6.7	123	14.8
More than N1,500	305	72.3	227	78.5	101	84.1	633	76.2
Total	472	100.0	340	100.0	143	100.0	955	100.0

Source: Author's Fieldwork, 2019.

3.4 Type of Energy Source

The type of energy source used for domestic cooking was examined across the core, transition and periphery of the study area. The study showed that at the periphery, 45.0 percent of the type of the energy source was kerosene stove, followed by 29.2 percent Gas/kerosene. At the transition, Gas/kerosene accounted for 56.1 percent, followed by gas with 20.1%, and while at the core, Gas/kerosene accounted for 70.1 percent followed by firewood 15.6 percent. It was generally observed that the use of charcoal or electricity as energy source for cooking is minimal across the residential densities. Some respondents attributed the low percentage for the use of electricity to the fact that it is prone to fire outbreak that could be devastating. On the other hand, the reason for low percentage for charcoal was attributed to the fact that it was not decent to be used in this present age among other.

Furthermore, results revealed that, at the city core, exposure to smoke is evident among the households, this result agrees with the .finding of Olukolajo, et al. (2013) which revealed that 58.58% of the household at the core area of Akure depends on firewood and charcoal as energy for cooking. Where kitchen facilities are non-existent, some cook in the corridor, passage or even within their bedrooms. This increases the health risk among the residents. However, this research has revealed that there is decrease on the use of firewood as the main source for cooking in the study area. The prevailing energy source for cooking is Gas supported occasionally by the Kerosene stove when Gas finishes. However, Gas only accounted for 10.5% and Kerosene stove only 9.9%, therefore reducing the health risk among the inhabitants in the study area.

Sogbon, Olugbamila, Akinrimade and Oloketuyi (2017), showed that, firewood is the prevalent source of fuel for cooking in the study area; however, this study revealed that the predominant source of energy for cooking currently is Gas supported occasionally by kerosene stove in the study area. This implies that if this positive trend is maintained and improved upon, vegetation in the study area would be conserved to a reasonable and appreciable degree.

Table 4: Type of Energy Source **(Cooking)**

Zone / Type of Energy Source	Core		Transition		Periphery		Total (Study Area)	
	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)
Firewood only	66	15.6	18	6.2	5	4.2	89	10.7
Charcoal only	14	3.3	12	4.2	2	1.7	28	3.4
Kerosene stove only	15	3.6	13	4.5	54	45.0	82	9.9
Electricity only	21	5.0	26	9.0	5	4.2	52	6.3
Gas only	10	2.4	58	20.1	19	15.8	87	10.5
Gas and Kerosene stove	296	70.1	162	56.1	35	29.2	493	59.3
Total	472	100.0	340	100.0	143	100.0	955	100.0

Source: Author's Fieldwork, 2019.

Reason for Choice of Energy Source

The reason for the choice of energy source in the different residential densities in the study area is shown on table 5. The reason for choice of energy source at the core revealed that cheapness accounted for 46.2 percent and convenience 42.9 percent. Similarly, at the transitional zone, cheapness 34.9 percent and convenience 24.2 percent while at the periphery, convenience accounted for 40.0 percent and fastness 26.7 percent as the reason for choice of energy source. Safety and cleanness that appeared decent had 9.4 percent and 3.4 percent respectively in the study area. However, it can be inferred from the following reasons, convenience, fastness and cleanness that the inhabitants of the study area living within the periphery had better education, more resourceful, well informed and better standard of living among others compared to each of the other zones.

Table 5: Reason for Choice of Energy Source

Zone / Reason for Choice of Energy Source	Core		Transition		Periphery		Total (Study Area)	
	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)
Cheapness	218	46.2	119	34.9	33	23.3	372	39.0
Convenience	203	42.9	82	24.2	57	40.0	344	36.0
Fastness	13	2.8	68	20.1	39	26.7	117	12.3
Safety	38	8.1	52	15.2	0	0	90	9.4
Cleanness	0	0	19	5.5	14	10.0	32	3.4
Total	472	100.0	340	100.0	143	100.0	955	100.0

Source: Author's Fieldwork, 2019.

Affordability of Energy Source

Findings show the different levels of affordability of the identified energy sources across the core, transition and periphery of the study area. At the core, affordability of the available resources showed that 23.2 **percent** not affordable and different categories of affordability accounted for 76.8 percent while at the transition, not affordable accounted for 28.0 percent and affordable 72.0 percent. However, at the periphery, not affordable had 13.3 percent and affordable 86.7 percent of the respondents.

Table 6: Affordability of Energy Source

Zone / Affordability	Core		Transition		Periphery		Total (Study Area)	
	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)
Not affordable	98	23.2	81	28.0	16	13.3	195	23.5
Fairly affordable	221	52.4	135	46.7	52	43.4	408	49.1
Affordable	62	14.7	62	21.5	40	33.3	164	19.7
Very affordable	41	9.7	11	3.8	12	10.0	64	7.7
Total	472	100.0	340	100.0	143	100.0	955	100.0

Source: Author's Fieldwork, 2019.

3.7 Type of Energy Source Utilized by Reason for the Choice of Energy Source

The results of cross tabulation of type of energy source utilized and reason for the choice of energy source in the entire study area are revealed in table 7. The analysis of energy source and reason for the choice of energy source revealed that for firewood, cheapness accounted for 66.7% and safety 21.2%; for charcoal, cheapness had 61.5% and fastness 23.1% as reasons for choice of energy; for kerosene stove, cheapness accounted for 35.2%, convenience 33.8% and fastness 31.0%; for electricity, convenience accounted for 44.7% and cheapness 29.8%; for gas, fastness accounted for 44.4% and cleanness 25.9%; for Gas/Kerosene, cheapness accounted for 42.4% and convenience 45.9%.

Table 7: Energy Source by Reason for Choice of Energy Source

Energy Source	Reason for the choice of energy source					Total
	Cheapness	Convenience	Fastness	Safety	Cleanness	
Firewood	52	0	12	16	0	80
Charcoal	24	12	10	2	0	48
Kerosene stove	33	33	27	0	0	93
Electricity	22	30	0	13	0	65
Gas	16	25	53	10	29	133
Gas/Kerosene	225	244	22	45	0	536
Total	372	344	124	86	29	955

Source: Author's Fieldwork, 2019.

3.8 Chi-Square Tests

The chi-square test of significance was used to test the difference in the type of energy source utilized and reason for the choice of energy source across the residential zones in Akure. The null hypothesis: there is no significant difference between type of energy source utilized and reason for the choice of energy source across the residential zones in the study area. The result shows that there was a significant difference between type of energy source utilized and reason for the choice of energy source by the residents across the residential zones of the study area ($X^2 = 470.91$, $P < 0.01$). The X Asymp. Sig. is less than 0.05. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted which says that there is significant difference between type of energy source utilized and reason for the choice of energy source across the residential zones of Akure.

Table 8: **Chi-Square Tests**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	470.909	20	.000
Likelihood Ratio	414.619	20	.000
Linear-by-Linear Association	43.041	1	.000
N of Valid Cases	955		

Source: Author's Fieldwork, 2019.

Sources of Domestic Water

Investigation revealed the sources of some improved and unimproved sources of domestic water in the study area as shown in table 9. Considering the entire study area, unimproved sources of domestic water had 84.8 percent and 3.0 percent for well and vending respectively, while improved sources had 1.9 percent and 10.2 percent for public tap and borehole correspondingly. Similarly, at the core, unimproved source had 86.7 percent and improved 13.2 percent; transition unimproved 89.0 percent and improved 11.1 percent; and at the periphery, unimproved 89.2 percent and improved 10.8 percent. Section 127 (a): Water Supply, "the well shall be situated as not to be liable to contamination or pollution by a stream, drainage water, latrine or refuse or waste water" (Ondo State Building and Sub-division Regulations 1984).

It was revealed that the activity of vending as a source of domestic water reduces from the core to the periphery. However, the location of well within the house or compound influences the level of safety of such water. It was observed that at the core area most of the hand-dug wells are located within the septic field. Furthermore, most of these wells are located in unkempt surroundings, without cover and water from these wells are used raw without treatment. This condition does not guarantee adequate supply of quality water in the area. This result concurs with the findings of Owoeye and Omole (2012) which reveal that hand-dug well had % 85.7% at the core area of Akure and wells 65.7% in the entire study area (Aribigbola, 2010). The implication of this is that majority of residents of the city depends on water supply from unsafe sources thereby lowering the quality of housing in the city.

Table 9: Source of water

Zone / Source of Water	Core		Transition		Periphery		Total (Study Area)	
	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)	Freq.	Percent (%)
Public tap	10	2.1	7	2.1	1	.8	18	1.9
Well	388	82.2	295	86.9	128	89.2	810	84.8
Vending	21	4.5	7	2.1	0	0	29	3.0
Borehole	53	11.1	31	9.0	14	10.0	98	10.2
Total	472	100.0	340	100.0	143	100.0	955	100.0

Source: Author's Fieldwork, 2019.

Conclusion and Recommendation

This paper investigates spatial differentiation in sourcing of facilities in residential buildings at the core, transitional and residential zones. The study reveals that majority of the inhabitants in the study area use generator and national grid as their main sources of electricity. The inhabitants at the transitional zone had better hours of supply of electricity by national grid than those at core and periphery, although, the average monthly bill is not commensurate with the number of hours supplied. The prevailing energy source for cooking is Gas/Kerosene stove. The reason for choice of energy source at the core revealed that cheapness accounted for 46.2% and convenience 42.9%; transition zone, cheapness 34.9% and convenience 24.2 percent. Safety and cleanness that appeared decent had 9.4 percent and 3.4 percent respectively in the entire study area.

Furthermore, at the periphery, the respondent who said that the source of energy is not affordable had 13.3% and affordable 86.7 percent. Source of domestic water revealed that majority of residents of the city depends on water supply from unsafe sources thereby lowering the quality of housing in the city. Consequently, this paper recommends stable supply of electricity from the national grid / solar system, prepaid metres for all the inhabitants, encourage the use of gas at affordable price, construction of boreholes and public taps among others across the residential zones of the study area.

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